

EGERTON



UNIVERSITY

UNDERGRADUATE CATALOGUE

2016 - 2020

EGERTON UNIVESITY

UNDERGRADUATE CATALOGUE (DIPLOMA AND BACHELORS PROGRAMMES)

2016 - 2020

Compiled by
Board of Undergraduate Studies and Field Attachment Programmes
Division of Academic Affairs
Egerton University
P. O. Box 536,
EGERTON – KENYA

Typesetting:

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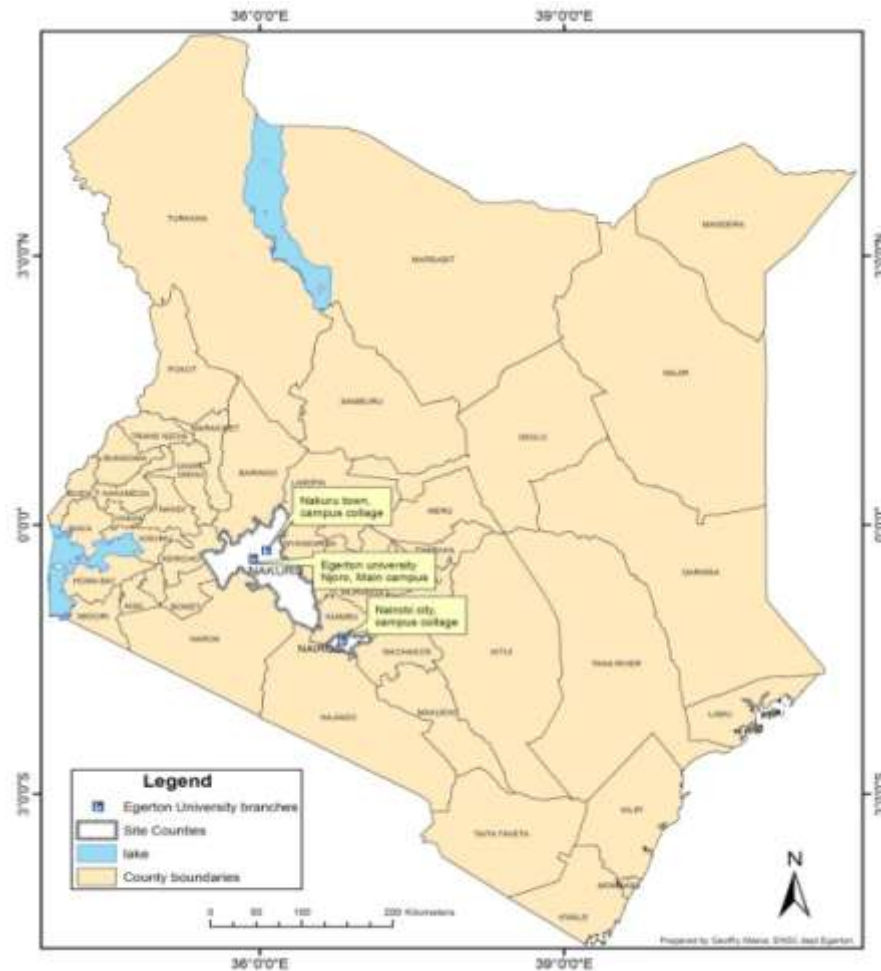
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Prof. SHEM OYOO WANDIGA

EBS, Frsc, B.Sc (Howard University), M.Sc. (Maryland), Ph.D (Reserve University)

LOCATION OF EGERTON UNIVERSITY CAMPUSES



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Vice-Chancellor

Prof. Rose A. Mwonya, Dip. (Egerton), B.Sc., M.Sc., Ph.D
(Iowa)

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BRIEF HISTORY OF EGERTON UNIVERSITY

Egerton University has the oldest and probably the longest history among all institutions of higher learning in Kenya. The present Egerton University is credited to Lord Egerton of Tatton, a British Baron who had settled in Kenya in the 1920s. He mooted the idea of starting a school which would train white settler youth/would-be white settlers in Kenya in African/tropical agriculture. In 1939, Lord Egerton founded Egerton Farm School (as it was known then) with an initial enrolment of only 3 students. The students were accommodated in makeshift structures. Construction of permanent buildings started in 1940 when 45 students were admitted. As the school gained popularity, Lord Egerton, to grow his dream further, donated 482 hectares of free-hold land for use by the school as a training ground.

The school was temporarily closed at the end of the Second World War in 1945. At the end of the War II, to meet the needs of the industry, the school decided to run short courses in practical and theoretical agriculture for men returning from the forces (British ex-servicemen) who wished to farm in Kenya (some of the ex-men were actually rewarded with land in Kenya) or as a way of rehabilitating the ex-servicemen into civilian life. The first nine-month certificate course was started in March 1946 with 45 students. The nine-month certificate course continued until 1949. In the same year (1949), the school assumed a higher level of standing by introducing a two-year Diploma Course and a one-year Certificate Course. Consequently and with permission of Lord Egerton, the Egerton School of Agriculture upgraded to Egerton College (EC).

The Management of the College was entrusted to a Private Board of Governors (PBG) which was indirectly answerable to the Minister for Agriculture.

In 1952, the EC was given further recognition by the government. Courses were diversified with a strong emphasis in Animal Husbandry and Crop

Husbandry, with related studies in Economics and Engineering. Soon after, the EC started offering a course in Forestry. The college also launched short courses for farmers and farm managers.

In 1984 the Ayany Commission was established to look into the possibility of EAC becoming a University. The commission submitted a report which recommended that EAC be considered for elevation to university status with focus on Agricultural Programmes in Kenya. There was resistance to the proposal by many stakeholders, including the Ministry of Agriculture and SECID (ostensibly because EAC would lose its strong emphasis for practical orientated training in her programmes). Nevertheless, in 1986, EAC was gazetted as a constituent college of the University of Nairobi. The following year, 1987, Egerton University College was granted full fledged University Status, becoming Egerton University through an Act of parliament (The Egerton University Act, 1987). Since inception, Egerton University has expanded both territorially and academically. Until it was granted the charter on 6th February, 2013, it has nurtured three other universities namely

- i) Kisii University
- ii) Laikipia University
- iii) Chuka University

Currently, Egerton University has 3 other campuses:

- i) Nakuru Town Campus College (NTCC), located in Nakuru town's Central Business District (CBD), The NTCC was established in the year 2001. The Campus College has a total student population of 2800;
- ii) Nairobi City Campus (NCC), which was established in May 2011 as a learning centre, and in 2012 was elevated to a Campus headed by a Director. The NCC is located in Nairobi's CBD;
- iii) Kenyatta Campus, located in Njoro across the Njoro Campus gate.

ABOUT THE CATALOGUE

Welcome to Egerton University *Catalogue*! This *Catalogue* is the official document for undergraduate programmes, courses, and rules and regulations governing these programmes. Egerton University Statutes 36 on the rules and regulations for diploma and bachelor programmes are documented in this *Catalogue*. The *Catalogue* provides all enrolled students with the information they need regarding their respective programmes and helping prospective students make important enrolment decisions. The University currently has over forty (40) academic departments that offer a wide range of programmes at diploma, undergraduate, and postgraduate levels. The departments are spread over 10 faculties namely Agriculture, Arts and Social Sciences, Commerce, Education and Community Studies, Engineering and Technology, Environment and Resources Development, Health Sciences, Law, Science, and Veterinary Medicine and Surgery. Additional courses are offered by the Institute of Women, Gender and Development Studies and College of Open and Distance Learning. Over 85 undergraduate academic programmes with more than 5000 course units are described in this *Catalogue*.

Degree requirements and courses described in the 2016 - 2020 *Catalogue* apply to students enrolled in Egerton University from August 2016. All other students will continue with programmes and courses as described in previous catalogues.

Every effort is made to ensure that the programme information, applicable statutes and other materials presented in the *Catalogue* are accurate and correct. However, catalogue making is dynamic and changes are bound to occur after the compilation of the *Catalogue*. Up-to-date information on specific programmes or course (units) should be directed to the department that offers the programme. Annual updates will be available online at www.egerton.ac.ke.

For more information on Undergraduate Programmes and courses, contact:

Director,
Board of Undergraduate Studies and Field Attachment Programs
BH 46, Uganda Road
051 – 2217781/2217891/2 Ext. 3577
bugs@egerton.ac.ke

For more information on Postgraduate Programmes and courses, contact:

Director,
Board of Postgraduate Studies
051 – 2217781/2217891/2 Ext. 3606
bpgs@egerton.ac.ke

Abbreviations in summary of courses

L	-	Lecture
P	-	Practicals
T	-	Tutorials
C	-	Clinical practice
CF	-	Credit Factor

STATUTES 36

(Relevant to undergraduate studies)

RULES AND REGULATIONS FOR THE UNDERGRADUATE DEGREE AND DIPLOMA PROGRAMMES

1. Admission Procedures

- (a) Enquiries for all programmes offered at Njoro Campus should be made to the Registrar (Academic Affairs), Egerton University, P. O. Box 536-20115, EGERTON, Kenya.
- (b) Enquiries for all programmes offered at other campuses shall be made to the Principal/ Director of the Campus.
- (c) Application forms may be obtained from the Registrar (Academic Affairs) or downloaded from the University's website.
- (d) Duly completed application forms shall be returned to the Registrar (Academic Affairs) on or before the due date upon payment of a prescribed non-refundable fee.
- (e) The closing date for receiving applications shall be as determined by the Senate from time to time.
- (f) The Kenya Universities and Colleges Central Placement Service in consultation with the University may describe alternative procedures.

2. Entry Requirements

- (a) Entry requirements set out below are only minimum, and they in no way entitle an applicant to a place in the University.
- (b) Entry Requirements for the Bachelor's Degree that applicants must meet:
- (i) Have the Kenya Certificate of Secondary Education (KCSE) with a final mean grade C+ (C plus) from at least seven subjects drawn from subject groupings as specified by the Kenya National

Examinations Council (KNEC) or its equivalent. OR

- (ii) Have one of the following combinations of passes in the Kenya Advanced Certificate of Education (KACE) examination or its equivalent:
- (iii) Two Principal passes obtained at the same sitting. OR
- (iv) Two Principal passes obtained at different sittings provided the passes are of Grade C or higher. OR
- (v) Hold a Diploma of Egerton University with a "Credit" or higher or an equivalent qualification from a recognised institution in the relevant field of specialisation acceptable to the Senate. Those with a "Pass" Diploma will be considered if they have at least two years relevant experience after graduation. AND
- (vi) Meet additional entry requirements as may be specified by the respective Department, Faculty, School or Institute.
- (c) Entry requirements for the Diploma that applicants must meet:
- (i) Have the KCSE with a final mean grade "C" having passed at least seven subjects drawn from subject groupings as specified by the KNEC or equivalent. Provided that candidates with disabilities will be given special consideration with regard to the number of subjects taken at KCSE. OR
- (ii) Have the Kenya Certificate of Education (KCE) or its equivalent with a minimum of Division Three. OR
- (iii) Hold a certificate from a recognised institution with a "Credit", or equivalent qualification from a

recognized institution in the relevant field of specialization, acceptable to Senate. AND

- (iv) Meet additional or specific entry requirements as may be specified by the respective Department, Faculty, School or Institute offering the Diploma programme.

3. Duration of Study and Course Loading

- (a) The duration of study for a Bachelor's Degree and Diploma shall be as prescribed under the respective academic programmes and approved by the Senate.
- (b) A candidate must take and pass at least one hundred and twenty (120) CFs of prescribed courses to qualify for the award of a Degree or at least sixty (60) CFs for the award of a Diploma. The number of CFs required for the award of Diploma or Degree may vary from one programme to another.
- (c) A full-time student shall normally register for and take fifteen to thirty (15-30) CFs of courses per semester while part-time students may take half that number of CFs in consultation with the respective Department and Faculty, School or Institute.

The Senate may accept a Credit Transfer up to a maximum of forty percent (40%) of the required Degree or Diploma programme CFs. Such CFs must have been acquired from recognised institutions and taken within a period acceptable to the Senate. Provided that such CFs have been

obtained by passing the courses at the grade of B and above.

- (d) Credit Transfers will attract a fee per CF transferred. The fee shall be determined by Council from time to time
- (e) Candidates shall fulfill other conditions as may be stipulated by the respective Departments and Faculties, Schools or Institutes from which the Degree is sought.

4. Degree Structure and Course Requirements

- (a) The Bachelor's Degrees are structured as specified under individual academic programmes as approved by the Senate.
- (b) Courses taken to fulfill graduation requirements shall be drawn from those specified by the respective Department, Faculty, School or Institute and from the University Common Core Courses.
- (c) University Common Core Course: These are intended to broaden the academic background of the students consistent with their respective professional training and thus facilitate a more profound appreciation of the society and environment of which they are a part. All candidates must take and pass at least nine CFs of Common Core Courses selected from outside the candidate's area of specialisation.

5. Examination Processing and General Requirements

- (a) All examinations shall be conducted under the authority of the Senate as specified under various Rules and Regulations.
- (b) Every candidate, to be eligible to take university examinations, shall pay to the University in respect of the examinations, such fees as the Council shall prescribe.
- (c) Only students who have registered for scheduled courses within the first two weeks of the semester and fulfilled all other requirements shall be eligible for taking examinations.
- (d) There shall be Internal and External Examiners of the University appointed by the Senate upon the recommendation of the Boards of Faculty, School or Institute, who shall prepare examinations and examine students in papers assigned to them by the Faculty, School or Institute.
- (e) Final examination marks shall be agreed upon between the Internal and External Examiners. Provided that where no such agreement can be reached the Chief Examiner concerned shall make the final decision.
- (f) In the case of re-examination, a Moderator may be appointed from within or outside the University who had no part in teaching the candidate(s) in the subject for the paper under examination.
- (g) Departments shall establish Moderating Committees chaired by the Chairperson of

Department and consisting of at least three senior academic staff who shall moderate draft examination papers; in the absence of an External Examiner, examination results; in cases of appeals for remarking, the examination results.

- (h) No student shall be permitted to proceed to the next year of study without having satisfied all the examination requirements except when required to retake failed courses.

6. Assessment criteria and procedures for regular examinations

- (a) Examinations shall be graded on the basis of percentage marks consisting of thirty per cent (30%) as continuous assessment and seventy per cent (70%) as final examinations.
- (b) For medical programmes the grading shall be as follows:
 - i) Continuous assessment tests will comprise forty per cent (40%) and end-of-semester/ end-of-year final examinations – sixty per cent (60%);
 - ii) Any candidate who fails the clinical examination will have failed to satisfy the examiners in the overall examination for the course even if the final mark is fifty per cent (50%) or higher.
- (c) The duration of the final examinations shall be as follows:
 - i) A course having three CFs or less shall be examined by a paper of two hours only.
 - ii) A course having more than three CFs shall be examined by a paper of three hours only.

(d) Where a course is mainly practical in nature, it may be examined wholly or substantially by continuous and/ or practical assessment.

(e) The total marks scored for each course shall be translated into letter grades as follows:

i) For non-medical programmes:

100-70 per cent	A (Excellent)
69-60 per cent	B (Good)
59-50 per cent	C (Average)
49-40 per cent	D (Below average)
39-0 per cent	F (Fail)

(ii) For medical programmes

100-75 per cent	A (Distinction)
74-65 per cent	B (Credit)
64-50 per cent	C (Pass)
49-0 per cent	D (Fail)

(f) Other designations related to examinations shall be as follows:

P:	Pass
I:	Incomplete
CP:	Course in progress
CT:	Credit Transfer
Au:	Audit (regulations/guidelines for auditing courses)

(g) Auditing a Course(s): Auditing a course means allowing a student to take a class to fulfill requirements for a programme. A student who audits a course should officially register for the course. The marks of the audited course(s) will not be used to calculate the cumulative average. In certain cases, the student may be required to have passed the audited course. A student may also audit

a course on a voluntary basis. In this case, he may or may not sit for an examination.

7. Compensation of marks

A candidate who fails up to two courses in the regular examinations of an academic year will be allowed to pass on compensation grounds by the Faculty Board of Examiners under the following conditions:

- (a) A candidate shall be compensated if he/ she obtains between 39-36 marks in a course.
- (b) Marks for compensation for a particular course shall be obtained from a related course passed during regular examinations in the same academic year.
- (c) A grade of the compensating course shall not be changed due to the borrowing of the marks.
- (d) Marks taken for compensation shall be subtracted from the compensating course. For every one mark compensation, two marks will be required from the compensating course. In the medical courses a candidate shall be compensated if he/ she obtains between 45- 49 marks in a course.

8. Special Examinations

- (a) A student who completes the coursework but due to unavoidable circumstances, acceptable to the Senate, is unable to sit for final examinations, shall, on written request, be allowed to take special examinations.

(b) Special examinations shall be graded on the same guidelines as those for regular examinations

(c) Special examinations shall be held concurrently with the resit examinations unless otherwise specified by Senate.

(d) A student who fails a special exam shall repeat the year of study, provided the student shall be allowed to repeat the academic year only once.

9. Resit/Repeat of academic year

- (a) A student who fails up to twenty five (25%) of the total Credit Factors taken in an academic year shall be required to take resit examination(s) in all the failed course(s).
- (b) Resit examinations shall be taken and processed only once in an academic year on dates prescribed by the Senate before the commencement of the next academic year (except for students on part time and modular mode of study).
- (c) Resit examinations for students on part time or modular mode of study shall be taken and processed only once at the end of each session on dates prescribed by the Senate.
- (d) Marks obtained in a resit examination shall be graded down to forty percent (40%) only which is equivalent to the letter grade "D".
- (e) A student shall be allowed to repeat the academic year if s/he fails a resit course(s). Provided the student shall be allowed to repeat the academic year only once.

- (f) A student who fails more than twenty five (25%) but up to fifty percent (50%) of the total Credit Factors taken in an academic year shall be required to repeat the academic year. Provided the student shall be allowed to repeat the academic year only once.
- (g) A student who fails a course(s) during a repeated academic year shall be allowed to resit the failed courses(s) in accordance to statute 36(9a-c).

10. Discontinuation

A student shall be discontinued on academic grounds if s/he:

- (a) Fails more than fifty percent (50%) of all Credit Factors taken in an academic year.
- (b) Fails a resit examination(s) in a repeated academic year.
- (c) Fails to register for, and/ or attend scheduled classes for two weeks or longer consecutively or cumulatively without the consent of the Senate;
- (d) Commits an examination malpractice;
- (e) Fails to meet any other condition stipulated by the Faculty for the award of Degree or Diploma.

11. Remarking of examinations

- (a) A candidate shall be allowed to appeal to the Dean of the Faculty offering the course through the Chairperson of Department and the Dean where the student is registered, on payment of a non-

refundable fee to be determined from time to time by the Council.

- (b) Remarking shall be done by an Examiner (or Examiners) other than the original one and shall be moderated by the Moderating Committee.

12. Assessment criteria for medical and veterinary programmes

- (a) Resit of failed courses/ Repeat of academic year/ level:
 - (i) A student who fails up to fifty percent (50%) of the total Credit Factors taken in an academic year shall be required to take re-sit examination(s) in all the failed course(s).
 - (ii) Resit examinations shall be taken and processed only once in an academic year on dates prescribed by the Senate before the commencement of the next academic year.
 - (iii) Marks obtained in a re-sit examination where the pass mark is 50% shall be graded down to fifty percent (50%) only which is equivalent to the letter grade "C", otherwise the 40% pass mark applies.
 - (iv) A medical student who fails a final examination shall be required to resit the failed course(s).
 - (v) A student shall be allowed to repeat the academic year/ level if s/he failed the resit course(s). Provided such a student shall be allowed to repeat an academic year only once.
 - (vi) A student who fails a special exam shall repeat the year of study, provided the student shall be allowed to repeat the academic year once only.
 - (vii) A student who fails a course(s) during a repeated academic year/ level shall be allowed to resit the failed courses(s) in accordance to statute 36(12a-c

- (b) Discontinuation:
 - (i) A student shall be discontinued if s/he: Fails more than fifty percent (50%) of all Credit Factors taken in an academic year/ level.
 - (ii) Fails a resit examination(s) in a repeated year.
 - (iii) Fails to register for, and/ or attend scheduled classes for two weeks, whether continuous or intermittent, without the consent of the Senate.
 - (v) Commits a serious examination malpractice.
 - (vi) Fails to meet any other condition stipulated by the Faculty for the award of Degree or Diploma

13. Examination irregularities and penalties

- (a) The following examination malpractices are considered serious and any student guilty of committing any of them shall be liable to discontinuation from the University:
 - (i) Copying or reading from another candidate's script or from any other unauthorised source;
 - (ii) Bringing into the examination room any unauthorised materials to the examination, e.g. books, notes, electronic devices with pre-set formulae, mobile phones, Kindle, pre-written answers, etc.;
 - (iii) Abetting, aiding or covering up an examination malpractice;
 - (iv) Seeking or obtaining a deferment of examination on false pretence;
 - (v) Plagiarism;
 - (vi) Taking an examination script out of the examination room instead of handing it over to the Examiner at the end of examination time.
- (b) Examination misdemeanors shall attract lighter penalties.

14. Examination related disciplinary procedures

- (a) Any examination malpractice shall immediately be reported in writing by the invigilators through the Chief Examiner of the Department to the Dean of Faculty where the course is taught. The report shall include statements by the student involved, invigilators and examiners.
- (b) On receiving the report of examination malpractice, the Dean shall convene, not later than two weeks after the final examinations, a Faculty Students' Disciplinary Committee to deliberate on the case.
- (c) The membership of the Faculty Students' Disciplinary Committee shall be as follows:
 - (i) The Dean of Faculty where the course is offered – Chairperson;
 - (ii) The Chairperson of the Department where the Course was offered and the Chairperson of Department where the student was registered;
 - (iii) Two Faculty representatives from within the Faculty where the course was offered;
 - (iv) The Faculty Registrar or Administrative Assistant – Secretary.
- (d) The Faculty Students' Disciplinary Committee shall conduct its procedures, unless otherwise stated, in accordance with protocols stipulated by the Faculty Students' Disciplinary Committee.
- (e) The recommendations of the Faculty Students' Disciplinary Committee shall be reported to the Faculty Board of Examiners and the Senate as soon as possible, but before the Senate deliberates on the relevant examination results.

15. Expulsion from the University

A student shall be expelled from the University under the following conditions:

- (a) Declared by the Students Disciplinary Committee to have demonstrated gross misconduct;
- (b) Discovered to have been admitted irregularly, e.g. forging of admission documents, holding two admissions at the same time, etc. A student expelled from the University for irregular admission shall not be entitled to any previous academic records.

16. Appeal

Discontinued or suspended students may appeal to the Chairperson, Grievances Handling and Appeals Committee of the Council through the Vice-Chancellor within a period of ninety (90) days from the date of notification of the discontinuation. An appeal not submitted within the ninety (90) days shall not be considered.

17. Classification of Degrees and Diplomas

- (a) **For non-medical programmes**, the Bachelor's degree and the Diploma shall be classified on weighted average percentage marks of all the courses taken in all the years of study at the University as follows:

Per cent (%) Bracket	Degree Classification
100- 70	First Class Honours
69-60	Upper Second Class

	Honours
59-50	Lower Second Class Honours
49-40	Pass
40-40	Fail

Per cent (%) Bracket	Diploma Classification
100-70	Distinction
69-60	Credit
59-40	Pass
40-0	Fail

- (b) **For medical programmes**, after satisfying the general requirements, a student shall be required to pass the Qualifying Professional Examination(s) set by the Faculty in collaboration with relevant professional bodies. Unless otherwise stated, medical certificates shall not be classified.

18. Processing of Transcripts

- (a) The student's Academic Transcript shall show all the courses taken, including:
 - (i) CFs for each course;
 - (ii) Letter grade for each course, including the original F grade(s) for subsequently retaken courses;
 - (iii) The Weighted Average Score (WAS) for the current academic year;
 - (iv) The Cumulative Weighted Average Score (CWAS), and courses and respective CFs, in case of in-service students.
- (b) The provisional academic transcript shall be issued and signed by the Dean of Faculty or Director of School or Institute offering the Degree or Diploma.

- (c) The official academic transcript shall be signed and issued by the Registrar (Academic Affairs).

19. Rescinding of a Degree or Diploma

The University may rescind any Degree or Diploma awarded to a graduate who, while registered in a particular programme, committed an academic offence, or an error was otherwise committed, which if it had been detected before graduation, would have resulted in expulsion. Notification of a rescinded Degree or Diploma shall be communicated to all relevant parties and gazetted.

FACULTY OF AGRICULTURE



DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT

DIPLOMA IN FARM RESOURCE MANAGEMENT

1. Philosophy

Transforming livelihoods through quality training, extension and hands-on practical work in the area of farm and resource management

2. Rationale

Since over 70% of Kenya's population are small holders the graduates in Diploma in Farm and Resource Management are prepared to handle the challenges of agricultural transformation as they join the agricultural extension advisory service or serve in private sector agricultural entities.

3. Goal of the Programme

The programme goal is to impart theoretical and practical skills and knowledge in the economics and management of crops, livestock and other farm resources. The resource management includes issues related to crops, livestock and wild life interaction.

4. Programme Learning Outcomes

At the completion of the training, the Diploma in Farm and Resource Management graduates should be able to:

- i) Enhance the importance of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income for efficient and effective extension work among farmers
- ii) Provide an understanding of the role of Economic theory in designing, implementing and evaluating agricultural farm projects for profitability
- iii) Apply the knowledge in farm resource management to setup and run own profitable agribusiness enterprises.
- iv) Provide an understand of the role of markets, price dynamics and marketing systems as a pull for

shifting from subsistence to market oriented/ commercialization agriculture

5. Mode of Delivery

The programme is delivered on full time basis through lectures, practical, farm based attachment, internship and field visits:

6. Academic Regulation for the Programme

6.1 Admission Requirements

The requirements for admission as diploma students in Farm Management are:

- i) An aggregate score of KCSE Grade C- (C minus) or equivalent;
- ii) Individual score KCSE Grade C- (C minus) in each of the following subjects; English or Kiswahili, Mathematics or Physics, Chemistry or Physical Science, Biology or Biological Science.
- iii) Certificate in Agriculture/agribusiness with credit from a recognized agricultural or technical college.

6.2 Regulation on Credit Transfer

Credit transfer shall be done in adherence to Egerton University Statute of 2013 article 36(3) for undergraduate programmes

6.3 Course Requirements

Students must attend all classes, field visits and practicals. On the same premise the lecturers have the obligation to cover all the course contents, administer a minimum of two continuous assessment tests and facilitate field visits. The course requirement guidelines shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment Policy/Criteria

Student assessment policy/criteria shall be done in accordance with Egerton University statute 36 (6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with the examination regulations as stipulated in the Statutes of Egerton University 36(5) of 2013. AGECE 0350 (Field Attachment) shall be assessed in accordance with the existing Egerton University regulation relating to field attachment.

6.7 Moderation of Examination

The examination shall be moderated within the department and the external examiner following procedures (EU/AA/OP/07) .

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses and have attained a minimum of 147 credit factors of course work and 4 credit factors of field attachment.

6.9 Diploma Classification

Diploma in Farm Resource Management is classified in accordance with Egerton University Statute 36 (17a) of 2013.

7. Course evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme shall be hosted in the department of Agricultural Economics and Agribusiness Management

in the Faculty of Agriculture. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated after every academic cycle with reference to ISO procedure for quality Assurance of academic programmes EU/VC/OP/05.

8.3 Course Coding

All course codes begin with an abbreviation “AGEC” indicating that the course is offered from the department. The abbreviation is followed by a set of four digits as follows:

- The first digit is a zero (0) denoting that course is diploma course;
- The second digit is either a 1, 2, or 3, denoting the year the course should be offered;
- The third digit denotes the course discipline within the Department. The department has categorized its course into five disciplines as follows:
 1. Introduction economic theory and quantitative economics
 2. Resource and development economics.
 3. Agricultural marketing, price analysis & international trade.
 4. Farm management and production economics.
 5. Agricultural law & policy.
 6. Industrial and field attachment

The last digit denotes the sub-discipline of the course within the boarder category described in (c) above.

9.0 Courses/ Units offered for the Programme

9.1 Schedule of Courses

The courses offered by the programme shall be classified into;

a) Common Core courses

The following are the core courses that shall be offered by the programme;

Summary of Courses

CODE	TITLE	C.F
AGED 0112	Agricultural Communication Skills	2.0
AGRO 0101	Principles of Crop Production	3.5
BOTA 0101	Agricultural Botany	3.0
CHEM 0111	Basic Inorganic and Physical Chemistry	3.0
CHEM 0131	Basic Organic Chemistry	3.0
HORT 0111	General Principle & Practices of Vegetable & Fruit Growing	4.0
MATH 0102	Introductory Mathematics	3.0
SOIL 0100	Introductory Soil Science	3.0
ZOOL 0110	Ecology and Environmental Science	3.0

b) The schedule of courses in the programme shall be organized on semester basis, as follows:

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGRO 0101	Principles of Crop Production	45	15	3.5
AGED 0112	Agricultural Communication Skills	30	0	2.0
BOTA 0101	Agricultural Botany	30	30	3.0
CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
MATH 0102	Introductory Mathematics	45	0	3.0
SOIL 0100	Introductory Soil Science	30	30	3.0
AGBM 0103	Entrepreneurship	30	0	2.0
BOTA 0111	Genetics	30	30	3.0
TOTAL		270	135	22.5

YEAR 1 SEMESTER 2

AGED 0111	Fundamentals of Agricultural Economics	45	0	3.0
AGEN 0172	Workshop Practice	15	30	2.0
CHEM 0131	Basic Organic Chemistry	30	30	3.0

HORT 0111	General Principle & Practices of Vegetable & Fruit Growing	45	30	4.0
PHIL 0108	Ethic, Integrity and National Values	45	0	3.0
STAT 0131	Basic Statistics	45	0	3.0
ZOOL 0110	Ecology and Environmental Science	30	30	3.0
ZOOL 0120	Entomology	30	30	3.0
TOTAL		285	150	24.0

YEAR 2 SEMESTER 1

AGBM 0220	Principles of Agricultural Value Chains	45	0	3.0
AGEC 0241	Production Economics	45	0	3.0
AGED 0231	Rural sociology and Development	30	0	2.0
AGEN 0266	Water Resource Management	30	45	3.5
AGEN 0273	Introduction to Mechanized Agriculture	30	30	3.0
AGRO 0221	Principles and Practices of Plant Breeding	30	15	2.5
AGRO 0271	Pasture and Forage Management	30	15	2.5
ZOOL 0240	Parasitology	30	30	3.0
TOTAL		270	135	22.5

YEAR 2 SEMESTER 2

AGED 0212	Technical Writing and Reporting	30	0	2.0
AGED 0213	Agricultural Communication and Technology	30	30	3.0
AGED 0232	Agricultural Extension	45	0	3.0
AGEN 0277	Soil and Water Management	30	45	3.5
AGRO 0251	Annual Crops	45	15	3.5

ANSC 0230	Animal Nutrition and Livestock Feeding	30	30	3.0
ANSC 0250	Ruminant Husbandry	45	30	4.0
BOTA 0251	Plant Pathology	30	30	3.0
SOIL 0250	Fertilizer Use and Plant Nutrition	30	30	3.0
TOTAL		315	210	28.0
AGEC 0350	Field Attachment	0	120	4.0

YEAR 3 SEMESTER 1

AGBM 0330	Fundamentals of Human Resources Management	45	0	3.0
AGEC 0320	Agricultural Environmental Economics	45	0	3.0
AGEC 0331	Principles of Co-operatives	45	0	3.0
AGEC 0332	Agricultural Marketing	45	0	3.0
AGEC 0343	Farm Accounting	45	0	3.0
AGEC 0345	Farm Management I	45	0	3.0
AGRO 0361	Perennial Crops	45	15	3.5
ANHE 0326	Animal Diseases	45	30	4.0
TOTAL		360	45	25.5

YEAR 3 SEMESTER 2

AGBM 0331	Agribusiness Management	45	0	3.0
AGEC 0321	Foundation of Resource Economics	45	0	3.0
AGEC 0322	Introduction to Economic Development	45	0	3.0
AGEC 0342	Farm Management II	30	30	3.0
AGEC 0344	Agricultural Finance & Credit Management	45	0	3.0
AGEN 0371	Farm Structures	30	45	3.5
ANSC 0360	Non Ruminant	45	0	3.0

	Husbandry			
HORT 0351	Post-Harvest Technology and Marketing of Horticultural Produce	30	30	3.0
TOTAL		315	105	24.5

Academic Field Trips

Y2S2 AGBM 0221

Introduction to Agricultural Value Chains

Y3S1 AGECE 0331

Principles of Co-operatives

Y3S2 AGECE 0342

Farm Management II

c) Course Descriptions

AGEC 0111: Fundamentals of Agricultural Economics (45/0; C.F 3.0) Y1S2

Fundamentals of economics, basic economic principles used in an economic system. Problems of economic organization; price system; supply and demand, utility, substitution and income effects, consumer surplus, indifference curves, elasticity; market structures, theory of production, cost curves. National income accounting, aggregate demand and equilibrium income and output, money, interest, consumption and saving, investment spending, the demand for money, functions of money, money supply.

AGBM 0103: Entrepreneurship (45/0; C.F 3.0) Y1S1

Definition, nature and scope of entrepreneurship: Role of the entrepreneur in society; conditions necessary for entrepreneurship to evolve; Basic requirements for starting, running and expanding a small business, managing and financing of small businesses.

AGBM 0220: Introduction to Agricultural Value Chains (45/0; C.F 3.0) Y2S1

Definitions; importance of value chains; value chain and agricultural policies; stages and links of a value chain: primary production, processing, delivery, retail, consumption; structure and functioning of a value chain; value chain analysis and policy making: poverty reduction and food security, stimulation and protection of strategic production sectors, value addition, income distribution; actors in value chain: Agricultural value chains and development: opportunities and threats of trade and market globalization, value chain and agribusiness development, agricultural productivity. Limitations of the value chain approach; Selecting a value chain for promotion: scope of the value chain; prioritization of value chains: assessing growth potential, poverty alleviation potential, criteria for value chain selection, decision making process; Institutional framework of value chains: coordination, linkages and governance.

AGEC 0241: Production Economics (45/0; C.F 3.0) Y2S1

Nature of agricultural production, factors of production, properties of production functions; factors-product relationship - isocost, isoquants /isoproducts; product-product relationship- transformation curve; factor-factor relationships; returns to scale; economies of scale, cost minimization, revenue function, revenue maximization; cost theory, risk and uncertainty and their influence in production; production overtime; compounding and discounting, depreciation.

Prerequisite is AGECE 0111

AGEC 0345: Farm Management I (30/30; C.F 3.0) Y3S1

Principles of farm planning and project management, project cycle management, scope of management; enterprise selection and combination; rotation and farm layout; collection and analysis of farm management data; farm planning and budgeting; farm budgeting

analysis, partial budget, complete budget, break even budget, performance measures, programme planning and linear programming techniques. Introduction to farm accounting – objective of accounting, basic accounting documents, income statement and balance sheet.

AGEC 0320: Agricultural Environmental Economics (45/0; C.F 3.0)

Introduction: Definitions and basis of environmental economics, sustainable development and relationship between economic growth and the environment. Current environmental issues: climate change, climate change and food security, agricultural pesticides use, agricultural biotechnology and its impacts on the environment. Management of Water Resources/Wetlands and waste water management in agriculture.

AGEC 0321: Foundations Of Resource Economics (45/0; C.F 3.0)

The study of man's relationship to the land resource including the physical and biological attributes of the land, application of economic theory to land use, human welfare and satisfaction derived from the land and institutional arrangements that control the use of the land resource.

Areas emphasized will be natural and human resource attributes the man land ratio, common property concepts, externalities and environmental quality, energy resources and conservation of the land resource.

AGEC 0322: Introduction to Economic Development (45/0; C.F 3.0) Y3S1

Exposition to a brief treatment of principles and concepts of development economics, the role of development economics, the role of national income policy; the policy formulation and implementation; and realization of developmental goals; economic policy (macroeconomic and micro economic). The objectives of growth, etc. conflicts between objectives problems of the measurement (indicators) of economic development;

under development and the economic growth; economic planning (the Kenya case); Kenya's development strategies, rural development.

AGEC 0331: Principles Of Co-Operatives (45/0; C.F 3.0) Y3S1

Definition and co-operative philosophies. Co-operatives principles, organization and structure of co-operatives; management of co-operative members, board of directors, manager and employees; economic role of co-operatives, role of government and problems of co-operatives; principles of financing co-operatives - equity, revolving, reserves and borrowed capital; financial analysis and financial control- balance sheet, profit and loss statement and ratio analysis; liquidity, solvency; profitability and efficiency ratios.

AGEC 0332: Agricultural Marketing (45/0; C.F 3.0) Y3S1

Scope and importance of marketing, theoretical approaches to marketing: functional, institutional and commodity approaches, marketing functions, marketing agencies, market organization, structure, conduct and performance, food processing and manufacture, wholesaling and retailing, prices and marketing costs, competition in food markets, marketing problems, public intervention in marketing, marketing co-operatives and boards. **Prerequisite is AGECE 0111**

AGEC 0343: Farm Accounting (45/0; C.F 3.0) Y3S1

Objectives and reasons for farm records and accounting; principles of accounting and procedures; recording and analysis of financial data; types of accounts, record books and bookkeeping; accounting documents - invoice, receipts, statements, local purchase order, requisition order, cash analysis. Stock valuation. Preparation of final accounting statements - balance sheet, trial balance, income statement, performance measures. Accounting for: inventories, receivables, fixed assets and depreciation.

AGEC 0344: Agricultural Finance and Credit Management (45/0; C.F 3.0) Y3S2

To enable students to appreciate the importance of agricultural finance, the time factor credit institutions and use of credit in agriculture; economic principles, financial markets and intermediaries, credit institutions in Kenya, financial decisions of farmers, financial statements and concern for small farmer need for use of credit.

AGEC 0342: Farm Management II (30/30; C.F 3.0) Y3S2

Farm planning and budgeting, capital and cash flow budgeting, measuring small scale farmer investment incentives, LP techniques, management decisions under risk, enterprise studies, factors influencing profitability, measures of efficiency and size, economics of crop and livestock production.

AGBM 0330: Human Resource Management (45/0; C.F 3.0) Y3S2

Evolution of the concept. Strategic role of HRM. Human Resource activities: Recruitment, selection, placement, training and development, motivation, appraisal of personnel, supervision, and compensation. Role of human resources on Company's goals and objectives attainment. Major complex functions facing the modern HRM Administrator. Grievance handling, Discipline and disciplinary actions, Industrial disputes and dispute handling, Industrial Relations, Trade Unions.

AGBM 0331: Agribusiness Management (45/0; C.F 3.0) Y3S2

The scope of agribusiness, functions of management by objectives (M.B.O.) management communication facing agribusiness, the role and significance of agribusiness. Appropriate financing, markets, capital, labour management, personnel management, labour law and regulators supervision, incentives, work study and work simplification wages, decision making under risk and uncertainty in financing agribusiness

AGEC 0350: Field Attachment (0/120; C.F 4.0)

Student undergo hands-on training in order to acquire appropriate practical skills in operations and management in agribusiness, agricultural processing plants, financial and credit institutions, commercial farms, co-operatives, and agricultural extension.

SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

AGBM 0336: Financial and Human Resource Management (45/0; C.F 3.0) Y3S1

Elementary finance mathematics, objectives of financial management, analysis of financial ratios, use of financial statements, capital appraisal, functions of management - planning, organizing, directing, coordinating, control (PODCC). Personnel management, theories of motivation, group dynamics, industrial relations. **DIP HORT, AGRO, DAST, ANSCI.**

The following course coded as BUST are service courses offered to Diploma in Education (Arts) students in the department Curriculum, Instruction and Educational Management;

BUST 0111: Introduction to Business (45/0: CF 3.0) Y1S2

Meaning and concept of Business, Human activities, objectives of business, classification of business, classification of commerce, forms and business organization: sole trader, partnership, joint stock companies, statutory corporations, government companies, departmental undertakings, Joint sectors: cooperative movements. Business environment and its influence on business, management function, financial systems, functional areas of management. Business and society.

BUST 0112: Principals of Management (45/0: CF 3.0) Y1S2

Definition and nature of management, History and development of management thought. Management environment. Management functions: planning, organising, staffing, leading and controlling. Moral and social dimension of management.

BUST 0113 Fundamentals of Accounting (45/0: CF 3.0) Y1S2

Nature, purpose and scope of accounting, conceptual framework of accounting, objectives of financial reporting, accounting principles, concepts and assumptions, qualitative characteristics of accounting information. Accounting cycle: Journalizing, posting, trial balance, end of period adjustments, financial statements, closing entries, post-closing trial balance. Accounting for errors, subsidiary books and ledgers. Control accounts. Accounting for merchandising concerns. Accounting for manufacturing companies. Interpretation of financial statements.

BUST 0124: Principles of Marketing (45/0: CF 3.0) Y1S2

Marketing overview, marketing strategies, marketing environment, key marketing policy decisions, consumer behavior, marketing mix: product, promotion, price and place. Market segmentation. Marketing research and information, its acquisition and analysis as the basis for marketing strategies and decision making. Tools for marketing decisions: marketing audits, sales forecast, analysis of competition. Managing the marketing function-planning, organizing and controlling. Application of marketing concepts.

BUST 0125: Intermediate Financial Accounting (45/0: CF 3.0) Y1S2

Conceptual framework of financial reporting. Cash and short term marketable securities. Accounting for receivables. Inventories. Accounting for issue of shares. Cash flow statements. Accounting for bonds.

BUST 0216: Quantitative Methods in Business (45/0: CF 3.0) Y1S2

Set theory and logics. The number system. Nature of statistical data. Statistics as a tool of management. Application of differential and integral calculus, and linear algebra to business. Application of sampling and probability theory to management. Correlation and

regression analysis. Introduction to matrices and operation of matrices.

BUST 0217: Managerial Economics (45/0: CF 3.0) Y1S2

Nature and scope of managerial economics. Theory of demand and supply. Theory of consumer behavior. Theory of the firm: the production process. Cost theory and measurement. Market structures. Investment theory.

BUST 0228: Entrepreneurship and Small Business Management (45/0: CF 3.0) Y1S2

The concept of Entrepreneurship, entrepreneurship evolution and development of entrepreneurship. Role of entrepreneurship in economic development. Types of entrepreneurship, functions, characteristics, motivation of entrepreneur, circumstance in which one becomes an entrepreneur. Meaning of small business. Creating and starting new ventures, Business plans. Promotion of small enterprises, problems of small enterprises. Entrepreneurial environment, entrepreneurial competence and mobility. Women and rural entrepreneurship.

BUST 0229: Management Accounting (45/0: CF 3.0) Y1S2

Nature scope and purpose of management accounting in decision making, costing concept and cost classification. Cost estimation methods. Cost accumulation. Product costing methods – jobs order costing, contract costing, process costing, marginal and absorption costing, Activity Based costing (ABC). Cost volume profit (CVP) analysis, budgeting, and standard costing and variance analysis. Short term decision: Make or buy, special offer, dropping or adding a product line, choice of a product mix when there exist a limiting factor.

BUST 0312: Organizational Theory (45/0: CF 3.0) Y1S2

Nature and purpose of law. Sources of law in Kenya. Classification of law. The legal system in Kenya. Principles and concepts – rule of law, separation of

powers and fundamental rights. The law of contract, law of persons, law of tort, agency law. Sale of goods act, negotiable instruments

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

	Programme Learning Outcomes	Y1		Y2		Y3	
		Course	CF	Course	CF	Course	CF
PLO -1	Enhance the importance of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income for efficient and effective extension work among farmers	Principles of Crop Production	3.5	Introduction to Mechanized Agriculture	3.0	Perennial Crops	3.0
		Workshop Practice	2.0	Animal Nutrition and Livestock Feeding	3.0	Animal Diseases	3.0
		Agricultural Botany	3.0	Parasitology	3.0	Non Ruminant Husbandry	3.0
		Basic Inorganic and Physical Chemistry	3.0	Annual Crops	3.5	Farm Structures	3.0
		Introductory Mathematics	3.0	Ruminant Husbandry	4.0		
		Introductory Soil Science	3.0	Plant Pathology	3.0		
		Entomology	3.0	Fertilizer Use and Plant Nutrition	3.0		
		Agricultural Communication Skills	2.0	Technical Writing and Reporting	2.0		
		Principles of Crop Improvement	2.5	Agricultural Communication and Technology	3.0		
		Basic Organic Chemistry	3.0	Agricultural Extension	3.0		
		Principle & Practices of Vegetable & Fruit Growing	2.0	Principles and Practices of Plant Breeding	2.5		
		Genetics	3.0	Rural sociology and Development	2.0		
		Ethic, Integrity and National Values	3.0				
		Ecology and Environmental Science	3.0				
PLO -2	Provide an understanding of the role of Economic theory in dedesigning, implementing and evaluating agricultural farm projects for profitability	Fundamentals of Agricultural Economics	3.0	Production Economics	3.0	Agricultural Environmental Economics	3.0
		Introductory Statistics	3.0			Introduction to Economic Development	3.0
						Foundation of Resource Economics	3.0
PLO -3	Apply the knowledge in farm resource management (financial, credit, human and other materials resources) to setup and run own profitable farm based agribusiness enterprises	Entrepreneurship	2.0	Pasture & Forage Mgt	2.5	Principles of Co-operatives	3.0
				Water Resource Management	3.5	Farm Accounting	3.0
				Soil and Water Management	3.5	Agricultural Finance & Credit Management	3.0
				Field /Industrial Attachment	4.0	Farm Management I	3.5
						Post-Harvest Technology and Marketing of Horticultural Produce	3.0
						Fundamentals of Human Resources Management	3.0
						Farm Management II	3.0
						Agribusiness Management	3.5
PLO-4	Provide an understand of the role of markets, price dynamics and marketing systems as a pull for shifting from subsistence to market oriented/ commercialization agriculture			Principles of Agricultural Value Chains	3.0	Agricultural Marketing	3.0

BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS

1. Philosophy

Transforming livelihoods through quality training and outreach in agricultural economics.

2. Rationale

The programme is tailored to produce graduates trained in the discipline of agriculture, economics and management with good blending of practical work to promote agricultural development and living standards. Students graduating from this programme are expected to innovatively apply the economic principles and theories to address challenges in food and agriculture, including policy, advocacy and other emerging issues.

3. Goal of the Programme

The programme goal is to improve productivity and livelihoods in line with the continental initiatives on sustainable agriculture.

4. Programme Learning Outcomes

On completion of the training, the BSc. Agricultural Economics graduates should be able to:

- i) Have a better understanding of the role of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income in order to carryout effective extension work among farmers
- ii) Provide an understanding of the role of economic theory in designing, implementing and evaluating agricultural projects and programmes
- iii) Apply the knowledge in agricultural economics to setup and run own agri-entrepreneurial ventures including consulting
- iv) Provide an understand of the role of markets, price dynamics and marketing systems as a pull for shifting from subsistence to market oriented/commercialization agriculture

- v) Formulate/analyse agricultural and environmental policy, and participate in agenda setting and actual implementation of agricultural development.

5. Mode of Delivery

The programme is delivered on full time basis through lectures, practical, tutorials, attachment/internship and field visits.

6. Academic Regulation for the Programme

6.1. Admission Requirements

Candidates applying for the Bachelor of Science in Agricultural Economics must satisfy the minimum University entrance requirements in the Kenya Certificate of Secondary Education (K.C.S.E.). In addition to this, all candidates should meet the requirements provided in the Egerton University Statute 36(1) of 2013.

In addition to the above, applicants must offer passes in the following subjects:

- i. Minimum of C+ in either English or Kiswahili, C in Mathematics or Physics, and C in Biology or Aggriculture, and C in Chemistry.
- ii. An added advantage will be given to applicants who have passed with at least a B+ grade pass in Agriculture, Business or related studies.
- iii. Admission may be granted to diploma holders who have passed with distinction, Credit or equivalent in management, farm management or other disciplines recognized by Senate.

6.2 Regulation on Credit Transfer

Credit transfer shall be done in adherence to Egerton University Statutes of 2013 article 36(3) for undergraduate programmes.

6.3. Course Requirements

Students must attend all classes, field visits and practical. On the same premise the lecturers have the obligation to cover all the course contents, administer a minimum of two continuous assessment tests and

facilitate field visits. The course requirement guidelines shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4. Student Assessment Criteria

Student assessment policy/criteria shall be done in accordance with Egerton University Statute 36 (6) of 2013.

6.5. Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6. Examination Regulations

All examinations for this programme shall be conducted in accordance with the examination regulations as stipulated in the Egerton University Statute (36(5) of 2013.

6.7. Moderation of Examination

Moderation of exams shall follow the guidelines stipulated in Egerton University procedures (EU/AA/OP/07).

6.8. Graduation Requirements

To graduate, the student will be expected to have covered a total of 203 Credit Factors (CF) and 4 CFs of field attachment, making a total of 207.

6.9. Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36(6) of 2013.

7. Course evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme academic Leader

The programme shall be hosted in the department of Agricultural Economics and Agribusiness Management in the Faculty of Agriculture.

The Programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated after every academic cycle in accordance with ISO procedures EU/VC/OP/05. The programme shall be benchmarked using Michigan State University (USA), University of New England (Australia) and University of Goettingen (Germany).

8.3 Course Coding

i) All Course Codes begin with an abbreviation “AGEC” indicating that the course is offered from the Department of Agricultural Economics and Agribusiness Management.

ii) The abbreviation is followed by a set of three digits as follows:

(a) The first digit is a 1, 2, 3, or 4 denoting the year the course should be offered.

(b) The second digit denotes the course discipline within the Department. A course falls under any of the five disciplines as follows:

Category 1. Introductory, economic theory and quantitative economics

Category 2. Resource and development economics

Category 3. Agricultural marketing and trade.

Category 4. Farm management and production economics

Category 5. Agricultural law and policy

Category 6. Industrial/Field Attachment

c). the last digit denotes the course ordering within the category and courses given to students outside this programme.

9. Courses offered for the Programme

The courses/units offered shall include:

9.1 Schedule of Courses

The course offered by the programme shall be classified into:

a) Common Core courses

The following are the core courses that shall be offered by the programme;

CODE	TITLE	C.F
AGRO 102	Principles of Crop Production	3.5
BOTA 101	General Botany	3.0
CHEM 111	General Inorganic and Physical Chemistry	3.0
CHEM 130	Introduction to Organic Chemistry	3.0
COMP 101	Introduction to Computer Applications	3.5
COMS 111	Communication Skills	3.0
FOST 101	Introduction to Food Industry	3.0
MATH 100	General Mathematics	3.5
PHIL108	Ethics, Integrity and National values	3.0
SOIL 100	Introduction to Soil Science	3.0
ZOOL 143	HIV/AIDS and Society	3.0

b) The schedule of courses in the programme shall be organized on semester basis, as follows:

YEAR 1 SEMESTER I

CODE	TITLE	L	P	C.F
AGRO 102	Principles of Crop Production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of microeconomics	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	General Mathematics	45	15	3.5
PHIL 104	Philosophy and	45	0	3.0

	Society			
TOTAL		315	120	25.0

YEAR 1 SEMESTER 2

AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGEC 111	Introduction to Agricultural Economics	45	0	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 111	Introduction to Computing	45	15	3.5
ECON 121	Principles of Macroeconomics	45	0	3.0
FOST 101	Introduction to Food Industry	45	0	3.0
PHIL108	Ethics, Integrity and National values	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		300	45	24.5

YEAR 2 SEMESTER I

AGBM 211	Financial Accounting 1	45	0	3.0
AGBM 222	Cooperative Management & Development	45	0	3.0
AGEC 231	Principles of Marketing	45	0	3.0
AGRO 351	Annual Crops	30	30	3.0
ECON 212	Intermediate Micro Economic Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
ECON 233	Economic Statistics I	45	0	3.0
HORT 331	General Vegetable Production	45	30	4.0
SOIL 100	Introduction to Soil Science	30	30	3.0
TOTAL		375	90	28.0

YEAR 2 SEMESTER 2

AGBM 221	Agricultural Value Chain Analysis & Management	45	0	3.0
*AGEC 232	Agricultural Marketing (Applications)	45	0	3.0
AGEC 241	Agricultural Production	45	0	3.0

	Economics			
AGEC 242	Agricultural Finance	45	0	3.0
AGED 211	Agricultural communication and Technology	30	30	3.0
ECON 222	Intermediate Macro Economics	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
ECON 234	Economics Statistics II	45	0	3.0
HORT 341	General Fruit Production	45	30	4.0
TOTAL		390	60	28.0

YEAR 3 SEMESTER I

AGBM 311	Managerial Accounting I	45	0	3.0
AGBM 331	Data Analysis & Information Management	30	30	3.0
AGEC 312	Research Methods	45	0	3.0
AGEC 343	Principles of Farm Management	45	0	3.0
AGED 312	Technical Writing and Reporting	30	0	2.0
AGED 331	Rural Sociology	30	0	2.0
AGRO 361	Perennial crops	30	30	3.0
ANSC 450	Ruminant Production	45	30	4.0
ECON 341	Economics of Money and Banking	45	0	3.0
TOTAL		345	90	26.0

YEAR 3 SEMESTER 2

AGBM 312	Financial Accounting II	45	0	3.0
AGBM 321	Agribusiness Supply Chain Management	45	0	3.0
AGEC 311	Agricultural Economics Seminars	0	30	2.0
AGEC 313	Econometrics	30	30	3.0
AGEC 314	Agri-enterprise Project Proposal Writing	15	30	2.0
AGEC 321	Resource Economics	45	0	3.0
AGEC 333	Agricultural Price analysis	45	0	3.0
*AGEC 344	Farm Management	30	30	3.0

	Applications			
AGED 334	Extension Education	45	0	3.0
TOTAL		255	120	25.0
AGEC 361	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

AGBM 436	Agribusiness Management	45	0	3.0
AGBM 451	Strategic Management	45	0	3.0
AGEC 414	Agri-enterprise Project Implementation, Analysis and Reporting	0	90	3.0
AGEC 423	Economic Development	45	0	3.0
AGEC 434	Agriculture and International Trade	45	0	3.0
AGEC 451	Agricultural and food Policy	45	0	3.0
ECON 434	Operations Research	45	0	3.0
FOST 448	Principles of Food Processing and Preservation	45	30	3.5
TOTAL		315	120	24.5

YEAR 4 SEMESTER 2

AGBM 413	Business Taxation	45	0	3.0
*AGEC 421	Environmental Economics for Agriculture	45	0	3.0
AGEC 422	Agricultural Project Planning & Analysis	45	0	3.0
AGEC 452	Agricultural & Environmental Law	45	0	3.0
AGEC 455	New Institutional Economics	45	0	3.0
ANSC 460	Non-ruminant Production	45	30	4.0
ECON 355	Economics of Industry	45	0	3.0
TOTAL		315	30	22.0

* Courses that require academic field trips

Y2S2 AGECE 232 Agricultural Marketing (Applications)

Y3S2 AGECE 344 Farm Management Applications
Y4S2 AGECE 421 Environmental Economics for Agriculture

c). Course Descriptions

AGEC 111: Introduction to Agricultural Economics (45/0; C.F.3.0) Y3S2

The definition and scope of agricultural economics, the characteristics of agricultural supply and demand; agricultural production analysis; agricultural demand analysis; the place of agriculture in rural development; the prospects for agriculture in national development

AGEC 231: Principles of Marketing (45/0; C.F 3.0) Y2S1

The marketing concept, the marketing mix, product planning and development; advertising and public relations; personal selling; channels of and physical distribution; marketing of primary produce; problems and opportunities in commodity marketing; future markets; stock exchange and commodity exchange; commodity marketing.

AGEC 232: Agricultural Marketing (Applications) (45/0; C.F. 3.0) Y2S2

Concepts and definitions; Agricultural markets, agricultural marketing, and marketing systems; Approaches to studying agricultural marketing; The food marketing channel; Agricultural market and prices, price discovery and price setting; marketing costs and margins; linkages between agricultural production and food manufacturing industries ; emerging issues (international standards and traceability, growing role of supermarkets) (*Pre-requisite AGECE 231*)

AGEC 241: Agricultural Production Economics (45/0; C.F. 3.0) Y2S2

Scope of production economics; production environment; Nature and characteristics of production; factors of production; Risk and uncertainty; production

functions; concepts of production function; physical product, average product; marginal physical product, elasticity of production; law of diminishing returns and the three stages of production; technical and economic efficiency; cost concepts in production, economies and diseconomies of scale; production relationships and decision making; factor-factor, factor-product; product-product; technological change. **(Pre-requisite ECON 111/212)**

AGEC 242: Agricultural Finance (45/0 C.F. 3.0) Y2S2

Elementary mathematics of finance and objectives of financial management; analysis of financial ratios and uses of financial statements [c.f cash flow statements]. Methods of investment appraisal and the cost of capital; application of the theory of capital investing for making management decisions.

AGEC 333: Agricultural Price Analysis (45/0; C.F. 3.0) Y3S1

This is a foundation course designed to expose students to the concepts, conceptual tools, knowledge, skills and competencies required by practitioners in agricultural policy and development. It addresses the following: Theoretical foundations of agricultural policy; Key concepts in using shadow prices; Theoretical and analytical tools of policy evaluation; application of theoretical and analytical tools in evaluating the impacts of price Policies analyzing; Tools and techniques of disaggregating the impacts price policies.

AGEC 333: Agricultural Price Analysis (45/0; C.F. 3.0) Y3S1

This is a foundation course designed to expose students to the concepts, conceptual tools, knowledge, skills and competencies required by practitioners in agricultural policy and development. It addresses the following: Theoretical foundations of agricultural policy; Key concepts in using shadow prices; Theoretical and analytical tools of policy evaluation; application of

theoretical and analytical tools in evaluating the impacts of price Policies analyzing; Tools and techniques of disaggregating the impacts price policies.

AGEC 312: Research Methods (45/0; C.F. 3.0) Y3S1

Survey methods; sampling and sample designs; methods of fields investigation; rapid rural appraisal, case studies, farming systems research, farm management research; attitudinal research; methods of data collection. Designing and using questionnaires; Organization and management of survey; data analysis and processing; data management; computer packages; case study; practical exercise and planning using computers.

AGEC 343: Principles Of Farm Management (45/0; C.F. 3.0) Y3S1

The scope of farm Management, farm management survey. Farming systems; scope, small farm setting, systems approach in agriculture, concept of farming systems development, farming systems in Kenya. Resources; National resources, Labour, Capital and management, farm planning and business analysis techniques; gross margin analysis, budgeting, performance measures; Investment appraisal, programming techniques.

AGEC 313: Econometrics (30/30; C.F. 3.0) Y3S2

Simple linear regression, multiple regression, Stepwise regression, the use and interpretation of correlation, partial and multiple correlation, errors in variables and distributed lag models; a comprehensive survey of identification, estimation and hypothesis test in the context of simultaneous equation models; use of computer packages. **(Pre-requisite ECON 232/230)**

AGEC 314: Agri-Enterprise Project Proposal Writing (15/30; C.F. 2.0) Y3S2

Overview of research and research areas; problem identification; statement of objectives; research

questions/hypothesis; literature review; Methodology, Questionnaire making and referencing.

AGEC 321: Resource Economics (45/0; C.F. 3.0) Y3S2

Definition of terms, Classification of Resources, Measures of Resources, Resource scarcity and indicators, Economics of renewable and non-renewable resources, property rights and efficient market allocation. Case studies/ applications; fisheries, energy, forestry, water and wetlands, wildlife, urbanization and waste management; resource endowment and economic development. Resource conservation and preservation.

AGEC 311: Agricultural Economics Seminars (30/0; C.F. 2.0) Y3S2

Emerging issues in Agricultural Economics and policy, international trade and policy. Issues in food policy, rural livelihoods and development, agriculture and environment, gender in agriculture, poverty, food security, food safety, organic agriculture and biodiversity, biotechnology, microfinance, agricultural value chains, agro enterprise development, agricultural value addition and marketing. Other emerging issues.

(Pre-requisite all courses in year 1 and 2)

AGEC 344: Farm Management Applications (30/30; C.F. 3.0) Y3S2

Enterprises and National economy, economies of crop production; cereals legumes permanent crops, Livestock production; dairy, beef, pigs, poultry enterprises. Linear programming, Further programming techniques, Case studies, Data collection, FSD (Farming Systems Development) applications. **(Prerequisite AGECE 343)**

AGEC 414: Agri-Enterprise Project Implementation, Analysis and Reporting (0/60/30; C.F. 4.0) Y4S1

The student is supervised to conduct enterprise/ research project aimed at finding possible solutions to problems of the current interest. The student is expected, to

complete the collection and analysis of data and the write-up of the research report.

(Prerequisite AGEC 314 & AGEC 312)

AGEC 423: Economic Development (45/0; C.F. 3.0) Y4S1

Concepts of economic development; meaning of economic growth and economic development; Alternative theories and strategies of development; Economic development in developing countries; Challenges and prospects. Investment criteria and technological choices; Agriculture and industrialization; international trade and economic development; Finance and economic development; Role of Government and the private sector in Economic development Emerging issues in economic development.

AGEC 434: Agriculture and International Trade (45/0; C.F. 3.0) Y4S1

General equilibrium (simple open, simple closed economy) Theories of international trade; Rational for government intervention in trade; Instruments of Trade protection; International Trade Agreements (multilateral, regional); emerging issues in international trade (conflict between environmental policy and international trade policy; Global environmental changes and international trade, carbon trade and agriculture)

AGEC 451: Agricultural and Food Policy (45/0; C.F. 3.0) Y4S1

Fundamental concepts in agricultural development: farm and food challenges, population growth and demographic transition; policy setting and policy problems of the A-F sector; economic foundation of policy interventions; essential economic tools for A-F policy analysis; policy analysis of general policy instruments; policy paradigms and path dependencies; the political economy of agricultural policy; agricultural trade and trade policy; agricultural income policy; agricultural environmental policy.

AGEC 452: Agricultural and Environmental Law (45/0; C.F. 3.0) Y4S2

Foundations of Agrarian law; the development of land use law; the development of property law; aspects of Land Control Act; Aspects of the Agricultural Act; aspects of the Agricultural Finance Act; a lot of emphasis will be on the Agricultural Act and some Basics of the Contract Act. Environmental law, land law, land tenure, case studies in land law.

AGEC 455: New Institutional Economics (45/0; C.F. 3.0) Y4S2

Relationship of NIE and conventional economic theory, criticisms of the standard behavioral assumptions, the role of transaction costs, the theory of collective action; institutions of production and exchange; theory of property rights; the importance of force, the evolution of institutions, the significance of time, extension of this work to economic history, political economy and agricultural development.

AGEC 421: Environment Economics For Agriculture (45/0; C.F. 3.0) Y4S2

Introduction: Theoretical basis of environmental economics, agriculture and the environment, sustainable development and relationship between economic growth and the environment; agro-biodiversity and ecosystem function; soil erosion and ecosystem management. Market failure, Environmental valuation methods in agriculture; methodologies and applications in agriculture. Management of water resources/wetlands for irrigation, waste water management in agriculture and managing agriculture for sustainable development. Current environmental issues: climate change, climate change and food security, agricultural pesticides use, agricultural biotechnology etc. and its impacts on the environment.

(Prerequisite AGEC 321).

AGEC 422: Agricultural Project Planning and Analysis (45/0; C.F. 3.0) Y4S2

This is one of the applied courses in the programme. It is designed to expose students to the knowledge, skills, and competencies of planning and implementing agricultural development projects. The course focuses on the key conceptual and practical foundations of using projects as a key strategic approach to rural and agricultural development. It addresses the following: the role of agricultural projects in rural and agricultural development; the nature and content of agricultural projects; the necessity of stakeholder participation and basic techniques of stakeholder analysis and participation; Aspects of feasibility studies; techniques and tools of project appraisal; and basic methods of project evaluation **(Prerequisite AGEC 333, ECON 111 & ECON. 121).**

AGEC 361: Industrial/Field Attachment (0/120; C.F. 4.0)

Students will be expected to acquire appropriate practical farming and management skills in farm operations, agro-industries and financial and agricultural credit institutions. Hand-on attachment is expected. Monitoring and evaluation methods.

(Pre-requisite All courses in Year 1, 2 and 3)

9.2 Service Courses Offered to other Departments

AGEC 315: Agricultural Economics I (45/0; C.F. 3.0) Y3S1

The role of agriculture in rural development, Economics of Agricultural Markets and pricing institutions, Government participation in marketing of food and Agricultural products, International trade issues; national agricultural policies and their effects in rural development; Agricultural projects and their development impacts. **BSC. HORT, AGRO**

AGEC 331: Agricultural Marketing and Trade (45/0; C.F. 3.0) Y3S2

The role of agricultural marketing in economic development; organization and analysis of agricultural marketing; the functional, institutional and commodity approaches; marketing environment and institutions; government participation in the marketing of food and agricultural products; commodity studies; international marketing principles, policies and commodity trade agreements. *BSC. AGED, HORT, ANSC, AGRO*

AGEC 416: Agricultural Economics II (45/0; C.F. 3.0) Y4S1

Economic analysis of agricultural production; production relationships and decision-making; factor-factor, factor-product, risk and uncertainty; Farm management: Principles Farm planning, farm business analysis; Budgeting, Gross margins and investment appraisal. Types of farm/plant records and accounts, methods of data collection and their importance. *BSC. HORT, AGRO*

9.3 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3		Y4	
	Programme Learning Outcomes	Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	Have a better understanding of the role of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income in order to carryout effective extension work among farmers	Principles of Crop Production	3.0	Introduction to Soil Science	3.0	Ruminant Production	4.0	Non-ruminant production	4.0
		General Botany	3.0	Philosophy and Society	3.0	Technical Writing and Reporting	2.0		
		Introduction to Academic Communication skills	3.0	General vegetable production	4.0	Rural Sociology	2.0		
		Environmental Education	3.0	General fruit production	4.0	Perennial Crops	3.0		
		General Inorganic and Physical Chemistry	3.0	Annual Crops	3.0				
		General Mathematics	3.5	Agricultural communication and Technology	3.0				
		Introduction to Organic Chemistry I	3.0						
		Introduction to Computing	3.5						
		Ethics, Integrity and national values	3.0						
		HIV/AIDS and Society	3.0						
		Introduction to Food Industry	3.0						
PLO -2	Provide an understanding of the role of Economic theory in designing, implementing and evaluating agricultural projects and programmes	Principles of microeconomics	3.0	Intermediate Micro Economic Theory	3.0	Econometrics	3.0	Operations Research	3.0
		Introduction to Agricultural Economics	3.0	Mathematics for Economists I	3.0	Resource Economics	3.0	Economic Development	3.0
		Principles of Macroeconomics	3.0	Economic Statistics I	3.0	Agri-enterprise project Proposal Writing	2.0	Environmental Economics for Agriculture	3.0
				Economics Statistics II	3.0	Research Methods	3.0	Economics of Industry	3.0
				Agricultural Production Economics	3.0	Economics of Money and Banking	3.0	New Institutional Economics	3.0
				Intermediate Macro Economics	3.0				
				Mathematics for Economists II	3.0				

PLO -3	Apply the knowledge in agricultural economics to setup and run own agri-entrepreneurial ventures including consulting	Principles of Entrepreneurship	3.0	Financial Accounting 1	3.0	Data Analysis & Information Management	3.0	Agribusiness Management	3.0
				Agricultural Finance	3.0	Managerial Accounting I	3.0	Strategic Management	3.0
				Cooperative Management & Development	3.0	Principles of Farm Management	3.0	Agricultural Project Planning & Analysis	3.0
						Farm Management Applications	3.0	Business Taxation	3.0
						Financial Accounting II	3.0		
						Agribusiness Supply Chain Management	3.0		
						Agricultural Economics Seminars	2.0		
						Field Attachment	4.0		
PLO-4	Provide an understand of the role of markets, price dynamics and marketing systems as a pull for shifting from subsistence oriented/ commercialization agriculture.			Agricultural Value Chain Analysis & Management	3.0	Agricultural Price analysis	3.0		
				Principles of Marketing	3.0				
				Agricultural Marketing (Applications)	3.0				
PLO-5	Formulate/analyse agricultural and environmental policy, and participate in agenda setting and actual implementation of agricultural development					Extension Education	3.0	Agri-enterprise Project Implementation, Analysis and Reporting	3.0
								Agricultural Policy	3.0
								Agriculture and International Trade	3.0
								Agricultural & Environmental Law	3.0

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT

1. Philosophy

Transforming livelihoods through quality training and outreach in agribusiness.

2. Rationale

This programme is expected to enhance the capacity of students to innovatively address challenges along the agricultural value chains both in public and private sectors. Graduates from the programme are expected to be job creators in food and agriculture, and other related enterprises and organizations.

3. Goal of the Programme

The programme goal is to improve productivity and livelihoods in line with the continental initiatives on sustainable agribusiness development. The programme focuses on the managerial functions performed by the agribusiness sector by providing system-wide perspective of managerial problems in the agricultural value chains. The students in the Programme will be linked with agribusiness firms through field attachment to benefit with information about careers and employment in agribusiness firms/farms.

4. Programme Learning Outcomes

At the completion of the training in Bachelor of Science in Agribusiness Management Programme, the graduate should be able to:

- i. Have a better understanding of the role of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income for efficient and effective operation of agribusinesses
- ii. Provide an understanding of the role of economic theory in designing, implementing and evaluating agribusiness projects for profitability
- iii. Apply the knowledge in agribusiness management (financial, credit, human and other materials

resources) to setup and run own agribusiness including consulting.

- iv. Analyze agribusinesses in order to solve short, medium and long term problems along the value chains including, value addition, marketing, regulatory issues, price dynamics as avenue for market orientation.
- v. Formulate/analyse agribusiness and environmental policy, and participate in agenda setting and actual implementation of agricultural development

5. Mode of Delivery

The programme is delivered through a full time through lectures, practical, tutorials, attachment/internship and field visits.

6. Academic Regulation for the Programme

6.1 Admission Requirements

Candidates applying for the Bachelor of Science in Agribusiness Management must satisfy the minimum University entrance requirements in the Kenya Certificate of Secondary Education (K.C.S.E.). In addition to this, all candidates should meet the requirements provided in the Egerton University Statute 36(1) of 2013.

In addition to the above, applicants must offer passes in the following subjects:

- i. Minimum of C+ in either English or Kiswahili, C (plain) in Mathematics or Physics, C (plain) in Biology or Agriculture, and C (plain) in Chemistry.
- ii. An added advantage will be given to applicants who have passed with at least a B+ (plus) grade pass in Agriculture, Business or related studies.
- iii. Admission may be granted to outstanding diploma holders who have passed with distinction, Credit or equivalent in management, farm management or other discipline recognized by the Egerton University Senate

6.2 Regulation on Credit Transfer

Credit transfer shall be done in adherence to Egerton University Statutes of 2013 article 36(3).

6.3. Course Requirements

The course requirement guidelines shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4. Student Assessment Criteria

Student assessment shall be as stipulated in the Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6. Examination Regulations

All examinations for this programme shall be conducted in accordance with the examination regulations as stipulated in the Egerton University Statutes 36(5) of 2013.

6.7. Moderation of Examination

The examination shall be moderated as stipulated in the Egerton University Statute 36(6) of 2013 and ISO procedure (EU/AA/OP/07).

6.8. Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses and have attained a minimum of 214 credit factors including field attachment.

6.9. Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36 (17a) of 2013.

7. Course evaluation

Course evaluation shall be done in accordance to ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1. Host department and Programme Academic Leader

The programme shall be hosted in the department of Agricultural Economics and Agribusiness Management in the Faculty of Agriculture.

The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2. Programme Evaluation

The programme shall be evaluated after every academic cycle in accordance with ISO procedure for quality assurance of academic programmes EU/VC/OP/05. The programme shall be benchmarked with similar programmes in other highly ranked universities.

8.3 Course Coding

- All Course Codes begin with an abbreviation “AGBM” indicating that the course is offered from the Department.
- The abbreviation is followed by a set of three digits as follows:
 - The first digit is a 1, 2, 3, or 4 denoting the year the course shall be offered.
 - The second digit denotes the course discipline within the Department. A course falls under any of the five disciplines as follows:
 - Category 0. Introduction or General
 - Category 1. Accounting Related
 - Category 2. Cooperatives
 - Category 3. Behavioural Sciences
 - Category 4. Statistics, Economics and Project
 - Category 5. Marketing and Policy
 - Category 6. Industrial/Field Attachment
 - The last digit denotes the course ranking within the discipline and courses given to students outside this programme.

9. Courses/ Units offered for the Programme

The courses/units offered shall include;

9.1 Schedule of Courses

The course offered by the programme shall be classified into;

a) University Common Core courses

CODE	TITLE	C.F
COMP 101	Introduction to Computer Applications	3.5
COMS 111	Communication Skills	3.0
MATH 100	General Mathematics	3.5
PHIL 108	Ethics, Integrity and National values	3.0
ZOOL 143	HIV/AIDS and Society	3.0

b) The schedule of courses organized on semester basis:

YEAR 1 SEMESTER 1

CODE	TITLE	L	T	CF
AGBM 101	Introduction to Agribusiness Management	45	0	3.0
AGRO 102	Introduction to Crop Production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of Micro Economics	45	0	3.0
ENSC 100	Environmental Education	45	0	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL143	HIV/AIDS and Society	45	0	3.0
TOTAL		390	45	27.5

YEAR 1 SEMESTER 2

AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGBM 131	Principles of Management	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5

ECON 121	Principles of Macroeconomics	45	0	3.0
FOST 101	Introduction to Food Industry	45	0	3.0
PHIL 104	Philosophy and society	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
TOTAL		300	45	21.5

YEAR 2 SEMESTER 1

AGBM 211	Financial Accounting I	45	0	3.0
AGBM 222	Cooperative Management and Development	45	0	3.0
AGBM 231	Behavioral Science	45	0	3.0
AGBM 241	Business Statistics	45	0	3.0
AGEC 231	Principles of Marketing	45	0	3.0
AGRO 351	Annual Crops	30	30	3.0
ECON 212	Intermediate Microeconomic Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
HORT 331	General Vegetable Production	45	30	4.0
TOTAL		390	60	28.0

YEAR 2 SEMESTER 2

AGBM 232	Organizational Theory	45	0	3.0
AGEC 241	Agricultural Production Economics	45	0	3.0
ECON 222	Intermediate Macroeconomic Theory	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
AGBM 221	Agricultural Value Chain Analysis & Management	45	0	3.0
*AGBM 223	Marketing Management for Agribusiness	45	0	3.0
HORT 341	General Fruit Production	45	30	4.0
PHIL108	Ethics, Integrity and National Values	45	0	3.0
TOTAL		360	30	25.0

YEAR 3 SEMESTER 1

*AGBM 332	Human Resource Management	45	0	3.0
AGBM 311	Managerial Accounting I	45	0	3.0
AGBM 331	Data analysis and Information Management	30	0	3.0
AGEC 312	Research Methods	45	0	3.0
AGEC 343	Farm Management (Principles)	45	0	3.0
AGED 312	Technical Reporting and Writing	30	0	2.0
AGED 331	Rural sociology	30	0	2.0
AGRO 361	Perennial crops	30	30	3.0
ANSC 450	Ruminant Production	45	30	4.0
ECON 341	Economic of Money and Banking	45	0	3.0
TOTAL		390	60	29.0

YEAR 3 SEMESTER 2

AGBM 312	Financial Accounting II	45	0	3.0
AGBM 313	Business Finance	45	0	3.0
AGBM 321	Agribusiness Supply Chain Management	45	0	3.0
AGBM 333	Labour Relations Management	45	0	3.0
AGBM 342	Managerial Economics	45	0	3.0
AGBM 343	Agribusiness Seminars	0	30	2.0
AGBM 334	Leadership and Change Management	45	0	3.0
AGEC 313	Econometrics	30	30	3.0
AGEC 314	Agri-enterprise Research Proposal Writing	15	30	2.0
AGED 334	Extension Education	45	0	3.0
TOTAL		360	90	28.0
AGBM 361	Field/Industrial Attachment	0	0	4.0

YEAR 4 SEMESTER 1

AGBM 411	Auditing	45	0	3.0
AGBM 401	Business Law	45	0	3.0
AGBM 412	Financial Management	45	0	3.0
AGBM 431	Strategic	45	0	3.0

	Management			
AGBM 441	Agri-enterprise Project Implementation and analysis	0	90	3.0
AGEC 423	Economic Development	45	0	3.0
AGEC 434	Agricultural and International Trade	45	0	3.0
ECON 434	Operations Research	45	0	3.0
FOST 448	Principles of Food Processing and Preservation	45	30	3.5
TOTAL		360	120	27.5

YEAR 4 SEMESTER 2

*AGBM 432	International Agribusiness Management & Policy	45	0	3.0
AGBM 404	Risk Management	45	0	3.0
AGBM 413	Business Taxation	45	0	3.0
AGBM 414	Managerial Accounting II	45	0	3.0
AGBM 431	Strategic Management	45	0	3.0
AGEC 422	Agric. Project Planning and Analysis	45	0	3.0
AGEC 455	New Institutional Economics	45	0	3.0
ANSC 460	Non-ruminant Production	45	30	4.0
ECON 345	Economics of Industry	45	0	3.0
TOTAL		405	30	27.0

*Courses that require academic field trips:

Y2S2 AGBM 223 Marketing Management for Agribusiness

Y3S1 AGBM 332 Human Resource Management

Y4S2 AGBM 432 International Agribusiness Management and policy

c) Course Descriptions

AGBM 101: Introduction to Agribusiness Management (45/0: 3.0) Y1S1

This course will include orientation to the agribusiness sector of agriculture. An overview of the breadth, size, scope and management aspects of the agricultural business sector. The course comprises of: Concept of agribusiness management; the role of agribusiness in society, Legal forms of businesses; financial management and control; marketing; production and operations management; human resources management and risk management.

AGBM 102: Principles of Entrepreneurship (45/0: CF3.0) Y1S1

Nature and scope of entrepreneurship; Attributes of a successful entrepreneur; Types of entrepreneurship and entrepreneurship systems; Role of the entrepreneur in society; conditions necessary for entrepreneurship to evolve; The business plan; Basic requirements for starting, running and expanding a small business; The stages of business growth; Managing and financing of small businesses.

AGBM 131: Principles of Management (45/0:CF3.0) Y1S1

Nature and importance of management: Evolution of management thought; Management process, and skills; Management functions (planning, Organizing, Staffing, Directing and Controlling): Management and communication (why, what and how: Upward and Downward communication, networks, & problems)

AGBM 211: Financial Accounting I (45/0: C.F. 3.0) Y2S1

The accounting equation and balance sheet, double entry system for assets, liabilities and capital, the asset of stock, effect of profit or loss on capital and double entry

of expenses and revenues, balancing of accounts , the balance sheet, errors and their correction, effects of errors on profits, the income statement , the balance sheet. The cashbook, bank reconciliations, the ledger, sales and purchases ledger, returns inwards and outwards, petty cashbook and imprest system, day books, basic accounting for assets, double entry for depreciation and provision for depreciation bad debts, accruals and prepayments, valuation of stock, suspense account and errors, single entry and incomplete records, final accounts for sole traders, partnerships and corporations

AGBM 221: Agricultural Value Chain Analysis and Management (45/0: C.F. 3.0) Y2S2

Definitions; importance of value chains; stages and links of a value chain; role of agricultural value chains in agribusiness development; constraints and opportunities in value chain development; methodologies of value chain analysis; value chain mapping: mapping symbols, major links (segments) of a value chain; steps in drawing a value chain map (functions and operators, mapping sub-value chains, linkages and governance, and value chain supporters); examples of value chain maps for various commodity sectors; analysis of linkages among productive activities; information flow among actors in the value chain; segmentation of the value chain; Economic analysis of value chain: production and marketing costs, value added at different stages, performance of operators (productivity and profitability), distribution of value added along the value chain, calculation of production costs along the value chain, identification of cost drivers and competitive benchmarking; Value chain Governance; value chain management; value chain upgrading, promotion and facilitation. Y1S2 - All Streams

AGBM 222: Co-Operative Development and Management (45/0: C.F. 3.0) Y2S1

The concept, theories and philosophies of co-operatives, co-operative principles; Structure and management of

Kenyan co-operatives; Importance of co-operatives in Kenyan economy; Accounting and accountability co-operatives; Sources and uses of funds analysis; Co-operative capital budgeting. Break-even analysis; pricing methods. Inventory and sales management. Memberships and public relations in co-operatives; evaluation of co-operative business performance; improvement programmes for co-operative business.

AGBM 223: Marketing Management For Agribusiness (45/0: C.F. 3.0) Y2S2

Course includes Food and fiber marketing, structure and organization of the food systems, examining commodity, industrial and consumer product marketing from a managerial viewpoint. Marketing research, planning marketing programmes, organization and control of marketing programmes. A global perspective in understanding consumer needs and developing the knowledge of economics, political, social and environmental factors that affect food and fiber marketing systems.

(Pre-requisite AGECE 231- Principles of marketing)

AGBM 231: Behavioural Science (45/0: CF 3.0) Y2S1

Introduction to Behavioural science: fields of knowledge contributing to behavioural science, Behavioral systems model; influences of behaviour, theoretical foundations of behavioural science; Individual differences; Motivation and Leadership in the organization; Organization culture; Organization effectiveness; Conflicts and conflict management; Organization development. (Prerequisite: AGBM 131)

AGBM 232: Organisational Theory (45/0: CF3.0) Y2S2

Nature of Organizations; Theories of Organizations; The organization as a system Organization structure and Design ; Groups and Group dynamics in Organizations; Information and organization decision making; Organizational change and development; Power and

politics in organizations. **(Prerequisite AGBM 131 and 231)**

AGBM 241: Business Statistics (45/0: CF 3.0) Y2S1

Application of statistics in business. Definitions, collection, tabulation and accurate presentation of numerical & non-numerical data: Surveys, samples and the processing of data: Methods of data presentation: descriptive and statistical methods: Business forecasting and the analysis of market trends, budgeting - target-figures and performance data. Sources of statistical information, analysis and interpretation. **(Pre-requisite MATH 100)**

AGBM 312: Financial Accounting II (45/0: C.F. 3.0) Y3S2

Accounting theory and new developments ,accounting for VAT, capital and revenue expenses, employees pay and statutory deductions, control accounts and their use, manufacturing accounts, departmental accounts, partnership accounts,, goodwill, revaluation of assets, company accounts, analysis of financial statements, accounting ratios, cash and fund flow statements, accounting for mergers and acquisitions, consolidated financial statements, accounting, auditing and due diligence, accounting standards and applicability **(Pre-requisite AGBM 211).**

AGBM 313: Business Finance 45/0: C.F. 3.0) Y3S2

The resource of business finance: equity and loan capital - shares, loans, debentures, hire purchase, and trade credit. Finance from retained earnings. Cost of funds. Tools of business finance: Time value of money, interest rates, cash flows, risk and return. The stock exchange: terminology, functions, new issues, offers for sale, placing, rights bonus issues. Quotations, dealings and documents used. Measuring Business Performance - Calculation of yields and P/E ratios. Financial institutions: the Central Bank-control of credit, capital issues, exchange control and related matters: commercial banks, hire purchase finance companies.

This course will require a field trip to the Nairobi Stock Exchange. **(Pre-requisite AGBM 311)**

AGBM 321: Agribusiness Supply Chain Management (45/0: C.F. 3.0) Y3S2

Meaning of Agro-chains and supply chains; types of commodity value chains; Concept of value adding in agro supply chains; post-harvest activities; Backward and forward linkages between agro industries and agricultural production; linkages between consumers and supply services; Emerging issues in modern agro chain management; vertical integration and alliances; Strategic issues in agribusiness supply chain management; Support services in agro chains; Risk mitigation and management strategies. **(Pre-requisite AGECE 231, AGBM 221, AGBM 223)**

AGBM 331: Data Analysis and Information Management (30/30: C.F. 3.0) Y3S1

Data gathering processing and analysis. Designing techniques for developing systems responsive to managerial needs; Data and information management. Information storage and security; information use in planning, control and operational functions; business data processing systems, their capabilities, usage and limitations. Management of internet technology. **(Pre-requisite COMP 103)**

AGBM 332: Human Resource Management (45/0: CF 3.0) Y3S1

Nature and Importance of Human Resource Management, Characteristics and qualities of a Human Resource manager, objectives of Human Resource management; Human Resource management functions: equal employment opportunities, HR planning, job analysis and design, employee training and development, performance appraisal, employee compensation; Employee Health and Safety **(Prerequisite AGBM 131, AGBM 231)**

AGBM 333: Labour Relations Management (45/0: CF 3.0) Y3S2

Introduction to the labour movement; Historical development of labour unions in Kenya; Employee Relations and practices; Organization of labour relations; Determinants of sound Labour Relations; Kenyan Labour Laws; Theoretical perspectives of labour relations; Collective Bargaining; Contract Administration and Termination; Development of Healthy Labour-Management Relations. This course will require external speakers from trade unions e.g. COTU, UASU Etc. **(Prerequisite AGBM 131, AGBM 332)**

AGBM 334: Leadership and Change Management (45/0: C.F. 3.0) Y3S2

The Nature of Leadership, Leadership and organization culture, Leadership and communication, Leadership and problem solving, Leadership and management, Being a leader, Leadership and coaching, Team leadership, Leadership and motivation, Leadership and the change process, management of change, Leadership and decision making, Leadership and ethics. Leadership in agri-business organizations

AGBM 342: Managerial Economics (45/0: C.F. 3.0) Y3S2

The goals of the firm and the scope of Managerial economics, constrained and unconstrained optimization; market demand and forecasting techniques; theory of production and quantitative analyses of costs; theory of firms and industries under perfect competition; theory of firms with market power and their implementation of profit maximization decisions; multiple plans, markets and products; Oligopoly theory and practice; decision making over time; theory of investments, decision theory; game theory. **(Pre-requisite ECON 121)**

AGBM 343: Agribusiness Seminars (0/60: C.F. 2.0) Y3S2

The seminars will discuss the emerging issues in agribusiness, the local and global agri-food system network and food value chains, government and non-profit sectors across the international agribusiness and food chain system; Impact of government policies and regulations on agribusiness management decisions to meet the growing complexities in the trading of agricultural inputs and outputs, consumption patterns and supply inequalities of food items; Performance of value chains and inclusion of small-scale farmers; Innovation, management and entrepreneurship. Supermarkets and smallholders in Kenya and other developing countries; Potential contributions of agribusinesses to vital objectives e.g. employment, MDGS etc.; Challenges and opportunities of the Kenyan agribusiness firms in the global markets; The regional and international trading blocks and impact on the Kenyan agribusiness sector; Challenges of social inclusion and environmental sustainability; Technical cooperation for agribusiness development; Contentious issues such as the introduction and role of GMOs, small vs. large farms and firms, climate change, development of biofuel value chain, regional integration vs. national interests, fair trade, aid for trade for agribusiness exports etc. Any other current agribusiness issues. **(Pre-requisite all courses in year 1, 2 and 3)**

AGBM 351: Industrial/Field Attachment (0/120; C.F. 4)

Course covers agribusiness application of theory and practice to the solution of problems of agricultural production or related businesses in the field of agribusiness and consumer science. Analyze specific management problems and perform general management assignments detailed in a contract between the student, the firm or organization, and the faculty advisor before the internship commences. **(Pre-requisite All courses in Year 1, 2 and 3)**

AGBM 401: Business Law (45/0: CF 3.0) Y4S2

Nature and purpose of law; Sources of Business law of Kenya. Judicial Precedents, Classification of law. Natural justice principles, alternative dispute resolution mechanisms, Legal Personality, Law of Tort, General defences in Tort, Negligence, Vicarious Liability, Occupiers Liability, Law of contract, nature, classification, formation, essentials, vitiating factors, illegal contracts, discharge and remedies. Sale of goods, transfer of property in goods, conditions and warranties. Agency, nature and creation, types, rights and duties and termination. Insurance law; Negotiable Instruments and Intellectual Property Rights.

AGBM 412: Financial Management (45/0: CF 3.0) Y4S1

Purpose of Financial Management (Goals of the firm; Role of Financial Manager in achieving corporate goals and objectives; Social responsibility and financial management; Evaluation of the Agency Theory; Relationship between shareholders and management; theory of interest rates). Investment Decisions (Theory of choice, Capital Budgeting under uncertainty: Certainty Equivalents; Risk Adjusted Discount Rates; Sensitivity Analysis, Decision and simulation). Valuation models for businesses (Concept of value: Market Value; Intrinsic Value; Replacement Value; Application of valuation concepts: Capital Assets Pricing Model, Arbitrage Pricing Theory, Option Pricing Theory, Valuation of Futures and Swaps.), Financing and Dividend Decisions (Overview of sources of corporate finance: short-term, medium-term and long-term financing; Internally generated finance; Cost of capital; Capital structure decisions; Modigliani and Miller propositions and others; Dividend policy and valuation.) (Prerequisite AGBM 311 and 312)

AGBM 413: Business Taxation (45/0: C.F. 3.0) Y4S2

Basic concepts and purposes of Taxation. Principles of an Optima tax system; justice in taxation; cost of service or purchase theory, Benefit theory. Theory of equal

sacrifice; Ability theory - Determination of taxable income Gains or profit from Business: Profit, deductions Allowed, Deductions not allowed, receipts not considered income for tax purposes, Capital allowances or capital deductions, Investment Allowances. Taxation of Sole Proprietorship Businesses, Partnerships and Corporations. Economic Costs of Revenue, excise, Equity, and Externalities, Duties and Protection; Value Added Tax. (Pre-requisite AGBM 311)

AGBM 414: Managerial Accounting II (45/0: CF 3.0) Y4S2

Cost allocation and accumulation; terminology, purpose and criteria, The general process of cost allocation, Cost allocation from one department to another, Allocating costs of Service to departments, Allocating common costs, Choosing indirect cost pool categories, and cost application bases, The contribution approach to cost allocation, Allocating joint costs and by-products, Process –costing systems, Spoilage, reworked units and scrap, Varieties of production systems, Decision models; dealing with uncertainty. (Prerequisite AGBM 211, 311, 312)

AGBM 431: Strategic Management (45/0: C.F. 3.0) Y4S1

Nature of strategic management; Strategic management process; Strategic decision making; Internal and External Environmental analysis; Strategy formulation: Vision, Mission, long term objectives; Strategic alternatives- generic and grand strategies; strategic choice; Strategy implementation: functional implementation, structural implementation, behavioural implementation; Strategy Evaluation and Control. (Pre-requisite AGBM 101, AGBM 131 and AGBM 232)

AGBM 432: International Agribusiness Management and Policy (45/0: C.F. 3.0)

This course explores the mix of organizational practices and people that can be the basis of sustainable

competitive advantage in the contemporary global business environment. Topics covered should consider the factors that shape or reflect the operational realities of management and business. The course comprises; Patterns of historical development in international agribusiness management: cross-cultural issues in managing people; traditional and emerging models of organizations, change management. Creating organizational competitive advantage: core competence of organizations, top management teams and corporate governance, product/market scope decisions, and global value chain analysis. International monetary and financial relations: foreign investment and transnational enterprises. Regional and international agribusiness strategies and policies: contemporary developments in joint ventures, strategic alliances, cross-border mergers and acquisitions, and the management of the globally diversified agribusinesses. Changing agricultural trade prospects in a dynamic world economy: aid for trade for agribusiness exports, technical cooperation for agribusiness development and agricultural resource allocation issues. Other current agribusiness policies (Pre-requisite AGECE 231, AGBM 223, AGBM 431)

AGBM 404: Risk Management (45/0: C.F. 3.0) Y4S2

Definition of Risk Management; Historical development of the risk management function; Evidence of current risk management functions; Elements of organizational risk management; The strategic operations and risk management model; Enterprise risk management, Risk retention, financing and transfer Methods; Risk management in agriculture; Ethics and risk management.

AGBM 441: Agribusiness Project Implementation and Analysis (0/60/30 C.F 4.0) Y4S1

The student is supervised to undertake agribusiness project aimed at making profitable enterprise and analysing contemporary problems in agribusiness project and related policy issues. The student is expected, to complete project implementation,

collection and analysis of data and write-up of the report. **(Prerequisite AGEC 314 & AGEC 312)**

9.2 COURSES OFFERED TO OTHER DEPARTMENTS

AGBM 216: Accounting and Costing For Projects (45/0: C.F. 3.0)

The nature of Family and community development projects: Qualities of a good community project, project cycle. Distinction between cost, managerial and financial accounting. Financial transactions and preparation of financial statements. Elements of costing; costing methods and techniques and budgetary control. Evaluation and selection of projects based on: financial, economic and social criteria. Auditing and taxation for projects. Financial reporting and interpretation of project financial statements. **(Y2S2)**

AGBM 406: Financial And Human Resources Management (45/0 C.F. 3.0)

This course is designed to enable the student to acquire a broad familiarity with the field of financial and Human Resource management. Important financial management concepts that are covered include financial analysis, planning and control; capital budgeting; cost of capital; long and short term financing, including operations of the stock market. On HRM the focus is on the various human resource policies as Human resource

planning, sourcing for HR, appraisal and rewards, job analysis, job design, training and development and collective bargaining strategies. **(Y4S2)**

AGBM 436: Agribusiness Management (45/0 C.F. 3.0)

This course will involve an overview of the agribusiness sector in agriculture. It comprises of: The Concept of agribusiness management; role of agribusiness in society; Applications of economic theory in agribusiness management. Functions and styles of management; organizational theories of ivation and group dynamics. Labour management. Business analysis and control. Decision theory; nature of decision and plans; analytical sequences of problem solving; decision making under risk and uncertainty; efficiency studies for problem solving. Business policy and strategy development. Emerging issues in agribusiness. **(Y4S1)**

9.3 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3		Y4	
	Programme Learning Outcomes	Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	Have a better understanding of the role of agriculture, and in particular crops and animal husbandry in providing food and fiber, clothing and cash income for efficient and effective operation of agribusinesses	Introduction to Academic Communication Skills	3.0	Ethics, Integrity and National Values	3.0	Ruminant Production	4.0	Non Ruminant Production	4.0
		General Mathematics	3.0	General Fruit Production	3.0	Rural sociology	2.0	Principles of Food Processing and Preservation	3.5
		Environmental Education	3.0	Annual Crops	3.0	Perennial Crops	3.0		
		HIV/AIDS and Society	2.0	General Vegetable Production	3.0	Technical Writing and Reporting	2.0		
		Principles of Crop Production	3.5						
		Principles of Human Nutrition	3.0						
		Introduction to Soil Science	3.0						
		Introduction to Computing	3.0						
		Philosophy and society	3.0						
		Introduction to Food Industry	3.0						
PLO -2	Provide an understanding of the role of Economic theory in designing, implementing and evaluating agribusiness projects for profitability	General Botany							
		Principles of Micro Economics	3.0	Intermediate Microeconomic Theory	3.0	Economic of Money and Banking	3.0	Operations Research	3.0
		Principles of Macroeconomics	3.0	Mathematics for Economists I	3.0	Econometrics	3.0	Economic Development	3.0
				Agricultural Production Economics	3.0	Agrienterprise Research Proposal Writing	2.0	New Institutional Economics	3.0
				Intermediate Macroeconomic Theory	3.0	Research Methods	3.0	Economics of Industry	3.0
PLO -3	Apply the knowledge in agribusiness management (financial, credit, human and other materials resources) to setup and run own agribusiness including consulting			Mathematics for Economists II	3.0	Technical Reporting and Writing	2.0		
		Introduction to Agribusiness Management	3.0	Business Statistics	3.0	Managerial Accounting I	3.0	Agric. Project Management	3.0
		Principles of Management	3.0	Financial Accounting I	3.0	Data analysis and Information Management	3.0	Managerial Accounting II	3.0
		Principles of Entrepreneurship	3.0	Organizational Theory	3.0	Farm Management (Principles)	3.0	Auditing	3.0
				Cooperative Management and Development	3.0	Human Resource Management	3.0	Financial Management	3.0
				Behavioral Science	3.0	Labour Relations Management	3.0	Strategic Management	3.0

					3.0	Business Finance	3.0	Business Taxation	3.0
						Financial Accounting II	3.0	Business Law	3.0
						Managerial Economics	3.0	Agric. Project Planning and Analysis	3.0
						Agribusiness Supply Chain Management	3.0	Leadership and Change Management	3.0
						Agribusiness Seminars	2.0		
						Field/Industrial Attachment	4.0		
PLO-4	Analyze agribusinesses in order to solve short, medium and long term problems along the value chains including, value addition, marketing, regulatory issues, price dynamics as avenue for market orientation.			Principles of Marketing	3.0	Agribusiness Supply Chain Management	3.0	Agricultural and International Trade	3.0
				Agricultural Value Chain Analysis and Management	3.0				
				Marketing Management for Agribusiness	3.0				
PLO-5	Formulate/analyse agricultural and environmental policy, and participate in agenda setting and actual implementation of agricultural development					Extension Education	3.0	Agri-enterprise Project Implementation, Analysis and Reporting	3.0
								International Agribusiness Management & Policy	3.0

DEPARTMENT OF ANIMAL SCIENCES

DIPLOMA IN LIVESTOCK RESOURCES MANAGEMENT

1. Philosophy

Transforming lives through quality education and sustainable technologies.

2. Rationale

Kenya, aims at transforming its economy from low to middle income country by 2030. This ambitious projection requires rapid industrialization and modernization of the agriculture sector through quality training, research and innovations. To participate and contribute to this noble venture the Department of Animal Sciences is building on its previous curriculum in Diploma programme to offer a very efficient and technological programme in Livestock Resources Management that is based on competence learning with emphasis on entrepreneurship. The course content covers both specialized theoretical knowledge and practical skills in modern livestock management. Foundation courses in biological, physical and mathematics sciences are offered. Professional courses include agriculture, veterinary, social, animal and education sciences. The Diploma programme offers a great opportunity to achieve an excellent technological education in accelerating livestock production in a very pleasant, friendly, and stimulating environment. Farm and laboratory animals are available in augmenting practical instructions. These animal facilities are very important as they supplement formal coursework and permit students to take practical courses and conduct independent research projects, thus receiving insight in the handling, management, feeding, reproduction, physiology, and behavior of livestock.

3. Goal of the Programme

The Programme of the Livestock Resources Management prepares the graduates to acquire knowledge, skills, attitude and competencies in the utilization of livestock resources.

4. Programme Learning Outcomes

At the end of the diploma programme, the student should be able to:

- i) Acquire scientific knowledge and skills necessary for livestock industry.
- ii) Analyze and develop appropriate businesses for employment creation and gainful self-employment.
- iii) Be efficient extension communicators in livestock production.
- iv) Enforce quality assurance in the livestock value chain.
- v) Develop, promote and manage livestock entrepreneurship.

5. Mode of delivery

The programme is delivered on full time basis through lectures, course practicals, tutorials, academic trips, participation in Agricultural trade fairs and field/industrial attachment.

6. Academic Regulation for the Programme

6.1 Admission Requirements

All candidates admitted to the diploma programme of Livestock Resources Management must satisfy the minimum entry requirements stipulated in the common University entrance regulation, Egerton University Statute 36 of 2013.

6.2 Regulation on credit Transfer

This programme will not have credit transfer provision as indicated in Egerton University Statutes of 2013 article 36 for diploma programmes.

6.3 Course Requirements

Lectures, practical's and academic trips are mandatory to all students, on the same premise, the lecturers have the obligation to cover all the course content, administer a minimum of two (2) continuous assessment tests and facilitate academic trips, supervise student projects and administer end of semester examinations. The course requirement guidelines should follow the Egerton University ISO Procedures for teaching (EU/AA/OP/6 rev. 3)

6.4 Student Assessment Policy/Criteria

The University policy on student assessment will apply (Statute on student assessment, statute 36 of 2013).

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6 Examination Regulations

All examinations for this programme will be conducted in accordance with the examination regulation as stipulated in the Egerton University Statute 36 (5) of 2013.

6.7 Moderation of Examination

ISO procedure (EU/AA/OP/07) regulation requirement are: Each lecturer shall set final examination paper of the course (s) they teach. The examination shall be moderated within the department and the external examiner according to Egerton University Statute 36 (5) of 2013.

6.8 Graduation Requirements

To be legible to graduate, a student should have completed successfully all prescribed courses (minimum credit factor 174.5) and attained a minimum aggregate of pass within the stipulated period. The student should as well conform to other criteria as prescribed in accordance with Egerton University Statute 36 of 2013.

6.9 Classification of Diploma

Diploma classification shall be in accordance with Egerton University Statute 36 (17a) of 2013.

7. Course Evaluation

There shall be continuous formative and summative evaluations by the department, faculty, directorate of quality assurance and university management. This shall be supplemented by continuous reviews and benchmarking other credible programmes. This shall be done in accordance with ISO Procedure for Teaching Effectiveness and Evaluation Procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be hosted in the Department of Animal Science in the Faculty of Agriculture. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated after every three year academic cycle in accordance with ISO Procedure for Quality Assurance for Academic Programmes EU/VC/OP/05.

8.3 Course Coding

- All Course Codes begin with an abbreviation “ANSC” indicating that the Department of Animal Science and the programme respectively.
- The abbreviation is followed by a set of three digits as follows:
- The first digit is a 1, 2, and 3 denoting the year the course should be offered.
- The second digit denotes the course discipline within the Department. A course falls under any of the five disciplines as follows:
 - General introductory and principle courses
 - Nutrition, feeds and feeding
 - Genetics and breeding
 - Production from ruminant animals
 - Production from non-ruminant and other animal species
 - Production of non-conventional/emerging livestock
 - Experimentation, projects, seminars and field excursions.
- The third digit refers to the series of courses in the particular field

9. Courses /Units offered for the Programme

9.1 Schedule of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 0111	Fundamentals of Agricultural Economics	45	0	3.0
AGEN 0171	Technical Drawing	15	30	2.0
ANSC 0110	Principles of Livestock Management Practices	0	60	2.0
ANSC 0111	Introduction to Animal Science	30	30	3.0

BOTA 0101	Agricultural Botany	30	30	3.0
BOTA 0111	Genetics	30	0	2.0
CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
MATH 0102	Introductory Mathematics	45	0	3.0
SOIL 0100	Introductory Soil Science	30	30	3.0
TOTAL		255	150	24.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 0103	Entrepreneurship	45	0	3.0
AGED 0112	Agricultural Communication Skills	30	0	2.0
AGRO 0101	Principles of Crop Production	45	15	3.5
ANSC 0112	Livestock Management Practices	0	60	2.0
ANSC 0171	Animatics	0	60	2.0
CHEM 0131	Basic Organic Chemistry	30	30	3.0
COMP 0190	Information Technology and Society	30	30	3.0
NARE 0112	Principles of Range Management	30	30	3.0
BOTA 0110	Ecology and Environmental Science	45	0	3.0
AGEN 0172	Workshop Practices	15	30	2.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
TOTAL		315	195	29.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGBM 0220	Introduction to Agricultural Value Chains	45	0	3.0
AGEC 0332	Agricultural Marketing	45	0	3.0

AGED 0231	Rural Sociology and Development	45	0	3.0
AGEN 0273	Introduction to Mechanised Agriculture	30	30	3.0
AGRO 0271	Pasture and Fodder Crop Management	30	30	3.0
ANHE 0201	Introduction to Gross Anatomy	30	15	2.5
ANSC 0241	Animal Genetics and Breeding	45	0	3.0
BIOC 0204	Basic Biochemistry	30	30	3.0
BOTA 0231	Microbiology	30	30	3.0
ZOOL 0240	Parasitology	30	30	3.0
TOTAL		360	165	29.5

YEAR 2 SEMISTER 2

CODE	TITLE	L	P	CF
AGED 0212	Technical Writing and Reporting	30	0	2.0
AGED 0232	Agricultural Extension	45	0	3.0
AGRO 0191	Basic Statistics for Agriculture	45	0	3.0
ANHE 0218	Animal Physiology	30	30	3.0
ANHE 0219	Reproduction in Domestic Animals	30	30	3.0
ANSC 0231	Animal Nutrition	30	30	3.0
ANSC 0252	Beef Production	30	30	3.0
ANSC 0253	Sheep Production	30	30	3.0
ANSC 0263	Rabbit Production	30	15	2.5
ANSC 0264	Equine Management	30	15	2.5
TOTAL		330	240	30.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 0343	Farm Accounting	45	0	3.0
AGEC 0345	Farm Management	45	0	3.0

AGEN 0266	Water Resource Development	30	45	3.5
ANHE 0326	Animal Diseases	45	30	4.0
ANSC 0301	Ruminant Management Practices	0	60	2.0
ANSC 0332	Animal Feed Resources and Utilization	30	45	3.5
ANSC 0351	Dairy Production	30	30	3.0
ANSC 0361	Poultry Production	30	30	3.0
ANSC 0362	Pig Production	30	30	3.0
ANSC 0365	Aquaculture	15	30	2.0
TOTAL		300	300	30.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 0331	Agribusiness Management	45	0	3.0
AGBM 0336	Finance and Human Resource Management	45	0	3.0
AGEN 0371	Farm Structures	30	45	3.5
ANSC 0302	Non Ruminant Management Practices	0	60	2.0
ANSC 0354	Goat Production	30	30	3.0
ANSC 0355	Hides and Skins	30	30	3.0
ANSC 0356	Camel Production	30	15	2.5
ANSC 0363	Apiculture and Sericulture	30	30	3.0
ANSC 0372	Research Projects and Seminars	0	60	2.0
FOST 0388	Principles of Food Processing and Preservation	30	30	3.5
TOTAL		270	300	28.5

ANSC 0370	Field/Industrial Attachment (8weeks)	0	120	4.0
	TOTAL		120	4.0

c). Course Description

ANSC 0110 Princioles of Livestock Management Practices (0/60 CF:2.0) Y1S1

Introduction to livestock handling equipment and facilities. Participate in livestock breeds identification. Feeds, Feeding and watering animals. Housing requirements and types of houses. Livestock points and judging animals for exhibition. Breeding and reproduction management. Caring for the young animals. Handling techniques. Familiarization with livestock handling facilities.

ANSC 0111: Introduction to Animal Science (30/0: CF 2.0) Y1S1

An overview of the livestock industry. Classification of animals by feeding behavior and byproducts. Animal feeds and nutrients. Comparative digestion physiology of ruminants, non-ruminants and pseudo-ruminants. Basic principles of nutrition, grazing, pasture management, reproduction, breeding, health and housing in the management of livestock. Animal bioclimatology concepts, climate change adaptation strategies. Systems of livestock production. Facilities for livestock management. Animal products, handling and processing and marketing. Value chains concept. Visit to a mixed livestock farms. **FAM, NARE, DAT ANHE ANSC& HORT.**

ANSC 0112 Livestock Management Practices (0/60 CF:2.0) Y1S2

Students participate in carrying out management practices associated with livestock production. Areas covered include milking, calf feeding and cleaning of animal premises, feeding of different animals and record keeping. Assessment and reporting of sick cases and observing the treatments. Visit the farm office and familiarize with all livestock records.

ANSC 0171: Animatics (0/60:CF2.0) Y1S2

Introduction to livestock handling equipment and facilities. Appreciating the different livestock species in the farm. Livestock points and their relevance in judging and management. Husbandry procedures and techniques of handling various species and classes of livestock. Farm handling facilities- e.g. chutes harnesses, fences, holding yards, holding grounds. Restraint and casting. Handling for taking samples (blood, urine, faeces, skin scrapings, body fluids, etc.), preservation and presentation. Zoonotic diseases and risks. Preparing, presenting and handling animals for exhibitions/shows. Farm and animal hygiene and sustainable environment.

ANSC 0241: Animal Genetics and Breeding (45/0:CF3.0) Y2S1

History of animal breeding; concepts of random mating population; deleterious genes; quantitative traits and their measurements; components of phenotypic variance; concepts of heritability and repeatability; genetic correlation; genetic response through selection methods; mating systems; traits of economic importance and their improvement. Visit CAGRC, Nairobi.

AGRIC, AGED, ANHEM, DAST. Prerequisites: BOTA 111& AGRO 0291

ANSC 0231: Animal Nutrition (30/30: CF 3.0) Y2S2

History of animal nutrition. Food chains and nutrients. Review of comparative digestion, absorption and utilisation of nutrients in ruminant and non-ruminant animals. Evaluation of nutritive value of feeds with particular emphasis on composition of feeds, feed intake, digestibility, and partitioning of energy and protein in the body. Nutritional and metabolic disorders. Practical feed formulation and processing at TAP. Feed production enterprise and business plan. Visit to KEBS for Feed Standards/ Feed processor.

ANSC 0252: Beef Production (30/30:CF3.0) Y2S2

Describe the major factors that influence beef cattle production. The beef industry and systems of beef production. Breeds. Growth and development of beef cattle. Determine nutrient requirements and formulate balancing rations to meet these requirements. Application of principles of nutrition and pasture management, reproductive physiology, health and hygiene, breeding and selection. Housing in beef production. Climate change adaptation. Beef markets and marketing and guiding legislations. Beef value chains analysis. Developing beef animals and products business plans. Visits to slaughter house, ranch and feedlots.

ANSC 0253: Sheep Production (30/30:CF3.0) Y2S2

Sheep industry and production systems. Breeds. Sheep production systems. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing in sheep production. Climate change adaptation. Marketing and economics of sheep. Sheep value chains analysis. Developing Sheep and sheep product business plans. Visit sheep farms.

ANSC 0263: Rabbit Production (15/30: CF 2.5) Y2S2

Introduction of the rabbit industry globally and in Kenya. Terms used in rabbit production and importance of rabbits. Breeds and breed societies. Rabbit biology: - anatomy, digestion, reproduction, behavior. Production systems. Production for meat, fur/hair, pets, show, pelts and research. Commercial rabbit production. Challenges to rabbit production. Application of basic principles of animal physiology, nutrition, breeding disease control and housing... Management of different classes of rabbits. Marketing and niche markets. Analysis of the rabbit value chains. Slaughter of rabbit and assessment of rabbit meat. Regulations. Record keeping. Development of rabbit business plans. Visit to National Rabbit Production Centre-Ngong and slaughter house.

ANSC 0264: Equine Production (15/30:CF2.0) Y2S2

Origin and historical background. Potential role in the country's economy, classes, types and breeds. Domestication, anatomy, behavior, physiology, nutrition, health, and diseases of companion animals. Breeding, feeding, management and health. Handling skills and facilities for training. Use for draught and recreation. Understanding and appreciation for the bond between humans and animals. Responsibilities of animal care and ownership in current society. Opportunities in animal-oriented careers. Equine animal issues, e.g. legal and societal issues. Equine production business plans. Visit to Ngong Horse Race Course and Donkey Sanctuary.

ANSC 0301: Ruminant Management Practices (0/90:CF3.0) Y3S1

Introduction to livestock handling equipment and facilities. Appreciating the different livestock species in the farm. Livestock points and their relevance in judging and management. Husbandry procedures and techniques of handling various species and classes of livestock. Farm handling facilities- e.g. chutes harnesses, fences, holding yards, holding grounds. Restraint and casting. Handling for taking samples (blood, urine, faeces, skin scrapings, body fluids, etc.), preservation and presentation. Zoonotic diseases and risks. Preparing, presenting and handling animals for exhibitions/shows. Farm and animal hygiene and sustainable environment. Livestock record keeping. Students will prepare and present a model livestock business plan.

ANSC 0302: Non-Ruminant Management Practices (0/90:CF3.0), Y3S2

Introduction to livestock handling equipment and facilities. Appreciating the different livestock species in the farm. Livestock points and their relevance in judging and management. Husbandry procedures and techniques of handling various species and classes of livestock. Farm handling facilities- Restraint and casting. Handling for taking samples (blood, urine,

faeces, skin scrapings, body fluids, etc.), preservation and presentation. Zoonotic diseases and risks. Preparing, presenting and handling animals for exhibitions/shows. Farm and animal hygiene and sustainable environment. The students participate in carrying out routine livestock management practices and develop entrepreneurial skills for each enterprise: pigs, poultry, rabbit, fish and bees. Livestock record keeping. Students will prepare and present a model livestock business plan.

ANSC 0332: Animal Feed Resources and Utilization (30/45:CF3.5) Y3S1

Feed stuffs for livestock, analytical procedures for evaluation of feeds. The feeding standards. Principles of ration formulation and feed processing technology. Feeding for maintenance, growth, lactation, egg production, reproduction and work. Factors influencing efficiency of feed utilisation. Organic and hydroponic feed production. Feed safety, handling and storage, packaging, labeling. Feed quality evaluation i.e. mycotoxins, impurities, heavy metals and other contaminants and their effects on end products. Practical formulation and processing of feeds for ruminants, non-ruminants and pseudo-ruminants at TAP. Feed processing as a business. Visit to Feed Processing Plant. Prerequisite: ANSC 231

ANSC 0351: Dairy Production (30/30: CF3.0) Y3S1

Dairy industry, value chains and systems of production. Breeds. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing in dairy production. Rearing replacement stock. Milk synthesis, ejection and milking and handling. Adaptation strategies to climate change. Environmental issues in dairy production. Facilities for dairy herd management. Dairy value chains, marketing of milk and milk products. Economics of dairy production. Processing of milk and milk products. Legislations in the milk industry. Developing dairy business plans. Visits to small-scale and large-scale farms/firms and processor.

ANSC 0361: Poultry Production (30/30: CF 3.0) Y3S1

Review of the global and Kenyan Poultry industry. Domestication and distribution. Breeds, types and strains. Production systems. Physiology of egg formation and embryo development. Egg incubation and hatching. Brooding, feeding, housing and disease control. Application of science and technology in the management of breeding stock. Production of layers for consumption, eggs. Meat birds including ducks, geese, turkeys and quails. Ornamental birds: Peacock, Parrots, Pheasants. Climate change adaptation. Egg grading and handling. Poultry processing. Markets and Marketing of poultry and poultry products. Analysis and promotion of value chains. Poultry meat and egg production business plans. Visit to poultry farms and hatcheries.

Prerequisite: ANSC0231, ANSC0332 and ANSC0241

ANSC 0362: Pig Production (30/30:CF3.0) Y3S1

Pig industry and production systems: Breeds. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing in pig production. Management of a pig enterprise. Evaluation and processing of pig carcass. Environmental issues in pork production. Pork processing at Guilford Plant. Climate change adaptation. Pork value chains analysis. Legislations guiding the pig industry. Developing pig business plans. Visit to pig farms and firms/ Farmers Choice. **Prerequisite:** ANSC 0231 and ANSC 0241.

ANSC 0365: Aquaculture (15/30:CF2.0) Y3S1

General introduction to aquaculture. Terms used. Fisheries systems. World fisheries and aquaculture production. Primary water chemistry parameters and water quality management. Aquaculture site selection and construction techniques and yields from levee ponds, cages, raceways, and re-circulating aquaculture systems. Life cycles of major species of food, bait, sport, and ornamental species.. Production of current and future commercially important aquatic species (including

fish, molluscs, crustaceans and aquatic plants like spirulina). The biology of culture species and strategies used in their production (from juvenile to market). The culture environment and management to optimize the grow out performance of different culture species. General aspects of aquaculture. Fish physiology and immunology. Reproduction and larviculture. Fish genetics. Fish diseases. Fish nutrition and feed technology. Water quality and aqua cultural engineering. Production of other aquatic animals and plants (algae, crustaceans, bivalves, etc.). Fish behavior. Seawater fishes and plants with emphasis on selected species. Processing and marketing strategies with special emphasis on niche markets. Visit to Sagana/Kibos Aquaculture Centers.

ANSC 0354: Goat Production (30/30:CF3.0) Y3S2

Goat industry and production systems. Breeds. Goat production systems Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing for meat and milk production. Climate change adaptation. Goat products processing and marketing. Dairy goat's production. Goat value chains analysis and visits to ranches and multiplication/breeding facilities.

ANSC 0355: Hides and Skins (30/30:CF3.0) Y3S2

Introduction to various types of animal by-products: Hides and skins. Processing, handling, preservation and quality control. Value addition to hides, skins, pelts and leather. Value chains mapping, development and promotion of hides and skins. Developing business plans. Visits to animal slaughter plants and tannery.

ANSC 0356: Camel Production (30/15:CF2.5) Y3S2

A review of the camelids in the world. Distribution of the camels. The role and potential of camels. Types, physiological adaptation to arid and semi-arid ecological conditions. Application of principles of breeding and selection, reproductive physiology, nutrition and health in the management of camels. Camel products-

handling, processing and marketing. Developing camel and camel products business plans. Includes a visit to a camel ranch and camel meat/milk processing plant.
Prerequisite ANSC 0231, ANSC 332, ANSC 241

ANSC 0363: Apiculture and Sericulture (30/30:CF 3.0) Y3S2

Beekeeping and silkworm production in Kenya and globally. Biology of bees and silkworms. Entomology, behavior. Health and Safety. Hives and handling equipment. Botany. Pollination. Hive and colony management and manipulation. Pests and disease control. Agricultural chemicals. Harvesting, processing and grading products. Silkworm products and processing. Queen bee rearing. Swarm control. Organic honey and niche markets. Other commercial insects. Marketing in the apiculture Industry. Breeding and feeding of the silkworm. Management of cocoons and harvesting of the fiber product. Silkworm products, handling and marketing. Mapping, development and promotion of the relevant value chains. Legislation and Careers. Developing sericulture business plans. Field Visit to ICIPE/ Thika (Sericulture Centre).

ANSC 0370: Field Attachment (0/120:CF4.0) Y3 S2

This is a practical training for industrial exposure for a period of eight weeks in farms and firms in the value chains. This industrial attachment is undertaken after the students have covered production units. It will be done after second semester of 3rd year but before graduation. Field attachment reports and field assessments are used in compiling a final grade.

ANSC 0372: Research Projects and Seminars (0/60: CF 2.0) Y3S2

Principles and procedures in planning, layout, and execution of an experiment in the field and in the laboratory. Students are tutored in skills and techniques of scientific writing and reporting. Planning, designing, analyzing and managing research projects in the field of Animal Sciences. Tutoring covers skills and techniques of scientific writing and reporting and presentation.

Presentation by staff and invited guest speakers arranged on selected topics in livestock industry. Under the supervision of a lecturer, individual or group of students are assigned specific topics in animal production issues to carry out literature analysis, develop proposal, implement a research project and report orally and in scientific report.

**9.2 DIPLOMA SERVICE COURSES
OFFERED BY THE DEPARTMENT OF ANIMAL
SCIENCE**

ANSC 0210: Routine Livestock Practices (0/120:CF4.0) Y3S1

The students participate in carrying out routine managements practices associated with both ruminant and non-ruminant production. Areas covered include hand and machine milking, milk recording, calf feeding and cleaning of animal (cattle, pigs, sheep, goat, poultry, rabbit) houses, feeding of different animals (cattle, sheep, pigs, goat, poultry, rabbit, fish, bees) and record keeping, farm hygiene maintenance. Preparing integrated livestock business and farm plans.

ANSC 0230: Principles of Animal Nutrition (45/0:CF 3.0) Y2S2

History of animal nutrition. Food chains and nutrients. Review of comparative digestion, absorption and utilisation of nutrients in ruminant and non-ruminant animals. Evaluation of nutritive value of feeds with particular emphasis on composition of feeds, feed intake, digestibility, and partitioning of energy and protein in the body. Principles of feed formulation. Nutritional and metabolic disorders. Development of feed production enterprise and business plan.

ANSC 0250: Ruminant Husbandry (45/30:CF4.0) Y2S2

Status of the dairy industry in Kenya. Ruminant agriculture and production systems. The millennium development Goals and the Livestock revolution – the role of the Animal Scientist. Application of the

principles of breeding and selection, reproductive physiology, nutrition, health, housing and facilities and the management of dairy, beef, sheep, goats, and camels. Ruminant products, handling, processing and marketing. Slaughter of cattle, sheep and goat. Ruminant animal value chains. Climate change adaptation strategies. Importance of animal products in human nutrition. Breeds – characteristics and production. Constraints to cattle (milk, meat) production in Kenya. Essentials of a profitable dairy operation. Milk yield and composition and factors affecting them. Management and milking of the dairy herd. Managing dairy cattle for high fertility. Types, management and improvement practices of grasslands; reseeding, fertilization, water supply, weed control, burning, supplementary feeding. Concepts of grazing; stocking rate, carrying capacity, grazing capacity, overgrazing. Grazing management systems; continuous, rotational, zero, deferred. Forage conservation; aims, techniques, socio-economic and technical considerations, haymaking, silage making. Visit to a livestock ranch. **AGED, ANHE, FAM**

ANSC 0333: Animal Nutrition and Livestock Feeding (45/30:CF4.0) Y3S1

Feeds and nutrition. Comparative digestion, absorption and utilization of feeds in ruminant and non-ruminant animals. Forages and fodder crops, their utilization and influence on production. Non-forage livestock feeds. Feeding standards and principles of ration formulation. Factors influencing efficiency of feed utilization by farm animals. Feed safety including mycotoxins, heavy metals and other contaminants and their effects on end products. Visit Animal feed Processor or KEBS for Feed Quality Requirements. **AGED, AGRO, AGHE (Ext), ANHEM, FOND. Prerequisite: BIOC 0204**

ANSC 0360: Non-Ruminant Husbandry (45/30:CF4.0) Y3S1

Non-ruminant agriculture and production systems. Application of the principles of breeding and selection, reproductive physiology, nutrition, health, housing and facilities in the management of pigs, poultry,

aquaculture, rabbits and bees. Non-ruminant products; handling, processing and marketing and value chains. Feed production and formulation. Feed preservation; aims, techniques, socio-economic and technical considerations. Forage production and preservation: hay and, silage making. Climate change adaptation strategies. Visit to a mixed animal farm. **AGED, ANHE, FAM AND DAT**

**ANSC 0291: Principles of Livestock
Production (30/30:CF3.0) L2B1**

Review of the livestock industry in Kenya. Systems of livestock production. Feeding behavior and comparative digestive systems of ruminants, non-ruminants and pseudo-ruminants. Climate change adaptation strategies. Animal feeds and nutrient supply. Basic principles of nutrition, reproduction and health. Housing management of livestock and handling facilities. Waste management and nutrient recycling. Animal products, handling processing and marketing. Value chains concept. **DIP AGED (PRIMARY). (Formerly PANS 0291 Principles of Livestock Production (30/30:CF3.0)**

9.3 Matrix aligning courses with Programme learning outcomes

		Y1		Y2		Y3	
	Programme learning outcomes	Course	CF	Course	CF	Course	CF
PLO-1	The students will acquire scientific knowledge and skills necessary for livestock industry.	Introduction to Animal Science	2.0	Introduction to anatomy and physiology	3.5	Microbial diseases	4.0
		Basic Organic Chemistry	3.0	Intro. to mechanised agriculture	3.0	Parasitic diseases	4.0
		Agricultural Botany	3.0	Animal genetics and breeding	3.0	Farm structures	3.5
		Genetics	2.0	Basic Biochemistry	3.0	Ruminant Management Practices	2.0
		Basic Inorganic and Physical Chemistry	3.0	Fundamentals of Agricultural Economics	3.0		
		Introductory Mathematics	3.0	Reproductive Physiology	3.0		
		Introductory to Soil Science	3.0	Parasitology	3.0		
		Principles of Crop Production	3.0	Animal Nutrition and livestock feeding	3.0		
		Information Technology and Society	3.0	Soil and water engineering	3.5		
		Ecology and Environmental Science	3.0				
		Introduction to Agriculture economics	3.0				
		Vet microbiology	3.0				
		Introductory to Statistics	3.0				
		Principal of Range Management	3.0				
PLO-2	Analyse and develop appropriate business lines for employment creation and gainful self-employment.	Introduction to Animal Science	2.0	Rural sociology and Development	2.0	Agribusiness management	3.0
				Principles of food processing and preservation	3.0	Farm management	2.0
						Production Economics	3.0
				Introduction to Anatomy and Physiology	3.5	Financial and Human Resource management	3.0
				Reproductive Physiology	3.0	Non Ruminant Management Practices	2.0
						Technical Writing and Reporting	2.0
PLO-3	To be efficient extension communicators in livestock production.	Agri. communication skills	2.0	Agricultural extension	3.0	Research projects and seminars	2.0
		Introduction to Animal Science	2.0	Agriculture Marketing	3.0	Technical writing and reporting	2.0
		Principles of Livestock Management Practices	2.0			Field/Industrial Attachment	4.0
		Livestock Management Practices	2.0				
PLO-4	Enforce quality assurance in the livestock value chain.	Introduction to Animal Science	2.0	Introduction to Agricultural value chains	3.0		
				Animal Nutrition and livestock feeding	3.0	Principles of food processing and Preservation	3.5

PLO-5	Develop, promote and manage livestock entrepreneurship.	Workshop Technology	3.0	Pasture and fodder crop management	3.0	Goat production	3.0
		Principles of Entrepreneurship	2.0	Farm management and accounts	2.0	Dairy production	3.0
				Animal Nutrition and livestock feeding	3.0	Poultry production	3.0
				Beef production	2.5	Pig production	3.0
				Sheep production	3.0	Finance and Human Resource Management	3.0
						Entrepreneurship	3.0
				Rabbit production	2.5	Hides and Skins	3.0
						Camel Production	2.5
				Sheep Production	3.0	Apiculture and Sericulture	3.0
				Equine Management	2.5	Principles of Food Processing and Preservation	3.5
				Aquaculture	2.0	Livestock Entrepreneurial Skills II	2.0

BACHELOR OF SCIENCE IN ANIMAL SCIENCE AND TECHNOLOGY

1. Philosophy

Transforming livelihoods through quality training and outreach in Animal Science and Livestock Entrepreneurship

2. Rationale

Kenya's economy is agriculture based and animal production contributes substantial proportion to animal source foods, employment and income generation and the national gross domestic product. Vision 2030 envisions having Kenya as a middle income country. Based on industrialization and commercialization of all economic sectors, there is need to revitalize livestock production through the use of science and technology. The Department of Animal Science has responded by strengthening its curriculum to offer a broad-based BSc. degree in Animal Science and Technology. Egerton University farms and laboratories are well equipped for both training and research that permit students to take practicum and conduct independent research projects, thus receiving "hands-on" experience in the handling of animals and technological aspects in feed processing among others. The Animal Science and Technology programme offers a great opportunity to achieve an excellent undergraduate education in a pleasant, friendly, and stimulating environment. The graduate will be able to contribute to industrialization of the livestock sector and achieve food security and national prosperity. The programme provides students with adequate and relevant competencies for job creation and career opportunities like: livestock extension, production, marketing and sales, and quality enforcement; manager of livestock farm and firm; teaching and research assistant; livestock resources consultant; agri-journalists; and livestock technologies in many agribusiness areas, feed processing, honey

processing, meat processing; government agencies, teaching, insurance and banking. The graduates also have opportunities to advance into postgraduate studies.

3. Goal of the Programme

The Programme, BSc. Animal Science and Technology prepare the graduate to acquire knowledge, skills, attitude and competencies in the management, technologies, advisory and livestock enterprise development.

4. Programme Learning Outcomes

At the end of the degree programme, the student should be able to:

- i) Understand the role of Animal Production in the national economy particularly the importance of animal products in human nutrition.
- ii) Apply acquired knowledge in the fields of Nutrition, Breeding, Physiology and Management to various animal production systems in order to increase their productivity.
- iii) Communicate acquired knowledge and skills to various individuals or groups that are interested in improving animal production.
- iv) Apply the acquired knowledge to innovate new technologies and management techniques that would further improve productivity of various species of domestic livestock.
- v) Make critical analysis of research outputs for efficient animal production and business development.

5. Mode of delivery

The programme is delivered on full time basis through lectures, practical's, tutorials, field visits and attachment.

6. Academic Regulations for the Programme

6.1 Admission Requirements

All candidates admitted to the degree programme of Animal Science and Technology must satisfy the minimum entry requirements stipulated in the common University entrance regulation, statute 36 of 2013. Diploma holders from Egerton University may join in year two (2) of study.

6.2 Regulation on Credit Transfer in a Programme

Credit transfer shall be done in adherence to Egerton University Statute 36 (3) of 2013.

6.3 Course Requirements

The course requirement guidelines should follow the Egerton University ISO Procedures for teaching (EU/AA/OP/6 rev. 3)

6.4 Student Assessment Policy/Criteria

The University policy on student assessment will apply as stipulated in the Egerton university statute on student assessment, statute 36 (6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6 Examination Regulation

All examinations for this programme will be conducted in accordance with the examination regulation as stipulated in the Egerton University Statute 36 (5) of 2013.

6.7 Moderation of Examination

ISO procedure (EU/AA/OP/07) regulation requirement is used. Each lecturer shall set final examination paper of the course (s) they teach. The examination shall be moderated within the department and the external examiner according to Egerton University Statute 36 (5) of 2013.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses within the stipulated period. To graduate, a student shall be required to take and pass all scheduled courses and have attained a minimum of 226 credit factors, and meet all other requirements and cleared with any other relevant department including finance and library in accordance with Egerton University Statute 36 of 2013

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute 36(16a) of 2013.

7. Course Evaluation

There shall be continuous formative and summative evaluations by the department, faculty, directorate of quality assurance and university management. This shall be supplemented by continuous reviews and benchmarking with other credible programmes in national, regional and international Universities. This shall be done in accordance with ISO Procedure for Teaching Effectiveness and Evaluation Procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be hosted in the Department of Animal Science in the Faculty of Agriculture. The Programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated after every academic cycle in accordance with ISO Procedure for Quality Assurance for Academic Programmes EU/VC/OP/05.

8.3 Course Coding

- i) All Course Codes begin with an abbreviation “ANSC” indicating that the course is offered from the Department of Animal Science.
- ii) The abbreviation is followed by a set of three digits as follows:
 - (a) The first digit is a 1, 2, 3, or 4 denoting the year the course should be offered.
 - (b) The second digit denotes the course discipline within the Department. A course falls under any of the five disciplines as follows:
 1. General introductory, basic sciences and core courses
 2. Foundation courses
 3. Nutrition, feeds and feeding
 4. Genetics and breeding
 5. Production from ruminant animals
 6. Production from non-ruminant and emerging livestock
 7. Experimentation, projects, seminars and field excursions.
 - (c) The third digit refers to the series of courses in the particular field

9.0 Courses/Units offered for the Programme

9.1 Schedule of Courses

(a) University Common Core Courses

CODE	TITLE	L	P	CF
MATH 100	General Mathematics	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0

(b) The schedule of courses on semester basis

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
ANSC 110	Introduction to Ruminant management Practices	0	60	2.0
ANSC 111	Introduction to Animal Science	30	30	3.0

BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	Basic Mathematics	45	0	3.0
ZOOL 100	General Zoology	30	30	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		270	180	26.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGBM 131	Principles of Management	45	0	3.0
AGEC 111	Introduction to Agricultural Economics	45	0	3.0
AGED 112	Agricultural Communication Skills	45	0	3.0
ANSC 112	Introduction to Non-Ruminant Management Practices	0	60	2.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
TOTAL		315	90	26.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGBM 222	Cooperative Management and Development	45	0	3.0
AGEN 174	Basic Farm Power and Sources and Utilization	15	30	2.0
AGRO 102	Introduction to Crop Production	45	15	3.5
AGRO 291	Statistics for Agriculture	45	0	3.0
ANHE 201	Introduction to Gross	30	30	3.0

	Anatomy			
ANHE 218	Animal (Veterinary) Physiology	30	30	3.0
ANSC 210	Introduction to Aquaculture Management Practices	0	60	2.0
ANSC 271	Animatics	0	60	2.0
ANSC 221	Environmental Physiology and Ethology	30	30	3.0
NARE 215	Principles of Range Management	30	15	2.5
TOTAL		270	210	27.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 221	Agricultural Value Chain Analysis & Management	45	0	3.0
AGED 211	Agricultural Communication and Technology	30	30	3.0
AGRO 271	Pasture and Fodder Crops	30	30	3.0
AGED 312	Technical Writing and Reporting	30	0	2.0
AGEN 373	Farm Structures	30	30	3.0
ANSC 231	Animal Nutrition	30	30	3.0
ANSC 241	Population and Quantitative Genetics	45	30	4.0
ANHE 212	Reproduction in Farm Animals	30	30	3.0
ANSC 211	Introduction to Apiculture and Sericulture Management	0	60	2.0
BIOC 204	Basic Biochemistry	30	30	3.0
TOTAL		300	210	29.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 343	Principles of Farm Management	30	0	3.0
AGED 331	Rural Sociology and Development	45	0	3.0

AGED 334	Extension Education	45	0	3.0
AGEN 371	Introduction to Agricultural Field Machines	30	30	3.0
ANSC 310	Dairy and Beef Cattle Management Practices	0	60	2.0
ANSC 332	Feeds, Feed Processing Technology and Utilization	45	30	4.0
ANSC 334	Biotechnology in Animal Nutrition	30	30	3.0
ANSC 355	Hides, Skins and Leather Technology	30	30	3.0
ANSC 365	Aquaculture	30	15	2.5
ANSC 372	Design and Analysis of Animal Experiments	45	30	4.0
TOTAL		315	240	30.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
ANSC 311	Sheep and Goat Management Practices	0	60	2.0
AGEC 331	Agricultural Marketing and Trade	45	0	3.0
ANSC 342	Biotechnology in Animal Breeding	30	30	3.0
AGEC 422	Agricultural Project Planning and Analysis	45	0	3.0
ANSC 351	Dairy Cattle Production	30	30	3.0
ANSC 362	Pig Production	30	30	3.0
ANSC 363	Rabbit Production	30	15	2.5
ANSC 366	Apiculture and Sericulture	30	30	3.0
FOST 448	Principles of Food Processing and Preservation	45	30	4.0
TOTAL		285	255	26.5

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
ANSC 410	Pig, Poultry and Rabbit Management Practices	0	60	2.0
AGBM 436	Agribusiness Management	45	0	3.0
ANHE 423	Veterinary Parasitology	45	30	4.0

	and Parasitic Diseases			
ANSC 443	Animal Breeding Plans	15	30	2.0
ANSC 452	Beef Production	30	30	3.0
ANSC 453	Sheep Production	30	30	3.0
ANSC 454	Goat Production	30	30	3.0
ANSC 467	Emerging Livestock Species	30	30	3.0
ANSC 472	Research Proposal Development and Presentation	0	90	3.0
NARE 488	Grazing Management	30	30	3.0
TOTAL		255	360	29.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 406	Finance and Human Resource Management	45	0	3.0
AGEC 452	Agricultural and Environmental Law	45	0	3.0
ANHE 426	Animal Diseases	45	30	4.0
ANSC 411	Fish, Bee and Emerging Livestock Management Practices	0	60	2.0
ANSC 456	Camel Production	30	15	2.5
ANSC 462	Poultry Production	45	30	4.0
ANSC 464	Equine Management	30	15	2.5
ANSC 473	Research Project Implementation and Reporting	0	60	2.0
ANSC 474	Seminars	0	60	2.0
NARE 450	Agroforestry	30	30	3.0
TOTAL		270	300	28.0
ANSC 475	Field Attachment (8 weeks)	0	120	4.0

c). Course Description

ANSC 110 Introduction to Ruminant Management Practices (0/60 CF: 2.0) Y1S1

Farm overview of ruminant species- cattle, sheep and goats. Appreciate the different ruminant breeds. Participate in performing the handling and general management activities in the farm. Learn and apply the knowledge of livestock equipment and tools used

for different handling of livestock. Identification of feeds; diseases and their control.

ANSC 111: Introduction to Animal Science (30/30:CF3.0) Y1S1

Domestication of animals. Animal and veterinary science disciplines. Trends in application of animal science studies. Classification of animals by digestive physiology, products and by-products. Animal products in human nutrition, in industrial raw materials and in the economy. Livestock industry and development infrastructures. Basic concepts of livestock value chains. Basic concepts of Animal-Environment interactions and housing. Basic concepts of Animal Nutrition, Reproduction, Health, Breeding and Genetic improvement. Organic livestock production. Opportunities in animal-oriented careers in Livestock production technologies as a business and writing business plans. Visit to a mixed livestock farm. (DLRM)

ANSC 112 Introduction to Non-Ruminant Management Practices (0/60: CF2.0) Y2S1

Introduction of non-ruminant species-rabbits, poultry and pigs. Appreciate the different non-ruminant breeds and their peculiar characteristics. Participate in performing the handling and general management activities in the farm. Housing of non-ruminants. Learn and apply the knowledge of livestock equipment and tools used for different handling of livestock. Identification of feeds, diseases and their control.

ANSC 210 Introduction to Aquaculture Management Practices (0/60: CF2.0) Y1S2

Aquaculture site selection. Different systems of aquaculture. Pond construction. Pond fertilization. Appreciate the different aquaculture species. Harvesting gears. Fish feed requirements and production. Fish processing and grading. Fish value addition.

ANSC 211 Introduction to Apiculture and Sericulture Management Practices (0/60: CF 2.0) Y1S2

Types of hives. Tools used in apiculture, Management of hives and bee handling. Harvesting, handling, processing and grading of hive and silk worm products. The beeswax and processing of wax products. Value addition of hive products.

ANSC 221: Environmental Physiology and Ethology (30/30:CF3.0) Y2S1

Fundamental concepts of animal environment: physical, chemical, biological, and social. Effects of climate upon animal and its productivity. Homoeothermy. Concept of critical temperatures. Animal adaptation to environment, management of animal environment, and adaptation to climate change impacts. Concepts of animal behavior. The welfare of farm animals and factors that affect it. Visit to KSPCA. *Prerequisite: ANHE 211*

ANSC 231: Animal Nutrition (30/30:CF3.0) Y2S2

History of animal nutrition. Food chains and nutrients. Review of comparative digestion, absorption and utilisation of nutrients in ruminant and non-ruminant animals. Evaluation of nutritive value of feeds with particular emphasis on composition of feeds, feed intake, digestibility, and partitioning of energy and protein in the body. Nutritional and metabolic disorders. Practical feed formulation and processing at TAP. Feeding Standards. Develop feed production enterprise / business plan. Visit to KEBS / Feed processor. *Prerequisite: BIOC 204*

ANSC 241: Quantitative Genetics and Animal Breeding (45/30:CF4.0) Y2S2

History of animal breeding; concepts of random mating population; deleterious genes; quantitative traits and their measurements; components of phenotypic variance; concepts of heritability and repeatability; genetic correlation; genetic response through selection

methods; mating systems; traits of economic importance and their improvement. **AGRIC, AGED, ANHEM, DAST. Prerequisites: BOTA 111& AGRO 291**

ANSC 271: Animatics (0/60:CF2.0) Y2S1

Introduction to livestock handling, equipment and facilities used. Restraining and casting methods. Appreciating the characteristics of different livestock species/classes in the farm. Livestock points and their relevance in judging and management. Husbandry procedures and techniques of handling various species and classes of livestock. Farm handling facilities- e.g. chutes, harnesses, fences, holding yards, holding grounds. Risks in animal handling. Restraint and casting. Handling for taking samples (blood, urine, faeces, skin scrapings, body fluids, etc.), their preservation and presentation. Zoonotic diseases and risks. Preparing, presenting and handling animals for exhibitions/shows. Farm and animal hygiene and sustainable environment. *Prerequisite: ANHE 201, ANHE 218*

ANSC 310: Dairy and Beef Cattle Management Practices (0/60:CF 2.0) Y3S1

Management of calves, heifers, yearlings and mature stock. Farm handling facilities- e.g. chutes, harnesses, fences, holding yards, holding grounds. Body conformation scoring. Design livestock Housing – calf pens, hay racks, troughs, yokes. Spraying, deworming. Dip constitution and calibration. Handling for taking samples (blood, urine, faeces, skin scrapings, body fluids, etc.), their preservation and presentation. Zoonotic diseases and risks in animal handling. Preparing, presenting and handling animals for exhibitions/shows. Pastures and forages. Assessing forage biomass and calculating carrying capacity Farm and animal hygiene and sustainable environment. Animal waste management and nutrient recycling. Carrying out daily routine livestock practices of dairy and beef cattle. Feasibility of a livestock enterprises - records and record analysis. Drawing farm/section

plans. Gross margin analysis of dairy and beef cattle. Cash flow budgets and marketing strategies. Review and prepare production / business plans. **Prerequisite:** **AGBM 102 Y1S2**

ANSC 311: Sheep and Goat Management Practices (0/60: CF 2.0) Y3S2

Fodder production and preservation (hay, silage, hydroponics fodder). Ration formulation and feed processing technologies for farm animals. Assessing forage biomass and calculating carrying capacity. Herd Health Management and records. Artificial Insemination in sheep and goats. Housing construction and fabrication of handling structures- pens, milking table, troughs, hay racks. Wool shearing, grading and marketing. Health management and disease control. Milking, milk quality and food safety. Industry requirements for wool, meat and milk. Evaluating farm resources for sheep, goat etc. to include: Land, buildings, labour. Machinery, production systems, markets and marketing. Manure and nutrient management. Developing business plans and reports. **Prerequisite:** **AGBM 102 Y1S2**

ANSC 332: Feeds, Feed Processing Technology and Utilization (45/30:CF4.0) Y3S1

Feed stuffs for livestock, analytical procedures for evaluation of feeds. The feeding standards. Principles of ration formulation and feed processing technology. Feeding for maintenance, growth, lactation, egg production, reproduction and work. Factors influencing efficiency of feed utilisation. Organic and hydroponic feed production. Feed safety, handling and storage, packaging, labeling. Feed quality evaluation i.e. mycotoxins, impurities, heavy metals and other contaminants and their effects on end products. Practical formulation and processing of feeds for ruminants, non-ruminants and pseudo-ruminants at TAP. Feed processing as a business. Visit to Feed Processing Plant. **Prerequisite:** **ANSC 231**

ANSC 334: Biotechnology in Animal Nutrition (30/30:CF3.0) Y3S1

Introduction to biotechnology. Applications of biotechnology in feed production: transgenic plants and improved protein quality and feed conservation. Animal biotechnology and its uses in developing countries. Animal nutrition biotechnology in ruminants and non-ruminants. Biotechnology involving the use enzymes, microbials, growth promotants, probiotics, genetic manipulation of rumen microbes. Ionophores and antibiotics in animal feeds. Biological upgrading of feeds using industrial amino acids and protected proteins and amino acids. Genetically modified foods in animal nutrition. Consumer and public concern on biotechnology and biotechnology products such as genetically modified organisms (GMOs). Production of organic livestock feeds. Feed additives and other interventions for decreasing methane emissions. Legislations and the legislative environment on GMOs. Feed processing as a business and development of business plans. Visit to Biotechnology lab / Feed Processing Plant. **Prerequisite:** **ANSC231.**

ANSC 342: Biotechnology in Animal Breeding (30/30:CF3.0) Y3S2

Introduction to biotechnology in animals and its historical development. Quantitative Trait Loci (QTL) and Marker Assisted Selection (MAS), Genomic selection. Gene Mapping and Genetic Distances. DNA finger printing. Mutations, Polymorphism. Contribution of current biotechnology techniques of genetic improvement in animals. Future challenges of livestock biotechnology. Reproductive techniques; Artificial insemination, embryo transfer, cloning, three parent offsprings, semen sexing. Visit to KAGRC / ILRI / ICIPE. **Prerequisite:** **ANSC 241.**

ANSC 351: Dairy Cattle Production (30/30: CF3.0) Y3S2

Dairy industry, systems of production. Breeds. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and

selection, and housing in dairy production. Rearing replacement stock. Milk synthesis, ejection and milking and handling. Adaptation strategies to climate change. Environmental and climate change issues in dairy production in relation to greenhouse gas (methane) emission. Organic dairy production. Dairy cattle insurance. Dairy value chains, marketing of milk and milk products. Economics of dairy production. Processing of milk, milk products and value addition. Legislations in the milk industry. Visits to small-scale and large-scale farms/firms and processor. **Prerequisite:** **ANSC 231and ANSC 332 OR ANSC 333 and ANSC 241.**

ANSC 355: Hides, Skins and Leather Technology (30/30:CF3.0) Y3S1

Introduction to animal by-products: Hides and skins. Flaying, handling, collection, processing, and preservation. Quality control of hides and skins. Choice of tannins - Chemical, organic and enzymes. The leather industry. Environmental concerns in tanning process and effluents. Constraints in hide and skin industry. Value addition to hides, skins and pelts. Quality control in hides, skins and leather. Value chains mapping, development and promotion of hides and skins. Leather and leather products trade – local, regional and global. Developing business plans. Visits to animal slaughter plants and tannery.

ANSC 362: Pig Production (30/30:CF3.0) Y3S2

Pig industry and production systems: Breeds. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding selection, and housing in pig production. Management of a pig enterprise. Evaluation and processing of pig carcass. Environmental issues in pork production. Organic pig production Pork processing, by-products, value addition. Climate change adaptation and greenhouse gas emissions. Pork value chains analysis. Pig farming insurance. Legislations guiding the pig industry. Developing pig business plans. Visit to pig farms and

firms / Farmers Choice. **Prerequisite:** ANSC 231, ANSC 332, ANSC 241.

ANSC 363: Rabbit Production (30/15: CF 2.5) Y3S2

Introduction of the rabbit industry, terms used and importance of rabbits. History and domestication. Contemporary and emerging issues. Global production and international commercial uses. Rabbits in the Kenyan situation- population and distribution. Rabbit biology:- anatomy, digestion, reproduction, behavior. Rabbit health management and diseases and their control. Breeding cycles and management. Rabbit breeds and breed societies. Production for meat, fur/hair, pets, show, pelts and research. Challenges to rabbit production. Application of basic principles of animal physiology, nutrition and disease control in the management of rabbits. Production systems and housing types. Rabbit adaptations to climate change- past present and future perspectives. Meat quality and nutritional value vs. other meats and the health benefits. By-products and value addition. Economics and management for commercial meat rabbit production. Organic rabbit production. Marketing and niche markets. Analysis of the rabbit value chains. Slaughter of rabbit and assessment of rabbit meat and regulations. Development of rabbit business plans. Visit to National Rabbit Production Centre-Ngong and slaughter house. **Prerequisite:** ANSC231, ANSC242.

ANSC 365: Aquaculture (30/30:CF3.0) Y3S1

Introduction to aquaculture. Fisheries systems. World fisheries and aquaculture production. Water chemistry parameters and quality management. Aquaculture site selection and pond construction. Aquaculture systems. Production strategies for major species of food, bait, sport, and ornamental species. Production of current and future commercially important aquatic species. Organic fish production. The biology of culture species. The culture environment and management to optimize the growth performance of different culture species. Fish physiology and immunology. Reproduction and

larviculture. Fish genetics. Fish diseases. Fish nutrition and feed technology. Production of other aquatic animals and plants (algae, crustaceans, bivalves, etc.). Fish behavior. Mariculture. Fish adaptations to climate change – past, present and future perspectives. Fish processing, grading and marketing. Fish value chains analysis and development. Assessment of aquaculture enterprise opportunities and limitations. Political and legal issues. Fish by-products and value addition. Developing aquaculture business plans. Visit to fish farms / processing firms. **Prerequisite:** ZOOL 104

ANSC 366: Apiculture and Sericulture (30/30:CF3.0) Y3S2

The bee and sericulture industry in Kenya and the world. The role of bees in agriculture. Biology of the honeybee and silkworms. Entomology, behavior, health and safety. Bee and silkworm equipment. Botany of bee and silkworms. Reproduction, breeding and feeding of the bee and silkworm. Climate change adaptations. Pollination. Hive management. Pests and Diseases. Effects of agricultural chemicals. Queen bee rearing. Swarm control. Harvesting, handling, processing and grading of hive and silkworm products. Organic honey and niche markets. The wax industry. Other commercial insects. Marketing in the apiculture and sericulture industry. Value addition. Legislation and Careers. Developing apiculture / sericulture business plans. Field Visit to ICIPE/ Thika (Sericulture Centre), National Beekeeping Institute-Lenana.

ANSC 372: Design and Analysis of Animal Experiments (45/30:CF4.0) Y3S1

Review of basic concepts of statistics. Principles and procedures in planning, layout, and execution of an experiment in the field and in the laboratory. Common experimental designs: completely randomised, randomised complete block, Latin square and split plot designs. Factorial experiments. Basic data collection, processing and analysis with

common statistical software. Interpreting and reporting scientific results. **Prerequisite:** AGRO 291.

ANSC 410: Pig, Poultry and Rabbit Management Practices (0/60:CF 2.0) Y4S1

Management of pigs, poultry and rabbits. Carrying out daily routine livestock practices. Production systems; Housing; Farm hygiene (manure and nutrient mgt). Organic production. Feed formulation. Feasibility of a pig, poultry and rabbit enterprises. Enterprise records and record analysis. Biosecurity and Disease surveillance. Pests and disease control and prevention: vaccination and anti-biotic use. Drawing farm/section plans. Gross margin analysis of pig, poultry and rabbit enterprise. Marketing strategies. Review and prepare production / business plans. **Prerequisite:** AGBM 102 Y1S2

ANSC 411: Emerging Livestock Management Practices (0/60:CF 2.0) Y4S2

Emerging Livestock – Llama, crocodile, ostrich, Quails. Assessment and development of the requirements in terms of nutrients, housing, disease control, products. Developing implementable business plans and reporting. **Prerequisite:** AGBM 102 Y1S2, ANSC 310 Y3S1 and Y3S2

ANSC 443: Animal Breeding Plans (15/30: CF 2.0) Y4S1

Introduction to breeding programmes designs, production systems, breeding goal development, recording, breeding values estimation (EBV and GBVs), selection and mating systems, dissemination of genetic materials and evaluation of genetic and economic response; Design and evaluation of breeding programmes for different species of farm animals. Visit to Sahiwal and Boran stud KALRO, ILRI. **Prerequisite:** ANSC 241

ANSC 452: Beef Production (30/30:CF3.0) Y4S1

Describe the major factors that influence beef cattle production. The beef industry and systems of beef production. Breeds. Growth and development of beef cattle. Nutrient requirements and formulation of balanced rations. Application of principles of nutrition and pasture management, reproductive physiology, health and hygiene, breeding and selection. Housing in beef production. Organic beef production Climate change adaptations; greenhouse gas emission. Beef markets and marketing and guiding legislations. Beef cattle insurance. Animal by-products and value addition. Beef value chains analysis. Developing beef animals and products business plans. Visits to slaughter house, ranch and feedlots. **Prerequisite:** ANSC 231, ANSC 332, ANSC 241

ANSC 453: Sheep Production (30/30:CF3.0) Y4S1

Sheep industry and production systems. Breeds. Roles in farming systems. Sheep production systems. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing in sheep production. Climate change adaptation of sheep. Sheep insurance. Marketing and economics of sheep. Organic mutton production Sheep by-products and value addition. Sheep value chains analysis. Developing sheep and sheep product business plans. Visit sheep farms. **Prerequisite:** ANSC231, ANSC332 ANSC241

ANSC 454: Goat Production (30/30:CF3.0) Y4S1

Goat industry and production systems. Breeds. Roles in farming systems. Goat production systems. Application of principles of nutrition, reproductive physiology, health and hygiene, breeding and selection, and housing for meat and milk production. Climate change adaptations. Goat insurance. Goat products processing and marketing. Dairy goat production. Organic goat production. Goat by-products and value addition. Goat value chains analysis. Developing goat and goat products business plans. Visits to ranches and multiplication / breeding

facilities and dairy goat farms. **Prerequisite** ANSC 231, ANSC 332, ANSC 241

ANSC 456: Camel Production (30/30:CF3.0) Y4S2

A review of the camelids in the world. Distribution of the camels. The role and potential of camels. Types, physiological adaptation to arid and semi-arid ecological conditions. Application of principles of breeding and selection, reproductive physiology, nutrition and health in the management of camels. Climate change adaptations. Camel products- handling, processing and marketing. Organic camel production. Camel insurance. Camel by-products and value addition. Developing camel and camel products business plans. Includes a visit to a camel ranch and meat/milk processing plant. **Prerequisite** ANSC 231, ANSC 332, ANSC 241

ANSC 462: Poultry Production (45/30:CF 4.0) Y4S2

Review of the global and Kenyan Poultry industry. Domestication and distribution. Breeds, types and strains. Production systems. Physiology of egg formation and embryo development. Design and types of incubators, collection and handling of hatching eggs, hatchery operations; transport of chicks, management of day old- chicks species. Egg incubation and hatching. Brooding, feeding. Housing and equipment management. Health management practices and disease control. Application of science and technology in the management of breeding stock. Production of layers for consumption, eggs. Meat birds including ducks, geese, turkeys, guinea fowls and quails. Organic poultry products. Ornamental birds: Peacock, Parrots, Pheasants. Climate change and effects on poultry. Environmental controls and greenhouse gas emissions. Egg grading and handling. Markets and Marketing of poultry and poultry products. Insurance in poultry farming. Animal by-products and value addition. Analysis and promotion of value chains. Poultry production business plans. Visit to poultry farms and hatcheries. **Prerequisite:** ANSC 231, ANSC 332and ANSC 241

ANSC 464: Equine Management (30/30:CF3.0) Y4S2

Origin and historical background. Potential role in the country's economy, species, classes, types and breeds. Domestication, anatomy, behavior, physiology, nutrition, health, and diseases of companion animals. Breeding, feeding, management and health. Handling skills and facilities for training. Use for draught and recreation. Understanding and appreciation for the bond between humans and animals. Responsibilities of animal care and ownership in current society. Insurance of equines. Animal adaptations to climate change- past present and future perspectives. Greenhouse gas emissions and environmental hygiene. Opportunities in animal-oriented careers. Animal issues, e.g. legal and societal issues. Value addition in equines. Equine production business plans. Visit to Ngong Horse Race Course and KSPCA. **Prerequisite:** ANSC 231 and ANSC 332 and ANSC 241

ANSC 467: Emerging Livestock (30/30:CF3.0) Y4S1

Introduction to various types of emerging animals / insects. The role and benefits of these animals/ insects as sources of food, income, recreation / aesthetic, enrichment of biodiversity and diversification of farm enterprises. Management practices including feeding, reproduction and breeding, housing and health. Harvesting and marketing of products and by- products and value addition. Mapping, developing and promoting value chains. Developing business plans for emerging livestock. Visit to farms with emerging livestock e.g. Mamba Village, Ostrich Farm, Kakamega and Kaya Forest, Turtle farm.

ANSC 472: Research Proposal Development and Presentation (0/90: CF 3.0) Y4S1

Planning, designing, analyzing and managing research projects in the field of Animal Sciences. Tutorials cover ethical issues in animal research, skills and techniques of scientific writing, reporting and presentation. Under the supervision of a lecturer, individual or group of students are assigned specific topics in animal production issues

to carry out literature search and analysis, develop and present proposal for implementation. **Prerequisite** *AGED 112, AGED 312, ANSC 231, ANSC 332, ANSC 241*

ANSC 473: Research Implementation and Presentation (0/60: CF 2.0) Y4S2

The designed research project undertaken by individual or group of students under the supervision of a lecturer is implemented. Data collected, analyzed, and a final scientific report produced for assessment. Oral presentation of the work is mandatory

Prerequisite *ANSC 372, AGED 112, AGED 312*

ANSC 474: Seminars (0/60: CF 2.0) Y4S2

Skills and techniques of scientific writing and reporting. Critical analysis and review of published literature such as journal articles, conference proceedings and books on topics related to animal production. Writing review papers on current livestock issues. Presentation by student of critically analyzed and incisive topics in animal science that will benefit the students and the livestock industry. Developing and presentation of various livestock business plan proposals. Sources of funding for projects. **Prerequisites:** *ANSC 372, AGED 112, AGED 312*

ANSC 475: Field Attachment (0/120:CF4.0) Y4S2

This is a practical training for industrial exposure for a period of eight (8) weeks in farms and firms in the value chains. This industrial attachment is undertaken at the end of year four after the students have covered production units. It will be done after second semester of 4th year but before graduation. Field attachment reports and field assessments are used in compiling a final grade.

9.2 SERVICE COURSES OFFERED BY ANIMAL SCIENCES DEPARTMENT

(a) BSc. SERVICE COURSES

ANSC 267: Laboratory Animal Science (15/30:CF2.0) Y2S1

Historical perspectives in the evolution of experimental animals in biological and biomedical research. Emergence of modern laboratory animal science. Research protocols. Systems of laboratory animal production. Classification of species used as laboratory animals (mice, rats, rabbits, guinea pigs, grass cutters). Housing and environmental requirements. Breeding. Nutrition and feeding. Diseases and health management. Ethical and registration issues. Future of laboratory animals as tools of biomedical research. Visit ICIPE/ILRI small animal farm. **BIOMED**

ANSC 313: Routine Livestock Practices (0/120:CF4.0) Y3S1

The students participate in carrying out routine managements practices associated with both ruminant and non-ruminant production. Areas covered include hand and machine milking, milk recording, calf feeding and cleaning of animal (cattle, pigs, sheep, goat, poultry, rabbit) houses, feeding of different animals (cattle, sheep, pigs, goat, poultry, rabbit, fish, bees) and record keeping, farm hygiene maintenance. Preparing integrated livestock business and farm plans. **Prerequisite:** *ANSC 271 (AGED, ANHE, AGRO groups)*

ANSC 333: Animal Nutrition and Livestock Feeding (45/30:CF4.0) Y3S1

Feeds and nutrition. Comparative digestion, absorption and utilization of feeds in ruminant and non-ruminant animals. Forages and fodder crops, their utilization and influence on production. Non-forage livestock feeds. Feeding standards and principles of ration formulation. Factors influencing efficiency of feed utilization by farm animals. Feed safety including mycotoxins, heavy

metals and other contaminants and their effects on end products. Visit Animal feed Processor or KEBS for Feed Quality Requirements. **AGED, AGRO, AGHE (Ext), ANHEM, FOND. Prerequisite:** *BIOC 204*

ANSC 359: Principles of Livestock Production (45/30:CF4.0) Y3S1

Overview of the livestock industry. Classification of animals by feeding behavior and by products. Systems of livestock production. Animal bioclimatology concepts, climate change adaptation strategies. Animal feeds and nutrients. Grazing and pasture management. Comparative digestive systems of ruminants, non-ruminants and pseudo-ruminants. Basic principles of nutrition, reproduction and health. Housing management of livestock and handling facilities. Waste management and nutrient recycling. Animal products, handling and processing and marketing. Value chains concept. **AGEC, AGBM, FOND, AGHE, FOST, AGEN, NARE, BED (PRIMARY).**

ANSC 450: Ruminant Production (45/30:CF4.0) Y4S1

Status of the dairy industry in Kenya. Ruminant agriculture and production systems. The millennium development Goals and the Livestock revolution – the role of the Animal Scientist. Application of the principles of breeding and selection, reproduction, nutrition, health, housing and facilities and the management of dairy, beef, sheep, goats, and camels. Ruminant products, handling, processing and marketing. Slaughter of cattle, sheep and goat. Ruminant animal value chains. Climate change adaptation strategies. Importance of meat, milk and dairy products. Breeds – characteristics and production. Constraints to cattle (milk, meat) production in Kenya. Essentials of a profitable dairy operation. Milk yield and composition and factors affecting them. Management and milking of the dairy herd. Managing dairy cattle for high fertility. Types of pastures; natural, cultivated. Management and improvement practices of grasslands; reseeding, fertilization, water supply, weed control, burning,

supplementary feeding. Concepts of grazing; stocking rate, carrying capacity, grazing capacity, overgrazing. Grazing management systems; continuous, rotational, zero, deferred. Forage conservation; aims, techniques, socio-economic and technical considerations, haymaking, silage making. **AGRO, AGED, ANHEM, DATM. Prerequisite: ANSC333 and ANSC241**

ANSC 460: Non-Ruminant Production (45/30:CF4.0) Y4S2

Non-ruminant agriculture and production systems. Species and breeds of non-ruminants. Application of the principles of nutrition, selection and breeding, reproduction and health. Housing and facilities in the management of pigs, poultry, aquaculture, rabbits, fish and bees. Climate change adaptation strategies. Non-ruminant products; handling, processing and marketing and value chains. Feed production and formulation. Feed preservation and quality control. **AGRO, AGED, ANHEM, AGHE (Ext). Prerequisite: ANSC 333 and ANSC 241.**

(b) BSc. SERVICE COURSES FOR CLINICAL STUDIES (BVM & ANHEM)

ANSC 314: Management Practices for Livestock (0/270:CF 9.0) Y3S1

The students participate in carrying out routine management practices for all farm animals in Tatton Agricultural Park. Areas covered include clean milk production, calf feeding. Cleaning of animal (cattle, pigs, sheep, goat, poultry, and rabbit) houses, feeding of different animals (cattle, sheep, pigs, goat, poultry, rabbit, fish, bees) and record keeping, farm hygiene maintenance. Routine activities for different animal species at the farm (identification, hoof trimming, castration, dehorning, shearing and wool grading, disease control, treatment of animals, dipping/spraying etc.). Management and maintenance of animal facilities. Pasture management and conservation. Record keeping. Waste collection and handling. Preparing integrated livestock business plans. BVM, ANHEM

ANSC 451: Livestock Production Systems - Ruminants (45/90:CF6.0) Y4S1

Status of the dairy industry in Kenya. Ruminant agriculture and production systems. Sustainable development and the livestock revolution – the role of the Animal Scientist. Importance of meat, milk and dairy products. Application of the principles of nutrition, selection, breeding, reproduction, health, housing and facilities. Breeds – characteristics and production. Constraints to cattle (milk, meat) production in Kenya. Management of dairy, beef, sheep and goats. Climate change adaptation strategies. Milk yield and composition and factors affecting them. Management and milking of the dairy herd. Managing ruminants for high fertility. Types of pastures; natural, cultivated. Management and improvement practices of grasslands; reseeding, fertilization, water supply, weed control, burning, supplementary feeding. Concepts of grazing management; Grazing management systems; Forage conservation; aims, techniques, socio-economic and technical considerations, haymaking, silage making. Assessing forage biomass and calculating carrying capacity. Essentials of a profitable ruminant enterprise operations. Slaughter of cattle, sheep and goats. Ruminant products, handling, processing and marketing. Ruminant animal value chains. Ruminant handling facilities and designs. Body conformation scoring. Routine practices (spraying, deworming. Dip constitution and calibration, and taking samples). Preparing, presenting and handling animals for exhibitions/shows. Farm and animal hygiene, waste management and nutrient recycling. BVM , ANHEM. **Prerequisite: ANSC 333 and ANSC 241**

ANSC 461: Livestock Production Systems -Non-Ruminants (60/30:CF5.0) Y4S2

Non-ruminant agriculture and production systems. Species and breeds of non-ruminants and emerging Livestock – Llama, crocodile, ostrich, Quails. Application of the principles of nutrition selection and breeding, reproduction, health, housing and facilities in the management of pigs, poultry, aquaculture, rabbits

and bees Feed production and formulation. Routine management practices. Feed preservation and quality requirements. Climate change adaptation strategies. Non-ruminant products; handling, processing and marketing and value chains. Farm hygiene (manure and nutrient mgt). Organic production. Feed formulation and feed processing technologies. Feasibility of a pig, poultry, fish, bee and rabbit enterprises. Biosecurity and disease surveillance. Pests and disease control. Drawing farm/section plans. Enterprise records and record analysis. Gross margin analysis of pig, poultry and rabbit enterprise. Marketing strategies. Review and prepare production / business plans. BVM , ANHEM . **Prerequisite: ANSC 333 and ANSC 241.**

(c) BSc. SERVICE COURSES FOR PART – TIME PROGRAMMES IN THE DEPARTMENT OF CURRICULUM, INSTRUCTION AND EDUCATIONAL MANAGEMENT

ANSC 232: Introduction to Nutrition and Livestock Feeding (30/30:CF3.0) L2B2

Classification of feeds and their nutritional content. Comparative digestion, absorption and utilization of feeds in ruminant and non-ruminant animals. Factors influencing efficiency of feeding and feed utilization. Feed intake and influence on production. Feeding standards and principles of ration formulation. Feed quality and safety. **BED (PRIMARY).**

ANSC 331: Principles of Ruminant Production (30/30:CF3.0) L3B1

Status of ruminant production in Kenya. Ruminant agriculture and production systems. Sustainable development and livestock revolution. Importance of meat, milk and dairy products. Breeds – characteristics and production. Climate change adaptation strategies. Application of the principles of nutrition, breeding, reproduction, health. Housing and handling facilities. Constraints to ruminant production in Kenya. Pastures and pasture improvement and supplementary feeding. Grazing management. Forage conservation. Ruminant

products, handling, processing and marketing. Ruminant value chains. **BED (PRIMARY). Prerequisite: ANSC 232. (**

Formerly PANS 331 Principles of livestock production (30/30 CF. 3.0)

ANSC 458: Principles of Non-Ruminant Production (30/30:CF3.0) L4B1

Non-ruminant agriculture and production systems. Species and breeds of non-ruminants. Application of the principles of nutrition, selection and breeding, reproduction and health. Housing and facilities in the management of pigs, poultry, aquaculture, rabbits, fish and bees. Climate change adaptation strategies. Non-ruminant products; handling, processing and marketing and value chains. Feed production and formulation. Feed preservation and quality control. **Bed Primary. Prerequisite: ANSC 232. (Formerly PANS 421 Livestock Practices (30/30 CF. 3.0)**

9.3 Matrix aligning courses with Programme learning outcomes

		Y1		Y2		Y3		Y4	
	Programme learning outcomes	Course	CF	Course	CF	Course	CF	Course	CF
PLO 1	Understand the role of Animal Production in the national economy particularly the importance of animal products in human nutrition.	Introduction to Animal Science	3.0	Basic Farm Power Sources and Utilisation	2.0	Principles of Farm Management	3.0		
		General Botany	3.5	Introduction to Crop Production	3.5	Technical Writing and Report	2.0	Agricultural and Environmental Law	3.0
		General Genetics	3.5	Statistics for Agriculture	3.0	Rural Sociology and Development	3.0	Veterinary Parasitology and Parasitic Diseases	4.0
		General Inorganic and Physical Chemistry	3.0	Introduction to Gross Anatomy	3.0	Introduction to Agricultural Field Machines	3.0	Finance and Human Resource Management	3.0
		Environmental Education	3.0	Animatics	2.0	Production Economics	3.0	Principles of Farm Management	3.0
		Ethics, Integrity and National Values	3.0	Principles of Range Management	2.5	Principles of Agricultural Extension	3.0	Animal Diseases	4.0
		General Mathematics	3.0	Farm Structures	3.0	Livestock Management Practices	2.0		
		General Zoology	3.0	Animal (Veterinary) Physiology	3.0	Reproduction in Farm Animals	3.0		
		HIV/AIDS and Society	3.0						
		Principles of Management	3.0						
		Introduction to Agricultural Economics	3.0						
		General Microbiology	3.5	Population and Quantitative Genetics	4.0				
		Introduction to Organic Chemistry	3.0						
		Introduction to Computer Applications	3.5	Basic Biochemistry	3.0				
		Agricultural Communication Skills	3.0						
		Introduction to Soil Science	3.0						

PLO-2	Apply acquired knowledge in the fields of Nutrition, Breeding, Physiology and Management to various animal production systems in order to increase their productivity.	Introduction to Animal Science	3.0	Animal Physiology and anatomy	3.0	Biotechnology in Animal Breeding	3.0	Agroforestry	3.0
		Principles of Management	3.0	Environmental Physiology and Ethology	3.0	Pastures and Fodder Crops	3.0	Agribusiness Management	3.0
		Introduction to Ruminant management Practices	2.0	Introduction to Aquaculture Management Practices	2.0	Feeds, Feed processing and Technology Utilization	4.0	Pig, Poultry and Rabbit Management Practices	2.0
		Introduction to Non-Ruminant Management Practices	2.0	Introduction to Apiculture and Sericulture Management	2.0	Biotechnology in Animal Nutrition	3.0	Animal Breeding Plans	2.0
						Dairy and Beef Cattle Management Practices	2.0	Grazing Management	3.0
						Apiculture and Sericulture	3.0	Fish, Bee and Emerging Livestock Management Practices	2.0
						Sheep and Goat Management Practices			
PLO-3	Communicate acquired knowledge and skills to various individuals or groups that are interested in improving animal production.	Agricultural Communication skills	3.0	Animal Nutrition	3.0	Design and Analysis of Animal Experiments	3.0		
				Agricultural Value Chain Analysis and Management	3.0	Biotechnology in Animal Breeding	3.0		
				Cooperative Management and Development	3.0	Sheep and Goat Management Practices	2.0		
						Technical Writing and Reporting			
				Agricultural Communication and Technology	3.0	Extension Education	3.0		

PLO-4	Apply the acquired knowledge to innovate new technologies and management techniques that would further improve productivity of various species of domestic livestock.	Principles of Entrepreneurship	3.0			Principles of Food Processing and Preservation	3.5	Research Proposal Development and Presentation	2.0
						Principles of Food Processing and Preservation	4.0	Seminars	2.0
						Biotechnology in Animal Nutrition	3.0	Field Attachment	4.0
						Biotechnology in Animal Breeding	3.0	Agricultural Marketing and Trade	3.0
						Rabbit Production	3.0	Camel Production	3.0
						Hides, Skins and Leather Technology	3.0		
						Aquaculture	3.0		
						Farm Structures	3.0		
PLO-5	Make critical analysis of research outputs for efficient animal production and business development.			Rabbit Production	3.0	Pastures and Fodder Crops	3.0	Poultry Production	4.0
		Principles of Entrepreneurship	3.0	Aquaculture	3.0	Feeds, Feed processing and Technology Utilization	4.0	Equine Management	3.0
				Emerging Livestock Species	3.0	Pig Production	3.0	Beef Production	3.0
						Agricultural Planning and Analysis	3.0		
						Dairy Cattle Production	4.0	Sheep Production	3.0
								Field/ Industrial Attachment	4.0
						Apiculture and Sericulture	3.0	Goat Production	3.0
						Livestock Management Practices	2.0	Research Project Implementation and Reporting	2.0

DEPARTMENT OF CROPS, HORTICULTURE AND SOILS

DIPLOMA IN HORTICULTURE

1. Philosophy of the Programme

Innovatively influence human development through hands-on training and dissemination of horticultural knowledge and skills.

2. Rationale

The horticultural industry in Kenya is a major contributor to agricultural production and has evolved to be among the top four sectors that earn significant foreign exchange. The sector is rapidly growing and possesses great potential that needs to be fully harnessed for increased output and quality of horticultural produce. The realization of this potential requires highly trained technical manpower with practical knowledge and skills in horticulture

3. Goal of the Programme

This programme aims at generating manpower equipped with technical skills, knowledge and hands-on experiences in horticultural production, research and extension for transformation of livelihoods.

4. Programme Learning Outcomes

At the end of the programme, the Graduates should be able to:

PLO 1 Perceive the importance of horticulture in the national economy with particular reference to the roles of vegetables, fruits, flowers and other ornamental plants in meeting the nutritional needs of the family, aesthetic gratification and foreign exchange earnings;

PLO 2 Apply the acquired knowledge and practical skills to improve the production and post-harvest technology of horticultural crops, marketing of the produce and for further studies;

PLO 3 Effectively communicate the acquired knowledge and skills to various individuals and groups interested in improving horticultural crop production;

PLO 4 Develop a commercial horticultural enterprise involving the production and marketing of fruits, vegetables, cut-flowers and nursery stock plants in both outdoor and greenhouse environments;

PLO 5 Formulate scientific research on various facets of horticultural crop enterprises;

PLO 6 Evaluate environmental and food safety awareness, safe use of pesticides and production practices that minimize chemical residues, as well as soil erosion;

5. Mode of delivery

The programme will be delivered in full time mode.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy the University minimum entry requirements for a University Diploma of Grade C in the Kenya Certificate of Secondary Education (KCSE), or equivalent examinations and, in addition, offer passes with at least a:

- i) C in English/Kiswahili
- ii) C in Maths/Physics
- iii) C in Biology or C in Agriculture
- iv) C in Chemistry or C in Physical Sciences

OR

Admission may be granted to holders of a Certificate in agriculture, or fields related to agriculture from Colleges recognized by the Egerton university senate, who will have passed with at least a credit or its equivalent.

6.2 Regulation on Credit Transfer in a Programme

This programme will not have credit transfer provision as indicated in Egerton University Statute articles 36 (3) of 2013 for diploma programmes.

6.3 Course Requirements

The course requirements shall be as stipulated in Egerton University ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment Policy /Criteria

The University policy on student assessment will apply in according to. statute 36 (6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6 Examination Regulations

All examinations for this programme will be conducted in accordance with the examination regulation as stipulate in the Egerton University Statute 36 (5) of 2013.

6.7 Moderation of Examination

Egerton University ISO procedure (EU/AA/OP/07) for moderation of examinations shall apply. The examination shall be moderated both internally and externally by an examiner according to Egerton University Statute 36 (5) of 2013.

6.8 Graduation Requirements

To graduate with the Diploma in horticulture, a student will be required to pass a minimum of 155.0 Credit Factors (CF). In addition the student should meet the requirements prescribed in Egerton University Statute 36 of 2013.

6.9 Classification of Diploma

Diploma classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

Courses shall be regularly evaluated by the Directorate of Quality Assurance using an evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme shall be hosted in the Department of Crops Horticulture and Soils in the Faculty of Agriculture.

The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme evaluation (self-assessment) after the end of its academic cycle of three years. There shall also be benchmarking with credible programmes in both local and regional universities.

8.3 Course coding

The courses are coded as follows:

The abbreviation HORT refers to the Horticulture, The first digit (i.e. zero) in all the courses indicates the level of training (i.e. Diploma),

The second digit (i.e. 1, 2, and 3) represents the year of study,

The third digit (i.e. 1, 2, 3, 4, 5, 6, and 7) refers to the subject discipline/matter as follows:

0 = Introductory Courses

1 = General and Principle Courses

2 = Basic Horticultural Courses

3 = Vegetable Crops

4 = Fruit and Perennial Crops

5 = Post-harvest Management

6 = Ornamental Horticulture

7 = Experimentation and Research Projects.

The fourth digit shows the series of courses in a particular field.

9. Courses/ Units offered for the Programme The courses/units offered shall include

9.1 Schedule of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGED 0112	Agricultural Communication Skills	30	0	2.0
AGEN 0171	Technical Drawing	15	30	2.0
BOTA 0101	General Botany	30	30	3.0
BOTA 0141	Plant Taxonomy	30	30	3.0
CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
HORT 0101	Horticultural Practical Experience I (Vegetables)	0	60	2.0
HORT 0112	Principles and Practices of Horticultural Crop Production	30	30	3.0
MATH 0121	General Mathematics	45	0	3.0
SOIL 0100	Introduction to Soil Science	30	30	3.0
	Total	240	240	24.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F.
AGBM 0103	Entrepreneurship	30	0	2.0
AGEC 0111	Introduction to Agricultural Economics	45	0	3.0
AGRO 0191	Statistics for Agriculture	45	0	3.0
BOTA 0111	Genetics	30	30	3.0
CHEM 0190	Basic Organic Chemistry	30	30	3.0

COMP 0101	Information Technology and national Development	30	30	3.0
HORT 0113	Horticultural Plant Identification	0	45	1.5
ENSC 0100	Introduction to Environmental Science	30	30	3.0
ZOOL 0100	Entomology	30	30	3.0
HORT 0101	Horticultural Practical Experience I (Vegetables)	0	60	2.0
	Total	270	240	26.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGEC 0241	Production Economics	45	0	3.0
AGED 0231	Rural Sociology	30	0	2.0
AGEN 0231	Introduction to Mechanized Agriculture	30	30	3.0
AGRO 0221	Principles of Crop Improvement	30	15	2.5
HORT 0221	Principles of Plant Propagation	30	30	3.0
HORT 0231	Vegetable Production	45	30	4.0
SOIL 0250	Fertilizer Use and Plant Nutrition	30	30	3.0
HORT 0201	Horticultural Practical Experience II (Fruits)	0	60	2.0
	Total	240	195	22.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F.
AGBM 0220	Introduction to Agricultural Value Chains	45	0	3.0
AGEC 0242	Farm management	45	0	3.0
AGED 0252	Extension Education	45	0	3.0
BOTA 0226	Plant Pathology	30	30	3.0

HORT 0241	Fruit Production	45	30	4.0
HORT 0262	Floriculture	45	30	4.0
HORT 0271	Introduction to Agricultural Experimentation	30	30	3.0
HORT 0201	Horticultural Practical Experience II (Fruits)	0	60	2.0
	Total	285	180	25.0
HORT 0272	Field Attachment (8 Weeks)	0	120	4.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGEC 0231	Agricultural marketing	30	0	2.0
ANSC 0213	Principles of Animal Production	30	30	3.0
HORT 0314	Pest and Disease Management in Horticultural Crops	30	30	3.0
HORT 0322	Principles of Horticultural Seed Production	30	30	3.0
HORT 0323	Nursery Stock Production and Management	30	30	3.0
HORT 0351	Postharvest Technology and marketing of Horticultural Produce	30	30	3.0
HORT 0363	Fundamentals of Ornamental Horticulture	30	30	3.0
HORT 0373	Field Visits I	0	45	1.5
HORT 0375	Seminars and Research Projects 1	0	45	1.5
HORT 0301	Horticultural Practical Experience III (Ornamentals)	0	60	2.0
	Total	210	330	25.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F.
AGBM 0326	Financial and Human Resources Management	45	0	3.0
AGEN 0252	Soil and Water management	45	45	4.5
AGEN 0342	Farm Structures	30	45	3.5
HORT 0324	Introduction to Greenhouse management	30	30	3.0
HORT 0342	Beverages, Medicinal and Nut Crops	30	30	3.0
HORT 0323	Nursery Stock Production and Management	30	30	3.0
HORT 0364	Landscape Horticulture	30	30	3.0
HORT 0374	Field Visits II	0	45	1.5
HORT 0376	Seminars and Research Projects II	0	45	1.5
HORT 0301	Horticultural Practical Experience III (Ornamentals)	0	60	2.0
	Total	240	360	28.0
TOTAL PROGRAMME CFS				155

c) Course Descriptions:

HORT 0101: Horticultural Practical Experience (L/P 0/60; C.F. 2.0) Y1S1 and Y1S2

Students' hands-on practical experience in production and marketing of vegetables.

HORT 0112: Principles and Practices of Horticultural Crop Production (L/P 30/30, C.F. 3.0) Y1S1 and Y1S2.

History of the horticultural industry in Kenya. Horticultural terminologies. Environmental and cultural factors influencing plant growth and development. Plant growth structures. Practices used in the production of horticultural crops, including crop establishment, nutrition, maintenance, harvesting and post-harvest technology and handling of horticultural produce.

HORT 0113: Horticultural Plant Identification (L/P 0/45, C.F. 1.5) Y1S2

Classification and naming of horticultural plants vegetables, fruits and ornamentals. Acquaintance with the important characteristics, uses and environmental requirements of horticultural plants. Prerequisite BOTA 0141

HORT 0201: Horticultural Practical Experience II (L/P 0/60; C.F. 2.0) Y2S1 and Y2S2

Students' hands-on practical experience in production and marketing of fruits.

HORT 0221: Principles of Plant Propagation (L/P 30/30, C.F. 3.0) Y2S1

Methods of plant propagation, sexual and asexual multiplication of horticultural crops; that is seedage, cuttage, graftage, budding, layerage, specialized plant organs, and micro propagation. Propagation media, equipment, materials and structures. Two field trips. (*Prerequisite: HORT 0112*)

HORT 0231: Vegetable Production (L/P 45/30, C.F. 4.0) Y2 S1.

An overview of the vegetable industry in Kenya. Classification of vegetables. Aspects in vegetable production including site selection, propagation, spacing, fertilizers, manures, irrigation, intercropping, crop rotation, weed, insect pest and disease management, harvesting and storage. Cultural requirements of brassicas, Solanaceae, root crops, legumes, cucurbits, salads, Asian vegetables, mushrooms and local vegetables. Two field trips. (*Prerequisite: HORT 0112; HORT 0213; HORT 0221*)

HORT 0241: FRUIT PRODUCTION (L/P 45/30, C.F. 4.0) Y2S2.

Classification, distribution and economic importance of tropical, sub-tropical and temperate-zone fruits. Soil and climatic considerations made during site selection for

fruit production. Propagation, establishment, nutrition, irrigation, weeding, disease and insect pest management, training, pruning, harvesting, handling, storage and packaging. Fruit crops include avocados, citrus, bananas, pineapples, mangoes, papaya, passion fruits, macadamia nuts, apples, pears, grapes, plums and strawberry. Two field trips. Prerequisite: HORT 0112; HORT 0213; HORT 0221

HORT 0262: Floriculture (L/P 45/30, C.F. 4.0) Y2S2
Floriculture industry in Kenya. Identification and classification of cut flowers of commercial importance to export market. Principles and practices of out-door and greenhouse cut-flower production. Cultural practices including propagation, establishment, fertilization, pruning and training, weeding, pest and disease management, harvesting, grading, packaging and marketing. Cut-flower preservation techniques. Flowers include roses, carnation, orchids, chrysanthemums, alstroemeria, statice, Arabidopsis, lilies, anthuriums, liliopsis, molucella and others depending on the market trends. Two field trips. Prerequisite: HORT 0112; HORT 0213; HORT 0221.

HORT 0271: Agricultural Experimentation (L/P 30/30, C.F. 3.0) Y2S2
Basic concepts in agricultural experimentation. Use of statistical science in agricultural experimentation. Planning, design, execution, data collection and analysis of experiments. Significance and logical inference tests. Reporting experimental results. Prerequisite: MATH 0121 and MATH 0122

HORT 0272: Field Attachment (L/P 0/120, C.F. 4.0)
Work experience in commercial horticultural establishments such as fruit, flower and vegetable enterprises, horticultural nurseries, parks, gardens and golf courses, research centers, extension services, marketing organizations

HORT 0301: Horticultural Practical Experience III (L/P 0/60; C.F. 2.0) Y3S1 and Y3S2.

Students' hands-on practical experience in production and marketing of ornamentals.

HORT 0314: Pest and Disease Management in Horticultural Crops (L/P 30/30, C.F. 3.0) Y3S1

Principles of crop protection. Weed disease and insect pest's recognition and identification in horticultural crops. Pest management methods (chemical, cultural, biological, integrated pest management). Safe use of insecticides, herbicides & fungicides in horticultural crop production. (*Prerequisites: BOTA 0226 and ZOOL 0120*)

HORT 0322: Principles of Horticultural Seed Production (L/P 30/30, C.F. 3.0) Y3S1

Principles and practices of horticultural seed production. Production of vegetable, flower, herb, spice and fruit seeds. Processing, storage, quality control and certification. Intellectual property rights, seed laws and regulations. (*Prerequisites HORT 0112, HORT 0221*).

HORT 0323: Nursery Stock Production and Management (L/P 30/30, C.F. 3.0) Y3S1.

Types of nurseries. Production of field and container grown nursery stock plants including site consideration, plant selection, propagation, cultural requirements, harvesting and handling. Physical facilities, labour and financial management. Nursery stock inventory control. Laws, regulations and quality standards in nursery stock production. (*Prerequisite: HORT 0213, HORT 0221*).

HORT 0324: Introduction to Greenhouse Management (L/P 30/30, C.F. 3.0) Y3S2

Types of greenhouses, greenhouse space and construction. Management of greenhouse environment coverings, heating and cooling techniques, light quantity and duration control, moisture regulation and carbon dioxide enrichment. Shades and nets. Production of plants in greenhouses. Growing media, irrigation, nutrition, growth regulators and pest management.

Greenhouse cost of production. (*Prerequisites: HORT 0112, HORT 0314*).

HORT 0342: Beverages, Medicinal And Nut Crops (L/P 30/30, C.F. 3.0) Y3S2

History, ecological requirements, distribution, economic importance, cultural practices, crop protection, harvesting, storage and processing of major perennial crops including coffee, tea, cocoa, pyrethrum, neem, cashew nuts, coconuts, and macadamia nuts. (Prerequisite: HORT 0112, HORT 0221).

HORT 0351: Postharvest Tech And Marketing Of Hort Produce (L/P 30/30, C.F. 3.0) Y3S1

Introduction to postharvest technology, post-harvest losses of horticultural produce. Maturity determination, preparation and handling of horticultural crops for fresh market. Ethylene action associated with deterioration of horticultural produce. Postharvest treatments, storage techniques and transportation of horticultural produce. Marketing strategies, quality and quality assessment of horticultural produce, horticultural value chains. Two field trips. Prerequisites: HORT 0231, HORT 0241, HORT 0262.

HORT 0363: Ornamental Horticulture (L/P 30/30, C.F. 3.0) Y3S1.

Classification and cultivation of cut and potted ornamental plants for indoor and landscape beautification. Indoor ornamental plants management. Principles of floral, designs, arrangement of flowers for shows, houses, offices, weddings and churches. Floristry business and shop management. Prerequisites: HORT 0112, HORT 0213, HORT 0221.

HORT 0364: Landscape Horticulture (L/P 30/30, C.F. 3.0) Y3S2

Principles and practices of landscaping. Designing of landscapes. Establishment and maintenance of hedges, border plants, lawns and turf for institutions, private and public areas, house, park and golf-course grounds. Rock gardening. Landscape construction and maintenance.

Landscaping business management. AGEN 0111, HORT 0363.

HORT 0373: Field Visits I (Five Whole Day Field Visits) (L/P 0/45 Y3S1 C.F. 1.5)

Visits to the farming areas, industrial enterprises, research stations and laboratories related to horticulture. Five whole-day visits covering in a semesters (**Prerequisites: HORT 0232, HORT 0242, HORT 0262**).

HORT 0374: Field Visits I (Five Whole Day Field Visits) (L/P 0/45 Y3S2 C.F. 1.5)

Visits to the farming areas, industrial enterprises, research stations and laboratories related to horticulture. Five whole-day visits covering in a semesters. (**Prerequisites: HORT 0232, HORT 0242, HORT 0262**).

HORT 0375: Research Projects I (L/P 0/45, C.F. 1.5) Y3S1

Each student will give one seminar on a selected area of horticulture and develop supervised research proposal in selected areas of horticulture. The research will involve development of proposals on topics selected by students and under departmental guidance. Grading will be based on seminars and oral presentation of the research proposal and submission of a report. (**Prerequisite HORT 0271and HORT 0232/ HORT 0242/ HORT 0262**).

HORT 0376: Research Projects II (L/P 0/45, C.F. 1.5) Y3S2.

Each student will give one seminar on a selected area of horticulture and conduct supervised research projects in special areas of horticulture based on the approved proposal. Grading will be based on seminar and oral presentation of the findings and submission of a report. (**Prerequisite: HORT 0375**).

9.2. SERVICE COURSES OFFERED TO OTHER DEPARTMENTS .

HORT 0111: General Principles and Practices of Fruit and Vegetable Growing (L/P 45/30, C.F. 4.0) Y1S2.

The fruit and vegetable industries in Kenya. Fruit and vegetable science terminologies. Environmental and management factors influencing plant growth and development. Plant growth structures. Practices used in the production of fruit and vegetable crops, including nursery preparation, field planting, nutrition, pruning, irrigation, pest control, harvesting and post-harvest handling of fruit and vegetable produce.

HORT 0261: General Ornamental Horticulture (L/P 30/30, C.F.3.0) Y2S2

Introduction to the ornamental horticulture industry in Kenya. Principles of cut flower production. Production and management principles of ornamental plants. Basics of landscape design and maintenance. Postharvest handling and marketing of ornamental

9.3 Matrix aligning courses/units to Programme learning outcomes (PLOs)

	Year 1		Year 2		Year 3	
	Courses	CF	Courses	CF	Courses	CF
PLO 1: Be knowledgeable the importance of horticulture in the national economy;	• Principles and Practices of Horticultural Crop Production • Horticultural Practical Experience I • Horticultural Plant Identification	3.0 4.0 2.0	• Principles of Plant Propagation • Vegetable Production • Fruit Production • Floriculture • Horticultural Practical Experience II	3.0 4.0 4.0 4.0 4.0	• Fundamentals of Ornamental Horticulture • Landscape Horticulture • Horticultural Practical Experience III • Agricultural marketing	3.0 3.0 4.0 3.0
PLO 2: Use the acquired knowledge and practical skills to improve the production and post-harvest technology of horticultural crops and marketing of the produce;	• Principles and Practices of Horticultural Crop Production • Horticultural Practical Experience I • Horticultural Plant Identification • Agricultural Botany • Plant Taxonomy • Genetics • Entomology	3.0 2.0 4.0 3.0 3.0 3.0 3.0	• Principles of Plant Propagation • Vegetable Production • Principles of Crop Improvement • Fertilizer Use and Plant Nutrition • Annual Crops • Plant Pathology • Field Attachment • Horticultural Practical Experience II	3.0 4.0 2.5 3.0 3.0 3.0 4.0 4.0	• Pest and Disease Management in Horticultural Crops • Post-harvest Technology & Marketing of Horticultural Produce • Principles of Horticultural Seed Production • Nursery Stock Production & Management • Horticultural Practical Experience II	3.0 3.0 3.0 3.0 4.0
PLO 3: Effectively communicate the acquired knowledge and skills to horticultural practitioners	• Agricultural communication Skills • Entrepreneurship • Horticultural Plant Identification • Plant Taxonomy • Introduction to agricultural Economics • Information Technology and national Development • Technical Drawing	2.0 2.0 2.0 2.0 3.0 3.0 2.0 3.0	• Rural Sociology • Production Economics • Extension Education • Introduction to Agricultural Experimentation	2.0 3.0 3.0 3.0	• Agricultural Marketing • Field Attachment • Seminars and Research Projects 1	3.0 4.0 1.5
PLO 4: Set up and manage a commercial horticultural enterprises;	• Principles and Practices of Horticultural Crop Production • Entrepreneurship • Introduction to Soil Science • Introduction to Environmental Science • Genetics • Entomology • Horticultural Practical Experience I •	3.0 3.0 2.0 3.0 3.0 3.0 3.0 4.0	• Principles of Crop Improvement • Vegetable Production • Principles of Plant Propagation • Fertilizer use and Plant Nutrition • Introduction to Agricultural Value Chain • Farm management • Annual Crops • Plant Pathology • Fruit Production • Floriculture	2.5 4.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0 4.0 4.0	• Agricultural marketing • Principles of Animal Production • Pest and Disease Management in Horticultural Crops • Principles of Horticultural Seed Production • Nursery Stock Production and Management • Postharvest Tech and Marketing of Hort. Produce • Fundamentals of Ornamental Horticulture	2.0 3.0 3.0 3.0 3.0 3.0 3.0

			• Field Attachment • Horticultural Practical Experience II	4.0	• Soil and Water Management • Farm Structures • Introduction to Greenhouse management • Beverages, Medicinal and Nut Crops • Landscape Horticulture • Horticultural Practical Experience III	4.5 3.5 3.0 3.0 4.0
PLO 5: Assist in scientific research on various facets of horticultural crop enterprises	• Horticultural Practical Experience I • Statistics for Agriculture	4.0 3.0	• Principles of Crop Improvement • Introduction to Agricultural Experimentation • Horticultural Practical Experience II •	2.5 3.0 4.0	• Seminars and Research Projects I • Seminars and Research Projects II • Horticultural Practical Experience III	1.5 1.5 4.0
PLO 6: Promote environmental and food safety in the horticultural industry;	• Introduction to Environmental Science • Introduction to Soil Science	3.0 3.0	• Introduction to Mechanized Agriculture • Fertilizer Use and Plant Nutrition • Farm Management	3.0 3.0 3.0	• Pest and Disease management in Horticultural Crops • Fundamentals of Ornamental Horticulture • Soil and Water Management • Landscape Horticulture • Introduction to Greenhouse Management	3.0 3.0 4.5 3.0 3.0
PLO 7: Utilize the acquired knowledge and skills in gainful self-employment	• Agricultural Communication Skills • Horticultural Practical Experience I • Horticultural Plant Identification • Entrepreneurship • Information Technology and national Development	2.0 2.0 2.0 2.0 3.0	• Introduction to Agricultural value Chains • Production Economics • Rural Sociology • Farm management • Extension Education • Vegetable Production • Fruit Production • Floriculture • Field Attachment • Horticultural Practical Experience II	3.0 2.0 3.0 3.0 4.0 4.0 4.0 4.0 4.0	• Agricultural Marketing • Pest and Disease Management in Horticultural Crops • Nursery Stock Production and Management • Fundamentals of Ornamental Horticulture • Financial and Human Resources Management • Landscape Horticulture • Horticultural Practical Experience II	2.0 3.0 3.0 3.0 3.0 3.0 4.0

BACHELOR OF SCIENCE IN AGRICULTURE

1. Philosophy of the programme

BSc. in Agriculture programme influences human development through training, preservation and dissemination of knowledge and skills to enhance agricultural productivity under changing climatic conditions.

2. Rationale

Agriculture sector forms the backbone of Kenya's economy. Its contribution towards both large and small scale farm incomes, employment, foreign exchange earnings and food security cannot be overemphasized. Agricultural employment forms 80% of the national employment which is mainly in the rural areas. However, the full potential of agricultural productivity is yet to be realized and thus there is need for a qualified and highly skilled workforce.

3. Goal of the programme

The main objective of the programme is to develop human resource capacity with practical and conceptual skills to be deployed to increase crop and animal production through research, extension education, training, marketing and self-employment.

4. Programme Learning outcomes

At the end of the programme, the graduate should be able to:-

- (i) Demonstrate a clear understanding of the importance of agriculture and the role of crops and animals in providing food, fiber clothing and income for the Kenyan population.
- (ii) Teach theory and skills of crop and animal production in appropriate agricultural institutions.
- (iii) Integrate practices of crop and animal production with other farming enterprises

- (iv) Apply proper methods of raising crops and animals either directly on his/her own farm, or indirectly through extension.
- (v) Carry out basic and applied research geared towards enhancement of crop and animal production.
- (vi) Pursue advanced training in relevant areas of specialization in the agricultural sciences.

5. Mode of Delivery

The programme will be delivered in full time mode

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission, applicants must satisfy the minimum entry requirements stipulated in the Egerton university statutes;

- (i) Applicants must at least have obtained a C+ grade aggregate in the Kenya Certificate of Secondary Education (KCSE) or its equivalent.
- (ii) In addition, to be admitted into this programme, applicants must have passed the KCSE with at least grades C+ in Mathematics; C+ in English; C+ in Biology or B in Biological Sciences; C+ in Chemistry or B in Physical Sciences.
- (ii) Alternatively, admission may be granted to Diploma holders who have passed with at least a CREDIT or its equivalent from recognized colleges or universities.

6.2 Regulation of Credit Transfer

Diploma holders may qualify for credit transfer amounting to a maximum of 40% of total CFs in accordance with Egerton University Statutes 36(6) of 2013. Such CFs must have been acquired from recognized institutions and taken within a period acceptable to the senate provided that such CFs have been obtained by passing the courses at the grade of B and above.

6.3 Course Requirements

This shall be in accordance with the Egerton University ISO procedure for teaching (EU/AA/OP/06rev3).

6.4 Student Assessment Criteria

All examinations for this programme will be conducted in accordance with the University Examination regulations as stipulated in the Egerton University Statute 36(6) of 2013.

6.5 Grading System

Marks obtained in examination shall be converted into letter grades as stipulated in the Egerton University Statutes 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme will be conducted in accordance with the examination regulations of Egerton University Statutes 36 (6) of 2013.

6.7 Moderation of Examination

Examination shall be moderated in accordance with ISO procedure EU/AA/OP/07 of 2013 on examination management. The examination shall be moderated both internally and externally by an examiner according to the Egerton University statute 36(5) of 2013.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses (199 CF) within the stipulated period.

6.9 Classification of Degrees

The Bachelor of Science in Agriculture shall be classified in accordance with Egerton University Statute 36 (5) of 2013

7. Course Evaluation

The programme will be evaluated using a course evaluation tool provided by the Directorate of Quality Assurance. The tool captures the evaluation of all aspects of the course including; course content,

instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Bachelor of Science in Agriculture will be housed in the department of Crops Horticulture and Soils in the Faculty of Agriculture of Egerton University. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall undergo internal self assessment and review after each cycle of four academic years and will be benchmarked with at least one similar programme in a highly ranked local and regional university.

8.3 Course Coding

The acronym "AGRO" refers to the Section Agronomy. The first digit represents the year or level of teaching, the second digit refers to disciplines within agronomy or crop science the third digit refers to serial number for the various courses within a given discipline:

0: General or Basic Principles

1: Crop Physiology and Environment

2: Crop Improvement and Biotechnology

3: Crop Protection

4: Seed Science and Technology

5: Annual Crops

6: Perennial Crops

7: Pastures and Fodder Crops

8: Interdisciplinary courses.

9: Biometry and Experimentation; Projects, Seminars, Field visits, and Field attachment

9. Courses/Units offered for the Programme

9.1 Schedule of Courses

a) University Common Core courses

CODE	TITLE	L	P	C.F
COMP 101	Introduction to Computer Applications	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 143	HIV/Aids & Society	45	0	3.0

b) The schedule of courses organized on semester basis:

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGRO 100	Agronomy Practical I	0	60	2.0
AGRO 101	Introduction to Crop Production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
MATH 100	General Mathematics	30	30	3.0
ZOOL 104	General Zoology	30	30	3.0
	TOTAL	240	240	24.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGEC 111	Introduction To Agricultural Economics	45	0	3.0
AGEN 174	Basic Farm Power Source & Utilization	15	30	2.0
BOTA 131	General Microbiology	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
CHEM 130	Introduction Organic Chemistry	30	30	3.0
ENSC 100	Environmental Education	30	30	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
ZOOL 143	HIV/Aids & Society	45	0	3.0
	TOTAL	315	150	26.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
AGRO 200	Agronomy Practical II	0	60	2.0
BIOC 204	Basic Biochemistry	30	30	3.0
AGRO 233	Crop Entomology	30	30	3.0
AGRO 291	Statistics for Agronomists	30	30	3.0
ANHE 210	Gross Anatomy and Embryology	45	30	4.0
BOTA 271	Plant Physiology 1	30	30	3.0
SOIL 210	Soil Physics	30	30	3.0
SOIL	Soil Chemistry	30	30	3.0

220				
	TOTAL	225	270	24.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 221	Agricultural Value Chain Management	45	0	3.0
AGRO 222	Plant Breeding	30	30	3.0
AGRO 232	Crop Pathology	30	30	3.0
AGRO 234	Weed Science	30	30	3.0
AGRO 271	Pastures and Fodder Crops	30	30	3.0
AGRO 211	Crop Environment & Physiology	30	30	3.0
SOIL 230	Soil Biology	30	30	3.0
SOIL 241	Soil Genesis and Classification	30	30	3.0
	TOTAL	255	210	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
AGED 331	Rural Sociology	30	0	2.0
AGRO 300	Agronomy Practical III	0	60	2.0
AGRO 328	Biotechnology in Agriculture	30	15	2.5
AGRO 351	Annual Crops	45	15	3.5
AGRO 383	Principles of Organic Farming	30	30	3.0
AGRO 391	Agricultural Experimentation	30	30	3.0
AGEC 336	Agricultural Marketing	30	0	3.0
ANSC	Animal Nutrition and	45	30	4.0

333	Livestock Feeding			
SOIL 351	Soil fertility and Plant Nutrition	30	30	3.0
	TOTAL	285	210	26.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
AGED 332	Principles of Agric Extension Education	45	0	3.0
AGEN 366	Irrigation and Drainage	30	30	3.0
ANSC 313	Routine Livestock Practices	0	105	3.5
AGEN 375	Soil and Water Management	30	45	3.5
AGRO 361	Perennial Crops	45	15	3.5
AGRO 393	Research Projects I	15	30	2.0
HORT 331	General Vegetable Production	30	30	3.0
HORT 341	General Fruit Crops Production	30	30	3.0
	TOTAL	270	210	25.0

AGRO 392	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F
AGEC 343	Principles of Farm Management	45	0	3.0
AGRO 400	Agronomy Practical 1V	0	60	2.0
AGRO 401	Dryland Agriculture	30	30	3.0
AGRO 441	Seed Science And Technology	30	30	3.0
AGRO 491	Research Project II	0	60	2.0

AGRO 492	Field Studies and Evaluation I	0	60	2.0
ANHE 426	Introduction to Animal Diseases	45	15	3.5
ANSC 450	Ruminant Production	45	30	4.0
NARE 450	Agro-Forestry	45	15	3.5
	TOTAL	240	300	26.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 406	Financial and Human Resource Management	45	0	3.0
AGEC 452	Agricultural Law	45	0	3.0
AGED 433	Extension Programme Planning and Implementation	30	0	2.0
AGRO 411	Post-Harvest Technology of Field Crops	30	30	3.0
AGRO 482	Cropping Systems	30	30	3.0
AGRO 493	Seminars	15	30	2.0
AGRO 494	Field Studies and Evaluation II	0	60	2.0
ANSC 460	Non-Ruminant Production	45	30	4.0
	TOTAL	240	120	20.0

(c) Course Descriptions

AGRO 100: Agronomy Practical I (0/60: CF2.0)

Principles in farm enterprise practices: Students assigned, guided and supervised in good agricultural practices (GAP) on land measuring a minimum of 10 x10 m (preferably 100 m² per student). Diverse choices of crops per group will be chosen to undertake crop production as follows; Inputs acquisition and advice, seedbed preparation (conventional and conservation tillage), sowing/planting, fertilizer calculation and application, crop protection, harvesting and yield determination. Three field trip practicals to expose students to off-campus agro-enterprises. **(Y1S1 and S2)**

AGRO 101: Introduction to Crop Production (45/15: CF 3.5)

Concept of Agriculture. History and development of agriculture in East Africa. Factors limiting crop production in East Africa. Origin, classification and distribution of major crops; Crop ecology and climate change; tillage systems; planting; manures and fertilizers; cropping systems; weeds and their management; field crop insect pests and diseases and their management; integrated pest management(IPM), post harvest technology of field crops. Agricultural organizations, Research Institutions and their roles. Four field visits to research institutions and/ or farms. **(Y1S1)**

AGRO 200: Agronomy Practical II (0/60: CF2.0)

Morphological/botanical characteristics, crop growth and developmental stages: Learners assigned land measuring a minimum of 10 x10 m, guided and supervised on good agricultural practices (GAP). Crops to be used will be selected from major food and fodder cereals and legumes. Learners to identify crop growth and developmental stages for selected crops, identify each principal growth stage with visible morphological features from emergence to physiological maturity and determine associated heat units, understand required

crop management at each corresponding growth/developmental stage. Three field trip practicals to expose students to off-campus agro-enterprises. **Y2S1/S2**

AGRO 211: Crop Environment and Physiology (30/30: CF3.0)

The role of crop physiology in food production; Review of the physical characteristics of the tropical climate, including features of Agro-climatic zones. Plant/water relations; Light as an environmental factor in crop production; photosynthesis; photorespiration; plant growth regulators. Mineral nutrition in crop plants. **(Y2S1)**

AGRO 222: Plant Breeding (30/30: CF 3.0)

Genetic basis of plant breeding, approaches; sources of plant genetic variation; plant genetic resources and their conservation; reproduction systems in relation to plant breeding; quantitative inheritance and selection theory; genetic basis and breeding strategies of improving self- and cross-pollinated; breeding for disease and insect resistance; special techniques in plant breeding including biotechnology; improved seed; breeder's rights and variety protection.

(PREREQUISITES : AGRO 221 or BOTA (Y2S2)

AGRO 232: Crop Pathology (30/30: CF3.0)

Concepts, history, importance, classification and life cycles of plant pathogenic agents. Symptoms of Diseases in Crop Plants. Pathogenicity and Defense mechanisms. Genetics of plant disease. Use of biotechnology in plant pathology. Epidemiology and disease forecasting. Principles of Crop Disease Management. Important fungal, bacterial, viral and nematode diseases of field crops and their Control. Two field visits to a research institution and or a farm.

(Y2S2)

AGRO 233: Crop Entomology (30/30: CF3.0)

Introduction to the phylum Arthropoda. Taxonomy morphology, anatomy and physiology of the class insecta. Identification, biology and ecology of insects, mites and small vertebrate pests of field crops and stored products and their control. Insect vector of plant diseases; pollinators and other beneficial insects. Introduction to pesticides (insecticides, acaricides and rodenticides), classification, toxicity and safe use. **(Y1S2)**

AGRO 234: Weed Science (30/30: CF3.0)

Significance of weeds in agro-ecosystems. Weed biology; weed crop interactions; Systems of weed management: cultural, preventive, biological, chemical, and integrated weed management. **(PREREQUISITE: AGRO 211) Y2S2**

AGRO 271: Pastures and Fodder Crops (30/30: CF3.0)

Botany and identification of pasture grasses, legume and fodder crops; ecology and distribution of natural grassland in Kenya; agronomy, conservation and utilization of pastures and fodder crops; crop improvement of pastures and fodder's. **(Y4S1)**

AGRO 291: Statistics for Agronomists [45/15: C.F 3.5]

A basic course in biostatistics covering common statistical terminologies. Frequency distributions. Data presentations; tables, diagrams. Measures of central tendency and dispersion, probability and probability distribution, descriptive and inferential statistics (populations and samples); Hypothesis testing, significance tests and level. Student t-test, ANOVA, chi-square test; correlation and regression analysis; introduction to experimental designs. Introduction to computer data analysis by excel; SAS ; GENSTAT **(PREREQUISITE: MATH 100; AGRO 222) Y2S1**

AGRO 300: Agronomy Practicals III (0/60: CF 2.0)

Crop breeding and protection: Demonstrations for detailed practical exposure of crop germplasm acquisition, crossing techniques and selection. Field and storage crop pests; insects, diseases and weeds. Scouting for field and storage crop pests on campus and surrounding farming community. Diversity and significance of pests in selected farms, postulate predisposing conditions and suggest management. Crop loss assessments. Two field trip practicals to expose students to off-campus agro-enterprises. Y3S1/S2

AGRO 328: Biotechnology in Agriculture (30/15: CF 2.5)

Introduction to concepts and definition, importance in Agriculture, basic principles, case examples in plant breeding, GMO's, plant propagation and feeds, plant nutrition and health, processing (fermentation technology), immunology and nutrition, biopharmaceuticals. One field visit to biotechnology laboratory. **(PREREQUISITE :AGRO 221, AGRO 222, AGRO 211) (Y3S1)**

AGRO 351: Annual Crops (45/15: CF3.5)

Global trends of annual crop productions, demands, market trends, food supply, Challenges facing annual crop; Case studies: The history, distribution, national, regional, world production, Economic importance, Genetic improvement and new advances, Variety/types, Production systems, Botany and Agronomy, protection, harvesting, Post-harvest processing and utilization of: Tropical cereals (maize, Rice, sorghum and Finger millets, pearl millets), Temperate cereals (Wheat, Barley, oats, rye), Grain legumes/pulses (Common beans, Pigeon pea, chickpea, Groundnuts, Cowpeas, Green grams), Oil crops (Sunflower, Rapeseed, Linseed, Safflower, Groundnuts; Soybeans, Castor); Root and tuber crops (Sweet and Irish potatoes, Cassava, Yams, arrow roots), Fibre crops (Cotton, Flax), Industrial crops (Tobacco) and Minor annual crops. Four Field visit to a Research institution, Large and small scale farms, processing industry **(PREREQUISITE: AGRO**

101,AGRO 100, AGRO 200, AGRO 222, AGRO 211) Y3S2**AGRO 361: Perennial Crops [45/15: C.F 3.5]**

Overview, history, economic importance, ecological requirements and distribution, crop improvement, agronomy, protection, harvesting, storage and processing of industrial crops grown in Kenya/ Eastern Africa region namely; coffee, tea, pyrethrum, sugarcane, sisal, coconut, cashew-nut, macadamia-nuts and bixa. Three field trips to production and processing areas.

(PREREQUISITE AGRO 101: AGRO 100, AGRO 200 & AGRO 211) Y3S1

AGRO 383: Principles of Organic Farming (30/30: CF3.0)

Introduction to trends in tropical agriculture, definition of organic farming and its comparative analysis with respect to profitability, productivity and environmental sustainability. Organic farming techniques; multiple cropping and agro forestry; minimum tillage and enhanced nutrient use efficiency; biological symbionts, green manuring, mulching, composting, integrated plant protection, integration of livestock, certification (Y3S2)

AGRO 391: Agricultural Experimentation (30/30: CF3.0)

Review of basic statistics as tools for agricultural research. Objectives of agricultural research. Principles and procedures of experimentation. Statistical methods involving relationships between populations and samples. Collection, organization analysis and interpretation of data. Field plot techniques and common experimental designs; completely randomized block, Latin square, and split-plot designs. Introduction to linear regression and correlation. Scientific reporting. **(PRE-REQUISITE : AGRO 291) Y3S2**

AGRO 392: Field Attachment (0/120: CF 4.0)

Practical training covering eight weeks in agricultural extension services, research stations, farms or agricultural firms. End of Y3 (during long vacation).

AGRO 393: Research Project 1 (15/30: CF 2.0)

Research Methodology and its application; Selecting Research topics; formulation of a specific research problem; research proposal writing and presentation. Approaches to data entry and management. Y3S2

AGRO 400: Agriculture Practicals IV (0/60: CF2.0)

Farm enterprise evaluation: students to undertake critical analysis of farm enterprise for business engagement. Learners to be attached to among the following enterprises; Field crop production, green house crop production (selected value crops) and crop-livestock production systems. Learners to pick one of the enterprises and be attached from 'inception to production,' within/and or outside campus and take the necessary data to come up with farm business plan, gross margin analysis and present a report on the enterprise viability for agribusiness. One field trip practical to expose students to off-campus agro-enterprises. Y4S1/S2

AGRO 401: Dry-Land Agriculture (30/30: CF3.0)

Drought risk and risk management; timelines of operations; strategies of early planting; moisture management (irrigational water-harvesting); tillage methods (minimum tillage, double digging); plant population and rectangularity; agro forestry (importance and its future success in dry-land agriculture). One field visit to dry. **(PREREQUISITE: 101) Y4S2**

AGRO 411: Post Harvest Technology of Field Crops (30/30: CF3.0)

Post harvest physiology and technology. The need for processing. Post harvest losses and their control. Drying theory and air movement through the stored products (grains and pulses). Cleaning and sorting of field crop products. Storage facilities, preservation of field crop products. Storage pest, diseases and their control.

(PREREQUISITE: AGRO

101, AGRO 351,AGRO 232 and AGRO 233) Y4S2

AGRO 441: Seed Science and Technology (30/30: CF3.0)

Seed development and maturation-reproduction, seed maturation patterns; seed germination; dormancy and deterioration; functional concept of seed; chemical composition of seed; other physical properties and their significance. Principles and practices of seed production; seed harvesting; drying; storage; treatment and packaging; seed distribution and marketing. Principles of operation of seed processing machines, seed law; seed testing and seed testing organizations; seed quality control systems; concept of seed vigour. Two field visits to seed production and processing areas. **(PREREQUISITE: AGRO 101, AGRO 222, AGRO 291) Y4S1**

AGRO 482: Cropping Systems (30/30: CF3.0)

The distribution, importance and historical perspectives of cropping systems. Resource use by intercrops. Plant interactions in multiple cropping systems. Multiple cropping with legume and cereals; legumes and root crops. Agronomic considerations in multiple cropping systems. Insects, weeds and disease management in crop mixtures. Breeding for multiple cropping systems. Economic and risks in crop mixtures. Ecological framework for multiple cropping research. Two field visits to survey existing farming systems. **(PREREQUISITE: AGRO 102, AGRO 211) Y4S2.**

AGRO 491: Research Project II (0/60:CF 2.0)

Each shall be required to undertake research to implement AGRO 393 in Y3S2. The candidate will collect, analyse data, and present results in oral and written formats for evaluation **(Prerequisite: AGRO 393). Y4S1**

AGRO 492: Field Studies and Evaluation I (0/60: CF 2.0)

Agronomic studies and evaluation of field crops available in agricultural enterprises, research institutions

and farming areas. Studies of agro-ecological zones and their agricultural potential. Five whole day visits during the semester. **Y4S1**

AGRO 493: Seminars (15/30:CF 2.0)

Presentation and discussions of research and review papers on selected crop and soil science topics including presentation by people in agricultural enterprises. Five whole day visits during the semester. **(Y4S2)**

AGRO 494: Field Studies and Evaluation II (0/60: CF 2.0)

Agronomic studies and evaluation of field crops available in agricultural enterprises research institutions and farming areas. **Y4S2**

9.2 SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

(a) DIPLOMA SERVICE COURSES

AGRO 0102: Principles of Crop Production

Crop ecology, land preparation, planting, nursery management, soil fertility, manures and fertilizers, weeds, pests and diseases and their control, post-harvest storage and problems of crop produce. **Y1S1: DAT, ANHE, ANSC, FAM and AGED**

AGRO 0191:Basic Statistics for Agriculture

Introduction and application of statistics Frequency distribution; Measures of central tendency and measures of dispersion Probability concepts; Probability of distribution; Sampling distribution; t-distribution and Chi- square distribution and their applications; Basic concepts of Hypothesis testing; Concept of ANOVA; Correlation and Regression Analysis

AGRO 0221: Principles and Practices of plant Breeding (30/15: CF 2.5) Y2S1

Nature, objectives and economic value of crop improvement. Evolution of crops reproduction systems

in cultivated plants, methods and techniques of crop improvement, heterosis; breeding methods for self-pollinated and cross pollinated crops. Polyploidy and mutation breeding for disease and pest resistance, maintenance and distribution of improved cultivars; crop improvement achievements in East Africa. **Y2S1: FAM, HORT**

AGRO 0252: General Annual Crops (45/15: CF 3.5) Y2S2

Agronomy of maize, sorghum, rice, wheat, barley, groundnuts, sunflower, cotton, tobacco.

Y2S2:AGED, FAM, HORT (PREREQUISITE; AGRO 0102)

AGRO 0271: Pastures and Forage Management (30/15: CF 2.5) Y2S1

Pasture establishment, management and conservation. Individual pasture and fodder species such as Nandi sataria, star grass, guinea grass, rye grass, kales, sweet potato vines, Lucerne, desmodium, cloves, Napier grass, bana grass **Y2S1: AGED, ANHE,DAFT, FAM**

AGRO 0362: Perennial Crops (45/15: 3.5)

Agronomy of coffee, tea, coconuts, cashewnuts, sugarcane, sisal, pyrethrum. **Y3S1: AGED, FAM(Prerequisite: AGRO0101)**

AGRO 0102: Principles of Crop Production

Crop ecology, land preparation, planting, nursery management, soil fertility, manures and fertilizers, weeds, pests and diseases and their control, post-harvest storage and problems of crop produce. **Y1S1: DAT, ANHE, ANSC, FAM and AGED**

AGRO 0191:Basic Statistics for Agriculture

Introduction and application of statistics Frequency distribution; Measures of central tendency and measures of dispersion Probability concepts; Probability of distribution; Sampling distribution; t-distribution and Chi- square distribution and their applications; Basic

concepts of Hypothesis testing; Concept of ANOVA; Correlation and Regression Analysis

AGRO 0221: Principles and Practices of plant Breeding (30/15: CF 2.5) Y2S1

Nature, objectives and economic value of crop improvement. Evolution of crops reproduction systems in cultivated plants, methods and techniques of crop improvement, heterosis; breeding methods for self-pollinated and cross pollinated crops. Polyploidy and mutation breeding for disease and pest resistance, maintenance and distribution of improved cultivars; crop improvement achievements in East Africa. **Y2S1: FAM, HORT**

AGRO 0252: General Annual Crops (45/15: CF 3.5) Y2S2

Agronomy of maize, sorghum, rice, wheat, barley, groundnuts, sunflower, cotton, tobacco.

Y2S2: AGED, FAM, HORT (PREREQUISITE: AGRO 0102)

AGRO 0271: Pastures and Forage Management (30/15: CF 2.5) Y2S1

Pasture establishment, management and conservation. Individual pasture and fodder species such as Nandi sataria, star grass, guinea grass, rye grass, kales, sweet potato vines, Lucerne, desmodium, cloves, Napier grass, bana grass **Y2S1: AGED, ANHE, DAFT, FAM**

AGRO 0362: Perennial Crops (45/15: 3.5)

Agronomy of coffee, tea, coconuts, cashewnuts, sugarcane, sisal, pyrethrum. **Y3S1: AGED, FAM (Prerequisite: AGRO0101)**

BACHELORS PROGRAMMES

AGRO 102: Principles of Crop Production (45/15: CF 3.5)

Crop ecology; seedbed preparation; planting/seeding; crop rotation, manures and fertilizers, cropping systems weeds and their management; field crop insect pests and diseases and their management; integrated pest management (**Y1S2: DAFT, ANHE, FAM, AGED**)

AGRO 292: Statistics for Agriculture (45/0: CF 3.0)

Observations and variables; Frequency distributions; measures of central tendency and dispersion; exploratory data analysis; populations and samples; probability and sampling distributions; hypothesis testing; linear regression; introduction to experimental designs. (**PREREQUISITE: MATH 100**) **Y2S2**

AGRO 352: General Annual Crops (30/30: CF3.0)

The history, distribution, world production, economic importance, genetic improvement, variety/types, production systems, agronomy, protection, harvesting and processing of cereals (maize, wheat, barley, oats, sorghum and millet) and grain legumes (field beans, pigeon pea, chickpea and cowpeas) Cotton, Oil crops (sunflower, rapeseed, groundnuts and soybeans); Root crops (sweet potatoes and cassava), and Tobacco. One field visit to a research institution and or a farm. (**PREREQUISITE: AGRO 102, AGED & AGHE**) **Y3S1**

AGRO 362: General Perennial Crops (30/30: CF3.0)

Perennial crop production, history, economic importance, ecological requirements, distribution, agronomy, protection, harvesting, storage and processing of major perennial crops including coffee, tea, sugarcane, pyrethrum and coconut. One field visit. (**PREREQUISITE: AGRO 102, AGED & AGHE**) **Y3S1**

9.2 Matrix aligning courses/units to learning outcomes

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	C.F	Courses	C.F	Courses	C.F	Courses	C.F
PLO 1: Demonstrate a clear understanding of the importance of agriculture and the role of crops and animals in providing food, fiber clothing and income for the Kenyan population	- Introduction to Crop Production - Agronomy Practical 1	3.0 2.0	- Pastures and Fodder Crops - Agronomy Practical II	3.0 2.0	- Agronomy Practical III - Annual Crops - Principles of Organic Farming - Animal Nutrition and Livestock Feeding - Perennial Crops - General Vegetable Production - General Fruit Crops Production - Routine Livestock Practices - Field Attachment	2.0 3.5 3.0 4.0 3.5 3.5 3.0 3.5 4.0	- Principles of Farm Management - Agronomy Practical 1V - Dryland Agriculture - Seed Science and Technology - Introduction to Animal Diseases - Ruminant Production - Agro-Forestry - Non-Ruminant Production	3.0 2.0 3.0 3.0 3.5 4.0 3.5 4.0
PLO 2: Teach theory and skills of crop and animal production in appropriate agricultural institutions	- Communication Skills - Principles of Entrepreneurship - Introduction to Agricultural Economics - Introduction to Soil Science - Basic Farm Power Source & Utilization - Introduction Organic Chemistry - General Botany - General Genetics - General Zoology	3.0 3.0 3.0 3.0 2.0 3.0 3.0 3.0 4.0	- Agronomy Practical II - Soil Physics - Soil Chemistry - Soil Biology - Soil Genesis and Classification - Agricultural Value Chain Management - Crop Entomology - Crop Pathology - Plant Physiology I - Crop Environment & Physiology	2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Principles of Agric Extension Education - Biotechnology in Agriculture - Principles of Organic Farming - Agricultural Marketing - Irrigation and Drainage - Soil and Water Management - Perennial Crops - Annual Crops - General Vegetable Production - General Fruit Crops Production - Field Attachment	3.0 2.5 3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.0	- Agro-Forestry - Dryland Agriculture - Agronomy Practical 1V - Cropping Systems - Post-Harvest Technology of Field Crops - Non-Ruminant Production - Agricultural Law	3.5 3.0 2.0 3.0 3.0 4.0 3.0

	- Gross Anatomy and Embryology - General Inorganic & Physical Chemistry - Introduction to Environmental Education - Biology of HIV/Aids & Society	3.0 3.0 3.0	- Weed Science - Plant Breeding	3.0 3.0		4.0		
PLO 3: Integrate practices of crop and animal production with other farming enterprises			Agricultural Value Chain Management	3.0	- Agricultural marketing - Animal Nutrition and Livestock Feeding	3.0 4.0	- Principles of Farm Management - Dryland Agriculture - Post-Harvest Technology of Field Crops - Financial and Human Resource Management - Agricultural Law	3.0 3.0 3.0 3.0 3.0
PLO 4: Apply proper methods of raising crops and animals either directly on his/her own farm, or indirectly through extension.	Agronomy Practical I	2.0	- Agronomy Practical II - Pastures and Fodder Crops - Weed Science - Crop Pathology - Crop Entomology	2.0 3.0 3.0 3.0 3.0	- Agronomy Practical III - Routine Livestock Practices - Animal Nutrition and Livestock Feeding - Soil fertility and Plant Nutrition - Soil and Water Management - Perennial crops - Annual crops - General Fruit crops Production - General Vegetable Production - Rural Sociology	2.0 3.5 4.0 3.0 3.5 3.5 3.5 3.0 3.0 2.0	- Agronomy Practical IV - Ruminant Production - Non-Ruminant Production - Field Studies and Evaluation I - Field Studies and Evaluation II - Extension Programme Planning and Implementation	2.0 4.0 4.0 2.0 2.0 2.0

PLO 5: Carry out basic and applied research geared towards enhancement of crop and animal production.	- General Mathematics - Introduction to Computer Applications - Introduction to Crop Production	3.0 3.5 3.0	- Statistics for Agronomists - Plant Breeding	3.0 3.0	- Agricultural Experimentation - Research Projects I	3.0 2.0	- Research Projects II - Seminars	2.0 2.0
PLO 6: Pursue advanced training in relevant areas of specialization in the agricultural sciences.			- Basic Biochemistry - Plant Breeding - Crop Pathology - Crop Entomology - Statistics for Agronomists	3.0 3.0 3.0 3.0 3.0	- Biotechnology in Agriculture - Annual Crops - Perennial Crops - Agricultural Experimentation - Research Projects I	2.5 3.0 3.0 3.0 2.0	- Dryland Agriculture - Research Projects II - Seminars	3.0 2.0 2.0

BACHELOR OF SCIENCE IN HORTICULTURE

1. Philosophy of the Programme

Innovatively influence human development through holistic training and dissemination of horticultural knowledge and skills.

2. Rationale

Horticulture is a fast-growing and major subsector of the agricultural industry in Kenya. Its contribution towards both small-scale and large-scale farm incomes, employment, foreign exchange earnings and food security cannot be overemphasized. However, the full potential of horticulture industry is yet to be realized, hence the need for a highly qualified workforce.

3. Goal of the Programme

The goal of the Bachelor of Science in horticulture is to prepare the graduates to meet challenges faced by the horticultural industry in realizing its full potential. Specifically, the programme aims to train managerial level personnel with practical and theoretical skills in general horticulture, which through research, extension, marketing and entrepreneurship, will be able to increase production and the use of horticultural and other crops.

4. Programme Learning Outcomes

On completing the programme, graduates will be able to do the following:

- i. Relate the importance of horticulture to the national economy with particular reference to the roles played by vegetable and fruit crops as well as ornamental plants in meeting the family needs.
- ii. Contribute to improving production of horticultural crops, enhancing marketing of horticultural crop produce and public awareness of aesthetic value of ornamental plants.
- iii. Contribute in the setting up and running of horticultural enterprises.

- iv. Integrate production of horticultural crops with other farm enterprises.
- v. Carry out scientific research on various facets of horticultural and other crops.
- vi. Promote domestic, urban and institutional landscapes through design, development and maintenance.
- vii. Promote environmental conservation by encouraging and effecting agricultural practices that minimize soil erosion and pollution.

5. Mode of delivery

The Bachelor of Science Programme will be a full time programme.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates applying for the Bachelor of Science degree in horticulture must satisfy the minimum University entrance requirements in the Kenya Certificate of Secondary Education. In addition, they must have studied and passed the following subjects with minimum grades as shown below:

- i. B- in Biology or Agriculture
- ii. C+ in Chemistry or B- in Physical Sciences
- iii. C+ in Mathematics or Physics

Alternatively, admission may be granted to candidates with at least a CREDIT, or its equivalent, in Diploma in horticulture or agriculture related fields from a University or College recognized by the Egerton University senate.

6.2 Regulation on Credit Transfer in a Programme

Credit transfer shall be done in adherence to Egerton University Statute 36 (3) of 2013. programme

6.3 Course Requirements

This shall be in accordance with the Egerton University ISO Procedure for Teaching EU/AA/OP/06 ..

6.4 Student Assessment Criteria

All examinations for this programme will be conducted in accordance with the examination regulations as stipulated in the Egerton University Statute 36 (6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013. .

6.6 Examination Regulations

Examination shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.7 Moderation of Examination

Examinations shall be moderated in accordance with ISO procedure EU/AA/OP/07 of 2013 on examination management. The examination shall be moderated both internally and externally by an examiner according to the Egerton university statute 36(5) of 2013.

6.8 Graduation Requirements

To graduate with a Bachelor of Science degree in horticulture, a student should have studied and passed all scheduled none elective courses amounting to a minimum of 219 C.Fs, which includes the University common core courses approved by the Senate.

6.9 Classification of Degrees

The Bachelor of Science in horticulture degree shall be classified in accordance with Egerton University Statute 36 (5) .

7. Course Evaluation

All courses of the Bachelor of Science in Horticulture programme will be evaluated using a course evaluation tool provided by the Directorate of Quality Assurance. The tool captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Bachelor of Science in horticulture programme will be housed in the department of Crops Horticulture and Soils, in the Faculty of Agriculture of Egerton University.

The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal self-assessment and review after each cycle of 4 academic years and will be benchmarked with at least one similar programme in a highly ranked local and regional university.

8.3 Course coding

The courses are coded as follows:

- i) The abbreviation HORT refers to Horticulture,
- ii) The first digit (i.e. 1, 2, 3, and 4) represents the year of study. The second digit (i.e. 1, 2, 3, 4, 5, 6, and 7) refers to the subject discipline/matter defined as follows:

0 = Introductory Courses

1 = General and Principle Courses

2 = Basic Horticultural Courses

3 = Vegetable Crops

4 = Fruit Crops

5 = Post-harvest Management

6 = Ornamental Horticulture

7 = Experimentation and Research Projects.

- iii) The third digit shows the series of courses in a particular field.

9. Courses/ Units offered for the Programme

9.1 Schedule of Courses

a) University Common Core courses

CODE	TITLE	L	P	C.F
COMP 101	Introduction to Computer Applications	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0

(b) Schedule of courses organized on semester basis:

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGEN 170	Introduction to Drawing	15	30	2.0
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
HORT 101	Horticultural field Experience	0	60	2.0
HORT 111	Principles and Practices of Horticulture	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
	TOTAL	300	240	28.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 102	Principle of Entrepreneurship	45	0	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
ENSC 100	Environmental Education	30	30	3.0
HORT 101	Horticultural Field Experience I (Vegetables)	0	60	2.0
PHYS 103	General Physics	30	30	3.0
ZOOL 143	HIV AIDS and Society	45	0	3.0
	Total	225	210	20.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGRO 291	Statistics for Agriculture	45	0	3.0
ANSC 359	Principles of Animal Production	45	30	4.0
BOTA 241	Taxonomy of Higher Plants	30	30	3.0
BOTA 271	Plant Physiology I	30	30	3.0
COMP 101	Introduction to Computer Applications	45	0	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
HORT 201	Horticultural Field Experience II (Fruits)	0	60	2.0
HORT 212	Plant Identification	0	60	2.0
SOIL 350	Soil Fertility and Plant Nutrition	30	30	3.0
	Total	370	240	26.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
AGEN 174	Basic Farm Power Source and Utilization	15	30	2.0
AGRO 222	Plant Breeding	30	15	2.5
AGRO 233	Crop Entomology	30	30	3.0
AGRO 234	Weed Science	30	15	2.5
BIOC 204	Basic Biochemistry	30	30	3.0
HORT 201	Horticultural Field Experience II (Fruits)	0	60	2.0
HORT 213	Horticultural Crop Protection	30	30	3.0
HORT 214	Principles of Organic horticulture	30	30	3.0
HORT 221	Plant Propagation	30	30	3.0
	Total	225	270	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
AGEN 373	Farm Structures	30	30	3.0
HORT 363	Floriculture 1 (Major cut flowers)	30	30	3.0
AGEC 315	Agricultural Economics I	45	0	3.0
AGED 312	Technical Reporting and Writing	30	0	2.0
AGED 331	Rural Sociology	30	0	2.0
AGEN 371	Introduction to Agricultural Field Machines	30	30	3.0
BOTA 453	Plant Pathology	30	30	3.0
HORT 301	Horticultural Field Experience III (Floriculture)	0	60	2.0
HORT 332	Vegetable Crops I (Exotic)	30	30	3.0
	Total	255	210	24.0

ELECTIVE

FOST 415	Principles of Food Processing and Preservation	30	30	3.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
HORT 322	Biotechnology in Horticulture	30	15	2.5
AGEN 375	Soil and Water Management	30	30	3.0
AGED 334	Extension Education	45	0	3.0
AGEN 376	Irrigation and Drainage	30	30	3.0
HORT 301	Horticultural Field Experience III (Floriculture)	0	60	2.0
HORT 333	Vegetable Crops II (Indigenous)	30	30	3.0
HORT 342	Tropical and Sub-tropical Fruits	30	30	3.0
HORT 351	Post-harvest Physiology and Technology	30	30	3.0
HORT 371	Agricultural Experimentation	30	30	3.0
	Total	255	270	25.5

HORT 372	Field Attachment (8 weeks)	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F
AGEC 416	Agricultural Economics II	45	0	3.0
HORT 423	Horticultural Seed Production	30	30	3.0
AGRO 351	Annual Crops	30	30	3.0
HORT 401	Horticultural Field Experience IV (Ornamentals & Landscaping)	0	60	2.0
HORT 424	Plant Nursery Management	30	30	3.0

HORT 443	Temperate-Zone Fruits	30	30	3.0
HORT 464	Floriculture II (Outdoor cut flowers)	30	30	3.0
HORT 465	Ornamental Horticulture	30	30	3.0
HORT 475	Seminars and Research Projects I	0	60	3.0
HORT 473	Field Visits I	0	45	1.5
	Total	195	315	26.5

ELECTIVES

AGEC 422	Agricultural Project Planning Management	45	0	3.0
AGED 433	Extension Programme Planning and Implementation	30	0	2.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 221	Agricultural Value Chain Analysis & Mgt	45	0	3.0
AGBM 406	Human and Financial Resources Management	45	0	3.0
AGEC 452	Agricultural Law	45	0	3.0
HORT 401	Horticultural Field Experience IV (Ornamentals & Landscaping)	0	60	2.0
HORT 425	Greenhouse Management	30	30	3.0
HORT 434	Herbs and Spices	30	15	2.5
HORT 444	Industrial Crops	30	30	3.0
HORT 466	Landscape Construction & Maintenance	30	30	3.0
HORT 476	Seminars and Research Projects II	0	60	2.0
HORT 474	Field Visits II	0	45	1.5
	Total	255	285	26.5

ELECTIVE

AGEC 422	Agricultural Project Planning Management	45	0	3.0
ENSC 309	Environmental Impact Assessment	30	30	3.0
Grand Total		1995	2175	219

c). Course descriptions**HORT 101: Horticultural Field Experience I (Vegetables) (L/P: 0/120 C.F. 4.0) Y1S1 & Y1S2**

Students' field practical experience in production and marketing of vegetables. Activities to include site selection, land preparation, crop establishment and maintenance, harvesting, post-harvest handling and marketing.

HORT 111: Principles and Practices of Horticulture (L/P: 30/30, C.F. 3.0) Y1S1

History and development of agriculture in Kenya. Basic concepts and definitions in horticulture. Introduction to the Horticultural industry in Kenya including the regulatory authorities and emerging issues.. Ecological factors influencing plant growth and development. Horticultural production systems. Cultural practices and post-harvest handling of horticultural crop production. Horticultural cropping systems. Spacing and yield estimation of horticultural crops. Plant growing structures and growth media. Manipulation of crop environment to include temperature, light and moisture.

HORT 201: Horticultural Field Experience II (Fruits) (L/P: 0/120 C.F. 4.0) Y2S1 & Y2S2

Students' field practical experience in production and marketing of fruits. Activities to include site selection, land preparation, crop establishment and maintenance, harvesting, post-harvest handling and marketing.

HORT 212: Plant Identification (L/P: 0/60, C.F. 2.0) Y2S2

Identification and classification of important horticultural plants including fruits, vegetables, ornamentals, nuts, herbs, spices, medicinal plants and grasses. A general review of growth characteristics and use of common horticultural plants. *Prerequisites:* BOTA 241.

HORT 213: Horticultural Crop Protection (L/P: 30/30, C.F. 3.0) Y2S2

Principles of crop protection as applied in the field and greenhouse production. Pest control methods including biological, cultural, chemicals, physical and integrated pest management. Case studies and diagnosis of selected horticultural pests and diseases. One field trip. *Prerequisites:* AGRO 233, AGRO 234.

HORT 214: Principles Organic Production of Horticultural Crops (L/P: 30/30, C.F. 3.0) Y2S2

Principles and practices of organic farming. Benefits of organic farming compared to conventional practices. Principles of Good Agricultural Practices (GAPs). Agricultural codes of conduct and regulations including Global Gap, Uregap, and Kenyan Gaps etc. in flowers, fruits and vegetable production. Horticultural crop certification and accreditation. Urban and Peri-urban Horticulture: -. Case studies of organic farming systems. One field trip. *Prerequisites:* HORT 111 or AGRO 102.

HORT 221: Plant Propagation (L/P 30/30, C.F. 3.0) Y2S1

Principles and practices of plant propagation. Seed and vegetative plant propagation methods. Environmental factors affecting plant propagation. Propagation structures, containers and media. Introduction to micro propagation and rapid multiplication techniques. Two field trips. *Prerequisites:* HORT 111.

HORT 301: Horticultural Field Experience III (Floriculture) (L/P: 0/120 C.F. 4.0) Y3S1 & Y3S2

Students' field practical experience in production and marketing of cut-flowers. Activities to include site selection, land preparation, crop establishment and maintenance, harvesting, post-harvest handling and marketing.

HORT 322: Biotechnology In Horticulture (L/P: 30/15, C.F. 2.5) Y2S2

Introduction to key concepts and definitions in plant biotechnology. Importance of Biotechnology in horticulture. Basic principles of plant tissue culture techniques including micro propagation and rapid multiplication techniques, in vitro and ex-vitro cultures. Case studies on selected genetically engineered horticultural plants. Handling and operation of biotechnology equipment and apparatus. *Prerequisites:* HORT 111, HORT 221, BOTA 271

HORT 332: Vegetable Crops I (Exotic) (L/P: 30/30, C.F. 3.0) Y3S1

Principles and practices of vegetable growing. Production of commercial vegetable crops to cover botany, economic importance, ecology, cultural practices, crop protection, harvesting, post-harvest handling, and marketing. Crops include: French beans, Snow peas, garden peas, brassicas (kale, cabbage, cauliflower), Solanaceae (tomato, Irish potato, capsicum, brinjals), onions, carrots, lettuce, spinach, sweet corn, baby corn, Cucurbits (melons, cucumber), and asparagus. One field trip. *Prerequisites:* HORT 111, HORT 212, HORT 221.

HORT 333: Vegetable Crops II (Traditional) (L/P: 30/30, C.F. 3.0) Y3S2

Production of traditional/indigenous African vegetable crops of commercial potential to cover botany, economic importance, ecology, crop improvement, cultural practices. Vegetables include: cowpea, black nightshade, amaranthus, spider plant, cassava, sweet

potato, *Crotolaria*, *Cochorus*, *Dolichos* and green grams, okra, cucurbits. *Prerequisites: HORT 332.*

HORT 342: Tropical and Sub-Tropical Fruits (L/P: 30/30, C.F. 3.0) Y3S2

Principles and practices of fruit growing. Production of tropical and sub-tropical fruits, covering economic importance, botany, ecology, physiology, culture, crop improvement and protection, harvesting, handling and marketing. Fruits include: avocado, banana, citrus, guava, mango, passion fruit, papaya and pineapple. Two field trips. *Prerequisites: HORT 111, HORT 212, HORT 221.*

HORT 351: Post-Harvest Physiology and Tech. of Hort Crops (L/P: 30/30, C.F. 3.0) Y3S2

Post-harvest losses and preharvest factors affecting postharvest quality of horticultural produce. Maturity and maturity indices. Postharvest physiology, ethylene biosynthesis and management. Pack house operations, storage, transportation and handling of flowers, fruits, vegetables and other horticultural products. Quality assurance and control operations. Food Safety: - Consumer awareness to food safety issues; food additives; contamination of fresh produce and microbiological safety; Traceability. Two field trips. *Prerequisites: HORT 331/332, HORT 341/342.*

HORT 363: Floriculture I (Major Cutflowers) (L/P: 30/30, C.F. 3.0) Y3S1

Principles and practices of cut flower growing. Production of major cut flowers, covering botany, ecological requirements, propagation, cultural practices, plant improvement, and marketing. Flowers will include: Roses, alstroemeria, carnation, calla lilies, tulips, statice, and others. One field trip. *Prerequisites: HORT 111, HORT 212, HORT 221*

HORT 371: Agricultural Experimentation (L/P: 30/30, C.F. 3.0) Y3S2

Review of basic statistics as they relate to agricultural experimentation. Principles and procedures of field

experimentation. Planning, layout, execution and reporting of an experiment. Common experimental designs, including completely randomized, randomized complete block, Latin square, split-plot and split-block designs. Data transformations, and factorial experiments. *Prerequisite: AGRO 291.*

HORT 372: Field Attachment (L/P: 0/120, C.F. 4.0) Y3S2

Practical training in agricultural extension services, private institutions or in research stations to enable students gain experience in agricultural development activities. The attachment will be carried out over a period of Eight Weeks after the end of the Third Year. *Prerequisites: HORT 332/342/362, HORT 351.*

HORT 401: Horticultural Field Experience IV (Ornamentals and Landscaping) (L/P: 0/120 C.F. 4.0) Y4S1 & Y4S2

Students' field practical experience in production and marketing of ornamental plants and landscaping. Activities to include landscaping and site selection, land preparation, establishment, maintenance, and marketing of ornamental plants.

HORT 423: Horticultural Seed Production (L/P: 30/30, C.F. 3.0) Y4S1

An overview of the seed industry in Kenya. Seed physiology and biology. Seed formation and development. The effects of environmental factors on seed germination and development. Seed enhancement. Principles of seed production. Production of vegetable, flower, herb, spice and fruit seeds. Seed processing, storage, quality control and certification. Intellectual property rights, seed laws and regulations. International seed trade.

Prerequisite: HORT 111, HORT 221.

HORT 424: Plant Nursery Management (L/P: 30/30, C.F. 3.0) Y4S1

Classification of nurseries. Principles and practices of nursery establishment and management, including site

selection, physical facilities, labour and financial management, and nursery stock inventory control. Nursery plant production, handling and marketing. Nursery certification procedures. *Prerequisites: HORT 111, HORT 212, HORT 221*

HORT 425: Greenhouse Management (L/P: 30/30, C.F. 3.0) Y4S2

Protected cultivation; greenhouse designs, structures and construction. Greenhouse cladding materials. Greenhouse climate; temperature, light, humidity and CO₂ management. Computerised greenhouse climate regulation. Greenhouse root media and substrates; irrigation, nutrition and pest management in greenhouse crops. Plant growth regulation in greenhouse environment. Greenhouse production of selected cut flowers, fruits and vegetables. Economic analysis of greenhouse crop production. *Prerequisite: HORT 111; HORT 213.*

HORT 434: Herbs and Spices (L/P: 30/15, C.F. 2.5) Y4S2

Production and utilization of herbs and spices of commercial value. Crops include Anise, celery, coriander, dill, fennel, garlic, ginger, marjoram, mint, oregano, parsley, black pepper, clove, rosemary, vanilla, thyme, cinnamon, cardamom, and others. *Prerequisites: HORT 111, HORT 221.*

HORT 443: Temperate-Zone Fruits (L/P: 30/30, C.F. 3.0) Y4S1

Production of temperate-zone fruits, covering importance, botany, ecology, physiology, culture, crop improvement and protection, harvesting, post-harvest handling and marketing. Fruits include apples, pears, peaches, plums, grapes, raspberries, blackberries, and strawberries. *Prerequisites: HORT 342.*

HORT 444: Industrial Crops (L/P: 30/30, C.F. 3.0) Y4S2

History, ecological requirements, distribution, economic importance, genetic improvement, agronomy (cultural

practices), protection, harvesting, storage and processing of major perennial crops including coffee, tea, cocoa, pyrethrum, cinchona, neem, cashew nuts, coconuts, and macadamia nuts. *Prerequisites:* HORT 111 or AGRO 102.

HORT 464: Floriculture II (Outdoor Cutflowers) (L/P: 30/30, C.F. 3.0) Y3S2.

Production of summer cut flowers, covering botany, ecological requirements, propagation, cultural practices, plant improvement, and marketing. Summer cut flower arrangement and flower value addition. Flowers will include: Lisianthus, Ornithogalums, gladiolus, gypsophilla, mollucella, orchids, sunflowers, and others. One field trip. *Prerequisites:* HORT 363.

HORT 465: Ornamental Horticulture (L/P: 30/30, C.F. 3.0) Y4S1.

Ornamental industry in Kenya; classification and functions of ornamental plants; arboriculture; establishment and maintenance of herbaceous perennials and groundcovers; bedding plant production systems, scheduling and growth regulation; turf culture; Foliage/indoor plant production, acclimatization, installation and maintenance. Establishment and maintenance of rock and aquatic plants. Principles and elements of floral design; interiorscaping. *Prerequisites:* HORT 111, HORT 212, HORT 221, HORT 424.

HORT 466: Landscape Design, Construction And Maintenance (L/P: 30/30, C.F. 3.0) Y4S2

Definitions; history, scope and objectives of landscaping; Categories of landscapes, types of landscaping; Landscape site analysis; designing landscape plan, drawing equipment and techniques; design software; principles of landscape design; Planting designs; hardscapes and landscape enrichments; Residential landscaping; Design and construction of home, public, rock and water gardens; Landscape maintenance. *Prerequisites:* AGEN 111, HORT 465

HORT 473: Field Visits I (L/P: 0/45, C.F. 1.5) Y4S1

Visits to the farming areas, industrial enterprises, research stations and laboratories related to horticulture. Five whole day visits during the semester. *Prerequisites:* HORT 332, HORT342, HORT363.

HORT 474: Field Visits II (L/P: 0/45 C.F. 1.5) Y4S2

Visits to the farming areas, industrial enterprises, research stations and laboratories related to horticulture. Five whole day visits during the semester. *Prerequisites:* HORT 332, HORT342, HORT363.

HORT 475: Seminars And Research Projects I (L/P: 0/60, C.F. 2.0) Y4S1

Topics will include current trends and development in the Horticultural industry. Guest speakers will be invited. Each student will be expected to give one seminar on a selected area of horticulture and write a research proposal on a topic related to horticulture. Grading will be based on oral presentation of the seminar and proposal and a comprehensive report. *Prerequisite:* HORT 371 and HORT 332, HORT 342, HORT363.

HORT 476: Seminars And Research Projects II (L/P: 0/60, C.F. 2.0) Y4S2

Topics will include current trends and development in the Horticultural industry. Guest speakers will be invited. Each student will be expected to give one seminar on a selected area of horticulture and conduct research on the proposal developed under HORT 475. Grading will be based on the seminar and oral presentation of the findings of the research project and a comprehensive report. *Prerequisite:* HORT 475

9.2 SERVICE COURSES

HORT 331: General Vegetable Production (L/P: 45/30, C.F. 4.0) Y3S1

Principles of vegetable production. Economic importance, Ecology, cultural Practices, harvesting, Postharvest handling and marketing of selected exotic and indigenous vegetable crops. *Prerequisite:* HORT 111 or AGRO 102.

HORT 341: General Fruit Production (L/P: 45/30, C.F. 4.0) Y3S2

Principles of fruit production. Economic importance, Ecology, cultural Practices, harvesting, Postharvest handling and marketing of selected tropical, subtropical and temperate fruit crops. *Prerequisite:* HORT 111 or AGRO 102.

HORT 361: General Ornamental and Landscape Horticulture (L/P: 30/30, C.F. 3.0)

Introduction to the ornamental horticulture industry in Kenya. Trends of the ornamental horticulture industry in Kenya. Role of ornamental Horticulture in the environment and economy. Principles of cut flower production. Production and management principles of ornamental plants. Basics of landscape design and maintenance. Postharvest handling and marketing of ornamental plants. *Prerequisite:* HORT 111 or AGRO 102.

HORT 362: Interiorscaping and Ornamental Horticulture (L/P: 30/30, C.F. 3.0) Y3S2

Introduction to the ornamental industry in Kenya. Functional, aesthetic and economic roles of ornamental plants. Principles of cut flower production. Establishment and management of ornamental plants. Basics of institutional and residential landscape planning and maintenance. Postharvest handling and marketing of ornamental plants.

9.3 Matrix aligning courses/units to Programme learning outcomes

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Relate the importance of horticulture to the national economy with particular reference to the roles played by vegetable and fruit crops as well as ornamental plants in meeting the family needs	• Principles and Practices of Horticulture • Horticultural Experience I	3.0 4.0	• Plant Propagation • Plant Identification • Horticultural Experience II • Principles of Organic Horticulture	3.0 1.5 4.0 3.0	• Vegetable Crops I • Vegetable Crops II • Tropical and Sub-tropical Fruits • Floriculture 1 • Horticultural Experience III • Postharvest Physiology and Technology of Horticultural Crops • Field Attachment	3.0 3.0 3.0 3.0 4.0 3.0 4.0	• Ornamental Horticulture • Herbs and Spices • Floriculture II • Industrial Crops • Horticultural Experience IV • Horticultural Production • Field Visits I • Field Visit II • Temperate zone Fruits • Landscape design, construction & maintenance	3.0 2.5 3.0 3.0 4.0 3.0 1.5 1.5 3.0 3.0
PLO 2: Contribute to improving production of horticultural crops, enhancing marketing of horticultural crop produce and public awareness of aesthetic value of ornamental plants;	• Horticultural Experience I • Principles and Practices of Horticulture • General Botany • Introduction to Economics • Introduction to Soil Science • General Microbiology • General Genetics	2.0 3.0 3.0 3.0 3.0 3.0 3.0	• Plant Propagation • Horticultural Crop Protection • Principles of Organic horticulture • Biotechnology in Horticulture • Plant Breeding • Crop entomology • Weed science • Taxonomy of Higher Plants • Plant Physiology I • Basic Biochemistry • Horticultural Experience II • Plant Identification • Soil Fertility and Plant Nutrition • Basic Farm Power Source and Utilization • Principles of Organic Horticulture	3.0 3.0 3.0 3.0 2.5 3.0 2.5 3.0 3.0 3.0 4.0 2.0 3.0 2.0 3.0	• Vegetable Crops I • Vegetable Crops II • Tropical and Sub-tropical Fruits • Floriculture 1 • Post-harvest Physiology and Technology • Agricultural Economics I • Plant Pathology • Field Attachment • Horticultural Experience III • Agricultural value chain analysis and management • Biotechnology in Horticulture • Irrigation and drainage	3.0 3.0 3.0 3.0 3.0 3.0 4.0 4.0 4.0 3.0 2.5 3.0	• Ornamental Horticulture • Herbs and Spices • Floriculture II • Agricultural Economics II • Horticultural Seed Production • Temperate-Zone Fruits • Horticultural Experience IV • Annual crops • Plant nursery management • Greenhouse management • Industrial Crops	3.0 2.5 3.0 3.0 3.0 3.0 4.0 3.0 3.0 3.0 3.0 3.0

PLO 3: Contribute in the setting up and running of private horticultural enterprises	• Principle of Entrepreneurship Skills • Communication Skills • Introduction to Economics • Horticultural Field Experience I	3.0 3.0 3.0 4.0	• Plant Identification • Horticultural Field Experience II • Introduction to Computer Applications	2.0 4.0 3.5	• Agricultural Value Chain Analysis & management • Field Attachment • Horticultural Field Experience III • Farm Structures • Agricultural Economics I • Technical Reporting and Writing • Agricultural Field Machines • Soil and Water Management • Irrigation and Drainage • Vegetable Crops I • Vegetable Crops II • Major Cut Flowers	3.0 4.0 4.0 3.0 3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0	• Human and Financial Resources Management • Agricultural Law • Landscape Construction & Maintenance • Plant Nursery Management • Greenhouse Management • Horticultural Field Experience IV • Agricultural Economics II • Outdoor Cut Flowers • Ornamental Horticulture • Field Visits • Agricultural Project and Planning Management • Herbs and Spices • Industrial Crops • Environmental Impact Assessment	3.0 3.0 3.0 3.0 3.0 4.0 3.0 3.0 3.0 3.0 3.0 2.5 3.0 3.0
PLO 4: Integrate production of horticultural crops with other farm enterprises	• Principles and Practices of Horticulture • Introduction to Soil Science • Environmental Education • HIV AIDS and Society	3.0 3.0 3.0 3.0	• Principles of Animal Production • Principles of Human Nutrition • Soil Fertility and Plant Nutrition • Basic Farm Power Source and Utilization	4.0 3.0 3.0 3.0	• Farm Structures • Rural Sociology • Introduction to Agricultural Field Machines • Soil and Water Management • Irrigation and Drainage • Extension Education • Agricultural Value Chain Analysis & management • Agricultural Economics I • Principles of Food Processing and Preservation • Field Attachment	3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0	• Annual crops • Seminars and Research Projects I • Seminars and Research Projects II • Agricultural Law • Field Visits I • Field Visits II • Agricultural Economics II • Human and Financial Resources Management	3.0 2.0 2.0 3.0 1.5 1.5 3.0 3.0
PLO 5: Carry out scientific research on various facets of horticultural and other crops	• Horticultural Field Experience I	4.0	• Statistics for Agriculture • Horticultural Field	3.0	• Agricultural Experimentation	3.0	• Seminars and Research Projects I	2.0 2.0

			Experience II		• Horticultural Field Experience III	4.0	• Seminars and Research Projects II • Horticultural Field Experience IV	4.0
PLO 6: Promote domestic, urban and institutional landscapes through design, development and maintenance	• Introductory Drawing • Principles and Practices of Horticulture • Environmental Education	2.0 3.0 3.0	• Introduction to Computer Applications • Plant Propagation • Taxonomy of Higher Plants • Plant Identification	3.0 3.0 3.0 2.0	• Introduction to Agricultural Field Machines • Soil and Water Management • Irrigation and Drainage	3.0 3.0 3.0	• Plant Nursery Management • Ornamental Horticulture • Landscape Construction & Maintenance	3.0 3.0 3.0
PLO 7: Promote environmental conservation by encouraging and effecting agricultural practices that minimize soil erosion and pollution.	• Environmental Education • Introduction to Soil Science	3.0 3.0	• Soil Fertility and Plant Nutrition • Horticultural Crop Protection • Weed Science • Principles of Organic Horticulture	3.0 3.0 2.5 3.0	• Soil and Water Management • Irrigation and Drainage • Field Attachment	3.0 3.0 4.0	• Greenhouse Management • Ornamental Horticulture • Field Visits I • Field Visits II • Landscape Construction & Maintenance • Environmental Impact Assessment	3.0 3.0 1.5 1.5 3.0 3.0

BACHELOR OF SCIENCE IN SOIL SCIENCE AND LAND USE MANAGEMENT

1. Philosophy

The programme influences human development through integrated soil environment and land use management training and generation. It also enables acquisition; preservation and dissemination of knowledge and skills for enhance agricultural productivity under a changing climate.

2. Rationale

Soil processes are integral in forming and regulating the natural environment, dictating how land is developed, thus influencing the distribution of people worldwide and governing where plants grow. Although soil is far more complex than air or water, it is sometimes the forgotten part of the environmental picture. This is a dangerous oversight not only because soils affect our future food supply but they also offer important ecosystem services. High-quality soils promote the growth of plants and microbial activity and prevent water and air pollution by resisting erosion, and by degrading and/or immobilizing agricultural chemicals, organic wastes, and other potential pollutants; The major threat to soil is degradation which results from unsustainable land uses or from processes arising from human activities such as accelerated erosion, deterioration of the soil's physical chemical and biological properties, or long-term loss of natural vegetation. There is therefore a need for well-trained personnel with relevant knowledge and skills on how to maintain soil resources for sustainable land use and environmental conservation.

3. Goal of the Programme

The main objective of the programme is to develop human resource capacity with practical and conceptual skills necessary for the sustainable use of soil resources.

4. Programme Learning Outcomes

At the end of the programme, the graduates should be able to:

- i) Practice sustainable management of agricultural soils and environmental services.
- ii) Carry out reclamation and remediation of degraded and contaminated soils.
- iii) Advice on policy issues pertaining to land use management.
- iv) Advice on the impacts of land use on water and soil quality and the use of soil for agricultural and municipal waste management.
- v) Carry out research, consultancy and outreach in relevant areas in soil environment and land use management.
- vi) Undertake postgraduate training in soil, environmental sciences and related fields.

5. Mode of Delivery

The programme shall be full time or part-time face-to-face.

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission, applicants must satisfy the minimum entry requirements stipulated in the Egerton University statutes.

- i) In addition, applicants must have passed the KCSE or any other equivalent qualification recognized by Egerton University Senate with at least grades C+ in Biology or Agriculture.; C+ in Chemistry; C+ in Mathematics or Physics or Geography, and C+ in English or Kiswahili
- ii) Admission will be granted to Diploma holders in agriculture or related fields who have passed with at least a CREDIT or its equivalent from Universities or Colleges recognized by Egerton University Senate.

6.2 Regulations of Credit Transfer

Credit transfer shall be done in adherence to Egerton University Statute 36 (3) of 2013.

6.3 Course Requirements

The Bachelor of Science degree in SELUM shall be four academic years each with two semesters of 15 teaching and 2 examination weeks. To graduate with a Bachelor of Science degree in SELUM, a student should have studied and passed all scheduled courses, which includes the University common core courses approved by Egerton University Senate.

6.4 Student Assessment Policy

Examinations shall be graded on the basis of percentage marks consisting of thirty per cent (30%) as continuous assessment and seventy per cent (70%) as final examinations.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6).

6.6 Examination Regulations

All examinations for this programme will be conducted in accordance with the examination regulations as stipulated in the Egerton University Statutes 36 (36).

6.7 Moderation of Examination

Departments shall establish Moderating Committees chaired by the Chairperson of Department and consisting of at least three senior academic staff who shall moderate draft examination papers; in the absence of an External Examiner. All moderation is as per ISO procedures EU/AA/OP/O7.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses (188 CFs) within the stipulated period.

6.9 Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36 (17b) of 2013.

7. Course Evaluation

The course will be evaluated using a course evaluation tool that will capture the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments. The teaching effectiveness evaluation will be done following ISO procedures EU/VC/OP/04

8. Management and Administration of the Programme

8.1 The host department will be Crops, Horticulture and Soils in the Faculty of Agriculture, Egerton University. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programmes will undergo an internal programme evaluation at the end of each programme's academic cycle following ISO procedures for quality assurance of academic programmes (EU/VC/4B/05). This programme will be benchmarked with related local and/or regional programmes from Universities recognized by Egerton University Senate.

8.3 Course Coding

The Code SOIL refers to soil science as a core discipline. The first digit refers to the year of study. The second digit represents the sub discipline or specialization area as follows:

0- Introductory/ basic principles

1- Physics

2- Chemistry

3- Biology

4- Genesis, classification and mapping

5- Fertility and plant nutrition

6- Management

7- Interdisciplinary

8- Biometry and experimentation, projects, seminars, field visits, field attachment

v) The third digit is a serial number for the various courses within a particular sub- discipline

9. Courses/ Units Offered for the Programme

9.1 Schedule of Courses

a) University Common Core Courses:

CODE	TITLE	L	P	CF
COMP 101	Introduction to Computer Applications	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introductory Economics	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		255	45	18.5

b) The Schedule of Courses Organized on Semester Basis:

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGRO 102	Introduction to Crop Production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		270	105	21.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGEN 174	Basic Farm Power Source and Utilization	15	30	2.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
ECON 100	Introductory Economics	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
HORT 111	Principles and Practices of Horticulture	30	30	3.0
PHYS 103	General Physics	45	0	3.0
TOTAL		270	165	23.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGRO 211	Crop Environment and Physiology	30	30	3.0
AGRO 291	Statistics for Agriculture	45	0	3.0
ENSC 201	Environment, Peace and Gender	30	30	3.0
NARE 201	Introductory Geology	30	30	3.0
SOIL 210	Soil Physics	30	30	3.0
SOIL 220	Soil Chemistry	30	30	3.0
SOIL 230	Soil Biology	30	30	3.0
SOIL 270	Soil Pollution	30	30	3.0
TOTAL		255	210	24.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
BIOC 204	Basic Biochemistry	30	30	3.0
SOIL 240	Soil Mineralogy and Morphology	30	30	3.0
SOIL 260	Agricultural Water Management	30	30	3.0
SOIL	Waste Management in	30	30	3.0

261	Soils			
SOIL 271	Soil Plant Water Relations	30	30	3.0
SOIL 272	Forest and Wetland Soils	30	30	3.0
ZOOL 210	Ecology	30	30	3.0
AGBM 221	Agricultural Value Chain Analysis and Management	45	0	3.0
TOTAL		255	210	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGED 331	Rural Sociology and Development	30	0	2.0
AGEN 374	Agro climatology	30	30	3.0
AGRO 351	Annual Crops	30	30	3.0
AGRO 391	Agricultural Experimentation	30	30	3.0
CHEM 351	Environmental Chemistry I	45	0	3.0
GEOG 221	Introduction to Remote Sensing and GIS	30	30	3.0
SOIL 330	Soil Biotechnology	30	30	3.0
SOIL 340	Soil Characterization and Classification	30	30	3.0
SOIL 350	Soil Fertility and Plant Nutrition	30	30	3.0
TOTAL		285	210	26.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGEC 321	Resource Economics	30	30	3.0
AGED 334	Extension Education	30	0	2.0
AGEN 371	Introduction to Agricultural Field Machines	30	30	3.0
AGEN 376	Irrigation and Drainage	30	30	3.0
ANSC	Principles of Livestock	45	30	4.0

359	Production			
AGRO 384	Agro biodiversity and Ecosystem Management	30	30	3.0
SOIL 351	Integrated Organic Farming Systems	30	30	3.0
SOIL 380	Research Methods	45	0	3.0
TOTAL		270	180	24.0

AFTER YEAR 3 SEMESTER 2

SOIL 381	Field / Industrial Attachment (8 weeks)	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
ECON 414	Entrepreneurship Economics	45	0	3.0
ENSC 309	Environmental Impact Assessment and Audit	30	45	3.5
ENSC 408	Environmental Law and Policy	45	0	3.0
SOCI 402	Environmental Sociology	45	0	3.0
SOIL 440	Land Evaluation and Land Use Planning	30	30	3.0
SOIL 450	Fertilizer Technology and Use	30	30	3.0
SOIL 470	Soil, Plant and Water analysis	15	45	2.5
*SOIL 480	Research Project I	15	30	2.0
TOTAL		255	180	23.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
ENSC 401	Management of Arid and Semi-Arid Lands	30	30	3.0
GEOG 324	Geographic Information System	30	30	3.0
SOIL 460	Soil Degradation and Conservation	30	30	3.0
SOIL 461	Farm-level Nutrient Flows and Management	30	30	3.0
SOIL	Soils in the Global	30	0	2.0

471	Environment			
SOIL 480	Research Project II	0	60	2.0
SOIL 481	Seminars	30	0	2.0
TOTAL		225	180	18.0
GRAND TOTAL		2115	1560	188.0

*SOIL 480 is a split course of CF 4 spread over Y4S1 and Y4S2

c) COURSE DESCRIPTIONS

SOIL 100: Introduction to Soil Science (30/30: CF3.0) Y1S1

Soil components; Rocks and minerals in relation to soil formation; Soil forming factors, processes and profile development; Soil organic matter and soil organisms; Soil colloids; Soil cation exchange and percentage base saturation; Soil reaction; Soil Structure; Soil Texture; Bulk density; Water and its movement in the soils; Soil tillage; Soil degradation and conservation; Soil survey and classification.

SOIL 210: Soil Physics (L/P30/30 CF 3.0) Y2S1

Soil as disperse three phase system, volume and mass relationships of soil constituents; soil air and aeration; soil temperature and heat flow; soil water and soil water movement, water balance, crop water use and soil water management. **Prerequisite SOIL 100**

SOIL 220: Soil Chemistry (30/30: CF 3.0) Y2S1

Properties of inorganic and organic colloids; Chemical equilibrium; Charge development in soils; Soil acidity and liming; Redox reactions in soils and their significance in plant growth; Chemistry of saline and sodic soils. **Prerequisite SOIL 100**

SOIL 230: Soil Biology (L/P 30/30: CF 3.0) Y2S1

Soil as a habitat for organisms; Soil environment and its effect on soil organisms; Important soil organisms-microflora, micro fauna, mesofauna and macrofauna - as related to soil ecology and plant growth; methods for

studying soil organisms and their activities; Effects of biota on ecosystem functions-relation of microorganisms to important mineral transformations in soil, nutrient cycling and biochemical processes in the soil environment;; Nitrogen fixation by free living and symbiotic associations; Mycorrhizal association and nutrient uptake; Rhizosphere; Microbial ecology-importance of biological equilibrium and significance of soil microbes to environmental quality; Pesticide biodegradation and environmental pollution; introduction to bio-remediation; biofertilizers; academic visits to institutions dealing with biological products.

Prerequisite SOIL 100

SOIL 240: Soil Mineralogy And Morphology (30/30: CF 3.0) Y2S2

Mineralogy: Composition, structure, classification, identification, origin, occurrence and significance of soil minerals with emphasis on primary weatherable silicates, layer silicate clays and sesquioxides; Properties of rock materials (igneous, sedimentary and metamorphic) found in soil and parent material, their formation and classification; Morphology: Soil profile; Soil horizon evolution processes and the macro (field) and micro (laboratory) features; Morphological characteristics conditioned by soil forming factors. One field trip **Prerequisite NARE 201.**

SOIL 260: Agricultural Water Management (30/30: CF 3.0) Y2S2

Water management principles applied to agriculture; Hydrologic cycle, runoff, surface and sub-surface drainage; Soil conservation measures to reduce erosion and sedimentation; Irrigation; Pond construction; Open channel flow; Water rights and environmental laws pertaining to water management; Economic and physical factors influencing irrigation planning; Determination of crop water requirements; Crop water uptake, use and availability; Review of water application methods; Salinity problems in irrigation; Drainage functions, requirements and field methods;

Field visits to irrigation and drainage project sites.

Prerequisite SOIL 220

SOIL 261: Waste Management in Soils (30/30: CF 3.0) Y2S2

Types of wastes; Theory and consideration of land use for waste disposal and surface application of manure, sewage sludge and grey water; Contamination of soils, surface water and ground water; Methods of controlling soil contamination by wastes and enhancing organic compound degradation; Efficacy evaluation of wastes in soils.

SOIL 270: Soil Pollution (30/30: CF 3.0) Y2S1

Concept of environmental degradation and pollution; Pollutants in the soil environment: heavy metals, pesticides, fertilizers, petroleum products, detergents, sewage sludge, manures, natural toxins, microbial contaminants; Point and diffuse pollution: sorption/desorption, speciation, transport, volatilization and uptake of contaminants; Effect of contaminants on soil organisms (plants and soil organisms); Soil pollution and human health; Risk assessment for soil and ground water; Principles for cleaning and remediation of polluted soils; Status of soil pollution in Kenya; Water pollution: industrial, domestic and agricultural sources; Control of water pollution.

SOIL 271: Soil Plant Water Relations (30/30: CF 3.0) Y2S2

Soil-plant-atmosphere continuum; Path of applied water and solutes through the soil- water-plant system; Photosynthesis and respiration; Responses of plants to water and aeration stress; Water in the soil: Physical properties of water; Soil water potential, soil water characteristic curves; Evapotranspiration: factors influencing rates of evaporation and transpiration; Energy balance and aerodynamic approaches; estimating water requirement for crops. **Prerequisite SOIL 220.**

SOIL 272: Forest and Wetland Soils (30/30: CF 3.0) Y2S2.

Evolution of Forest Soils: Nutrient cycling in forest ecosystems; Forest floor and forest soil biology; Forest management activities and their effect on forest soils; Role of forest soils in global climate change; Wetland Soils and their characteristics: Bogs, marshes; mucks; fens, moors, peats; Occurrence and importance in the ecosystem; Biogeochemical cycles in wetlands; Use and identification of hydric soils; hydric soil field indicators; Interconnectivity between vegetation, landscape and soils.

SOIL 330: Soil Biotechnology (L/P 30/30: CF 3.0) Y3S1

Introduction to soil biotechnology; Role of organisms in soil biotechnology; Molecular methods for the detection of soil organisms in the environment; Innovative applications of soil biotechnology and conditions for successful implementation; Fate and survival of introduced organisms in the soil environment; Molecular mechanisms of biological processes in waste treatment systems and biological risk assessment; Genetically modified organisms; Pros and cons of soil biotechnology; Bioinformatics in agriculture; Academic visits to institutions dealing with application of soil biotechnology. **Prerequisite BIOC 204, SOIL 230.**

SOIL 340: Soil Characterization and Classification (30/30: CF 3.0)

Soil survey: types and procedures; Soil profile description; Adequacy of soil databases for classification, updating and upgrading soil databases; Worldwide soil classification systems (FAO, WRB and USDA Soil Taxonomy): historical development, concepts, correlation and use in classifying soils; Local applications of soil survey in Kenya; Properties, occurrence, distribution, use and management of major soils in Kenya. One field trip. **Prerequisites SOIL 100, SOIL 211 and SOIL 240.**

SOIL 350: Soil Fertility and Plant Nutrition (30/30: CF 3.0) Y3S1

Essential plant nutrients and their availability in soil; Essential elements and their influence on plant growth; Nutrient uptake by plants; Physiological functions of essential elements in plants; Deficiency symptoms and toxicity; Soil amendments, organic matter and sustainability; Manure and inorganic fertilizers: Methods of application and fate of fertilizers in the soil; Crop response curves and fertilizer use recommendation. *Prerequisite SOIL 100*

SOIL 351: Integrated Organic Farming Systems (30/30: CF 3.0) Y3S2

Definition of organic farming and its comparative analysis with respect to benefits and environmental sustainability; Soil quality indicators; Organic farming techniques: multiple cropping and agro-forestry, rotations, cover crops and green manures, composting, manure, commercial organic fertilizers; organic amendments, biological, plant and animal by products; Characteristics of organic fertilizers; Conservation tillage: organic farming tillage dilemma, minimum tillage, mulch tillage; Integrated plant and soil protection; Integration of livestock; Certification and marketing of organic produce.

SOIL 380: Research Methods (45/0: CF 3.0) Y3S2

Soil environment research issues; Tools of research; Data collection and analysis; Preparation and presentation of scientific information in written and oral formats; Hands-on experience on computer packages used in data interpretation e.g. Statistical Analysis System (SAS) Computer Package, Genstat, Statistical Package for Social Scientists (SPSS), Statistica. *Prerequisite AGRO 391.*

SOIL 381: Field/Industrial Attachment (0/120: CF 4.0)

Students will be attached to organizations that deal with soil environmental issues, Wastewater treatment works,

Agricultural Research Institutions and Agricultural Firms. Students will prepare a technical report after their attachment. Supervision shall be undertaken by the organization's supervisor and departmental academic staff. The attachment will be carried out over a period of eight weeks after the end of the third year.

SOIL 440: Land Evaluation and Land Use Planning (30/30: CF 3.0) Y4S1

Land evaluation: process in land use planning, data sources for land evaluation, basic concepts and procedures; Land suitability classification, productivity estimation, simulation and crop growth Modeling; Land evaluation and decision support systems. *Prerequisites SOIL 341, AGEC 321.*

SOIL 450: Fertilizer Technology and Use (30/30: CF 3.0) Y4S1

Source, use and properties of fertilizer materials (including organic fertilizers); Potential for heavy metal accumulation following fertilizer or amendment application; Calculation of Maximum allowable metal levels for fertilizers, fertilizer manufacturing processes and forms; Practical manufacture of fertilizer and blending; Crop specific fertilizer formulation. Visits to fertilizer blending/manufacturing plants. *Prerequisite SOIL 351.*

SOIL 460: Soil Degradation and Conservation (30/30: CF 3.0) Y4S2

Soil degradation: definition, types, causes, effects and control; Soil conservation: definition, methods, effect of conservation practices on soil properties and the plant root environment. State of soil degradation and current government policies on soil conservation in Kenya. *Prerequisite SOIL 100.*

SOIL 461: Farm-Level Nutrient Flow and Management (30/30: CF 3.0) Y4S2

Comprehensive review of nutrient flows: outflows from the farm, inflows to the farm and interflow within the

farm; Soil nutrient balances and socio economic indicators at farm level; Technology development for integrated nutrient management; Soil fertility management and policy implications on nutrient management in agro-ecosystems. *Prerequisite SOIL 351.*

SOIL 470: Soil, Plant and Water Analysis (15/45: CF 2.5) Y4S1

Introduction to quantitative chemical analysis; Chemical analytical instrumentation as applied to the analysis of water, waste water, soil, soil extract and plant tissue samples; Fertilizer recommendations and reporting of analysis; Fertilizer analysis. *Prerequisite SOIL 351.*

SOIL 471: Soil in the Global Environment (30/0: CF2.0) Y3S2

Impact of mankind on soil environmental systems; Functions of the soil resource in the global environment; Soils and global climate change; Soils and the production of green house gases; Global aspects of soil biodiversity; Urban soil and environment; Policy and social forces in soil conservation; The World Soil Charter; Climate change implications for soil sustainability; Prospects for sustainable soil management.

SOIL 480: Research Project I & II (15/90: CF 4.0) Y4S1 and Y4S2

The course will be initiated in the first semester of the fourth year and concluded at the end of the second semester. The first semester will involve: Guidance on research proposal writing, presentation techniques and preparation of visual aids by an academic member of the Department; Students will present the written research proposal orally. The second semester will involve: Implementation of problem solving research activity developed from the proposal; Students shall present the results obtained orally and write a report after conclusion of the research project.

SOIL 481: Seminars (30/0: CF 2.0) Y4S2

Review and discussion of current topics in crop science, soil science, agronomy and natural resource management; Lectures by resident and visiting speakers on various topics in the above fields and problems related to soils and the environment.

SERVICE COURSES**SOIL 101: Soil Science and Water Conservation (L/P: 30/30 CF 3.0) Y2S1**

Physical properties of soil and water and its movement in soil. Soil erosion and conservation. Methods of soil and water conservation. Essential plant nutrients, their availability, role and deficiency symptoms. Soil fertility and fertilizers.

SOIL 241: Soil Genesis And Classification (L/P: CF 3.0)

Soil profile development; soil morphology; soils and land use; soil mapping and the design of mapping units; Descriptive legends; Inventory techniques; field practices and soil interpretations; soil classification systems; land classification and land rating techniques. One field trip. *Prerequisites SOIL 100, SOIL 220.*

9.3 Matrix Aligning Courses/Units to Programme Learning Outcomes

	YEAR 1		YEAR 2		YEAR 3		YEAR 4	
PROGRAMME LEARNING OUTCOMES (PLO)								
	COURSES	C.F	COURSES	C.F	COURSES	C.F	COURSES	C.F
PLO 1 Practice sustainable management of agricultural soils and environmental services	Introduction to Soil Science	3.0	Agricultural Water Management Waste Management in Soils Environment, Peace and Gender Ecology Soil Biology Forest and Wetland Soils Crop Environment and Physiology Soil Characterization and Classification Soil Biotechnology	3.0 3.0 3.0 3.0 3.0 3.0 3.0	Integrated Organic Farming Systems Environmental Chemistry I Remote Sensing of the Environment Irrigation and Drainage Agro biodiversity and Ecosystem Management	3.0 3.0 3.0 3.0 3.0	Soil Degradation and Conservation Farm-level Nutrient Flow and Management Environmental Impact Assessment and Audit Environmental Sociology Geographic Information System	3.0 3.0 3.0 3.0 3.0
PLO3 Advice on policy issues pertaining to land use management.			Resource Economics	3.0			Environmental Law and Policy Entrepreneurship Economics	3.0 3.0
PLO 4 Carry out reclamation and remediation of degraded and contaminated soils			Soil Pollution Waste Management in Soils	3.0 3.0			Management of Arid and Semi-Arid Lands	
PLO5 Advice on the impacts of land use on water and soil quality and the use of soil for agricultural and municipal waste management			Soil Mineralogy and Morphology Soil Physics Soil Chemistry Soil Plant Water Relations Introductory Geology Basic Biochemistry	3.0 3.0 3.0 3.0 3.0 3.0	Soil Fertility and Plant Nutrition Agro climatology Annual Crops Introduction to Agricultural Field Machines Principles of Livestock Production	3.0 3.0 3.0 3.0 4.0	Soil, Plant and Water analysis Fertilizer Manufacture and Formulation	2.5 3.0
PLO6 Carry out research, consultancy and outreach in relevant areas in soil environment and land use management.			Statistics for Agriculture Agricultural Value Chain and Analysis Management	3.0 3.0	Research Methods Field / Industrial Attachment (8 weeks Rural Sociology Agricultural Experimentation Principles of Agricultural Extension	3.0 4.0 2.0 3.0 2.0	Research Project I Research Project II Extension Programme Planning and	2.0 2.0 3.0

DEPARTMENT OF DAIRY AND FOOD SCIENCE AND TECHNOLOGY

DIPLOMA IN DAIRY TECHNOLOGY

1. Philosophy

Transforming livelihoods through quality training and hands-on skills in the area of Dairy Technology.

2. Rationale

The liberalization of the dairy industry in Kenya has greatly attracted entrepreneurship in the dairy industry. While many large milk producers are increasingly turning to processing milk on the farm, there are many entrepreneurs who will depend on out-growers. These entrepreneurs require diploma holders with in-depth knowledge of milk processing.

This course is designed to produce a diploma graduate qualified to work in milk processing industries in production and managerial capacities; to venture into entrepreneurship in the food industry; to teach; and to pursue further education in food related disciplines.

3. Goal of the Programme

Dairy technology involves production, handling, processing and preservation of milk and its products. This course is designed to impart skills in the application of biological, chemical, biochemical, physical and engineering sciences in processing and preservation of milk and milk products; the course takes a practical based approach to the activities from raw milk production to delivery of the processed and packaged milk product at the retail shop. Due to the current job scarcity, the course includes soft skills subjects that add to one's entrepreneurship ability. The objective of this course is to provide the trainee with sufficient knowledge and skills for a diploma in Dairy Technology.

4. Programme Learning Outcomes

The graduate will be able to use the knowledge, skills and attitude acquired or imparted to:-

- i) Carry out basic research in food processing, analysis and product development.
- ii) Successfully engage in entrepreneurship individually or in partnership with others.
- iii) Teach and conduct practicals in food related sciences at various institutions.
- iv) Further their education in dairy or any other food related area.
- v) Professionally handle duties in a dairy plant at quality assurance and supervisory capacities – skills and knowledge imparted will be easily transferable in other food plants.
- vi) Offer extension and advisory services to dairy farmers.

5. Mode of delivery

The programme is delivered on full time basis through lectures, practicals, industrial attachment and factory visits. The course duration shall be four years, each consisting of two semesters of fifteen teaching weeks and two examination weeks.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidate shall meet Egerton University Diploma general admission criteria as specified in the Egerton University Statutes 36 of 2013. In addition to meeting the prevailing minimum University Diploma requirements, the candidate must have scored a minimum of C in the following subjects; mathematics or physics, chemistry or physical science, biology or agriculture.

OR

Hold a certificate in Food Science or Dairy Technology from a recognized institution with a Credit pass or higher.

6.2 Regulation on Credit Transfer

The candidates are expected to pursue the programme as presented without any credit transfer.

6.3 Course Requirements

The ISO procedure for teaching EU /AA/OP/06 shall be followed.

6.4 Student Assessment Policy

The student assessment shall be in accordance to Egerton University Statute 36 of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

The examination regulations shall be as stipulated in Egerton University Statute 36(5) of 2013.

6.7 Moderation of Examinations

The examinations shall be moderated by both internal and external examiners as in the ISO procedure EU/AA/OP/07 regulation requirement.

6.8 Graduation Requirements

To graduate with the Diploma in Dairy Technology, a student shall be required to take and pass all scheduled courses within stipulated time.

6.9 Diploma Classification

The Diploma classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

ISO procedure on Teaching effectiveness evaluation (Doc No. EU/VC/OP/04) shall be adhered to.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

This programme will be hosted at the Department of Dairy and Food Science and Technology which is within the Faculty of Agriculture. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will undergo an internal self-assessment at the end of each cycle of 3 academic years and will be benchmarked with at least one local and one regional university.

8.3 Course coding

Coding of Dairy Technology diploma courses is represented by DAST followed by a four digit figure. The first digit all being 0, indicates a diploma course. The second digit represents the year in which the course is offered. The third digit represents the nature of the course within the code discipline, thus;

0 - Introductory,

1 - Microbiology,

2 - Chemistry,

3 - Engineering,

4 - Food Commodity Technology,

5 - Dairy Commodity Technology,

6 - Management,

7 - Attachment and

8 - Research.

The fourth digit represents the serial number of the course within that discipline.

9. Courses/Units offered for the Programme

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGED 0111	Agricultural Communication Skills	30	0	2.0
AGRO 0101	Principles of Crop Production	45	15	3.5
ANHE 0201	Introduction to Gross Anatomy	30	30	3.0
BOTA 0111	Genetics	30	0	2.0
BOTA 0231	General Microbiology	30	30	3.0
CHEM 0111	Physical and Inorganic Chemistry	30	30	3.0
DAST 0101	Introduction to the Dairy Industry	30	0	2.0
DAST 0131	Fundamentals of Dairy Processing Technology	45	0	3.0
MATH 0102	Introductory Mathematics	45	0	3.0
	TOTAL	315	105	24.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGED 0111	Fundamentals of agricultural Economics	45	0	3.0
ANHE 0218	Animal Physiology	45	15	3.5
ANSC 0241	Animal genetics and Breeding	30	30	3.0
CHEM 0113	Basic Organic Chemistry	30	30	3.0
COMP 0190	Information Technology and Society	45	15	3.5
DAST 0111	Dairy Microbiology I	30	60	4.0
ENSC 0100	Introduction to Environmental Science	30	0	2.0
STAT 0131	Basic Statistics	45	0	3.0
	TOTAL	300	150	25.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 0241	Production Economics	45	0	3.0
BIOC 0204	Basic Biochemistry	30	30	3.0
DAST 0212	Dairy Microbiology II	30	60	4.0
DAST 0223	Chemistry of Milk	30	0	2.0
DAST 0223	Analysis of Milk and Milk Products	30	0	2.0
DAST 0232	Dairy Plant Utilities and Services	30	15	2.5
DAST 0251	Fluid Milk Technology	30	30	3.0
DAST 0252	Milk Fat Technology	30	30	3.0
DAST 0253	Evaporated and Dried Milk Products	30	30	3.0
FOND 0121	Introduction to Human Nutrition	30	0	2.0
	TOTAL	315	195	27.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
ANSC 0210	Routine Livestock duties	0	90	3.0
ANSC 0230	Animal Nutrition and livestock feeding	30	30	3.0
ANSC 0250	Ruminant Husbandry	45	30	4.0
AGBM 0220	Principles of Agricultural Value Chains	45	0	3.0
DAST 0223	Chemistry of Milk and Milk Products	30	45	3.5
DAST 0233	Dairy Processing Machinery	30	30	3.0
DAST 0254	Fermented Milk Products Tech.	30	30	3.0
DAST 0255	Frozen Dairy Products Technology	15	30	2.0
DAST 0261	Packaging, Storage and Distribution of	30	0	2.0

	Dairy products			
ECEN 0211	Electrical Engineering	30	30	3.0
	TOTAL	285	315	29.5
DAST 0271	Dairy Industrial Attachment	0	120	4.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 0345	Farm Management I	30	30	3.0
AGED 0231	Rural Sociology and Development	30	0	2.0
ANHE 0326	Animal Diseases	45	30	4.0
DAST 0334	Dairy Plant Maintenance	15	30	2.0
DAST 0356	Dairy Pilot Plant Practicals	0	120	4.0
DAST 0362	Dairy Quality Assurance and Sensory evaluation	30	45	3.5
DAST 0363	Dairy Plant Hygiene and Waste Management	30	0	2.0
DAST 0382	Project Proposals Development	15	30	2.0
ENSC 0331	Environmental Impact Assessment and audits	30	0	2.0
	TOTAL	225	285	24.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 0336	Financial and Human Resource Management	45	0	3.0
AGED 0232	Agricultural Extension	45	0	3.0
DAST 0364	Dairy Plant Operations Management	30	0	2.0
DAST 0365	Dairy Entrepreneurship	30	0	2.0
DAST 0381	Scientific Writing and Presentations	15	30	2.0
DAST 0383	Project Implementation	15	30	2.0
EAPE 0356	Public Administration	30	0	2.0

FOST 0313	Introduction to Food Biotechnology	30	30	3.0
FOST 0341	Non-Dairy Foods Processing	30	45	3.5
	TOTAL	270	135	22.5
GRAND TOTAL		1680	1305	155.5

(c) Course Descriptions

DAST 0101: Introduction to the Dairy Industry (30/0: CF 2.00) Y1S1

Organization of the dairy industry in Kenya; collection of milk, milk composition; milk quality; payment for milk; milk marketing; philosophies of the dairy industry; milk constituents as they occur in dairy products; influence of dairy products in nutrition of consumers; basic processing technologies of common dairy products; dairy value chain.

DAST 0111: Dairy Microbiology I (30/60: CF 4.0) Y1S2

A review of bacteria, fungi and virus cell structure of interest in milk and milk products; microorganisms' metabolism, growth and destruction kinetics; techniques of isolation, identification and enumeration of microorganisms; practical in microbiological quality assessment of dairy products. (Prerequisite: BOTA 0231)

DAST 0131: Fundamentals of Dairy Processing Technology (45/0: CF 3.0) Y1S2

Dimensions and units; thermodynamics related to food processing operations; heat and mass transfer; pasteurization and sterilization; fluid statics and manometry; viscosity; fluid flow, sedimentation, centrifugation and homogenization; chemical emulsification; psychometrics and related processes. (Prerequisite: STAT 0131)

DAST 0212: Dairy Microbiology II (30/60: CF 4.0) Y2S1

Sampling and sampling plans; indices of sanitary quality; microbiological spoilage of dairy products; biochemical reactions of microorganisms in dairy products; enzymes in milk and their significance in dairy products; practical microbiological quality assessment of dairy products. (Prerequisite: DAST 0111)

DAST 0222: Chemistry of Milk (30/0: CF. 2.0) Y2S1

Definition of milk, milk synthesis and secretion; abnormalities in milk; milk composition and factors affecting it; quantitative relationships between milk constituents; physical properties of milk and their implications in milk quality; enzymes in milk constituents; physical properties of milk and their implications in milk quality; enzymes in milk and their significance in dairy products. (Prerequisite: CHEM 0113)

DAST 0223: Analysis of Milk and Milk Products (30/45: CF 3.5) Y2S2

Sampling of milk and milk products; preservation of samples; principles of representative sampling; analysis of milk and milk products for composition; analysis of milk for toxicants and undesirable common residues. (Prerequisite: DAST 0222)

DAST 0232: Dairy Plant Utilities and Services (30/15: CF 2.5) Y2S1

Dairy processing plant layout; water sources and quality; water treatment; electric power installation and safety; steam generation and utilization; solar energy utilization; wood as fuel; refrigeration and cooling systems; utilization of compressed air and vacuum; preventive maintenance of utility machinery; industrial colour codes; environmental impact assessment by relevant government agencies.

DAST 0233: Dairy Processing Machinery (30/30: CF 3.5) Y2S2

Materials of construction; milking machines; machines; filters; agitators; tanks and tankers; pipes and fitting; pumps; heat exchangers; sedimentations and centrifugal separators; liquid/vapor and solid/vapor separators; homogenizers; roller and spray driers; reconstitution equipment; system assemblies for the manufacture of fluid milks, butter, anhydrous milk fat, evaporated milk, dry milk powder, ice-cream, cheese and fermented milks; membrane filters; machinery installation and maintenance logistics.

DAST 0251: Fluid Milk Technology (30/30: CF 3.0) Y2S1

Definition and standards, historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of fluid milk. To include one visit to processing industries.

DAST 0252: Milk Fat Technology (30/30: CF 3.0) Y2S1

Definition and standards, historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of the various milk fat products. To include one visit to processing industries.

DAST 0253: Evaporated and Dried Milk Products Technology (30/30: CF2.0) Y2S2

Definition and standards, historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of evaporated and dried milk products. To include one visit to a processing industry.

DAST 0254: Fermented Milks Products Technology (30/30: CF 3.0) Y2S2

Definition and standards, historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of fermented milk products. To include one visit to processing industries.

DAST 0255: Frozen Dairy Products Technology (15/30: CF 2.0) Y2S2

Definition and standards, historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of frozen dairy products. To include one visit to processing industries.

DAST 0261: Packaging, Storage and Distribution of Dairy Products (30/0: CF 2.0) Y2S2

Functions of food packaging; packaging materials; forms and application of packages; storage of packaging materials; storage of raw materials; storage of packaged products; transportation and distribution of dairy products, new trends in packaging.

DAST 0271: Dairy Industrial Attachment (0/120: CF 4.0) Y2S2

Attachment of students to dairy plant for hand on experience for a minimum of 8 continuous weeks. (End of Y2S2)

DAST 0334: Dairy Plant Maintenance (15/30: CF 2.0) Y3S1

Definition of maintenance; Preventive maintenance; Corrective maintenance; Maintenance of various dairy equipment; Maintenance of tools; Maintenance costing; Cost of depreciation; Disposal of non functional and obsolete equipment.

DAST 0356 Dairy Pilot Plant Practical (0/120: CF 4.0) Y3S1

Attachment of students to the Guildford Dairy Institute pilot plant for pilot processing operations for one semester.

DAST 0362: Dairy Quality Assurance and Sensory Evaluation (30/45: CF 3.5) Y3S1

Definition and scope; Kenyan and other dairy quality standards; assessment of microbiological and compositional quality; sensory and quality assessment; quality control laboratory layouts; food laws and legislation; current trends in sensory evaluation. (Prerequisite: DAST 0111, DAST 0122)

DAST 0363: Dairy Plant Hygiene and Waste Management (30/0: CF 2.0) Y3S1

Sanitary plant layout and equipment design; detergents and sanitizers, methods of cleaning and sanitization of dairy processing equipment and buildings; personnel health and hygiene; management of dairy processing plant wastes; pests and vermin control; relevant legislation. To include a visit to a sewage plant.

DAST 0364: Dairy Plant Operations Management (30/0: CF 2.0) Y3S2

Dairy plant location and site selection; fundamentals of building construction; machinery layout and safety design, costing of dairy products; dairy plant records and accounts; financial control; staff welfare and personnel management principles; concepts of industrial relations; plant supplier relations; selected relevant legislation.

DAST 0365: Dairy Entrepreneurship (30/0: CF 2.0) Y3S2

Definitions and scope; decision and challenges of entrepreneurship; business setup; product and service; sources of financing; intellectual property; entry strategies for new businesses; legal aspects of enterprise operation/ government policies; marketing

logistics; business plan; sources of technical services; entrepreneurship and the economy

DAST 0381: Scientific Writing and Presentations (15/15: CF 1.5) Y3S2

Scientific seminar preparation, writing and presentations on selected topics in food science and technology. Seminar presentation by students, staff and relevant outside speakers.

DAST 0382: Project Proposal Development (15/30: CF 2.0) Y3S1

Students select topics in any of the major curriculum disciplines and write a proposal for carrying out a research project on it. Oral presentation of the research proposal to an examination panel for evaluation and approval.

DAST 0383: Project Implementation (15/30: CF 2.0) Y3S2

Students carry out individual research of the approved proposal and supervised by departmental staff to produce an original report. Oral presentation of research results to an examination panel for evaluation.

COURSES OFFERED TO OTHER DEPARTMENTS

FOST 0301: Introduction to Food Biotechnology (30/30: CF 3.0) Y3S2

Definition and origins of biotechnology; biotechnology in the food processing sector; biotechnology in food fermentation; concepts of culture growth; starter cultures, substrates and enzymes; culture growth kinetics; fermenter design; industrial fermentations; traditional and modern approaches to biotechnology; ethical and legal issues related to biotechnology; agro-biodiversity and intellectual property rights.

FOST 0341: Non-Dairy Foods Processing (30/45: CF 3.5) Y3S2

Manufacture of food products other than milk products; includes cereals and root crops, fruits and vegetables, non-alcoholic beverages, alcoholic beverages, sugar and confectionaries, edible fats and oils, meat, poultry and sea foods.

9.3 Matrix Aligning Courses/Units to Learning Outcomes (Programme Learning Outcomes)

	Year 1		Year 2		Year 3	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	CF
PLO 1: Carry out basic research in food processing, analysis and product development.	Genetics	2.0	Chemistry of Milk	2.0	Project Implementation	2.0
	General Microbiology	3.0	Dairy Microbiology II	4.0	Scientific Writing and Presentations	2.0
	Dairy Microbiology I	4.0			Project Proposals Development	2.0
	Physical and Inorganic Chemistry	3.0				
	Introductory Mathematics	3.0				
	Basic Organic Chemistry	3.0				
	Basic Statistics	3.0				
PLO 2: Successfully engaged in entrepreneurship individually or in partnership with others.	Introduction to the Dairy Industry	2.0	Production Economics	3.0	Dairy Entrepreneurship	2.0
	Fundamentals of Dairy Processing Technology	3.0	Principles of Agricultural Value Chains	3.0	Dairy Plant Operations Management	2.0
	Fundamentals of Agricultural Economics	3.0			Financial and Human Resource Management	3.0
	Information Technology and Society	3.5				
PLO 3: Teach and conduct practical in food related sciences at various institutions.			Packaging, Storage and Distribution of Dairy Products	2.0		
			Frozen Dairy Products Technology	2.0	Introduction to Food Biotechnology	3.0
			Fermented Milk Products Tech	3.0		
			Dairy Processing Machinery	3.0		
			Analysis of Milk and Milk Products	3.5		
			Fluid Milk Technology	3.0		
			Milk Fat Technology	3.0		
PLO 4: Further their education by undertaking Bachelor of Science degree in food or any other area as defined by the science requirements.			Evaporated and Dried Milk Products	3.0		
			Basic Biochemistry	3.0	Non-Dairy Foods Processing	3.5
			Electrical Engineering	3.0		

PLO 5: Professionally handle duties in a dairy plant at quality assurance and supervisory capacities – skills and knowledge imparted will be easily transferable in other food plants.			Dairy Plant Utilities and Services	2.5	Dairy Plant Hygiene and Waste Management	2.0
			Dairy Industrial Attachment	4.0	Dairy Quality Assurance and Sensory Evaluation	3.5
					Dairy Pilot Plant Practicals	4.0
					Dairy Plant Maintenance	2.0
					Environmental Impact Assessment and audits	2.0
PLO 6: Offer extension and advisory services to dairy farmers.	Agricultural Communication Skills	2.0	Introduction to Human Nutrition	2.0	Agricultural Extension	3.0
	Principles of Crop Production	2.0	Principles of Animal Nutrition	3.0		
	Introduction to Environmental Science	2.0	Routine Livestock Duties	3.0	Rural Sociology	2.0
	Introduction to Gross Anatomy	3.0			Animal Diseases	4.0
	Animal Physiology	3.5	Ruminant Husbandry	4.0	Public Administration	2.0
	Animal genetics and Breeding	3.0			Farm Management I	3.0

BACHELOR OF SCIENCE IN DAIRY TECHNOLOGY AND MANAGEMENT

1. Philosophy

Transforming livelihoods through quality training and hands-on skills in the area of Dairy Technology and Management

2. Rationale

The liberalization of the dairy industry in Kenya has greatly attracted entrepreneurship in the dairy industry. While many large milk producers are increasingly turning to processing milk on the farm, there are many entrepreneurs who will depend on primary producers and suppliers of milk. This course is designed to produce graduates qualified to work in milk processing industries in production and managerial capacities; to venture into entrepreneurship in the food industry; to teach; and to pursue further education in food related disciplines.

3. Goal of the Programme

The aim of this course is to provide an appropriate depth of knowledge and skills in subjects related to the dairy industry for a Bachelor of Science Degree in Dairy Technology and Management. In addition the graduates will have developed managerial and financial management skills. This course is designed to produce a graduate qualified to advise on milk production at farm level, to work in milk processing industries at production and managerial capacities, to teach, to carry out research and extension services, to venture into entrepreneurship in the food industry and to pursue higher education.

4. Programme Learning Outcomes

At the completion of the training in Bachelor of Science in Dairy Technology and Management Programme, the graduate should be able to:

- i) Possess the knowledge and understanding of the dairy industry in Kenya and the region/global.
- ii) Provide technical support, and operate in various capacities along different segments of the dairy value chain and particularly in the dairy processing facilities.
- iii) To undertake managerial responsibilities and demonstrate competence in the use of financial management skills in running profitable dairy enterprises.
- iv) Carry out research and extension in the area of dairy product value addition.
- v) Venture into the food industry as an entrepreneur
- vi) Gain competence for further training in dairy technology and management and related fields.

5. Mode of Delivery

The programme is delivered on a full time basis: through lectures, practical, tutorials, industrial attachment and factory visits. The course duration shall be four years, each consisting of two semesters of fifteen teaching weeks and two examination weeks.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates shall meet Egerton University general admission criteria. In addition to meeting the prevailing minimum University BSc degree requirements, the candidate must have scored a minimum of B- in each of the following subjects; Mathematics or Physics, Chemistry, Biology or Agriculture.

OR

Candidates with a Diploma in Dairy or Food Science and Technology or equivalent from an institution recognized by Egerton University Senate having graduated with Credit or higher.

6.2 Regulation on Credit Transfer

Credit transfer will be done in adherence to Egerton University statute of 2013 article 36(3) for undergraduate programmes.

6.3 Course Requirements

The course requirement guidelines should follow the Egerton University ISO 9001:2008 procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment Policy/Criteria

The University policy on student assessment will apply (Statute on student assessment, statute 36(6) of 2013).

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with the examination regulations as stipulated in the Statutes of Egerton University Statute 36(5) of 2013.

6.7 Moderation of Examination

The examinations shall be moderated as per the in the ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses.

6.9 Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36(6) of 2013.

7. Course Evaluation

All courses shall be evaluated using ISO procedures on teaching effectiveness evaluation (Doc No. EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be hosted in the Department of Dairy and Food Science and Technology in the Faculty of Agriculture. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal self-assessment at the end of each cycle and will be benchmarked with at least one local and one regional university.

8.3 Course Coding

Coding of degree courses will be DATM representing Dairy Technology and Management followed by a three digit figure. The first digit represents the year in which the course is offered. The second digit represents the nature of the course within the code discipline, thus;

- 0-Introductory,
- 1-Microbiology and Biotechnology,
- 2-Chemistry,
- 3-Engineering,
- 4- Food Commodity Technology,
- 5- Dairy Commodity Technology,
- 6- Management,
- 7- Attachment and
- 8 - Research.

The third digit represents the serial number of the course within that discipline.

9. Courses/Units offered for the Programme

a) University Common Core courses

CODE	TITLE	L	P	CF
COMP 101	Introduction to computer applications	15	45	3.5
COMS 111	Communication Skills	45	0	3.0

ENSC 100	Environmental Education	30	30	3.0 *
MATH 100	General Mathematics	45	0	3.0 *
ZOOL 143	HIV-AIDS and Society	45	0	3.0 *

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGED 112	Agricultural Communication Skills	45	0	3.0 *
AGRO 101	Principles of Crop Production	45	15	3.5
CHEM 111	General inorganic and Physical Chemistry	30	60	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of Micro-economics	45	0	3.0
ENSC 100	Introduction to Environmental Science	30	30	3.0 *
MATH 100	General Mathematics	45	0	3.0 *
ZOOL 104	General Zoology	30	30	3.0
ZOOL 143	HIV-AIDS and Society	45	0	3.0 *
Total		360	135	27.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 131	Principles of management	45	0	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Organic Chemistry	30	45	3.5
COMP 101	Introduction to computer applications	45	15	3.5
ECON 121	Principles of Macro-Economics	45	0	3.0
FOST	Introduction to the Food	30	0	2.0

101	Industry			
FOST 131	Fundamentals of Food Engineering I	45	0	3.0
PHYS 103	General Physics	45	15	3.5
Total		285	135	25.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGEC 231	Principles of Marketing	45	0	3.0
CHEM 341	Analytical Chemistry I	30	30	3.0
DATM 222	Dairy Chemistry I	30	0	2.0
FOND 121	Principles of Human Nutrition	45	0	3.0
FOST 211	Food Microbiology I	30	60	4.0
FOST 232	Fundamentals of Food Engineering II	45	0	3.0
FOST 233	Food Plant Utilities & Services	30	30	3.0
ZOOL 232	Cell Biology	45	0	3.0
Total		300	120	24.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 211	Financial Accounting I	45	0	3.0
AGBM 222	Co-operative Management and Development	45	0	3.0
AGRO 291	Statistics for Agriculture	45	0	3.0
BIOC 204	Basic Biochemistry	30	30	3.0
DATM 212	Dairy Microbiology	30	60	4.0

FOST 234	Food processing instrumentation	15	30	2.0
ICEN 216	Electrical Engineering	30	30	3.0
Total		240	150	21.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGBM 311	Managerial Accounting I	45	0	3.0
AGED 331	Rural Sociology and development	45	0	3.0*
ANHE 427	Animal Diseases	30	30	3.0
ANSC 450	Ruminant Production	45	30	4.0
DATM 323	Dairy Chemistry II	30	45	3.5
DATM 351	Fluid Milk Technology	30	30	3.0
DATM 352	Milk Fat technology	30	30	3.0
FOST 335	Unit operations in food processing	45	30	4.0
Total		300	195	26.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 406	Financial and Human Resource Mgt	30	30	3.0
AGRO 391	Agricultural Experimentation	30	30	3.0
DATM 353	Evaporated and Dried Milk Products	30	30	3.0
DATM 354	Fermented Milk Products Technology	30	45	3.5
DATM 356	Dairy Pilot Plant Practicals	0	120	4.0
Total		180	270	21.0

(End of Y3S2)

DATM 371	Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
AGBM 436	Agribusiness Management	45	0	3.0
FOST 413	Food Toxicology	45	0	3.0
FOST 414	Food Biotechnology	30	30	3.0
FOST 449	Non-dairy Food Commodity Technologies	30	45	3.5
DATM 455	Frozen Dairy Product Technology	15	30	2.0
FOST 461	Food Packaging, Storage and Distribution	30	0	2.0
FOST 462	Food Plants Operations Management	30	0	2.0
FOST 463	Food Products Development and Marketing	30	0	2.0
DATM 482	Research Projects I (Proposals)	15	30	2.0
Total		270	135	22.5

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 221	Agricultural Value Chain Analysis and Management	45	0	3.0
AGBM 414	Managerial Accounting II	45	0	3.0
ENSC 309	Environmental Impact Assessment and Audit	30	30	3.0
FOST 425	Application of Enzyme Technology in Foods	45	0	3.0
FOST 436	Food Plant Design and Layout	30	15	2.5
FOST 464	Sanitation and Waste Management	30	25	2.5
FOST 465	Food Entrepreneurship	30	0	2.0

DATM 481	Dairy Science and Technology Seminars	15	30	2.0
DATM 483	Research Projects II (Experimental)	0	60	2.0
Total		270	150	23.0

(c) COURSE DESCRIPTIONS

Year 1

No DATM courses offered in year 1.

DATM 212: Dairy Microbiology (30/60 CF: 4.0), Y2SII

Sampling and sampling plans; indices of sanitary quality; Microorganisms associated with milk and milk products, microbiological spoilage of dairy Products; biochemical reactions of microorganisms in dairy products; enzymes in milk and their significance in dairy products; practical microbiological quality assessment of dairy products (*Prerequisite: BOTA 131 and FOST 211*)

DATM 222: Dairy Chemistry I (45/00: CF: 2.0) Y2SI

Definition and chemical properties of milk; milk synthesis and secretion; abnormalities in milk; milk composition and factors affecting it; biochemistry, properties and composition of milk constituents; quantitative relationships between milk constituents; physical properties of milk and their implications on milk quality.

DATM 335: Unit Operations in Dairy Processing (30/45, CF: 3.5) Y3SI

Materials of construction of food contacts surfaces; processing machinery layout; milking machines; filters; agitators; tanks and tankers; pipes and fittings; Pumps; heat exchangers: sedimentation and centrifugal separators; liquid/vapor and solid/vapor separators; homogenizers; roller and spray driers; reconstitution equipment; system assemblies for the

manufacture of fluid milks, butter, anhydrous milk fat, evaporated milk, dry milk powder, ice cream, cheese and fermented milks; membrane filters; dairy machinery installation and maintenance logistics.(Prerequisite: FOST 131)

DATM 323: Dairy Chemistry II (30/45, CF: 3.5) Y3SI

Sampling of milk and milk products; preservation of samples; principles of representative sampling; analysis of milk and milk products for composition; analysis of milk for toxicants and undesirable common residues, influence of processing on milk components. (Prerequisite: DAST 222)

DATM 351: Fluid Milk Technology (30/30, CF: 3.0) Y3SI

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of fluid milk products. To include one visit to processing industries.

DATM 352: Milk Fat Technology (30/30, CF: 3.0) Y3SI

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of milk fat products. To include one visit to a relevant processing industries.

DATM 353: Evaporated and Dried Milk Technology (30/30, CF: 3.0) Y3SI

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of

evaporated and dried milk products. To include one visit to a relevant processing industry.

DATM 354: Fermented Milk Products Technology (30/45, CF: 3.5) Y3SII

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of fermented dairy products. To include one visit to a relevant processing industry.

DATM 356: Dairy Pilot Plant Practicals (0/120, CF: 4.0) Y3SII

The students will be attached to the Guildford Dairy Institute (GDI) pilot plant for processing operations and exposure to the hands-on work related to the lecture courses covered in dairy technology. The course is assessed on a continuous basis, oral examination at the end of the semester and a report.

DATM 371: Industrial Attachment (0/120, CF: 4.0))

Each student is attached to a food processing industry and or related institution for at least eight (8) continuous weeks for hands on training and experience. **End of Y3SII**

DATM 455: Frozen Dairy Products Technology (15/30, CF: 2.0) Y3SII

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of frozen dairy products. To include one visit to a relevant processing industry.

DATM 456: Dairy Technology I (30/0, CF: 2.0) Y4SI
Dairy industry in Kenya and in the region; definition of milk; milk composition and factors influencing composition and yield; chemistry of milk solids - milk lipids, proteins, carbohydrates, minerals, vitamins and enzymes; sources and characteristics of microorganisms associated with milk; milk antimicrobial substances and milk hygiene; nutritional aspects of milk and milk products; nutritional significance of milk components; chemistry of water and cleaning solutions.

DATM 457: Dairy Technology II (30/45, CF: 3.5, Y4SII)

Clean milk production methods; sources of milk contamination; milk preservation methods; raw milk collection systems; raw milk assessment and handling; cleaning and sanitization of dairy processing equipment; technology of milk products - fluid milk, milk fat based products, margarine, frozen dairy products, fermented milks, cheese, concentrated milks and dried milks.

DATM 481: Scientific Writing and Reporting (15/30, CF: 2.0) Y4SII

Scientific seminar preparation, writing and presentations on selected topics in Dairy Science and Technology Seminar presentation by students, staff and relevant outside speakers.

DATM 482: Project Proposal Development (15/30: CF 2.0) Y4S1

Students select topics in any of the major curriculum disciplines and write a proposal for carrying out a research project on it. Assessment and approval is by oral presentation and a report of the research proposal.

DATM 483: Research Project Implementation (15/30: CF 2.0) Y4S2

Students carry out individual research of the approved proposal and supervised by departmental staff to produce an original report. Assessment is by oral presentation and a report of research results.

9.3 Matrix Aligning Courses/Units to Learning Outcomes (Programme Learning Outcomes)

		Y1		Y2		Y3		Y4	
	Programme Learning Outcomes	Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	Possess the knowledge and understanding of the dairy industry in Kenya and the region/global.	Introduction to Food Industry	2.0						
PLO -2	Provide technical support, and operate in various capacities along different segments of the dairy value chain and particularly in the dairy processing facilities.	Fundamentals of Food engineering I	3.0	Fundamentals of Food Engineering II	3.0	Animal Diseases	4.0	Food Toxicology	3.0
		General Mathematics	3.0	Cell Biology	3.0	Food Processing Instrumentation	2.0		
		Introduction to Environmental Science	3.0	Analytical Chemistry	3.0	Dairy Chemistry II	3.5	Food Packaging, Storage and Distribution	2.0
		Physical and inorganic chemistry	3.0	Principles of Human nutrition	3.0	Fluid milk Technology	3.0	Food Quality Assurance	2.0
		General Zoology	3.0	Food Microbiology I	4.0	Milk fat technology	3.0	Agricultural Value Chain Analysis and Management	3.0
		Principles of crop production	3.5	Food Plant Utilities and Services	3.0	Evaporated and Dried Milk Products	3.0	Environmental Impact Assessment	3.0
		General Microbiology	3.0	Dairy Chemistry I	2.0	Ruminant Production	4.0	Sanitation and Waste Management	2.5
		Organic chemistry	3.5	Electrical Engineering	3.0	Food plant design and layout	2.5		
		General physics	3.5	Basic Biochemistry	3.0	Fermented Milk Products Technology	3.5		
				Dairy Microbiology	4.0	Frozen dairy Products Technology	2.0		
				Unit Operations in dairy Processing	3.5	Dairy Pilot Plant Practicals	4.0		
						Industrial Attachment	4.0		

PLO -3	To undertake managerial responsibilities and demonstrate competence in the use of financial management skills in running profitable dairy enterprises.	HIV-AIDS and Society	3.0	Introduction to Management	3.0	Managerial Accounting I	3.0	Food Plant Operations Management	2.0
		Principles of Microeconomics	3.0	Cooperative Management & Development	3.0	Financial Accounting II	3.0	Managerial Accounting II	3.0
		Principles of Macroeconomics	3.0	Financial Accounting I	3.0	Human Resource Management and industrial Relations	3.0		
							4.0	Managerial Accounting II	3.0
PLO-4	Carry out research and extension in the area of dairy product value addition.	Agricultural Communication Skills	3.0	Statistics for Agriculture	3.0	Rural Sociology	3.0	Scientific Writing and Reporting	2.0
		Introduction to Computer Applications	2.5			Agricultural Experimentation	3.0	Project Proposal Development	2.0
		Communication Skills	3.0					Research Project Implementation	2.0
PLO5	Venture into the food industry as an entrepreneur	Principles of Entrepreneurship	3.0	Principles of Marketing	3.0			Food Entrepreneurship	2.0
PLO6	Gain competence for further training in dairy technology and management and related fields							Non-Dairy Food Commodity Technologies	3.5
								Application of Enzymes Technology in Foods	3.0
								Food Biotechnology	3.0
								Product Development and Marketing	3.5

BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

1. Philosophy

Transforming livelihoods through quality training and outreach in Food Science and Technology.

2. Rational

Crop and animal products are in general perishable and produced in such amounts and states that may not allow direct consumption. Foods have to be processed into other forms to increase variety, reduce seasonality and enhance their shelf life. These contribute to food security and nutrition. The course is designed to produce a graduate qualified to advise on animal and crop production at farm level, to work in a food processing industry at production and managerial capacities, to teach, to carry out research and extension, to venture into entrepreneurship in the food industry and to pursue higher education.

3. Goal of the Programme

The goal of this course is to provide an appropriate depth of knowledge and skills in subjects related to the food industry for a Bachelor of Science Degree in Food Science and Technology. Upon completion of this course, the graduate will be qualified to work in food processing industries in various capacities. These include areas such as, in production, supervision, quality assurance and managerial capacities. They will be able to teach and carry out research and extension services, to venture into entrepreneurship in the food industry and to pursue further education.

4. Programme Learning Outcomes

At the completion of the training in Bachelor of Science in Food Science and Technology Programme, the graduate should be able to:

- i) Possess the knowledge and understanding of the food industry in Kenya and the region/global.
- ii) Provide technical support, and operate in various capacities along different segments of the food value chains and particularly in the food processing facilities.
- iii) To undertake managerial responsibilities and demonstrate competence in the use of financial management skills in running profitable food enterprises.
- iv) Carry out research and extension in the area of food product value addition.
- v) Venture into the food industry as an entrepreneur
- vi) Gain competence for further training in food science and technology and related fields.

5. Mode of Delivery

The programme is delivered on full time basis; through lectures, practical, tutorials, industrial attachment and factory visits.

6. Academic Regulations of the Programme

6.1 Admission Requirements

Candidates applying for a Bachelor of Science in Food Science and Technology must meet Egerton University general admission criteria. In addition to meeting the prevailing minimum University BSc degree requirements, the candidate must have scored a minimum of B- in each of the following subjects; Mathematics or Physics, Chemistry, Biology or Agriculture.

OR

Candidates with a Diploma in Dairy or Food Science and Technology or equivalent from an institution recognized by Egerton University Senate having graduated with Credit or higher.

6.2 Regulation on Credit Transfer

Credit transfer will be done in adherence to Egerton University statute of 2013 article 36(3).

6.3 Course Requirements

The course requirement shall follow guidelines in ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment Criteria

The student assessment shall be as stipulated in the Egerton University Statute 36 (6) of 2013

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with the examination regulations as stipulated in the Statute 36(5) of 2013, of Egerton University.

6.7 Moderation of Examination

The examinations shall be moderated as stipulated in the Egerton University Statute 36 (6) of 2013 and as per the ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses.

6.9 Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36(17a) of 2013.

7. Course evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects as per ISO procedure on Teaching Effectiveness and Evaluation (Doc No. EU/VC/OP/04)

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be hosted in the Department of Dairy and Food Science and Technology in the Faculty of Agriculture. The programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal self-assessment at the end of each cycle and will be benchmarked with at least one highly ranked university.

8.3 Course Coding

Coding of degree courses will be FOST representing Food Science and Technology followed by a three digit figure. The first digit represents the year in which the course is offered. The second digit represents the nature of the course within the code discipline, thus;

0-Introductory,

1-Microbiology and Biotechnology,

2-Chemistry,

3-Engineering,

4- Food Commodity Technology,

5- Dairy Commodity Technology,

6- Management,

7- Attachment

8 - Research.

The third digit represents the serial number of the course within that discipline

9. Courses/Units offered for the Programme

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
ZOOL 143	Biology of AIDS HIV and Society	45	0	3.0*
MATH 100	General Mathematics	45	0	3.0*

ANHE 210	Gross Anatomy	45	30	4.0
CHEM 111	General Inorganic and physical Chemistry	30	30	3.0
COMS 111	Communications Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
ZOOL 104	General Zoology	30	30	3.0
AGED 112	Agricultural Communication Skills	45	0	3.0*
AGRO 101	Principles of Crop Production	45	15	3.5
Total		375	105	28.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 131	Principles of Management	45	0	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Organic Chemistry	30	30	3.0
PHYS 103	General Physics	45	15	3.5
COMP 101	Introduction to computer applications	15	45	2.5
BOTA111	General Genetics	30	45	3.5
FOS T101	Introduction to the Food Industry	30	0	2.0
FOST 131	Fundamentals of Food Engineering I	45	0	3.0
Total		270	165	23.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGED 331	Rural Sociology and development	45	0	3.0*
ENSC 100	Introduction to Environmental Science	30	30	3.0
CHEM	Analytical Chemistry	30	30	3.0

341				
ZOOL 232	Cell Biology	45	0	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
FOST 211	Food Microbiology I	30	60	4.0
FOST 232	Fundamentals of Food Engineering II	45	0	3.0
FOST 233	Food Plant Utilities & Services	30	30	3.0
Total		300	150	25

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
ECEN 206	Electrical Engineering	30	30	3.0
BIOC 204	Basic Biochemistry	45	0	3.0
AGRO 291	Statistics for Agriculture	45	0	3.0
ANHE 218	Animal Physiology	30	30	3.0
AGBM 221	Agricultural Value Chain Analysis and Mgt	45	0	3.0
FOST 222	Food Chemistry I	45	0	3.0
FOST 212	Food Microbiology II	30	60	04.
FOST 234	Food processing instrumentation	15	30	2.0
Total		285	150	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
ANSC 333	Animal Nutrition and Feeding	45	30	4.0
AGEC 315	Agricultural Economics I	45	0	3.0
BIOC 304	Nutritional Biochemistry	45	0	3.0
FOST 323	Food Chemistry II	30	0	2.0

FOST 335	Unit operations in food processing	45	30	4.0
FOST 341	Cereals and Root crop Technology	45	30	4.0
FOST 342	Fruits and Vegetable Technology	30	30	3.0
FOST 343	Non-Alcoholic Beverages	30	15	2.5
Total		315	135	25.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 406	Financial and Human Resource Management	45	0	3.0
AGRO 391	Agricultural Experimentation	30	30	3.0
FOST 324	Food Analysis	30	60	4.0
FOST 344	Sugar Technology & Confectioneries	30	15	2.5
FOST 345	Edible Fats and Oils Technology	30	15	2.5
FOST 346	Meat, Poultry and Sea Food's Technologies	45	30	4.0
FOST 347	Alcoholic Beverages	30	15	2.5
FOST 360	Food Quality Assurance	45	45	4.5
Total		285	210	26.0

(End of Y3 S2)

FOST 371	Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER I

CODE	TITLE	L	P	CF
AGEC 416	Agriculture Economics II	45	0	3.0
ANHE 427	Animal Diseases	30	30	3.0
DATM 456	Dairy Technology I	30	0	2.0

FOST 413	Food Toxicology	45	0	3.0
FOST 414	Food Biotechnology	30	30	3.0
FOST 461	Food Packaging, Storage and Distribution	30	0	2.0
FOST 462	Food Plant Operations Management	30	0	2.0
FOST 463	Food Product Development and Marketing	30	0	2.0
FOST 482	Research Projects I (Proposals)	0	60	2.0
Total		270	120	22.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
ENSC 309	Environmental Impact Assessment and audits	30	30	3.0
FOST 436	Food Plant Design and Layout	30	15	2.5
DATM 457	Dairy Technology II	30	45	3.5
FOST 465	Sanitation and Waste Management	45	0	3.0
FOST 425	Applications of Enzyme Technology in Foods	30	15	2.5
FOST 465	Food Entrepreneurship	30	0	2.0
FOST 481	Food Science and Technology Seminars	15	30	2.0
FOST 483	Research Projects II (Experimental)	0	60	2.0
Total		210	195	20.5

c). COURSE DESCRIPTIONS

FOST 101: Introduction to Food Industry (30/0, CF: 2.0)

An introduction to the food industry in Kenya, Africa and the World; sources of food and attributes of its quality; physiological and biochemical characteristics of agricultural products and post-harvest changes, losses and control measures; Causes of food spoilage;

principles of handling, processing and preservation of food to improve food nutrition and ensure food security; implications of population growth to the food industry; Y1SII

FOST 131: Fundamentals of Food Process Engineering (45/0, CF: 3.0)

Dimensions and units; thermodynamics in food processing; mass and energy balances; formulation of food; thermal process design based on kinetics of thermal destruction of microorganism and nutrient loss; modes of heat transfer; steady and transient state heat transfer; principles of heat exchanger design; static fluids and manometers; rheology of fluid foods; fluid flow, conduit friction and pump sizing; Stoke's law in sedimentation, emulsification and centrifugation; psychometrics and related processes.

Y1SII (Prerequisite: Math 100)

FOST 211: Food Microbiology I (30/60, CF: 4.0)

Classification and taxonomy of microorganisms of interest in foods; kinetics of multiplication and destruction of microorganisms; microbial physiology and genetics, microbiological principles of food processing and preservation; laboratory techniques used in the identification, enumeration and isolation of selected groups of bacteria, fungi and viruses of significance in foods. **Y2SI** (Prerequisite: BOTA 131)

FOST 212: Food Microbiology II (30/60, CF: 4.0)

Sampling and sampling plans; indices of sanitary quality; classification of foods by pH; biochemical reactions of bacteria, fungi and viruses in foods; microbiological spoilage of foods; microbiological food poisoning; practicals on microbiological quality of food. **Y2SII** (Prerequisite: FOST 211)

FOST 222: Food Chemistry I (45/0, CF: 3.0)

The structure of water and ice; water-solute interactions; water activity and stability of food; isotherms; ice and

the stability of frozen food; nomenclature, classification, structure, functionality and nutritional aspects carbohydrates, proteins and lipids; effects of processing on carbohydrates. **Y2SII**

FOST 232: Fundamentals of Food Engineering II (45/00, CF: 3.0)

Fundamentals of sorting; size reduction; sieving and filtration; mixing; cooling and freezing and thawing of food; extrusion; extraction; concentration of food; crystallization; distillation and rectification; dehydration of food; microwave heating; food irradiation; ultra-filtration and electro-dialysis. **Y2SI** (*Prerequisite: FOST 131*)

FOST 233: Food Plant Utilities and Services (30/30, CF: 3.0)

Water sources and quality; water treatment; electric power installation and safety; steam generation and utilization; solar energy utilization; wood as fuel; refrigeration and cooling systems; utilization of compressed air and vacuum; preventive maintenance of utility machinery. **Y2SI**

FOST 234: Food Processing Instrumentation (15/30, C.F 2.0)

Definition and essence of instrumentation in modern food processing; definition of terms: accuracy, precision, transducers, probes etc.; methods of heating, cooling, pressure development and vacuum creation; measurement and control of temperature, pressure, flow rate, liquid level; application of instruments in compressed air, vacuum and steam lines; instrumentation of timed processes. Guidelines to selection of instruments. **Y3SI** (*Prerequisite: FOST 131*)

FOST 232: Food Chemistry II (30/0, CF: 2.0)

Vitamins - Definition, water soluble vitamins, fat soluble vitamins, functions of vitamins, health implications of vitamins. Effects of processing on

vitamins. Minerals - Functions of minerals including sodium, potassium, magnesium, chloride and sulfate, iron, zinc, iodine, copper etc. Health implications of minerals. Effects of processing on minerals. Food additives – Definition and functions. Generally Regarded as Safe (GRAS) concept. Potential hazards of additives. Legislation. **Y3SI**

FOST 324: Food Analysis (30/60, CF: 4.0)

Principles of food analysis; selection of techniques used, statistical assessment of results and report writing in food analysis. Laboratory determination and analysis of moisture, protein, lipids, carbohydrate and ash content in foods. Analysis of food preservatives; Techniques of determining food allergens and genetically modified components. **Y3SII**

FOST 335: Unit Operations in Food Processing (30/45, CF: 3.5)

Materials of construction of food contact surfaces; food tanks and other vessels; operation of food processing equipment including filters sieves, sorters; mixers, pumps, mills, heat exchangers, centrifugal separators, homogenizers, evaporators, driers and batch processing vats; assemblies for continuous processing of pasteurized, ultra-heat treated, fermented, distilled, concentrated and dried food commodities. **Y3SI** (*Prerequisites: FOST 233*)

FOST 336: Food Plant Design and Layout (30/15, CF: 2.5)

Plant location and site selection fundamentals; food plant building construction fundamentals; process charts and process equipment layout; industrial color codes; graphic symbols for presentation of plant layouts; safety considerations in plant layout and environmental impact assessment by the relevant government authority. **Y3SII**

FOST 341: Cereals and Root Crops Technology (45/30, CF: 4.0)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors cereal and root crop products. To include two visits to relevant processing industries. **Y3SI**

FOST 342: Fruits and Vegetables Technology (30/30, CF: 3.0)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors fruits and vegetable products. To include two visits to relevant processing industries. **Y3SI**

FOST 343: Non-Alcoholic Beverages Technology (30/15, CF: 2.5)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors non-alcoholic beverage products. To include at least one visit to relevant processing industries. **Y3SI**

FOST 344: Sugar Technology and Confectionaries (30/15, CF: 2.5)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, artificial sweeteners and analogues and competitors of confectionaries products. To include at least one visit to relevant processing industries. **Y3SII**

FOST 345: Edible Fats and Oils Technology (30/15, CF: 2.5)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of fats and oil products. To include at least one visit to relevant processing industries. **Y3SII**

FOST 346: Meats, Poultry and Seafoods Technology (45/30, CF: 4.0)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of meat, poultry and seafood products. To include at least one visit to relevant processing industries. **Y3SII**

FOST 347: Alcoholic Beverages Technology (30/15, CF: 2.5)

Definition and standards; historical background; procurement, quality assessment and handling of raw materials; processing technologies including product quality assessment, packaging, storage, utilization, nutritional impact, analogues and competitors of alcoholic beverage products. To include at least one visit to relevant processing industries. **Y3SII**

FOST 316: Food Experimentation (30/45, CF: 3.5)

A scientific approach to foods and their preparation, chemical and physical properties of foods and the changes which affect them under various conditions. Laboratory experimentation and product development. Objective and subjective methods of evaluating food products. Food standards and legislation **Y3SI**

FOST 360: Food Quality Assurance (45/45, C.F: 4.5)

Definition of food quality; quality of design and conformance; quality control; quality management systems and their applications; principles of quality management – ISO 9000 family, good management practices (GMP), hazard analysis and critical control point (HACCP); food safety management systems - ISO 22000, total quality management (TQM); quality evaluation methods – laboratory quality management, sampling and sample management, reference standards and objective evaluation; sensory evaluation of food – perception of sensory evaluation, discriminative tests, descriptive tests, affective tests; statistical quality methods – statistical review, control charts, process capability. **Y4SI**

FOST 371: Industrial Attachment (0/120, CF: 4.0, End of Y3S2)

Each student is attached to a food processing industry and or related institution for eight (8) continuous weeks for hands on training and experience.

FOST 413: Food Toxicology (45/0, CF: 3.0)

Definition and types of toxicity; measurement of fatal toxicity; biochemical aspect of toxicity; natural toxic constituents of foodstuffs; microbiologically derived toxicity; accidentally derived toxicity; radio nuclides in foods; manifestations of toxic effects and their remedies. **Y4SI** (*Prerequisite: FOST 212*)

FOST 414: Food Biotechnology (30/30, CF: 3.0)

Definition and origins of biotechnology; biotechnology in the food processing sector; biotechnology in food fermentation; starter cultures, substrates and enzymes; bacteriocins and probiotics; culture growth kinetics; fermenter design; industrial fermentations; traditional approaches; modern molecular approaches; molecular typing methodologies; ethical and legal issues relevant to biotechnology; agro-biodiversity and intellectual

property rights. **Y4SII** (*Prerequisites: BIOC 204 and FOST 212*)

FOST 425: Applications of Enzyme Technology in Foods (45/0, CF: 3.0)

Genetic engineering, and immunology for the production of safe foods and food ingredients; proteins as functional food ingredients; applications and regulations of protein biotechnology in the food industry; industrial production of enzymes from microorganisms; applications in the production of food ingredients (flavoring agents, organic acids, food additives and amino acids); applications in diagnostics for food testing (genetic based diagnostic and identification systems,; commercial opportunities and appropriateness of food processing biotechnology in low income countries. **Y4SI**

FOST 448: Principles of Food Processing and Preservation (30/45, CF: 3.5)

Attributes of food quality; food spoilage; Objectives of food processing and preservation; Heat treatment, pH, temperature, water activity, chemical preservation, irradiation and packaging in food preservation; Processing of food products. **Y4SI**.

FOST 449: Non-Dairy Food Commodity Technologies (30/45, CF: 3.5)

Attributes of food quality; food spoilage; Objectives of food processing and preservation. Manufacture of food products other than milk products including cereals and root crops, fruits and vegetables, non-alcoholic beverages, alcoholic beverages, sugar and confectionaries, edible fats and oils, meat, poultry and sea foods. **Y4SI**

FOST 461: Packaging, Storage and Distribution of Foods (30/0, CF: 2.0)

Functions of food packaging; packaging materials; forms and application of packages, storage of packaging

materials; storage of raw materials; storage of bulk and packaged foods; food transportation and distribution, new trends in packaging. **Y4SI**

FOST 462: Food Plant Operations Management (30/0, CF: 2.0)

Nature of food plant operations; design of food plant operations; role of management in decision making; levels of food plant management; management hierarchy charts and personnel responsibilities; delegation and authority; managing resources – human, financial, equipment, time and space; managing for performance; managing for quality and for profitability (cash flow statements, balance sheets etc.); inventory management; definition of inventory and its relationship with raw material acquisition, production and delivery schedules; movement of inventory. Managing the supply chain – definition of supply chain, operation on supply chain and its relationship with raw material supply, production, marketing and sales; international/global operations management; forecasting; electronic commerce. **Y4SI**

FOST 463: Food Product Development and Marketing (30/0 CF: 2.0)

Objectives of product development; stages of product development; Role of research, engineering and food science in new product development; development of a production and marketing strategy; developing and testing prototypes; package development; test-marketing of new products; process evaluation, scaling up, product costing, marketing and sales strategy; market surveillance of product performance. New trends including nutraceuticals and functional foods **Y4SII**

FOST 464: Sanitation and Waste Management (30/15, CF: 2.5)

Sanitary plant layout and equipment design; cleaning and sanitation of food processing equipment and buildings; personnel health and hygiene; management of food processing plant wastes; pests and vermin control; relevant legislation. To include a visit to a sewage plant. **Y4SII**

FOST 465: Food Entrepreneurship (30/0, CF: 2.0)

Definitions and scope; decision and challenges of entrepreneurship; business setup; product and service; sources of financing; intellectual property rights; entry strategies for new businesses; legal aspects of enterprise operation/ government policies; marketing logistics; business plan; sources of technical services; entrepreneurship and the economy, commissioning; licensing. Food business in the internet.

Y4SII

FOST 481: Scientific Writing and Reporting (15/30, CF: 2.0, Y4SII)

Scientific seminar preparation, writing and presentations on selected topics in Food Science and Technology Seminar presentation by students, staff and relevant outside speakers.

FOST 482: Project Proposal Development (15/30: CF 2.0) Y4S1

Students select topics in any of the major curriculum disciplines and write a proposal for carrying out a research project on it. Assessment and approval is by oral presentation and a report of the research proposal.

FOST 483: Research Project Implementation (15/30: CF 2.0) Y4S2

Students carry out individual research of the approved proposal and supervised by departmental staff to produce

an original report. Assessment is by oral presentation and a report of research results

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

	Programme Learning Outcomes	Y1		Y2		Y3		Y4	
		Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	Possess the knowledge and understanding of the food industry in Kenya and the region/global.	Introduction to Food Industry	2.0						
PLO -2	Provide technical support, and operate in various capacities along different segments of the food value chain and particularly in the food processing facilities.	Fundamentals of Food engineering I	3.0	Fundamentals of Food engineering II	3.0	Animal Diseases	4.0	Food Toxicology	3.0
		General Mathematics	3.0	Cell Biology	3.0	Food Processing Instrumentation	2.0	Dairy Technology I	2.0
		Introduction to Environmental science	3.0	Analytical chemistry	3.0	Food analysis	4.0	Food Packaging, Storage and Distribution	2.0
		Physical and inorganic chemistry	3.0	Principles of Human nutrition	3.0	Sugar Technology and confectionaries	2.5	Food Quality Assurance	2.0
		General Zoology	3.0	Food Microbiology I	4.0	Non-alcoholic beverages	2.5	Agricultural Value Chain Analysis and Management	3.0
		Principles of crop production	3.5	Food Plant Utilities and services	3.0	Edible fat and oil technology	2.5	Environmental Impact Assessment	3.0
		General Microbiology	3.0	Animal physiology	3.0	Animal nutrition and feeding	4.0	Sanitation and Waste Management	2.5
		Organic chemistry	3.5	Electrical Engineering	3.0			Dairy Technology II	3.5
		Gross anatomy	4.0	Food chemistry I	3.0	Nutritional biochemistry	3.0	Food plant design and layout	2.5
		General physics	3.5	Basic Biochemistry	3.0	Cereals and root crop technology	4.0		
		General genetics	3.5	Food Microbiology	4.0	Fruits and vegetables technology	3.0		
				Unit Operations in food Processing	3.5		4.0		

						Food chemistry II	2.0		
						Meat, Poultry and seafood technologies	4.0		
						Alcoholic beverages	2.5		
						Industrial Attachment	4.0		
PLO -3	To undertake managerial responsibilities and demonstrate competence in the use of financial management skills in running profitable food enterprises.	HIV-AIDS and Society	3.0	Introduction to Management	3.0			Food Plant Operations Management	2.0
		Principles of management	3.0						
					3.0	Human Resource Management and industrial Relations	3.0		
		Introduction to economics	3.0		3.0	Agricultural economics I	3.0		3.0
					3.0	Food quality assurance	4.0		3.0
PLO-4	Carry out research and extension in the area of food product value addition.	Agricultural communication skills	3.0	Statistics for Agriculture	3.0	Rural Sociology	3.0	Scientific Writing and Reporting	2.0
		Introduction to computer applications	2.5			Agricultural Experimentation	3.0	Project Proposal Development	2.0
		Communication skills	3.0					Research Project Implementation	2.0
PLO5	Venture into the food industry as an entrepreneur	Principles of entrepreneurship	3.0	Principles of Marketing	3.0			Food Entrepreneurship	2.0
PLO6	Gain competence for further training in food technology and management and related fields							Application of Enzymes Technology in Foods	3.0
								Food Biotechnology	3.0
								Product Development and marketing	3.5

FACULTY OF ARTS AND SOCIAL SCIENCES



DEPARTMENT OF ECONOMICS

BACHELOR OF ARTS IN ECONOMICS & HISTORY

1. Philosophy of the Programme

The Bachelor of Arts Economics and History programme combines the two related disciplines and will provide an opportunity for students to be well grounded in both. The programme seeks to generate and disseminate knowledge and skill in economics and history. In the modern world, these specialists are needed in understanding the historical perspectives of societal economic endeavour, hence enabling optimal and sustainable improvement of the social and economic welfare of a nation.

2. Rationale

The History programme combines two closely related disciplines as is the practice in many universities around the world. The diverse courses on offer ensure that students are well-grounded in aspects of the two disciplines. This prepares them for careers in research institutions, NGOs, public administration, journalism, diplomacy, Bachelor of Arts in Economics and, etc. Graduates of the programme may also become professional economists, historians or business people. In the contemporary liberalized global environment, graduates of this programme will find their skills in high demand globally.

3. Goals of the Programme

The programme provides knowledge, skills and attitudes for solving basic problems and exposes students to contemporary economic and social issues and their consequences. This will prepare the graduates to pursue careers in areas, such as management, public administration, industries and corporate world, journalism, law, social and economic planning and development

4. Programme Learning Outcomes

Graduates of the programme will:

- i) Be equipped with knowledge, skills and attitudes in economic and historical issues relevant to contemporary life.
- ii) Apply the acquired knowledge, skills and attitudes to careers that require a mastery of the two disciplines.
- iii) Integrate economic and historical ideas effectively.
- iv) Pursue postgraduate studies in either of the two disciplines.

5. Mode of delivery

This programme will be delivered on full time, e-learning, blended, modular or open and distance learning modes.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy the general minimum entry requirements for admission into the University. Additionally, applicants must have obtained at least a B-(minus) in Mathematics, or a C+ in Mathematics and a B (plain) in Economics / Commerce / Accounting / Business Studies, and History and Government in the KCSE, or its equivalent. Holders of A-level certificates must have at least principal passes in the two disciplines.

6.2 Regulations on Credit Transfer

The credit transfer policy shall be guided by Egerton University Statute 36(3) of 2013.

6.3 Course Requirements

The programme covers four academic years and is designed for students taking Economics and History. To graduate, one must accumulate a minimum of 48 course units, of which at least 20 units should be in each of the two disciplines.

6.4 Student Assessment Policy/Criteria

Student assessment policy/criteria shall be done in accordance with Egerton University statute 36 (6) of 2013.

6.5 Grading System

The grading of the programme shall be conducted in accordance with Egerton University Statute 36(6a) of 2013.

6.6 Examination Regulations

All the examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statutes 36(5) of 2013.

6.7 Moderation of Examination

Egerton University ISO procedure (EU/AA/OP/07) for moderation of examinations shall apply. The examination shall be moderated both internally and externally by according to Egerton University Statute 36 (5) of 2013.

6.8 Graduation Requirements

The B.A in Economics & History shall require the students to have completed a minimum of 24 economics course units, out of which at least 14 will be core courses. The students shall also complete a minimum of 24 History course units, of which 14 units must be core.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Bachelor of Arts Economics and History programme is hosted by the Department of economics, Faculty of Arts of Egerton University. It is overseen by a Programme Leader appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated after every academic cycle with reference to ISO procedure for quality Assurance of academic programmes EU/VC/OP/05.

8.3 Course Coding

The BA in Economics and History courses are coded as follows:-

- (i) The code ECON refers to Economics Department
- (ii) The first digit indicates the year of study
- (iii) The second digit indicates the subject matter field in Economics
- (iv) The second digit indicates the subject matter field in Economics as follows: -
 - 0 General Economic courses
 1. Microeconomics courses
 2. Macroeconomics courses
 3. Quantitative techniques courses
 4. Applied Economic courses
 5. Applied Economic courses
 6. Research Project courses.
- (v) The third digit indicates the serial number of the courses.

9 Courses/Units offered for the Programme

a) Common Core courses

The programme shall have at least 3 common core courses in line with the university philosophy and national values.

(b) Schedule of Courses

YEAR I SEMESTER I

CODE	TITLE	L	P	CF
COMS 111	Communication Skills	45	0	3.0

ECON 111	Principles of Microeconomics	45	0	3.0
ECON 130	Introduction to Mathematics for Economists	45	0	3.0
HIST 100	Introduction to Academic History	45	0	3.0
HIST 130	The Making of Kenya	45	0	3.0
PHIL 101	Introduction to Logic	45	0	3.0
TOTAL		270	0	18.0

YEAR I SEMESTER II

ECON 121	Principles of Macroeconomics	45	0	3.0
ECON 140	Contemporary Economic Issues in Africa	45	0	3.0
HIST 110	Africa in World History	45	0	3.0
HIST 131	Themes in East African History	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0
TOTAL		270	0	18.0

YEAR II SEMESTER I

CODE	TITLE	L	P	CF
ECON 212	Intermediate Microeconomic Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
ECON 233	Economic Statistics I	45	0	3.0
HIST 210	Sources of African History I	45	0	3.0
HIST 220	Topics in the History of Agriculture I	45	0	3.0
HIST 280	History of Science and Technology I	45	0	3.0
TOTAL		270	0	18.0

YEAR II SEMESTER II

CODE	TITLE	L	P	CF
ECON 222	Intermediate Macroeconomic Theory	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
ECON 234	Economic Statistics II	45	0	3.0
HIST 211	Sources of African History II	45	0	3.0
HIST 221	Topics in the History of Agriculture II	45	0	3.0
HIST 281	History of Science and Technology II	45	0	3.0
TOTAL		270	0	18.0

YEAR III SEMESTER I

CODE	TITLE	L	P	CF
ECON 303	Economic Development I	45	0	3.0
ECON 331	Econometrics I	45	0	3.0
ECON 340	Research Methodology I	45	0	3.0
HIST 325	History of Economic Thought I	45	0	3.0
HIST 330	The Agricultural History of Kenya I	45	0	3.0
Elective courses (2)		45	0	3.0
TOTAL		315	0	21.0
Elective (At least one from each discipline)				
ECON 357	Urban and Regional Economics	45	0	3.0
ECON 355	Economics of Industry	45	0	3.0
HIST 332	History of the Kenya Labour Movement	45	0	3.0
HIST 335	Selected Topics in African Economic History I	45	0	3.0

YEAR III SEMESTER II

CODE	TITLE	L	P	CF
ECON 304	Economic Development II	45	0	3.0
ECON 332	Econometrics II	45	0	3.0
ECON 351	Economics of Money and Banking	45	0	3.0
HIST 326	History of Economic Thought II	45	0	3.0
HIST 331	The Agricultural History of Kenya II	45	0	3.0
Elective courses (2)		90	0	6.0
TOTAL		315	0	21.0

Elective (At least one from each discipline)

ECON 356	Transport Economics	45	0	3.0
ECON 353	Economics of Labour	45	0	3.0
HIST 336	Selected Topics in African Economic History II	45	0	3.0
HIST 338	African Labour History II	45	0	3.0

**YEAR IV SEMESTER I
CORE COURSES**

CODE	TITLE	L	P	CF
ECON 441	International Economics I	45	0	3.0
ECON 452	Public Finance and Fiscal Policy	45	0	3.0
HIST 420	The International Working Class Movement I	45	0	3.0
HIST 424	History of International Economic Organizations	45	0	3.0
Elective courses (2)		90	0	6.0
TOTAL		270	0	18.0

ELECTIVE COURSES

Elective (At least one from each discipline)				
CODE	TITLE	L	P	CF
ECON 453	Economics of Public Policy	45	0	3.0
ECON 458	Economic Demography	45	0	3.0
ECON 455	Environmental Economics	45	0	3.0
HIST 422	Global Studies in Conflict & Conflict Resolution I	45	0	3.0
HIST 430	Perspectives in Africa's International Relations I	45	0	3.0

YEAR IV SEMESTER II

CODE	TITLE	L	P	CF
ECON 442	International Economics II	45	0	3.0
ECON 459	Project Planning and Evaluation	45	0	3.0
HIST 459	The International Working Class Movement II	45	0	3.0
HIST 425	Topical Issues in Economic History	45	0	3.0
Elective courses(2)		90	0	6.0
TOTAL		270	0	18.0

Elective (At least one from each discipline)

ECON 454	Health Economics	45	0	3.0
ECON 462	Entrepreneurship Economics	45	0	3.0
HIST 423	Global Studies in Conflict & Conflict Resolution II	45	0	3.0
HIST 431	Perspectives in Africa's International Relations II	30	30	3.0

**BACHELOR OF ARTS IN
ECONOMICS & SOCIOLOGY****1. Philosophy of the Programme**

The programme seeks to generate and disseminate knowledge and skill in economics and sociology. In the modern world, these specialists are needed in understanding the socio-economic dynamics so as to improve the social and economic development of a nation.

2. Rationale

The Bachelor of Arts in Economics and Sociology programme combines economics and sociology disciplines. The Programme will prepare students for careers in research institutions, NGOs, Public and private sectors, among other job opportunities. Graduates of the programme will also be professional economists, sociologists or business people.

3. Goals of the Programme

The programme provides knowledge, skills and attitudes for solving basic problems and exposes students to contemporary economic and social issues and their consequences. This will prepare the graduates to pursue careers in areas, such as management, public administration, industries and corporate world, journalism, law, social and economic planning and development

4. Programme Learning Outcomes

By the end of this Bachelors Degree programme, graduates will be able to:

- Analyze contemporary economic and sociological issues;
- Pursue professional careers in any of the two disciplines;
- Conduct research and issue policy guidelines to deal with social economic problems at local, national and international level
- Pursue postgraduate studies in any of the two disciplines.

5. Mode of delivery

The Programme will be offered in full time and part – time modes.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy the general minimum entry requirements for admission into the University.

Additionally, applicants must have obtained

- i) at least a B- in Mathematics, or
- ii) a C+ in Mathematics and a B- in Economics/Commerce/Accounting/Business Studies, in the KCSE, or its equivalent.

Holders of A-level certificates must have at least two principal passes, one of which must be in economics or mathematics

6.2 Credit Transfer

The credit transfer shall be guided by Egerton University Statute 36(3) of 2013.

6.3 Course Requirements

The course requirements shall be guided by ISO procedure for teaching number (EU/AA/OP/06 rev 3)

6.4 Student Assessment Criteria

Procedures for course examination and conditions for the award of the degree are stipulated in the common university regulations governing the undergraduate degree.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance within Egerton University Statute 36(6a) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute No 36, 2013. ISO procedures number EU/AA/OP/07 will apply.

6.7 Moderation of Examination

The examination shall be moderated both internally and externally by according to Egerton University Statute 36 (5) of 2013 and ISO procedure (EU/AA/OP/07) for moderation of examinations.

6.8 Graduation Requirements

The B.A in Economics & Sociology shall require the students to have completed a minimum of 24 economics course units, out of which at least 14 will be core courses. The students shall also complete a minimum of 24 Sociology units, of which 14 units must be core.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Leader

The Bachelor of Arts Economics and Sociology programme is hosted by the Department of Economics, Faculty of Arts of Egerton University. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

A curriculum review exercise shall be carried out at every end of a 4 year cycle for purposes of reorienting the programme with current, up-to-date pedagogical techniques.

8.3 Course Coding

The BA in Economics and History courses are coded as follows:-

- (i) The code ECON refers to Economics Department
- (ii) The first digit indicates the year of study
- (iii) The second digit indicates the subject matter field in Economics

- (iv) The second digit indicates the subject matter field in Economics as follows: -

- 0 General Economic courses
- 1 Microeconomics courses
- 2 Macroeconomics courses
- 3 Quantitative techniques courses
- 4 Applied Economic courses
- 5 Applied Economic courses
- 6 Research Project courses.

- (v) The third digit indicates the serial number of the courses.

For Sociology Courses coding will be as follows:

The course code is denoted by four capital letters namely; SOCI refers to the Department of Peace, Security and Social Studies, followed by three digits. The first digit 1, 2, 3 or 4 shall represent the year of study,

0 represents compulsory/core courses and

1 denotes elective courses.

The last digit denotes the course ranking in the discipline.

9 Courses/Units offered for the Programme

(a) University Common Core courses

(b) Schedule of Courses

YEAR I SEMESTER I

CODE	TITLE	L	P	CF
AGBM 101	Introduction to Business	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of Microeconomics	45	0	3.0
ECON 130	Introduction to Mathematics for Economists	45	0	3.0
SOCI 101	Introduction to Sociology	45	0	3.0
SOCI 102	Introduction to Anthropology	45	0	3.0
TOTAL		270	0	18.0

YEAR I SEMESTER II

AGBM 210	Financial Accounting I	45	0	3.0
ECON 121	Principles of Macroeconomics	45	0	3.0
ECON 140	Contemporary Economic Issues in Africa	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0
SOCI 103	Rural Sociology	45	0	3.0
SOCI 104	Introduction to Social work	30	30	3.0
TOTAL		300	30	21.0

YEAR II SEMESTER I

ECON 212	Intermediate Microeconomic Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
ECON 233	Economic Statistics I	45	0	3.0
SIHL 100	Society and International Humanitarian Law	45	0	3.0
SOCI 201	Methods of Social Research I	45	0	3.0
SOCI 202	Community Development and Social Welfare	45	0	3.0
Elective	At least one	45	0	3.0
TOTAL		315	0	21.0
ELECTIVES (ANY ONE)				
SOCI 211	Collective Behaviour and Social Movements	45	0	3.0
SOCI 212	Sociology of the Family	45	0	3.0
SOCI 214	Child and Society	45	0	3.0

YEAR II SEMESTER II

ECON 222	Intermediate Macroeconomic Theory	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
ECON 234	Economic Statistics II	45	0	3.0
SOCI 203	Social structures of E. African societies	45	0	3.0
SOCI 204	Social Institutions	45	0	3.0
Elective	Any one	45	0	3.0
TOTAL		270	0	18.0

Electives (any one)

PSYC 112	Human Growth and Development	45	0	3.0
SOCI 213	Social Roles	45	0	3.0

NB: OTHER** stands for Courses as recommended in other 2 disciplines

YEAR III SEMESTER I

ECON 303	Economics Development I	45	0	3.0
ECON 331	Econometrics I	45	0	3.0
SOCI 301	Foundations of Sociological Theory	45	0	3.0
SOCI 304	Social Psychology	45	0	3.0
Elective	Any two	90	0	6.0
TOTAL		270	0	18.0

Electives (two – one from Economics & one from Sociology)

ECON 301	History of Economic Thought I	45	0	3.0
ECON 355	Economics of Industry	45	0	3.0
SOCI 307	Social Demography	45	0	3.0
SOCI 311	Urban Sociology	45	0	3.0
SOCI 312	Sociology of Work and Occupation	45	0	3.0

YEAR III SEMESTER II

ECON 304	Economic Development II	45	0	3.0
ECON 332	Econometrics II	45	0	3.0
SOCI 303	Criminology	45	0	3.0
SOCI 305	Methods of Social Research II	30	30	3.0
SOCI 315	Social Policy and Administration	45	0	3.0
Elective	Any two			
TOTAL		210	30	15.0
Electives (two – one from economics & one from sociology)				
ECON 302	History of Economic Thought II	45	0	3.0
ECON 357	Urban and Regional Economics	45	0	3.0
ECON 351	Economics of Money and Banking	45	0	3.0
ECON 352	Agricultural Development Policy	45	0	3.0
ECON 353	Economics of Labor	45	0	3.0
SOCI 313	Sociology of Family Planning and Population Policies	45	0	3.0
SOCI 314	Gender Issues & Development	45	0	3.0
SOCI 316	Race, Ethnicity and Stratification	45	0	3.0

YEAR IV SEMESTER I

ECON 441	International Economics I	45	0	3.0
ECON 452	Public Finance and Fiscal Policy	45	0	3.0
SOCI 401	Contemporary Sociological Theory	45	0	3.0
SOCI 402	Environmental Sociology	45	0	3.0

Elective	Any two	90	0	6.0
TOTAL		270	0	18.0
Electives (two – one from economics & one from sociology)				
CODE	TITLE	L	P	CF
ECON 456	Economics of Education	45	0	3.0
ECON 453	Economics of Public Policy	45	0	3.0
ECON 55	Environmental Economics	45	0	3.0
SOCI 411	Sociology of Mass Communication	45	0	3.0
SOCI 412	Deviant Behavior	45	0	3.0
SOCI 415	Conflict Resolution & Management	45	0	3.0

YEAR IV SEMESTER II

ECON 442	International Economics II	45	0	3.0
ECON 459	Project Planning, Monitoring and Evaluation	45	0	3.0
SOCI 406	Social Change and Development	45	0	3.0
SOCI 409	Disaster Management	45	0	3.0
Elective	Any two	90	0	6.0
TOTAL		270	0	18.0
Electives (two – one from economics & one from sociology)				
ECON 451	Financial economics	45	0	3.0
ECON 454	Health Economics	45	0	3.0
SOCI 413	Political Sociology	45	0	3.0
SOCI 414	Human Ecology	45	0	3.0
SOCI 416	Medical Sociology	45	0	3.0

BACHELOR OF SCIENCE IN ECONOMICS AND STATISTICS

1. Philosophy of the Programme

The programme is anchored on philosophical tenets of Student Centred, Critical Thinking, Intellectual Diversity and Best Practices achieved through learning and administrative strategies.

2. Rationale

The programme enables students employ the twin disciplines in describing, comparing and correlating important economic phenomena of production, consumption and distribution. Recognizing the growing demand in personnel trained in mathematical, statistical and accounting skills-both in the public and private sectors- the programme aims to fill this deficit occasioned by the same. The degree of Bachelor of Science in Economics and Statistics is a market driven programme.

3. Goals of the Programme

The programme provides students with thorough understanding of the theories, principles and analytical techniques in the economics and statistics disciplines as taught worldwide.

4. Programme Learning Outcomes

By the end of the programme, graduates will be able to:

- Analyze contemporary issues using both economics and statistical analytical methodologies.
- Conduct research in economics, and provide policy guidelines to myriad economic problems at local, national and international level.
- Pursue postgraduate studies in either economics or statistics disciplines.
- Apply the acquired knowledge, skills and attitudes in careers in economics or statistics in public and private sectors both locally and globally.

5. Mode of delivery

The Programme's mode of delivery is face to face and part-time.

6. Academic Regulations for the Programme

6.1 Admission Requirements

- Applicants to this programme must satisfy the minimum entry requirements for admission into the University.
- In addition, applicants must have at least KCSE grade of B minus (B-) in Mathematics, or C+ in Mathematics and B in Economics/Commerce/Accounting/Business studies. Holders of "A" level qualifications with at least two principal passes-one of which must be in Economics or Mathematics- also qualify.

6.2 Credit Transfer

As pertain to this programme, the credit transfer policy shall be guided by Egerton University Statute 36(3) of 2013.

6.3 Course Requirements

The course requirements shall be guided by ISO procedure for teaching number (EU/AA/OP/06 rev 3)

6.4 Student Assessment Policy/Criteria

Student assessment policy/criteria shall be done in accordance with Egerton University statute 36 (6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance within Egerton University Statute 36(6a) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute No 36, 2013. ISO procedures number EU/AA/OP/07 will apply.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass a minimum of 150 credit factors within the stipulated period.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute 36(6) of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Bachelor of Science in Economics and Statistics programme is hosted by the Department of Economics, Faculty of Arts and Social Sciences. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

A curriculum review exercise shall be carried out at every end of a 4 year cycle for purposes of reorienting the programme with current, up-to-date pedagogical techniques.

8.3 Course Coding

The BA in Economics and History courses are coded as follows:-

- (i) The code ECON refers to Economics Department
- (ii) The first digit indicates the year of study
- (iii) The second digit indicates the subject matter field in Economics
- (iv) The second digit indicates the subject matter field in Economics as follows: -
 - 0 General Economic courses
 - 1 Microeconomics courses
 - 2 Macroeconomics courses
 - 3 Quantitative techniques courses
 - 4 Applied Economic courses
 - 5 Applied Economic courses

6. Research Project courses.

(vi) The third digit indicates the serial number of the courses.

9. Courses/Units offered for the Programme

9.1 Schedule of Courses

YEAR I SEMESTER I

CODE	TITLE	L	P	C.F
ECON 111	Principles of Microeconomics	45	0	3.0
ECON 130	Introduction to Mathematics for Economics	45	0	3.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 132	Analytical Geometry	45	0	3.0
COMS 111	Communication Skills	45	0	12.0
COMP 111	Information Tech and National Development	45	0	12.0
TOTAL		360	0	24.0

YEAR I SEMESTER II

CODE	TITLE	L	P	C.F
ECON 121	Principles of Macroeconomics	45	0	3.0
ECON 140	Contemporary Economic Issues in Africa	45	0	3.0
MATH 111	Differential Calculus	45	0	3.0
MATH 131	Vectors and Mechanics	45	0	3.0
STAT 133	Introductory Statistics	45	0	3.0
PHIL 101	Introduction to Logic	45	0	3.0
ENSC 100	Environmental Education	45	0	3.0
TOTAL		315	0	21.0

YEAR II SEMESTER I

CODE	TITLE	L	P	C.F
ECON 212	Intermediate Macroeconomic Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
ECON 233	Economic Statistics I	45	0	3.0
ACMP 121	Introduction to Programming I (Java)	45	0	3.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0
MATH 240	Probability and Statistics I	45	0	3.0
TOTAL		315	0	21.0

YEAR II SEMESTER II

CODE	TITLE	L	P/T	C.F
ECON 222	Intermediate Macroeconomics Theory	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
ECON 234	Economic Statistics II	45	0	3.0
MATH 213	Linear Algebra I	45	0	3.0
STAT 233	Advanced Probability & Statistics	45	0	3.0
AGBM 211	Financial Accounting	45	0	3.0
TOTAL		270	0	18.0

YEAR III SEMESTER I

CODE	TITLE	L	P	C.F
ECON 303	Economic Development I	45	0	3.0
ECON 313	Advanced Microeconomic	45	0	3.0

	Theory			
ECON 331	Econometrics I	45	0	3.0
ECON 360	Research Methodology	45	0	3.0
MATH 342	Ordinary Differential Equations	45	0	3.0
STAT 332	Theory Of Estimation	45	0	3.0
Elective course	Probability and Statistics I	45	0	3.0
TOTAL		315	0	21.0
ELECTIVES (AT LEAST ONE PER SPECIALIZATION AREA)				
1	ECONOMIC DEVELOPMENT			
CODE	TITLE	L	P/T	C.F
ECON 342	Economics of Labour	45	0	3.0
ECON 352	Agricultural Development Policy	45	0	3.0
2	MICROECONOMICS			
CODE	TITLE	LEC	PRAC	C.F
ECON 301	History of Economic Thought I	45	0	3.0
ECON 345	Technology and Industrialization	45	0	3.0
AGBM 312	Managerial Accounting	45	0	3.0
3	ECONOMETRICS AND MATHEMATICS			
CODE	TITLE	L	P/T	C.F
COMP 313	Computing I	45	0	3.0
STAT 340	Statistical Quality Control	45	0	3.0

YEAR III SEMESTER II

CODE	TITLE	L	P/T	C.F
ECON 304	Economic Development II	45	0	3.0
ECON 323	Advanced Macroeconomic Theory	45	0	3.0
ECON 332	Econometrics II	45	0	3.0
ECON 351	Economics of Money and Banking	45	0	3.0
ECON 361	Industrial Attachment	45	0	3.0
STAT 349	Sampling Methods	45	0	3.0
Elective course		45	0	3.0
TOTAL		315	0	21.0
ELECTIVES (AT LEAST ONE PER SPECIALIZATION AREA)				
1	ECONOMIC DEVELOPMENT AND MICROECONOMICS			
CODE	TITLE	L	P/T	C.F
ECON 356	Transport Economics	45	0	3.0
ECON 357	Urban and Regional Economics	45	0	3.0
2	ECONOMETRICS AND MATHEMATICS			
CODE	TITLE	L	P/T	C.F
MATH 311	Group Theory	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
AGEC 360	Data Processing, Systems Analysis & Design	45	0	3.0

YEAR IV SEMESTER I

CODE	TITLE	L	P/T	C.F
ECON 441	International Economics I	45	0	3.0

ECON 460	Research Project	45	0	3.0
MATH 434	Partial Differential Equations	45	0	3.0
STAT 345	Design and Analysis of Experiments	45	0	3.0
STAT 432	Testing of Hypothesis	45	0	3.0
Elective course		45	0	3.0
TOTAL		270	0	18.0
ELECTIVES (AT LEAST THREE PER SPECIALIZATION AREA)				
1	METHODOLOGY AND MATHEMATICS			
CODE	TITLE	L	P/T	C.F
ECON 434	Operations Research	45	0	3.0
MATH 454	Non-Parametric Methods	45	0	3.0
ECON 448	Institutional Economics	45	0	3.0
2	APPLIED ECONOMICS			
CODE	TITLE	L	P/T	C.F
ECON 456	Economics of Education	45	0	3.0
ECON 453	Economics of Public Policy	45	0	3.0
ECON 444	Entrepreneurship Economics	45	0	3.0
ECON 455	Environmental Economics	45	0	3.0

YEAR IV SEMESTER II

CODE	TITLE	L	P/T	C.F
ECON 442	International Economics II	45	0	3.0
ECON 452	Public Finance & Fiscal Policy	45	0	3.0
MATH 449	Time Series Analysis	45	0	3.0

Elective course		45	0	3.0
Elective course		45	0	3.0
TOTAL		270	0	18.0
ELECTIVES (AT LEAST TWO PER SPECIALIZATION AREA)				
1	APPLIED ECONOMICS			
CODE	TITLE	L	P/T	C.F
ECON 435	Game Theory	45	0	3.0
ECON 443	Project Planning & Evaluation	45	0	3.0
ECON 454	Health Economics	45	0	3.0
2	RESEARCH PROJECT			
CODE	TITLE	L	P/T	C.F
STAT 443	Applied Multivariate analysis	45	0	3.0
STAT 445	Design and Analysis of Experiments II	45	0	3.0
COMP 427	Computing II	45	0	3.0
3	TIME SERIES			
CODE	TITLE	L	P/T	C.F
MATH 441	Stochastic Processes	45	0	3.0
MATH 442	Algebra II	45	0	3.0
COMP 427	Computing II	45	0	3.0

(c) Course Descriptions

ECON 111: Principles of Microeconomics (45/0: CF 3.0)

Definition, scope and methods of economics; the nature of economics, economic systems and organizations; theory of supply and demand; consumer theory; theory of production and costs; theory of market structure.

ECON 121: Principles of Macroeconomics (45/0: CF 3.0)

Definition and scope of macroeconomics; micro and macroeconomic links; National income accounts; the circular flow of national income; national income determination; the consumption, investment and saving functions; money demand and money supply; macroeconomic issues; monetary and fiscal policies, Unemployment; inflation and balance of payments.

ECON 130: Introduction to Mathematics for Economists (45/0: CF 3.0)

Nature of mathematical economics, Algebra; Fundamental techniques in algebra, logarithms and laws binomial expansions, of logarithmic operations, Set theory-representation, types and operations, Relations and Functions, Linear function; Linear equation; Differentiation; concepts of rate of change and limits, rules of differentiation, Unconstrained optimization of uni-variate functions

ECON 140: Contemporary Economic Issues in Africa (45/0: CF 3.0)

Economic growth and Development. The developing countries, African economies. Structures and performances of African economies. Savings, investment and growth. Population, migration, poverty, inequality, and environmental concerns and impact of climate changes in economies. Unemployment, Inflation; Balance of payments; Fiscal and Monetary issues. Agriculture, industrialization Technology. Entrepreneurship - private and public enterprises. Regional integration.

ECON 212: Intermediate Microeconomic Theory (45/0 CF 3.0)

Theory of consumer behaviour; theory of consumer choice; equilibrium analysis of the consumer theory; application of consumer demand theory; equilibrium analysis of the producer theory; market structure; market factor pricing; general equilibrium analysis; (PREREQUISITE:ECON 111)

ECON 222: Intermediate Macroeconomic Theory (45/0: 3.0)

Extension of the Keynesian income determination model. Theories of Consumption, savings and investment. Theories of money. The IS-LM framework. Inflation, employment and balance-of-payments and exchange rates. Monetary policy and fiscal policies. (PREREQUISITE:ECON 121)

ECON 230: Mathematics for Economists I (45/0: CF 3.0)

Algebra; set theory-sequence of a set, limits of a sequence, interior point of a set, set interval, Functions and relations; Quadratic functions, rational functions, power functions, Equations and in-equations; quadratic equations, linear simultaneous equations, in-equations. Differential calculus; chain rule, quotient rule, partial derivatives, total derivatives, Optimization of multivariate functions; Unconstrained and Constrained optimization (PREREQUISITE: ECON 130 or MATH 100 for non-economics students)

ECON 231: Mathematics for Economists II (45/0: CF 3.0)

Matrix Algebra; matrix operation, solution of linear simultaneous equations by matrix algebra(Cramer's rule, Solution by matrix inverse), Input-Output model, Exponential and logarithmic functions, Optimal timing, Dynamic analysis and Integral calculus, Differential and difference equations, Linear programming (PREREQUISITE: ECON 230)

ECON 233: Economic Statistics I (45/0: CF 3.0)

Nature and scope of economic statistics. Census and sampling. Classification and presentation of data. Descriptive statistics. Measure of central tendency and

dispersion. Frequency distributions. Lorenz curve. Index numbers. Probability theory. Introduction to normal distribution.

ECON 234: Economic Statistics II (45/0: CF 3.0)

Normal and Binomial distribution. Theory of small samples. Sampling distribution of the mean and of the proportion. Population, statistics. Statistical estimation and hypothesis testing; normal students t, Chi-square and the F-distributions. One and two-way analysis of variance. Regression and correlation analysis. (PREREQUISITE:ECON 233)

ECON 301: History of Economic Thought I (45/0: CF 3.0)

Pre-mercantilist and mercantilist economic thought. The physiocratic model. The classical school; Laissez faire economy, Classical political economy. Utopian socialism. Marx's critique of the classical political economy. The Marshallian and marginalism. General equilibrium. The Austrian school. Capital and interest rate.

ECON 302: History of Economic Thought II (45/0: CF 3.0)

Keynesianism. Controversies in the theory of capital. The neo-classical synthesis. Monetarists. Neo-Keynesianism and contemporary criticism. New-Classical and New-Keynesian. The theory of transitions in scientific thought and economic models. Counterfactual hypotheses and quantitative estimation under limited data. The African pre-colonial and post-colonial economic thought. (PREREQUISITE:ECON 301)

ECON 303: Economic Development I (45/0: CF 3.0)

Economic Development and economic growth. Economic development in historical perspective. Theories of growth and development. Development strategies. The old, the present and desired international economic order and, economic development in the developing countries. Comparative analysis of economic development

ECON 304: Economic Development II (45/0: CF 3.0)

Development planning and market processes. Programs and policies for development: Resource allocation, Investment criteria and technological choices, Unemployment, Income distribution, Population, Agriculture and economic development, Industrialization and economic development, International trade and economic development, Finance and economic development. (PREREQUISITE : ECON 303)

ECON 313: Advanced Microeconomic Theory (45/0: CF 3.0)

Consumer behaviour- utility functions, direct and indirect demand functions, expenditure functions: Theory of dualism, Production theory- factor demand functions profit functions. Theory of markets- perfect competition, monopoly, monopolistic competition and oligopoly; general equilibrium theory; choice under uncertainty and risk; welfare economics. (PREREQUISITE:ECON 212)

ECON 323: Advanced Macroeconomic Theory (45/0: CF 3.0)

Monetary and fiscal policies in relation to output and employment- IS and LM. Further analysis of the theories of consumption and investment. Rational expectations and macroeconomics analysis. Dynamic macroeconomics equilibrium analysis. Growth models. Open economy (PREREQUISITE:ECON 222)

ECON 331: Econometrics I (45/0: CF 3.0)

Definition and scope of econometrics. Methodology of applied econometric research. Simple regression analysis; the ordinary least square method. Gauss-Markov Theorem (Blue). Economic applications of single-equation estimation. Multivariate linear regression model in simple algebra. (PREREQUISITE:ECON 234)

ECON 332: Econometrics II (45/0: CF 3.0)

Multivariate linear regression model in matrix algebra. Estimation/regression analysis. Properties of ordinary least squares estimates in matrix rotation. Econometric

problems (autocorrelation, heteroscedasticity and multicollinearity); specification. Simultaneous applications. Forecasting. Distributed lag and autoregressive models. Discrete models, Logit, Probit. (PREREQUISITE:ECON 331)

ECON 351: Economics of Money and Banking (45/0: CF 3.0)

Nature, forms, functions and the role of money in a modern economy. The evolution of money. Theories of money. Evolution of Banking. Characteristics of modern banking systems. Commercial banking, specialized banking and Central banking; money demand and supply. The Money market .The Capital market; Non-Bank financial institutions. Monetary Policy; The role of financial institutions in development; The Kenyan Financial System. International financial institutions. International money.

ECON 352: Agricultural Development Policy (45/0: CF 3.0)

Agricultural in an economy. The goals of agricultural production policy. Land tenure reforms. Settlement and irrigation schemes. Food policy. Technological change in Agriculture. Co-operative farming. Ujamaa and group production. Public expenditure in Agriculture. Research, Extension and education. Agricultural credit. Analysis of alternative institutional arrangements for Agricultural marketing (e.g. Marketing Boards). Agricultural price policy. International commodity agreements. Agricultural planning at national and regional levels.

ECON 353: Economics Of Labour (45/0: CF 3.0)

The concept of labour force. Demand and supply of labour. Wages and unemployment. Employment problem. Population migration. Education and training; trade unions. Government policies and the welfare of the labour force. Labour laws

ECON 354: World Food Economy (45/0: CF 3.0)

Agriculture, food, population and economic development. Nutritional features of the major types of food. Macroeconomic policies and food policy. Economic development and changes in food

consumption. Structural changes in agriculture and food consumption; focus on developed and developing economies. Rural development strategies. National food policy- Kenya

ECON 355: Economics Of Industry (45/0: CF 3.0)

Determinants of market structures. Behaviour of a firm. Market efficiency in oligopolies. The theory and practice of pre-competitive government policies. Internal Organization of a firm, contracts and vertical integration. Technological innovations. Quality of the products and market structures. Government regulations. Licensing of products. The Kenya Bureau of Standards. Public utilities. Worker's safety. Protection of the environment.

ECON 356: Transport Economics (45/0: CF 3.0)

Kinds of transport and infrastructure in the modern world: road, rail, aviation, sea, pipelines etc. The economic and environmental impacts of transport systems. Urban and Inter-urban transport flows and movements, their planning and management; modelling passenger and traffic movements in urban areas; combating the congestion problem peak load pricing theory and other strategies. Examining costs and benefits in transport and infrastructural investments. Evaluating efficiency of public policies on transport and infrastructure e.g. subsidies, parking, road pricing etc. Forecasts of costs and demand function in the transport sector; simulating or alternative provisions of transport facilities.

ECON 357: Urban and Regional Economics (45/0: CF 3.0)

Concepts of centres and regions. Theories of central places, nodes and growth poles. Hierarchy of Social and economic activities in space. Regional interaction and growth. Economic structure and the function of cities. Infrastructures. Demolition and settlement. Social services. Integrated rural development. Rural-urban migration. Rural-urban relationship. Rural and urban poverty. Land distribution and utilization. Regional inequality. Economic externalities of urban concentration. Use of planning techniques in urban and regional economics.

ECON 358: Information Economics (45/0: CF 3.0)

Properties of information, the value of information, information and insurance, Hidden information, screening, Hidden information signalling, Hidden action moral Hazard, Dynamic moral Hazard, Adverse selection, Dynamic adverse selection, Disclosure of private certifiable information, multidimensional Incentive Problems, Multilateral Asymmetric information: Bilateral Trading and Auctions, Multi-agent Moral Hazard and collusion, Incomplete contracts, Foundation of contracting with unverifiable information, Markets and contracts,

ECON 360: Research Methodology

The meaning of research, Purpose/importance of research, Types of research. Research designs: Qualitative and quantitative. Research process: Data collection. Measurement and scaling. Sources of data. Methods/Instruments/tools of data collection. Questionnaire construction. Sampling procedures – sample size determination. Describing data/data processing and analysis: Data entry. Data Analysis. Data presentation and practice: Tabulation, Bar graphs and Histograms, line graphs and Pie charts etc. Descriptive statistics – theory and practice. Inferential statistics: Z- statistic - theory and practice. Student t-Statistic. Chi-Square, Correlation, Regression.

ECON 361: Industrial/Field Attachment

Students will be expected to go for attachment in the field to gain practical skills and knowhow in industry operations related to production, consumption and distribution activities in manufacturing or service sectors. Hands-on skills in monitoring and evaluation methods will be acquired. The student is also expected to understand the role of policy within the sector or industry. Time duration in the field will be 8 weeks during the vacation between Y3 and Y4. Field attachment report - The student will be assessed in the field.

ECON 434: Operations Research (45/0: CF 3.0)

The nature of operations research. Linear programming and the solutions procedures of graphical and simplex – algorithms, advantages disadvantages of the graphical

method; extensions of linear programming covering sensitivity analysis and duality: applications of linear programming to transportation and assignment problems. Game theory. Network models. Input-Output models. Transport problems. Queuing theory. Simulation. Inventory theory.

ECON 435: Game Theory (45/0: CF 3.0)

Static Games of Complete Information: Basic theory – Norm-Form representation of Games, Iterated Elimination of strictly Dominated strategies, Nash Equilibrium and applications, mixed strategies, Existence of Equilibrium, Existence of Nash Equilibrium. Dynamic Games of Complete and perfect Information - Two-Stage Games of complete but imperfect information, Repeated Games, Dynamic games of complete but imperfect information. Static Games of incomplete information - Static Bayesian Games and Bayesian Nash equilibrium, Cournot competition under asymmetric information, Applications an auction, A Double auction, the revelation Principle. Dynamic Games of Incomplete Information - Introduction to perfect Bayesian Equilibrium, Signalling games, Job market Signalling, Corporate investment and capital structure, monetary policy, Refinements of perfect Bayesian Equilibrium

ECON 441: International Economics I (45/0: CF 3.0) Y4S1

Theories of International trade: Mercantilism, Absolute advantage, comparative advantage; the basis for and gains from trade; Partial and general equilibrium; Factor endowment and the Heckscher-Ohlin theory. International Trade Policy; Free trade and protectionism; Tariffs and non-tariff barriers to trade; International trade and economic development; International trade and problem of developing nations, the new internal economic order (NIEO).

ECON 442: International Economics II (45/0: CF 3.0) Y4S2

Open Economy problems and policy: International economic integration theory and practice. Economic integration (experiences from Africa: EAC, COMESA, SADC, ECOWAS, UEMOA). International finance,

foreign debt, structural adjustment programs. International Payments theory. Balance of payments. Theories of exchange-rate determination. Exchange rate systems. International trade and development. Global and industrial specialization. Technological advancement and industrialization in the developing economics. International institutions e.g. UNCTAD, WTO, IMF, WORLD BANK, NEPAD. **(Prerequisite ECON 441)**

ECON 444: Entrepreneurship Economics (45/0: CF 3.0)

Meaning of entrepreneurship: the psychologist's view: the sociologist's view the economist view and the managerial point characteristics. Importance of entrepreneurship in an economy. Basic requirements point characteristics. Importance of entrepreneurship in an economy. Basic requirements for starting running and expanding an enterprise. Micro and Macro constraints to entrepreneurship development and growth. Government policy on entrepreneurship in Kenya. History of entrepreneurship in pre-and post-independence. Kenya. Enterprise support system in Kenya. The policy framework behind the success of East Asian and Israel enterprise success. Technology and industrial growth: impact of technology on small-scale enterprise. Current issues in entrepreneurship in Kenya. Case studies of managing small Business Enterprise.

ECON 448: Institutional Economics (45/0: CF 3.0)

Introductory Concepts in Institutional Economics, Meanings of Institutions, Institutional Environment, Institutional Arrangements, Transaction Costs, Evolution of Institutions, Institutional Analysis & Design Framework, Transactional Costs Framework, Institutional Economics and Conventional Economic Theory, Economics of Imperfect Information, Adverse Selection, Moral Hazard, Coase Theorem, Theory of Property Rights, Theory of Collective Action, Causes of Market Failure, Applications of Institutional Economics in economic history, economic sociology, political economy, agricultural development & Natural Resource Management.

ECON 451: Financial Economics (45/0: CF 3.0)

Capital, Consumption and Investment, Investment Decision: The certainty case, the theory of choice: Utility theory given Uncertainty, State preference theory, Objects of choice: Mean Variance portfolio Theory, Market equilibrium: CAPM and APT, Pricing Contingent Claims: Option Pricing Theory and Evidence, The term Structure of interest rates, Forward contracts and futures, multi-period capital budgeting under uncertainty, real option analysis, efficient capital markets theory, efficient capital markets evidence, information asymmetry and agency theory, Corporate policy Theory, Evidence and Applications, The role of the CFO, performance Measurement, and incentive Design, Valuation tax policy, Capital structure and the cost of capital: theory and evidence, Dividend Policy: theory and Empirical evidence, applied issues in corporate finance, Acquisition, Divestures, Restructuring, and corporate Governance, International Finance management,

ECON 452: Public Finance and Fiscal Policy (45/0: CF 3.0)

Meaning, scope and principles of public finance. The theory of public finance. The role of Government in an economy. Public revenues and expenditures; determination and evaluation. Institutions e.g. Treasury and parliament. Taxation and public debt. Public budget. Fiscal policy and economic development in Kenya. *(PREREQUISITE:ECON 302 & 306)*

ECON 453: Economics of Public Policy (45/0: CF 3.0)

Policies and economic analysis; objectives importance and instruments. Economic rationale for public policies. Economic systems and their policies. Market failure and decision making process. Planning and its role in policy making. Policy making and implementation. Methods of policy evaluation. Economic models of political processes and their impact on economic policy. Income-distribution and choice of public policy. Policy applications; income distribution and choice of public policy. Public private partnership in public policy.

ECON 454: Health Economics (45/0: CF 3.0)

Concepts. Impact of a healthy population in an economy. Effect of health-care on health and the role of health insurance. Demand and supply of doctors and other medical personnel. Demand and supply of health-care. Behaviour of the physician: general market organization of the health industry.

ECON 455: Environmental Economics (45/0: CF 3.0)

The concept of environment. Environment as a public good. Theory of environmental economics; externalities. Property rights, efficiency and social welfare, market and policy failures. The economics of pollution; optimal and efficient solutions. Techniques for environmental appraisal, covering environmental impact assessments, cost-benefit analysis including non-market valuation, and multi-criteria analysis. Environmental problems and pollution control policy in developed and the developing countries. Limits to neo-classical

.ECON 456: Economics of Education (45/0: CF 3.0)

This course is concerned with the development and optimal allocation of human resources. It entails the study of the following concepts. Human Capital theory. Cost Benefit Analysis in Education. Efficiency of Education Systems. Costs and Production functions in Education Equity in the provision of educational resources. Education and Economic Development. Intellectual Dependence and the International and Internal Brain Drain. Major Educational Policy Options – Policies External to educational systems and policies internal to educational systems.

ECON 457: Economics of Transport and Infrastructure (45/0: CF 3.0)

Kinds of transport and infrastructure in the modern world: road, rail, aviation, sea, pipelines etc. The economic and environmental impacts of transport systems. Urban and Inter-urban transport flows and movements, their planning and management; modelling passenger and traffic movements in urban areas; combating the congestion problem peak load pricing theory and other strategies. Examining costs and

benefits in transport and infrastructural investments. Evaluating efficiency of public policies on transport and infrastructure e.g. subsidies, parking, road pricing etc. Forecasts of costs and demand function in the transport sector; simulating or alternative provisions of transport facilities.

ECON 458: Natural Resource Economics (45/0: CF 3.0)

A natural resource. Natural resources; renewable and non-renewable (exhaustible) resources. Common property resources. The efficient and optimal use of natural resources. The theory of optimal resource extraction; production and consumption. Resource-use and the environment, cases: Energy, Fisheries, Forestry, Water, Wildlife and recreation. Resource endowment and economic development. (*PREREQUISITE: ECON 421*)

ECON 459: Monitoring and Evaluation in Economics (45/0: CF 3.0)

Introduction; Monitoring and Evaluation in economics; theories and methods; project phases and indicator setting; programme and project monitoring and evaluation; library and field research methods, data sources, statistical analysis, SWOT analysis, cost-benefit analysis, sector-wide approaches, Participatory approaches; project management, monitoring and evaluation.

ECON 460: Research Project (0/120: CF 4.0)

By the end year four, semester one, the student is expected to have written and presented a research proposal in a group seminar. The student will devote semester two to collection and analysis of research data and to writing of the report. The student is supervised to conduct research aimed at finding possible solutions to problems of current importance in economics. The student will then present the final copy to his/her supervisors for examination. Areas covered include: the nature and purpose of academic writing, planning research projects, conducting research, and purpose theory and methodology, forms of discourse. Format of academic writing and writing research reports.

ECON 459: Project Planning And Evaluation (45/0: CF 3.0)

The Definition and specification of project, Project Appraisal need, stages concepts and principles. Data Requirements. The Necessity of Alternatives. Short Cuts. Project evaluation and selection criteria. The need for Cost-Benefit Analysis Valuation of non-traded goods and services. Economics of Scope and Resources. Policy Objectives. Distribution between Future and Present Consumption. Uncertainties and Investment criteria.

9.2 Service Course offered to other Departments

ECON 100: INTRODUCTORY ECONOMICS (45/0: CF 3.0)

Definition, scope and methods of economics: economic systems and organizations. Microeconomics: elementary theory of supply and demand; production theory; market structures. Macroeconomics: national income accounting; the circular flow of national income; national income determination – the consumption, investment and saving functions. Employment; inflation; fiscal and monetary policies.

9.2 Matrix of alignment to programme learning outcomes for BA (Economics & Sociology)

Programme Learning Outcomes (PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Analyze economic and sociological contemporary issues	Contemporary economic issues in Africa	3.0	Macroeconomic theory	3.0	Macroeconomic theory	3.0	Project planning and evaluation	3.0
PLO 2: Pursue professional careers in any of the two disciplines	Principles of macroeconomics	3.0	Macroeconomic theory	3.0	Economics of money and banking	3.0	International economics	3.0
PLO 3 Conduct research and issue policy guidelines to deal with social economic problems at local, national and international level	Introduction to Mathematics for Economists	3.0	1. economic statistics 2. Methods of Social Research	3.0	research methodology	3.0	economics of public policy	3.0
PLO 4 Pursue postgraduate studies in any of the two disciplines	ALL COURSES		ALL COURSES		ALL COURSES		ALL COURSES	

9.3 Matrix of alignment of courses/units to Programme Learning Outcomes (PLO) for BSc (Economics & Statistics)

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Analyze contemporary issues using both economics & statistical methodologies	Contemporary Economics Issues in Africa Introduction to Statistics	3.0	Economic Statistics I & 2 Probability & Statistics I	3.0	Research Methodology Economic Development I & II Theory of Estimation	3.0	International Economics I Economics of Public Policy	3.0
PLO 2: Conduct research in economics, and provide policy guidelines to myriad economic problems at local, national and international level.	Principles of Microeconomics Principles of Macroeconomics Analytical Geometry	3.0	Intermediate Microeconomics Intermediate Macroeconomics	3.0	Research Methodology Industrial Attachment Sampling Methods	3.0	Research Project Testing of Hypothesis	3.0
PLO 3: Use the acquired skills in careers in economics or statistics in public and private sectors both locally and globally	Introduction to Mathematics for Economists	3.0	Mathematics for Economists II	3.0	Econometrics I Statistical Quality Control	3.0	Public Finance and Fiscal Policy	3.0
PLO 4: Pursue postgraduate studies in either economics or statistical disciplines.	Principles of Microeconomics Principles of Macroeconomics	3.0	Intermediate Microeconomics Intermediate Macroeconomics	3.0	Economics of Money and Banking Design & Analysis of Experiments	3.0	Project Planning and Evaluation	3.0

DEPARTMENT OF LITERATURE LANGUAGES AND LINGUISTICS

DIPLOMA IN LIBRARY AND INFORMATION SCIENCE

1. Philosophy of the Programme

Equipping library and information managers with knowledge and skills to collect, organize, store, retrieve and disseminate information pertinent in Kenya and the World today.

2. Rationale

Today, information management has become an important resource more than ever before. Access to information has enhanced development in society at large. It is imperative to ensure proper organization and dissemination of information in all institutions for their proper functioning. Those charged with the responsibility of manning such information resources should be trained properly in the relevant skills. However, this has not always been the case due to lack of knowledge and skills for information handlers. Therefore, the Diploma in Library and Information Science (LINS) was introduced at Egerton University to cater for these diverse interests at para-professional level. The programme cuts across disciplines while being professionally focused. With the job market in the field of librarianship becoming competitive, the increase in lucrative positions is evident. Therefore, candidates with a Diploma in Information Science have various opportunities.

3. Goal of the Programme

The main goal of this programme is to provide the learner with basic skills and knowledge in library and information studies that will help in efficient collection management and dissemination of information, while ensuring that the information needs of users are satisfied and understand the role and importance of information management. The graduates will be equipped with knowledge and skills to enable them to work in libraries, record centres, media houses and other information centres

4. Programme Learning Outcomes

Upon completion of the course, the graduates will be able to;

- i. Apply the knowledge, skills and attitudes in organization, storage and dissemination of information.
- ii. Acquire knowledge, skills and attitude to enable them work in information related centres
- iii. Pursue higher professional courses.

5. Mode of Delivery

The programme shall be offered on fulltime, part-time, e-learning and distance learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Egerton University Statutes 36(2c) of 2013 for admission in Diploma programme shall apply.

Those having Certificate in Library, Archives and Records Management or equivalent from institutions recognized by Egerton University Senate may be admitted. The certificate must be at Credit level or above or the candidate must have working experience.

6.2 Credit Transfer in the programme

The Egerton University Statute 36(3d) of 2013 shall apply.

6.3 Course Requirement

The course requirement shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment

Student assessment shall be done in accordance with Egerton University Statute 36 (6) of 2013.

6.5 Grading system

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6 Examinations Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (5) of 2013.

6.7 Moderation of Examinations

Moderation of exams shall follow the guidelines stipulated in Egerton University ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

Students must take and pass at least one hundred and sixteen (116.0) credit factors for the award of the Diploma.

6.9 Classification of Degrees

The Diploma in Library and Information Science shall be classified in accordance with Egerton University Statute 36(6) of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Leader

The programme is hosted by the Department of Literature, Languages and Linguistics in the Faculty of Arts and Social Sciences. The Programme academic leader shall be appointed in accordance with University Standards and Guideliness (2014).

8.2 Programme Evaluation

The programme shall undergo an internal self evaluation at the end of each academic cycle in accordance with ISO procedures EU/VC/OP/05.

8.3 Course Coding

The course for this programme shall start with the abbreviation, "LINS" which refers to Diploma in Library and Information Science. The abbreviation is

followed by four (4) digits that uniquely identify the course.

The first digit is a zero (0) denoting the course is part of a diploma programme.

The second digit denotes year of study.

The third digit denotes the semester during which the course is taught

The fourth digit denotes the sequence of the courses in the programme.

9. Courses offered for the programme

9.1 Schedule of Courses

YEAR 1 SEMESTER 2

Code	Title	L	P	CF
LINS 0111	Introduction to Information Science	45	0	3.0
LINS 0112	Library Classification Theory	45	0	3.0
LINS 0113	Cataloguing Theory	45	0	3.0
LINS 0114	Introduction to Records Management	45	0	3.0
LINS 0115	Reference and Information Sources	45	0	3.0
LINS 0116	Communicative English	45	0	3.0
Total		270	0	18.0

YEAR 1 SEMESTER 2

Code	Title	L	P	CF
LINS 0121	Information and Communication in Society	45	0	3.0
LINS 0122	Library Classification Practice	15	30	3.0
LINS 0123	Library Cataloguing Practice	15	30	3.0
LINS 0124	Information Literacy	45	0	3.0
LINS 0125	Internet: Basics and Tools	15	30	3.0
COMP 0190	Information Technology and the Society	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 1

Code	Title	L	P	CF
LINS 0211	Public Relations (PR) in Librarianship	45	0	3.0

LINS 0212	Introduction to Library Statistics	45	0	3.0
LINS 0213	Research Methods	45	0	3.0
LINS 0214	Introduction to Archives and Administration	45	0	3.0
LINS 0215	Administrative History	45	0	3.0
ENSC 0100	Introduction to Environmental Science	45	0	3.0
Total		270	0	18

YEAR 2 SEMESTER 2

Code	Title	L	P	CF
LINS 0221	Information Entrepreneurship	45	0	3.0
LINS 0222	Introduction to Legal Aspects of Information	45	0	3.0
LINS 0223	Documentation, Systems and Services	45	0	3.0
LINS 0224	Management of Libraries, Archives and Information Centres	45	0	3.0
LINS 0225	ICT for Libraries	45	0	3.0
LINS 0226	Field/Industrial Attachment	0	120	4.0
EDFO 0213	Sociology of Education	45	0	3.0
Total		270	0	18.0

YEAR 3 SEMESTER 1

Code	Title	L	P	CF
LINS 0311	Planning and Management of Change	45	0	3.0
LINS 0312	Library Housekeeping Operations	45	0	3.0
LINS 0313	Conservation, Restoration and reprography	45	0	3.0
LINS 0314	Management of Electronic Records	45	0	3.0
LINS 0315	Publishing and Book Trade	45	0	3.0
LINS 0316	Library Automation	45	0	3.0
LINS 0317	Research Proposal Writing	45	0	3.0
Total		315	0	18.0

YEAR 3 SEMESTER 2

Code	Title	L	P	CF
LINS 0321	Introduction to Marketing of Information Products & Services for Library	45	0	3.0
LINS 0322	Library Information and Professional Ethics	45	0	3.0
LINS 0323	Registry Systems, Retirement and Disposal of Records	45	0	3.0
LINS 0324	Financial and Human Resources Management	45	0	3.0
LINS 0325	Library Automation	45	0	3.0
LINS 0326	Research Project	0	120	4.0
GEDS 0322	Gender, Information and Media	45	0	3.0
Total		270	120	22.0

(c) Course descriptions

YEAR 1 SEMESTER 1

LINS 0111: Introduction to Information Science (45/0: CF 3.0) Y1S1

Introduction to Librarianship and Information Science - definition of terms; Historical development of Libraries and Information Centers; Introduction to Archives – definition of terms; Introduction to National, Regional and Global Information Associations and Organizations; Role of Information Science in information management.

LINS 0112: Library Classification Theory (45/0: CF 3.0) Y1S1

Classification – definition of terms, classification of knowledge; Theories, principles and historical development of classification schemes; Enumerated and faceted classification schemes; Dewey decimal Classification (DDC), Universal Decimal Classification (UDC), and Library of Congress (LC); Structure and attributes for formation of subject; Universe of knowledge as mapped in different schemes of classification meaning, importance/objectives and functions of knowledge classification, document classification, indexing of information, book indexing, and periodical indexing.

LINS 0113: Cataloguing Theory 45/0 CF: 3.0 Y1S1

Definition and purpose of catalogue; Why prepare catalogue? Functions of a catalogue; Types of library catalogues; Forms of catalogues; Comparative criteria for judging a good catalogue form; Factors determining the type of entries; Cataloguing codes; Advantages of using cataloguing codes; Characteristics of an ideal cataloguing code; Major cataloguing codes; Cooperative Cataloging; Steps of preparing a cooperative cataloguing; Benefits of cooperative cataloguing; Forms of centralization; Criticism of cooperative cataloguing; International standard book number (ISBN); Introduction to Bibliography; The difference between bibliography and catalogue; Application to ICT in libraries; Machine readable catalogue (MARC); Filing catalogue entries.

LINS 0114: Introduction to Records Management (45/0: CF 3.0) Y1S1

Scope of the subject; Reading material, definition of technical terms, history of records management in Kenya and elsewhere; Evolution of public administration in general and in Kenya as a case Study; Relationship of records services, Survey of records: semi-current and non-current records; Appraisal of records; for retention and destruction; Surveying current records in organizations including an institution's library, the survey site, compiling the report, recent trends in records management.

LINS 0115: Reference and Information Sources (45/0: C.F 3.0) Y1S1

Introduction to reference and Information sources; Criteria for selecting information resources: material resources, institutional resources, information personnel; Role of information personnel; Reference sources; Bibliographic sources; Reference service; User education; Bibliographic services; Current Awareness Services (CAS) and Selective Dissemination of Information (SDI).

LINS 0116: Communicative English (45/0: CF 3.0) Y1S1

Introduction. Meaning of a sentence, sentence types, sentence elements, subject and predicate. Parts of a speech. Verbs-types, functions. Nouns-types, functions, pronouns, articles. Grammatical categories –gender,

person, possession, case. Mechanics- punctuation, sentence structure, stress, intonation, word formation processes.

YEAR 1 SEMESTER 2**LINS 0121: Information and Communication in Society (45/0: CF 3.0) Y1S2**

Purpose of communication; Process for communication; Informal and formal methods of transmission; Essential of effective communication; Barriers of effective communication; Factors to consider in choosing communication media; Written communication; Verbal communication; A/V communication; Traditional forms of tools of management; Interview; Meetings; Communication as a tool of management; Mass media; Transmission of culture.

LINS 0122: Library Classification Practice (15/30: CF 2.0) Y1S2

Introduction to practical classification of information resources; Rules for classifying library information resources; steps in classifying information resources; Components of DDC and LCC schemes; Assigning class numbers using Dewey Decimal Classification and Library of Congress Classification Scheme; Online classification of information resources.

LINS 0123: Library Cataloguing Practice (15/30: CF 3.0) Y1S2

Basic principles of descriptive cataloging; Machine Readable Cataloging (MARC) formats; Bibliographic control and authority control; Online copy cataloging using national standards for cataloging; The OCLC system and local cataloging modules; Introduction to basic principles of classification and subject headings.

LINS 0124: Information Literacy (45/0 C.F 3.0) Y1S2

Introduction and definition of terms; Information Literacy and Life-Long learning; 21st Century survival literacies; characteristics of information literate person/student; Pillars of information literacy; Skills for information literacy; Information seeking strategies; Use of information: Engage (e.g. read, hear, view), Extract relevant information, Synthesis, Organize information from multiple sources, Present the results, Evaluation; Information sources, characteristics of

information; Access and use of electronic resources in libraries and information centers, factors to consider when accessing electronic resources; Use of information literacy standards; Information Literacy and information Technology; Information Literacy and assessment.

LINS 0125: Internet: Basics and Tools (15/30: CF 3.0) Y1S2

An overview of the Internet; History of the Internet; Definitions and objectives; Differences between Internet and Intranet; Types of the Internet; Internet connectivity: dial-up, Leased line, microwave, ISDN, Cable modem; Services and resources available via the Internet; Searching on the Internet and search engines; Evaluation of Internet resources; Electronic information resources; Uses of the Internet access in libraries; Internet versus World Wide Web (WWW), managing a website; World Wide Web, Security ownership and structure of the Internet.

YEAR 2 SEMESTER 1**LINS 0211: Public Relations (PR) in Librarianship (45/0: CF 3.0) Y2S1**

Introduction to Public Relations (PR); Communicating with the public- written and oral; Improving the image of the library; The Public Relations services; Importance of PR in libraries, Personnel in PR; Role of the library service in its regional, National and international sphere; Library PR needs. PR policy; Library progress in a global perspective; Reaching out to the library client: actual and potential library users; Advertising library services; Library exhibitions, workshops/seminars, Open Days, media/press, display, notices, websites, fliers, brochures etc; Planned PR programs- internal and external.

LINS 0212: Introduction to Library Statistics (45/0: CF 3.0) Y2S1

Introduction; Definition of terms; Descriptive and inferential statistics; Variables Application of statistical methods for use in Libraries and Information Centres; Organization and classification of data, graphic representation, measures of central tendency and variability, percentiles, standard scores, correlation and regression; Use of computers for statistical calculations.

LINS 0213: Research Methods (45/0: CF 3.0) Y2S1

Introduction; Definition of terms; Characteristics of research; Types of research; The research process-formulating a research problem, research designs, constructing research instruments, data collection, samples and sampling, proposal writing. Conducting research, collecting data, processing data; Writing a research report; Research and librarianship.

LINS 0214: Introduction to Archives Administration (45/0: CF 3.0) Y2S1

History of archives and its practices from early to present times; Scope of the subject, reading materials, definition of technical terms, objectives and structure of the archives office, acquisition, conservation, exploitation, legislation, governing archives services, functions and control of archives services, staffing and budgeting; Source of archival materials; Custody and transfer of archives, accessioning intellectual arrangement; Retrieval of archival records. Primary, secondary and tertiary uses of archives; Business archives, archival associations at regional to international levels.

LINS 0215: Administrative History (45/0: CF 3.0) Y2S1

Introduction; Definition of terms: administrative history; Historical background of administrative history; Meaning and evolution; Importance of administrative history; Changes in administrative history; Structure of administration in pre-colonial period: in colonial Kenya, in independent Kenya, European expansion overseas; Background of the scramble for partition in East Africa.

YEAR 2 SEMESTER 2**LINS 0221: Information Entrepreneurship (45/0: CF 3.0) Y3S1**

Introduction to Entrepreneurship; Entrepreneur and infopreneur; Characteristics of a successful entrepreneur/infopreneur; Different types of entrepreneurship/ forms of business ownership; Creating problem-solving techniques; Three pillars to an information risk strategy, effects of cutbacks on public services; Developing business plans for various types of businesses; Why business plans fail; The process for establishing small businesses - (development of business idea, market survey/opportunities, assessing competition, evaluation of business idea, undertaking a

trial run, raising funds, company registration and acquiring resources and manage the enterprise); Various opportunities that abound for librarians and information professionals; Lobbying and advocacy in library and information sciences, and how to raise funds for libraries; Branding the image of librarians; Emerging trends in entrepreneurship – ISO 9001:2015; Entrepreneurial advantages in information services.

LINS 0222: Introduction to Legal Aspects of Information (45/0: CF 3.0) Y2S2

Introduction to legal concepts; Freedom of access to information; Fundamentals of human rights; Barriers hindering provision of information; Roles of libraries in provision of information; Introduction to copyright and intellectual property rights; Basic differences between invention, literacy and artistic works; Introduction to censorship.

LINS 0223: Documentation, System and Services (45/0: CF 3.0) Y2S2

Introduction to Documentation; Types of Documentation centres; Sources of Information resources in Documentation Centres; Government Information and Documentation Centres; Bibliographic Services; Universal Availability of Publication (UAP); Universal Bibliographic Control (UBC); Professional Associations; Documentation Policy; National Information Policy (NIP); Hindrances in implementing National Information Policy.

LINS 0224: Management of Libraries, Archives & Information Centres (45/0: CF 3.0) Y2S2

An introduction to management of information centres and services; Information resources; Acquisition systems; Circulation systems; Financing of information systems and services; Buildings for various information systems and services; Stock verification, Book binding; Charging systems; Statistics, annual reports and planning for easy use of resources.

LINS 0225: ICT for Libraries (45/0: CF 3.0) Y2S2

Introduction; Definitions; Impact of Information Technology on library management; Challenges before librarians and library management; Traditional versus modern Librarian; Redefining librarianship; Computers in Information Centres; History of computers in

Information Centres; Computer applications in various Information Centres; Management of information systems; CD-ROM technology in information handling; Advantages and disadvantages of CD-ROM technology; Computers in information networking; computers in information sharing, off-line networking, online networking; Advantages and disadvantages of computers in information networking; Using Library services in provision of information; Management of digital information resources.

LINS 0226: Field/industrial Attachment (0/120: CF 4.0) Y2S2

Students to be attached to firms, government Departments, NGOs and other recognized places where they can apply skills and theoretical knowledge acquired in six semesters of the programme. The preferred sections for attachment are libraries, information and technology centres, registries, archives and record centres, media houses and any other information related centres Assessment to be conducted by University supervisors and heads of respective host organizations. Students will submit log books duly signed by host and University supervisors and present a typed Attachment Reports.

YEAR 3 SEMESTER 1**LINS 0311: Planning and Management of Change (45/0: CF 3.0) Y3S1**

Concept, definition, need and purpose; Types of policies and procedures; Management by Objectives (MBO); Management By Crisis (MBC); Building and space management in all types of libraries and information centres; Risk management; Contingency management; Strategic planning and change management; Planning for effective communication planning related to infrastructure; Library standard procedures and methods of managing change; Use of new tools and techniques in change management; Problems incorporating change; New tools and techniques in management of change etc.

LINS 0312: Library House Keeping Operations (45/0: CF 3.0) Y3S1

Introduction; Meaning and different sections of library and information centres: book ordering, acquisition and technical processes, serials control, circulation, maintenance etc.; Collection Development and

management policies; Procedures, evaluation and weeding; Archiving, conservation, preservation, restoration, including print, non-print and electronic materials; Stock verification- policies and procedures.

LINS 0313: Conservation, Restoration and Reprography (45/0: CF 3.0) Y3S1

Historical overview; Meaning and definition of technical terms; Scope of the subject and the reading materials; Typology of information resources: their properties and consumption, historical background, preventive conservation of information resources, causes of damage and control measures; Restoration of damaged information resources; Reprographic processes; Introduction to microfilming of information resources; Conservation of archives: custody, storage, security and repair.

LINS 0314: Management of Electronic Records (45/0: CF 3.0) Y3S1

Introduction; Definition of terms; Types of electronic records; Accessing electronic records; digital archives-issues of copyright and privacy; Computer systems in managing electronic records: digital imaging; scanning etc.; Document management systems; Policy issues on digitalization; Digital preservation; Challenges in accessing electronic records; Backups systems and security issues; Electronic records and the principles of ownership.

LINS 0315: Publishing & Book Trade (45/0 CF: 3.0) Y3S1

Introduction to book and book publishing; Types of books and structure of a book; Types of publishers; Book publishing: history and evolution of the “book”; The life-cycle of a book/journal publishing; Management/Administrative structure of publishing house/industry; Book publishing in East Africa with reference to Kenya; Publishing and the law; Information and communication technologies (ICT) and publishing; Journal publishing.

LINS 0316: Library Automation (15/30: CF 3.0) Y3S1

Introduction to Library automation; Objectives and scope of library automation; Automation of in-house operations- acquisition, cataloguing, circulation, serial control, OPAC and library statistics; Retrospective

Conversion (RC); Bar-coding; Tattle –strips; multilingual bibliographic databases using Unicode, GIST card; library automation software like; ALICE, T-SERIES, LIBSIS, WINISIS, AMLIB, or any other software available commercially (Turnkey); Practicals on one library software in use.

LINS 0317: Research Proposal Writing (0/120: CF 4.0) Y3S1

Each student has to work on a selected topic related to information science and carry out individual research under the guidance and supervision of the course lecturers to write a research proposal (developed in Y3S1). Every student must then submit the research proposal to the department through the supervisor at the end of the semester.

YEAR 3 SEMESTER 2

LINS 0321: Introduction to Marketing of Information Products & Services for Libraries (45/0 CF: 3.0) Y1S2

Introduction to marketing; Basic Concepts and Definitions; Principles of marketing; Information marketplace; Library customers; Information products and services; Building customer relationships; Marketing Techniques; Marketing Strategy; Creating a Market; Professional Skills for Marketing; marketing ethics; Communication strategies – developing an integrated marketing communications program, Promotion, Traditional marketing strategies, marketing in Digital Age, Cutting-edge internet marketing strategies; Trending issues in marketing of information products and services.

LINS 0322: Library Information and Professional Ethics (45/0/0:CF 3.0) Y3S2

Introduction to professional ethics; Attributes of a profession; Librarianship as a profession; Professional ethics; Professional Associations and their role in the development of the profession; Objectives, functions and study of selected International and National Associations and Organizations- IFLA, COMLA, KSLIC, KULC ALA, KLA, KNLS, KULA, etc.; Professional education and research; Recent trends in the development of Library and Information Science as a Profession.

LINS 0323: Registry Systems, Retirement and Disposal of Records (45/0: CF 3.0) Y3S2

Introduction to Registry systems and Records; History of Retirement and Disposal Records; Meaning and definition of Retirement and Disposal; Retirement records; Disposal schemes: transfer to Archives, Record Centre, sampling, a warning, outward movement of records, destruction, commercial records centres and some developments; Microreprography in record management; Management of records centre operations: sitting and design, services offered for destruction; Records management and modern technology; Impact of Information Technology (IT) on records management and modern technology; Computers and records management; Future projections.

LINS 0324: Library Automation (45/0: CF 3.0) Y3S2

Genesis, definition, objectives and scope of library automation. Automation of in-house operations- acquisition, cataloguing, circulation, serial control, OPAC and library statistics, Retrospective Conversion (RC), Bar-coding, Tattle-strips, multilingual bibliographic databases using Unicode, GIST card; library automation software like; ALICE, T-SERIES, LIBSIS, WINISIS, AMLIB, or any other software available commercially (Turkey). Practicals on one library software in use. Academic trip to selected academic library, public library and/or research library.

LINS 0325: Research Project (0/120: CF 4.0) Y3S2

Each student has to work on a selected topic related to information science and carry out individual research under the guidance and supervision of the course lecturers to write a research project; and must then submit the research report to the department through the supervisor at the end of the semester.

9.3 Matrix of alignment of course/units to programme learning outcomes

PROGRAMME LEARNING OUTCOMES (PLO.)	YEAR ONE		YEAR TWO		YEAR THREE	
	COURSES	C.F	COURSES	C.F	COURSES	C.F.
PLO 1: Students will be capable to master the skills in organization, storage and dissemination of information in various types of institutions.	Introduction to Information Science	3.0	Introduction to Environmental Science	3.0	Planning and Management of Change	3.0
	Introduction to Records Management	3.0	Sociology of Education	3.0	Conservation, Restoration and Reprography	3.0
	Reference and Information Sources	3.0	Administrative History	3.0	Publishing & Book Trade	3.0
	Communicative English	3.0	Information Entrepreneurship	3.0	Library Automation	3.0
	Information and Communication in Society	3.0	Introduction to Legal Aspects of Information	3.0	Library Information and Professional Ethics	3.0
	Information Literacy	3.0	Documentation, System and Services ICT for Libraries	3.0		
	Internet: Basics and Tools	3.0				
PLO 2: Acquire knowledge, skills and attitude to enable them work in information related centres	Information Technology and the Society,	3.0	Introduction to Environmental Science	3.0	Gender, Information and Media Library House Keeping Operations	3.0
	Library Classification Theory	3.0	Public Relations (PR) in Librarianship	3.0	Management of Electronic Records	3.0
	Cataloguing Theory	3.0	Introduction to Archives Administration	3.0	Introduction to Marketing of Information Products & Services for Libraries	3.0
	Introduction to Records Management	3.0	Management of Libraries, Archives & Information Centres	3.0	Library Information and Professional Ethics	3.0
	Reference and Information Sources	3.0			Registry Systems, Retirement and Disposal of Records	3.0
	Library Classification Practice Library Cataloguing Practice	3.0				
PLO 3: The students will be able to pursue higher professional courses.	Communicative English	3.0	Introduction to Library Statistics Research Methods	3.0	Research Proposal Writing	3.0
			Field/industrial Attachment	3.0	Research Project	3.0

BACHELOR OF LIBRARY AND INFORMATION SCIENCE

1. Philosophy of the Programme

The Bachelor of Library and Information Science programme at Egerton University cuts across disciplines whilst being professionally focused. This will produce information professionals who are marketable, both nationally and internationally. Furthermore, the programme has a major element of training in Information and Communication Technology (ICT).

2. Rationale

Information is an important resource in the day-to-day operations of individuals, organizations and society. The world has evolved to an age where information technology and information explosion are here with us. This calls for highly trained professionals in information sciences. The Bachelor of Information Science degree programme is specially tailored for this need. The Bachelor of Information Science programme is a structured, professional and discipline-specific curriculum. There are four main areas of specialization namely: Library and knowledge management; Records and archives management; Information systems and communication technology; Publishing and media informatics.

3. Goal of the Programme

The main goal of this programme is to equip the students with appropriate technical and professional knowledge, skills and attitudes in Information Science. The programme will equip students with knowledge, skills and attitudes for the generation, organization, storage and dissemination of information in different types of information institutions and Information and Communication Technologies required for libraries, media houses and other information centres.

4. Programme Learning Outcomes

At the end of the course, the graduate should be able to:

PLO 1: Access, organize, store and disseminate information in various types of institutions including libraries, records, registries, media houses and other information centres.

PLO 2: Pursue higher professional courses and higher level training at masters and doctorate in information science.

4.1 Specialization Learning Outcomes

During semester 2 of year 3, students specialize in either library and knowledge management, records and archives management or Information systems and Communication Technology. The specific learning outcomes are as follows:

SLO 1: Library and Knowledge Management

At the end of this specialization, the graduate should be able to develop and refine skills for handling and managing of information in knowledge centres and related information environments.

SLO 2: Records and Archives Management

At the end of this specialization, the graduate should be able to develop and refine skills for working in archives, record centres and related information environments.

SLO 3: Information Systems and Communication Technology

At the end of this specialization, the graduate should be able to develop and refine skills in the use of current technology tools for information management.

5. Mode of Delivery

The programme shall be offered on fulltime, part-time, e-learning and distance learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates must meet the minimum Egerton University entry requirements for admission together with those in the Department and Faculty.

Applicants who have passed with at least a Diploma or its equivalent in Library and Information Studies from a recognized institution are also liable for admission.

6.2 Regulation on Credit Transfers in the programme

Credit transfer shall be done in accordance to Egerton University Statute 36(3) of 2013.

6.3 Course Structure and Duration

The course requirement guidelines shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment

Student assessment policy/criteria shall be in accordance with Egerton University Statute 36 (6) of 2013.

6.5 Grading system

Grading of examinations shall be done in accordance with Egerton University Statute 36 (6) of 2013

6.6 Examinations Regulations

All examinations in the programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(5) of 2013.

6.7 Moderation of Examinations

Moderation of exams shall follow the guidelines stipulated in Egerton University ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student must have passed one hundred and fifty one (151) Credit Factors (CFs). These shall consist of one hundred and twenty seven (127) CFs of courses in Library and Information Science (84%) and twenty-four (24) CFs of the Common Core Courses together with the service courses from other disciplines (16%).

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute 36(6) of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme is hosted by the Department of Literature, Languages and Linguistics, in the Faculty of Arts and Social Sciences. The Programme academic

leader shall be appointed in accordance with University Standards and Guideliness (2014).

8.2 Programme Evaluation

The programme shall undergo an internal evaluation at the end of its academic cycle in accordance with ISO procedures EU/VC/OP/05.

8.3 Course Coding

The discipline code used is LINS, meaning “Library and Information Science” followed by three digits

The first digit denotes the year or level of study. The second digit signifies the semester the third digit denotes the sequence of the courses in the programme.

In semester two of the third year students are expected to choose an option of their choice and coding system will be as follows:

- i. The first digit (3/4), will represent third/fourth year of study
- ii. The second digit shall be interpreted as follow:
 - a. (0) represents core courses
 - b. (3) library and knowledge management courses;
 - c. (4) represents records and archives management;
 - d. (5) represents Information and Communication Technology
- iii. The third digit represents the course ranking in the specialization

9.0 Courses/ Units offered for the Programme

9.1 Schedule of Courses

YEAR 1 SEMESTER 1

Code	Title	L	P	CF
LINS 111	Introduction to Information Science	45	0	3.0
LINS 112	Classification Theory	45	0	3.0
LINS 113	Fundamentals of Information Technology	45	0	3.0
LINS 114	Information Literacy	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
PHIL 101	Introductions to Logic	45	0	3.0
Total		255	0	18.0

YEAR 1 SEMESTER 2

Code	Title	L	P	CF
LINS 121	Cataloguing Theory	45	0	3.0
LINS 122	Records Management	45	0	3.0
LINS 123	Publishing and Book Trade	45	0	3.0
ENSC 100	Environmental Education	45	0	3.0
HIST 113	The Making of Kenya	45	0	3.0
PHIL 105	Government and Society	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 1

Code	Title	L	P	CF
LINS 211	Classification Practice	45	0	3.0
LINS 212	Cataloguing Practice	45	0	3.0
LINS 213	Archives Administration	45	0	3.0
LINS 214	Collection Developments and Management	45	0	3.0
LINS 215	ICT for Information Resource Management	45	0	3.0
COMM 242	Gender Issues in Communication	45	0	3.0
Total		225	0	18.0

YEAR 2 SEMESTER 2

Code	Title	L	P	CF
LINS 221	Media Informatics	45	0	3.0
LINS 222	User Studies and Information Services	45	0	3.0
LINS 223	Writing Skills for Information Professionals	45	0	3.0
LINS 224	Computer Networks and Internet	45	0	3.0
EPSC 224	Introduction to Statistics and Research Methods	45	0	3.0
SOCI 202	Community Development and Social Welfare	45	0	3.0
Total		255	0	18.0

YEAR 3 SEMESTER 1

Code	Title	L	P	CF
LINS 311	Preservation of Information Resource	45	0	3.0
LINS 312	Information Organization, Storage and Retrieval	45	0	3.0
LINS 313	Principles and Practices of Management	45	0	3.0
LINS 314	Entrepreneurship for Knowledge Management Centres	45	0	3.0
LINS 315	Online Information Systems	45	0	3.0
LINS 316	Database Management Systems & design	45	0	3.0
Total		255	0	18.0

YEAR 3 SEMESTER 2

Code	Title	L	P	CF
LINS 301	Knowledge Management	45	0	3.0
LINS 302	Information Behaviour	45	0	3.0
LINS 303	Research Methods	45	0	3.0
LINS 304	Industrial Attachment	45	0	3.0

(A student will select ONE option for an area of Specialization)

Either

LINS 331	Financial and Human Resource Management	45	0	3.0
LINS 332	Public Speaking	45	0	3.0
LINS 333	Indexing & Abstracting	45	0	3.0

Or

LINS 341	Management of Record Centres	45	0	3.0
LINS 342	Management of Electronic Records	45	0	3.0
LINS 343	Legal Issues and Managing Records and Archive	45	0	3.0

Or

LINS 351	Internet Application and Development	45	0	3.0
LINS 352	Advanced Computer Systems and Networks	45	0	3.0
LINS	Computer Programming	45	0	3.0

353				

YEAR 4 SEMESTER 1

Code	Title	L	P	CF
LINS 401	Information Society	45	0	3.0
LINS 402	Knowledge Management	45	0	3.0
LINS 403	Management Information Systems	45	0	3.0
LINS 404	Research Project	45	0	3.0

(A student will select ONE option for an area of Specialization)

Either

LINS 431	Sectoral Librarianship	45	0	3.0
LINS 432	Information Technology in Libraries	45	0	3.0
LINS 433	Digital Libraries and Information Portals	45	0	3.0

Or

LINS 441	Management of Legal Records	45	0	3.0
LINS 442	Management of Health Records	45	0	3.0
LINS 443	Management of Personnel Records	45	0	3.0

Or

LINS 451	Data Communication and Networks	45	0	3.0
LINS 452	Artificial Intelligence & Robotics	45	0	3.0
LINS 453	Systems Analysis, Design and Evaluation	45	0	3.0

YEAR 4 SEMESTER 2

Code	Title	L	P	CF
LINS 405	Business Information Management	45	0	3.0
LINS 406	Legal & Professional Aspects of Information	45	0	3.0
LINS 407	Contemporary Issues in information science	45	0	3.0

(A student will select ONE option for an area of Specialization)

Either

LINS 434	Advanced Information Retrieval	45	0	3.0

LINS 435	Library Supervision & Management	45	0	3.0
LINS 436	Marketing of Library Products and Services	45	0	3.0

Or

LINS 444	Advanced Records Management	45	0	3.0
LINS 445	Advanced Archives Administration	45	0	3.0
LINS 446	Marketing of Archival Products & Services	45	0	3.0

Or

LINS 454	Data Structures and Algorithms	45	0	3.0
LINS 455	Software Engineering	45	0	3.0
LINS 456	Marketing and Information Technology	45	0	3.0

(c) COURSE DESCRIPTIONS

YEAR 1 SEMESTER 1

LINS 111: Introduction to Information Science (45/0: CF 3.0) Y1S1

Introduction; The role of Libraries and Information; Principles of Librarianship/Information Sciences; library Legislation; Standards for Library and Information Services; Values for Library and information Science Professionals; Services; History and development of libraries; Development of libraries in Africa; Types of libraries and their functions Ethical concerns in Libraries; Information Science and Information Technology.

LINS 112: Classification Theory (45/0: CF 3.0) Y1S1

Definition and Introduction to Library Classification; The universe of knowledge and knowledge organization; History and theory of classification; Library classification; Introduction to Bibliographic classification schemes: special and general schemes; Classifying library materials; Simple design and development of a library classification scheme.

LINS 113: Fundamentals of Information Technology (30/15: CF 3.0) Y1S1

Introduction to the Computer and its Environment; Types of computers; Computer hardware, Systems architecture; Computer software; Functions of computer systems and

interactions between hardware, software and the computer user; Computer data preparation and processing; Presentation of data as algorithms; processing at a basic machine level; Introduction to computer networks.

LINS 114: Information Literacy (45/0: CF 3.0) Y1S1

Introduction and background of information literacy; Benefits and application of information literacy; Components of information literacy; Information literacy models; Information society, digital age and data smog; Information literacy in higher education; Lifelong learning; Information literacy and libraries.

YEAR 1 SEMESTER 2

LINS 121: Cataloguing Theory (45/0 CF: 3.0) Y1S2

Introduction to information storage and information retrieval; library Catalogues in context; Bibliographic control; The Catalogue Record and Indexing; Development of cataloguing codes; call number; Anglo-American Rules; Dewey decimal Classification Scheme; Subject Headings; Descriptive Cataloguing; Basic Features of AACR2; Description and Access of information resources; Choice of Access points; Forms of Headings for names and titles; Authority control; Online Public Access Catalogue (OPAC); Physical Forms; Computer Application of Cataloguing; MARC; Organization and management of a cataloguing department; Contemporary Issues in Cataloguing.

LINS 122: Records Management (45/0 C.F 3.0) Y1S2

Introduction, definition and scope of records management; Objectives of records management; principles of records management, benefits and challenges of records management; the life cycle concept of records; The registry system, types of registry systems, functions of registries; File control system: classification and filing, file movement and control procedures; Records survey, appraisal, transfer, retention and disposal; Security of records; access rules and regulations.

LINS 123: Publishing & Book Trade (45/0: CF 3.0) Y1S2

Introduction to Book and Book Publishing; Types of Books and Structure of a book; Scope and importance of publishing and book trade; The book in a social nexus;

Nature of literacy; Books and social change; Organization of publishing houses; Analysis of editorial functions; Production, marketing and distribution of books to bookshops and libraries; Markets for book readership, structure, size and output of book publishing industry. Towards the Future- birth and times of modern publishing; Technological and organizational environment: e-book emergence, OMDC cross media projects, Google.

YEAR 2 SEMESTER 1

LINS 211: Classification Practice (15/30: CF 3.0)

General Principles in Library Classification Process; Dewey Decimal Classification Scheme (DDC) history, characteristics, structure/main classes and subdivisions, strengths, weaknesses, practice; Library of Congress Classification Scheme (LCC): history, characteristics, structure/main classes and subdivisions, strengths, weaknesses, practice ; Universal Decimal Classification Scheme (UDC) history, characteristics, structure/main classes and subdivisions, strengths, weaknesses, practice; Differences between DDC, LCC and UDC schemes and Use of Special Schemes; Current and Future Trends in Library Classification; Indexing and Information Retrieval.

LINS 212: Cataloguing Practice (45/0: CF 3.0) Y3S2

Principles and theories of metadata development in digital environment; Design and application of metadata schemas for distinct domain; Metadata interoperability, vocabulary control, quality control and evaluation; Examination and practices of international standards of description and encoding; Anglo-American cataloguing rules and MARC 21 formats; Standards and tools for subject analysis; Dewey decimal classification and Library of Congress subject headings; Practices on Dewey Decimal Classification and Library of Congress. Dublin Core practices and standards.

LINS 213: Archives Administration (45/0 C.F 3.0) Y2S1

Introduction to archives administration; Acquisition and Accessions management; Arrangement and description of archives; Archival principles of provenance and original order; Archival finding aids; Reference services regulations; Search room operations; Access to archives, archival access policy; Automation of archival functions

and services; History and development of archival practices in Kenya.

LINS 214: Collection Developments and Management (45/0: CF 3.0) Y2S1

Introduction; Assessing user needs/ community analysis; Policies for Information sources; selection of Information Sources; Acquisition; Budgeting and Fiscal Management; Evaluation/Assessment of Information Sources; Weeding/Deselection of Information Sources; Cooperative development of Information Sources; The Law and Development of Information Sources; Information and Communication Technologies and Development of Information Sources.

LINS 215: Information Communication Technology for Information Resource Management (45/30: CF 3.0) Y2S1

Overview of information and communication technology and related concepts; Application of computer and communication technologies in libraries; Implementation of technologies: change management and methods of implementation; Components of IT and business systems, such as library related agencies; Information systems and technology, and management issues to staff training, user education; Impact of information technology on library services and other related agencies in a computerized environment; Current developments and evaluation of information systems and technology in terms of user needs and national development; Information organization, storage and processing using IT: benefits, challenges and considerations.

YEAR 2 SEMESTER 2

LINS 221: Media Informatics (45/0: CF 3.0) Y2S2

Introduction and background to media informatics; Definition and importance of media informatics in the society; Growth and Concepts of media and informatics; Information media: books, journals, patents, information flow, communication channels, and multimedia; Social functions, technical characteristics, and discourses of information media; Epistemological and ontological perspectives of information in relation to the transmission, service and retrieval of information.

LINS 222: User Studies and Information Services (45/0: CF 3.0) Y2S2

Introduction to user studies; Information User Groups; Users and contexts of Information; Information Users and Needs; Information use and influence on user groups; Development of Information Services; Information Services in Different Libraries (public, academic, special, etc.); Auditing Library and Information Services; Creating user-focused environments in Libraries and Information Services; Essential skills for LIS professionals.

LINS 223: Writing Skills for Information Professionals (45/0: CF 3.0) Y3S1

Introduction to writing; Importance of Good writing, Text reading and note-taking/making; Language Register for Library & information Science (LIS); Purpose of a register; Style and register; Forms of Language in LIS; Oral, written, non-visual and visual, interactive and non-interactive languages; Text writing: stages, organizing paragraphs, introductions, main body and conclusions; Writing accurately: cause and effect, cohesion, comparisons, generalizations, numbering, etc.; Referencing styles (e.g. APA, MLA, Harvard, etc.); Other writings: report writing, curriculum vitae, formal and informal letters, survey reports, etc.

LINS 224: Computer Networks and Internet (30/30 C.F 3.0) Y2S2

Introduction to telecommunication and communication systems; Overview and differences of communication and telecommunication system; Introduction to computer networks and types of networks; Network hardware and Software; Network protocols; Introduction to internet and www basics; Intranets and extranets and their role in organizations and business enterprises; Role of telecommunication and networks to the library and its related agents such as resources centres.

YEAR 3 SEMESTER 1

LINS 311: Preservation of Information Resources (45/0 C.F 3.0) Y3S1

Preservation and Conservation concepts; Properties of information materials; Agents of information deterioration, chemical agents, physical agents and biological agents; benefits and challenges of preservation; Principles of preservation, restoration,

repair and conservation; digital preservation; Reprography; Planning a preservation programme; Preservation policy; Disaster management, disaster planning.

The course will require Academic trip to any organization providing information preservation services or training.

LINS 312: Information Organization, Storage and Retrieval (45/0: CF 3.0) Y3S1

Information organization, storage and retrieval, production, circulation, use of information from IR perspective; history of information retrieval; fundamental approaches, theories and techniques in information retrieval; application and influence of information retrieval on other fields; Information retrieval systems and services relating to information technology; Functions and elements of information retrieval systems, database services, text searching; Roles and characteristics of natural language in information transfer; research trends in storage and retrieval theories, evaluation relating to searching; User behaviour, information retrieval systems and effects of IT on these items.

LINS 313: Principles and Practices of Management (45/0: CF 3.0) Y3S1

Introduction to the nature of Management; History/Schools of Management thought; Functions of Management; Management Process: Planning, Organizing, Staffing, Directing, Controlling; Modern Management strategies (Production and operations Management, strategic management, Managing change, planning; Project Management, leadership; Supplies Management, etc.); Management and Information and Communication Technologies.

LINS 314: Entrepreneurship for Knowledge Management Centres (45/0: CF 3.0) Y3S1

Philosophy of Entrepreneurship; The entrepreneurial mindset; Evolution of entrepreneurship- the concepts of entrepreneurship, theories and principles of entrepreneurship, infopreneurship and self-employment; Schools of thought; 10 trends in the entrepreneurial marketing; Characteristics of successful entrepreneur, entrepreneurial support; Myths regarding entrepreneurs, entrepreneurial strategy, information as a product and service-costing, pricing, cost-benefit and cost

effectiveness, market research, information marketing institutions, information brokerage, marketing and promotion of LIS products and services, planning, repackaging, branding and promotion both at individual and firm levels, the marketing mix (Price, Product, etc.), setting up and managing LIS businesses, developing a marketing strategy, sources of business finance, principles of book keeping, gender issues in information entrepreneurship, E-business and networking, service communication, business proposal writing; Emerging trends in entrepreneurship.

LINS 315: Online Information Systems (15/30 CF 3.0) Y3S1

Basics of information systems; Online information systems: benefits, challenges and components; Library automation; Selection, evaluation and use of computer based systems for acquisitions, cataloguing, circulation, serials control and other library processes; Evaluation of automated systems; System migration; Online on managing organizational data and information.

LINS 316: Data Base Management Systems and Design (15/30: CF 3.0) Y3S1

Database management theory and application; Implementation of computer based applications; Overview of database models including: hierarchical, network, distributed, object oriented, and Extensible Markup Language (XML) database models; Data modelling using the entity-relationship diagram; Relational database model. Database design; Database operations; Web access to databases; Data warehousing; Database administration; Transaction processing and concurrence control.

YEAR 3 SEMESTER 2

LINS 301: Knowledge Management 1 (45/0: CF 3.0) Y3S1

Introduction to Knowledge Management; Types of Knowledge; Characteristics of Knowledge; Elements/components of KM; Pillars/Enablers of KM; Ways/Methods of Creating and acquiring Knowledge; strategic management; KM and Learning Organizations and Organizational Learning; Non-IT tools of Knowledge Management; IT-tools of knowledge; Use of Knowledge in everyday life; Communities of Practice;

libraries/Information Centres and Knowledge Management; pyramids

LINS 302: Information Behaviour (45/0: CF 3.0) Y3S1

Introduction to the concept of Information Behaviour (IB); Framework/components of Information Behaviour; Models/theories of information needs; Information Behaviour and sources; Models/theories of information searching and seeking; information Access; Information Processing; Information use; Information Behaviour of specific user groups e.g lawyers, engineers, healthcare workers, teachers, farmers etc; Role of ICTs in Information Behaviour.

LINS 303: Research Methods (45/0: CF 3.0) Y3S2

Introduction to the research process; The role and values of research in libraries and information resource centres; The role of research in professional practice; Major philosophies of research; Components of a research study; Planning research and using literature sources; quantitative and qualitative research methods; Research design; Introduction to statistical methods of data analysis.

LINS 331: Financial & Human Resources Management (15/30: CF 2.0) Y1S2

Introduction to Financial Management; Nature and scope of finance; Publishing Finance; Financial Planning; Financial Management; Forecasting and Planning Capital Budgeting; Financial Statement Analysis; Sources of finances in library & Information centres; Functions of Finances; Introduction to Human Resource Management; the Nature of Human Resource; Organizing the Human Resource Function; Staffing and Hiring; Training, Supervision and Performance Management; Strategic Human Resource Management; ethics; managing change; pay, employee relations, gross functional issues, managing globalization: An international dilemma, managing employees fairly.

LINS 332: Public Speaking (45/0: CF 3.0) Y3S2

Analyze audiences, choose topics, organize, and deliver speeches of introduction, information, persuasion, and ceremony; Utilize effective vocal qualities, language, delivery techniques, non-verbal communication, and visual aids for each speech; Critique the speeches of

others as well as himself or herself; Work collaboratively as a panel member to present and defend a position

LINS 333: Indexing and Abstracting (45/0: CF 3.0) Y3S1

Introduction and definition of information repackaging and consolidation; Description and role of information in development; Information consolidation activities; Information products, design and development, and marketing; Content analysis, repackaging and consolidation; Abstracting, types of abstracts, rules, guidelines and standards for abstracting; Basics of information retrieval, indexing languages, pre- and post-coordinated systems, vocabulary control; Use of subject headings, indexing systems like chain indexing, PRECIS and POPSI; guidelines for abstracting; thesaurus construction and search strategy, Fundamentals of indexing and abstracting theory and practice, formation of vocabularies; Construction of a thesaurus. Systems of indexing; Effects of systems upon information retrieval; Style and format of abstracts; Evaluation of abstracting services and requirements of users of abstracts; Fundamentals of indexing and abstracting theory and practice, formation of vocabularies; Construction of a thesaurus. Systems of indexing; Effects of systems upon information retrieval; Style and format of abstracts. Evaluation of abstracting services and requirements of users of abstracts.

LINS 341: Management of Record Centres (45/0 C.F 3.0) Y3S2

The Records Centre Concept; Types of record centres: on-site, off-site, public, private and commercial; Planning and developing of records centre: Records centre functions: acquisition, transfer, processing, maintenance, storage, preservation, access, use and disposition; Nature and characteristics of record centre buildings: purpose-built and converted buildings design and lay-out, construction, materials and environmental considerations; Record centre resource needs: personnel, finance, equipment and supplies; Application of information technology to records centre functions; Disaster management in record centres; Evaluation of record centre functions.

LINS 342: Management of Electronic Records (45/0 C.F 3.0) Y3S2

Electronic records basic concepts: Content, structure and context of electronic records; Electronic record formats: data sets, text-based documents, multi-dimensional documents and multi-media documents; Life cycle of Electronic records; Management issues on electronic records: policy on the creation use maintenance, access and disposition of electronic records; Steps in establishing an electronic records management programme: needs analysis, stakeholder analysis, survey of computerized and electronic records systems, analysis of institutional capacity and determining essential resources; Components of an electronic data and records management programme, inventorying, scheduling, appraising, accessioning and processing, preserving, describing and providing access; Electronic recordkeeping systems; recordkeeping Meta data.

LINS 343: Legal Issues of Managing Records and Archives (45/0 C.F 3.0) Y3S2

An over view of legal systems in Kenya; Legal issues in records and archives: privacy, copy rights, intellectual property rights, freedom of information and censorship distribution, use, and possession of sensitive records and information; Legal requirements in the provision of records archival services; Archival legislations.

LINS 351: Internet Applications and Development (15/30: CF 3.0) Y3S2

Review of LAN and WAN technologies; Internetworking concepts, architectures, and protocols; The internet protocol (IP) and the transport control protocol (TCP); Client-server interaction and the socket interface; Network programming; Application layer of TCP/IP protocol suite, creating static, dynamic, and active World Wide Web (www) documents; study of different web programming and scripting language including Java, VB, CGI, ASP, VBscript, CSS, HTML, XML, Jscript, and Perl; Three tier systems, user interface, business logic and database tiers.

LINS 352: Advanced Computer Systems and Networks (15/30: CF 3.0) Y3S2

Recent advances in computer and telecommunications networking based on TCP/IP; Importance of networking technologies in the computing discipline; Computer

communication network concepts and protocols multimedia systems; Web standards and technologies. Information and network security. Privacy and ethics; Wireless and mobile computing and distributed systems.

LINS 353: Computer Programming (15/30: CF 3.0) Y3S2

Introduction to programming techniques and logical constructs; Data types, statements and expressions; Decision constructs (e.g. if-then-else statements); Repetition and loops; Simple data structures, definition and manipulation; Structured programming concepts; Introduction to object oriented programming principles. *(Department of Literature, Languages and Linguistics)*

LINS 304: Industrial Attachment (0/120: CF 4.0) Y3S2

Students to be attached to firms, government Departments, NGOs and other recognized places where they can apply skills and theoretical knowledge acquired in six semesters of the programme. The preferred sections for attachment are libraries, information and technology centres, registries, archives and record centres, media houses and any other information related centres Assessment to be conducted by University supervisors and heads of respective host organizations. Students will submit log books duly signed by host and University supervisors and present a typed Attachment Reports.

YEAR 4 SEMESTER 1

LINS 401: Information Society (45/0: CF 3.0) Y4S1

Introduction to concepts of Information society (IS); Information Revolution; Theories of Information Society; Information institutions/Industries; communities of Practice and IS; The Digital Divide and IS; Information Freedom and Information Society; Information Society and Practices in Businesses/industries; Information Professionals and IS; LIS and Information Society.

LINS 402: Knowledge Management II (45/0: CF 3.0) Y4S2

Theories of KM; Evolution of KM; Knowledge capture and codification; Knowledge Management and Organizational culture; Knowledge Management version 1 & 2; Repackaging of information, strategy and metrics of Km; Data mining in KM; knowledge application and implementation; KM and intellectual capital; Knowledge

Management team; Metaphors of KM; Ethical and Critical issues in KM; Role and Impact of ICT in Knowledge Management.

LINS 403: Management Information Systems (45/0 CF 3.0) Y4S1

Fundamentals of Information/Concept of Information; Nature of Management Information Systems; Use and role in planning, organizing, staffing, directing and controlling a business organization; Role of information systems within organizational strategy; Design and development of a management Information system; Introduction and drawback of the traditional MIS; Conceptual framework of information system; Information system planning and management.

LINS 404: Research Project (45/0: CF 3.0) Y4S1

A written research report on a topic or problem related to the students chosen area of interest in the information field. Choice of topic will be made by students in consultation with lecturers who have relevant expertise and assigned to supervise them. The research report will demonstrate the use of appropriate subject content, methodology, proper presentation of results, evidence of originality and deduction of valid conclusions from the study.

LINS 431: Sectoral Librarianship (45/0: CF 3.0) Y4S1

Factors that help to establish Libraries and information services; International/Global Librarianship; Public Libraries; School Librarianship; Librarianship for Children and Young Adults; Law Librarianship; Medical Librarianship; Military Librarianship; Marine Librarianship; Library services for researchers; Librarianship for Housebound people: prisons, hospitals, the aged etc; Community outreach Information Services.

LINS 432 IT in libraries (45/0: CF 3.0) Y4S1

Use of information technology in libraries and related agencies. Application of computer and communication technologies in libraries. Basics of information systems and technology. Management issues, staff training and user education. Impact of information technology on library services. Computerized environment for libraries, records management and information centres. Current developments in technologies used in libraries and

information centres. Evaluation of information and communication technologies in terms of user needs.

LINS 433: Digital Libraries and Information Portals (45/0: CF 3.0) Y4S1

Basic concepts and evolution of digital libraries and information portals; Design, content and technical infrastructure; Information organization and metadata; Information retrieval, information seeking, behaviour and user interface issues; User requirements with regards to access control, management and evaluation; Technologies for building digital libraries and information portals; Management of digital information resources including preservation, copyright and security issues.

LINS 441: Management of Legal Records (45/0 C.F 3.0) Y4S1

Introduction to legal records; Context, scope of legal records; Principles and challenges of managing legal records; Legal system and legal records; Disposal of legal records; Access policy on legal on legal records; Application of Information Communication Technology in the management of legal records.

LINS 442: Management of Health Records (45/0 C.F 3.0) Y4S1

Context of hospital records; Health care system in Kenya; Nature of health records, patients case notes, x- rays, pathological specimens and preparations, patient indexes and registers, pharmacy, and drug records, administrative records, nursing records, educational records; Management of hospital records: access, storage, preservation, appraisal and disposition: computerization of health information systems; Legal status of health records, Medico-legal issues and policy in health records; collection of Health care statistics; Medical records department, functions and activities.

LINS 442: Management of Personnel Records (45/0 C.F 3.0) Y4S1

Personnel records, types of personnel records in support of public good; Accountability and good governance; Access to personnel records; Authenticity and reliability of electronic personnel records; Identification and management of confidential personnel records is also covered.

LINS 441: Marketing of Information Products and Services (45/0: CF 3.0) Y4S2

Introduction to marketing products and services; What is marketing management?; what is strategy and what inhibits Librarians from marketing oriented?; Challenges and relevance of marketing of information and knowledge managers; Five laws of library science and marketing. Approaches of marketing: barriers, status and use of marketing concepts and their application in information providing centres; Factors affecting information products and services; Market segmentation, service design, quality, and communication; Satisfaction, performance, measurement and evaluation; Developing the market plan for information services; Entrepreneurship and income generation by information and knowledge centres; Economics of information; Marketing Plan, 4P's; Marketing and Technology; Direct Marketing; Marketing Approach; Marketing Audit;

LINS 451: Data Communication and Networks (15/30: CF 3.0) Y4S1

Computer networks and data communications; Network technology and standards; Applications and the computer network systems; Network design and management; Network security, telecommunication systems and the Internet; Trends in data communication and network technologies.

LINS 452: Artificial Intelligence and Robotics (45/0: CF 3.0) Y4S1

Overview of artificial intelligence (AI); Design and analysis of autonomous agents; Software systems and/or physical machines; Sensors and actuators, embodied within a robot to an autonomous spacecraft; Computer vision, planning and acting; Robotics, multi-agents systems, speech recognition, and natural language processing; AI and robotics provide a set of tools for solving problems that are difficult or impractical to solve with other methods; Heuristic search and planning algorithms, formalisms for knowledge representation and reasoning, machine learning techniques, and methods applicable to sensing and action problems such as speech and language understanding, computer vision, and robotics, among others.

LINS 453: System Analysis, Design and Evaluation (15/30: CF 3.0) Y4S1

Introduction to system Analysis, Design and Evaluation; Definition, concepts and techniques of system analysis; Design and application of information systems and services; Cost-benefit analysis and operations research; critical path methodology, basic queuing theory, retrieval system evaluation and measurement, and human factors in information systems design; Introduction to logical data structuring; Selection of hardware and software system design project.

YEAR 4 SEMESTER 2

LINS 405: Business Information Management (45/0: CF 3.0) Y4S2

Introduction and background to business information management; Original of public management; Organizational management, theories of human motivation, management styles and processes; Data and information systems, information requirement analysis; Role of hybrid information management, information mapping and information audit, information economics, information communication in organization, developing information strategy; Information management and organizational change, planning and managing change; Total Quality Management.

LINS 406: Legal & Professional Aspects of Information 45/0: CF 3.0) Y4S2

Introduction to information security; The need for security; Security profession; Legal, ethical and professional issues in information security; Risk Management: identifying and assessing risk; Planning for security; Firewalls and VPNs; Intrusion Detection, Access Control; Physical security; Implementing Information Security; Security and Personnel; Information security maintenance; Archival Legislation, Law and Society. Course summary

LINS 407: Contemporary Issues in Information Science (30/30 C.F 3.0) Y4S2

Discussion and investigation of emerging topics and issues of current interest to the library; information science; information systems and communication technology; knowledge management; publishing and media informatics; archival and records management.

LINS 434: Advanced Information Retrieval (45/0: CF 3.0) Y4S2

Overview of information retrieval, architecture of search engines, information retrieval utilities; Meaning and definitions of information retrieval; Types of Information retrieval; Structured (relational database attributes values) or unstructured (text, video, image, sound, and geospatial) data; Index structures, retrieval strategies (Boolean, fuzzy sets, vector space, probabilistic), relevance feedback, compression of inverted indexes and efficiency techniques; Information retrieval utilities such as thesauri, semantic networks (Word Net), clustering, and n-grams; Application of detailed web search engines; Current topics on information retrieval.

LINS 435: Supervision and Management of Library & Information Services (45/0: CF 3.0) Y4S2

Introduction to the concepts of supervision and management; Supervision and the environment/context of LIS work; Position of an LIS supervisor/manager; Responsibilities of a library/information service supervisor; Core skills for supervision and management in LIS services; Establishing and managing library and information services; Managing information sources; Managing the human resources in library and information service; Managing diversity in libraries and information services; Managing Meetings; Collaborations and working with colleagues; Managing oneself, career development and preparing to move on; Objectives and policy development in LIS.

LINS 436: Marketing of Library Products & Services (Y4S2)

Introduction to Marketing of Information Products and Services; Purposes of Marketing in Libraries; Key Concepts in Marketing of Information Products and Services; Five Laws of LIS and Marketing; Orienting the Library to the Market; Market Strategy; Market Approach; Developing a Marketing Plan; Planning Information Products and Services Policy; Pricing Information Products and Services; Promoting Information Products and Services & market Segmentation; Conceiving, Designing and Introducing New Information Products and Services; Conducting Marketing Research and Audit for Marketing of Information Products and Services; Preparing the Organization for Marketing of Information Products and

Services; Factors affecting achievements of objectives in Libraries.

LINS 444: Advanced Records Management (45/0 C.F 3.0) Y4S2

Theories and principals of records management; Managing records as strategic resource; integrated records management. Strategic planning in records management; Change management in recordkeeping; Management analysis techniques in records management; Restructuring of records management systems. Practical in specialized resources centres.

LINS 445: Advanced Archives Administration (45/0 C.F 3.0) Y4S2

Theories and principles of archives administration; Archives and the public good; Accountability and good governance; Economic development, National heritage and cohesion. Archives management ethics, access and freedom of information legislation; Archives as tool for National Development; Archives and national cohesion: archives legislation, factors affecting archives legislation, contents of archives legislation.

LINS 446: Marketing of Archival Products & Services

Introduction to marketing of Archival products and services; Introduction to marketing management; Key purpose of marketing management; Marketing strategies for librarians and information professionals; Understanding marketing information marketable commodity; Records and Archives as commodities for use; Marketing information services; Production and distribution of archival services, costing archival services, application of marketing concepts to archival services and products; Relevance of marketing of public information services; Objectives and marketing goals of information services; Challenges faced in marketing public-funded information services; Records and archives as commodity; Introduction to product; Components of a product; Challenges facing information professionals and profession; Developing marketing plan, evaluation of marketing, strategies; Market segmentation, marketing mix, corporate mission, promotion and public relations; Marketing in the digital world; Marketing trends in marketing.

LINS 454: Data Structures and Algorithms (15/30: CF 3.0) Y4S2

Introduction to design and analysis of algorithms; Design techniques e.g. divide-and conquer, greedy method, dynamic programming, selection of prototypical algorithms, choice of data structures and representations; complexity measures; time, space, upper and lower bounds, a asymptotic complexity; NP-completeness, algorithms and their performance, data abstraction, queues, linked lists, stacks, trees, graphs and associated algorithms, sorting and searching; Implementation of algorithms and data structure in the C++ programming language.

LINS 455: Software Engineering (15/30: CF 3.0) Y4S2

Introduction and role of software engineering; Software process models, the linear sequential model, the prototyping model, the evolutionary models, the component-based development model, the formal methods model; Function-oriented methodology for analysis and design; System engineering, analysis concepts and principles; Analysis modeling, design concepts and principles; Architectural design, user interface design, component level design; Requirement analysis and design modeling tools; Object-oriented methodology for analysis and design; Object-oriented analysis, object oriented design; APIs: API packages, API programming, class browsers and related tools, debugging in the API environment; Programming environments; Web-based Engineering.

LINS 456: Marketing and Information Technology (45/0: CF 3.0) Y4S2

Need for marketing and information technology; Marketing of organizations; Development and managing of appropriate products, services and strategies; Information management in line with social, ethical and environmental responsibilities; Incorporation of information technology; Current issues and electronic marketing; Trends in marketing; Electronic marketing, emerging interactive technologies, implications for marketers; Communication and direct marketing technologies; Basics of e-business technology; Legal issues and security; Languages and formats supporting e-business.

9.3 Matrix aligning courses/units to Programme Learning Outcomes (PLO)

PROGRAMME LEARNING OUTCOMES	YEAR ONE		YEAR TWO		YEAR THREE		YEAR FOUR	
	COURSES	C.F	COURSES	C.F	COURSES	C.F.	COURSES	C.F.
PLO 1: To produce professionals who can access, organize, store and disseminate information in various types of institutions including libraries, records, registries, media houses and other information centres.	Communication Skills	3.0	Media Informatics	3.0	Preservation of	3.0	Knowledge	
	Introduction to		User Studies and		Information Resources	3.0	Management	3.0
	Information Science	3.0	Information Services	3.0	Information	3.0	Management	
	Classification Theory	3.0	Computer Networks and		Organization, Storage	3.0	Information Systems	3.0
	Fundamentals of		Internet	3.0	and Retrieval			
	Information Technology	3.0	ICT for Information		Entrepreneurship for			
	Information Literacy	3.0	Resource Management	3.0	Knowledge Management			
PLO 2: Pursue higher professional courses and higher level of masters and doctorates of information science.	Sectoral Librarianship	3.0	User Studies and		Centres			
	Cataloguing Theory	3.0	Information Services	3.0	Repackaging,			
			Computer Networks and		Consolidation, Indexing			
			Internet	3.0	& Abstracting			
	Environmental	3.0	Gender Issues in	3.0	Information Behaviour		Information Society	3.0
	Education Publishing &	3.0	Communication	3.0	Research Methods	3.0	Research Project	
	Book Trade	3.0	The Making of Kenya	3.0	Research Methods	3.0		3.0
Specialization Learning Outcomes (SLO)	Introduction to Logic	3.0	Media Informatics		Industrial Attachment	3.0		
	Government and Society		Community Development					
			Social Welfare	3.0				
S.L.O. 1: The students should be able to develop and refine skills for handling and managing of information in knowledge centres and related information environments.					Financial and Human	3.0	Sectoral Librarianship	3.0
					Resource Management		IT in Libraries	3.0
					Public Speaking	3.0	Digital Libraries and	3.0
					Repackaging,		Information Portals	
					Consolidation, Indexing	3.0	Advanced Information	3.0
					& Abstracting		Retrieval Marketing of	
							Library Products and	3.0
SLO 2 The students should be able to develop and refine skills for working in archives, record centres and related information environments.							Services	
							Library Supervision &	3.0
							Management	3.0
							Contemporary Issues	3.0
							in information science	
					Systems Analysis, Design		Management of Legal	
					and Evaluation	3.0	Records	
					Business Information		Management of Health	3.0
					Management	3.0	Records Management	
					Legal & Professional		of Personnel Records	
					Aspects of Information	3.0	Advanced Records	3.0
							Management	
							Advanced Archives	3.0
							Administration	3.0
							Marketing of Records,	3.0
							Archival Products and	
							Services	3.0

S.L.O 3: Students should be able to develop and refine skills in the use of current technology tools for information management.					Internet Application and Development	3.0	Data Communication and Networks	3.0
					Advanced Computer Systems and Networks	3.0	Artificial Intelligence & Robotics Systems	
					Computer Programming	3.0	Analysis, Design and Evaluation	
							Data Structures and Algorithms	
							Marketing and Information Technology Software Engineering	
								3.0
								3.0

BACHELOR OF ARTS IN COMMUNICATION AND MEDIA

1. Philosophy of the Programme

In the pursuit of excellence, our philosophy evolves in response to increased knowledge, experience, and growth in the field of communication and media by advancing theory and professional practice in recognition of the significance of communication and media in the contemporary world for individual, institutional, organisational and the whole society.

2. Rationale

The evolution of information and communication technology has intensified the need for dynamic and adaptable communication and media skills. This need is aggravated today in the twenty-first century because of advances in communication and technology that determine how people and nations of the world are inter-connected into a real “global village”. Advances in technology have made it possible for people of different cultures and countries to interact, but it is human skills in communication that will ensure that the interactions are constructive and positively utilized. Corporations have recognized the need for structured and systematic communication and hence the increased use of professional communication strategies. This necessitates continuous training of communication and media professionals at the higher education level.

Although many professionals make their living as communication consultants, there is great reliance on mediation and negotiation skills in situations ranging from civil cases to labour/management disputes to third party diplomacy in resolving regional conflicts. The graduates of this programme will work in the communication and media practice areas of print media (journalists, editors and writers), electronic media (radio and television presenters, editors, producers and screenwriters), public relations officers, business communicators, communication consultants, diplomats, educators, lecturers, researchers and photojournalists. The target groups include fresh secondary school graduates and also para-professionals in the communication and media related disciplines.

3. Goal of the Programme

We purpose to ensure that learners in our programme are provided with the highest quality theory and practice to attain all round education in the broad field of communication and media. Our special responsibility is therefore to produce individuals who are well prepared to face communication challenges of the twenty first century

4. Programme Learning Outcomes

At the end of the programme, the graduates will be able to use communication and media skills acquired in pursuance of a career in communication and media and other related areas. Specifically, the students should be able to:

- i) Develop and refine skills in effective academic writing, communication and media and in specialized technical fields;
- ii) Carry out independent research in their area of specialization and familiarize themselves with information gathering retrieval and dissemination techniques;
- iii) Organize, supervise and evaluate effective communication tools; manage and control facilities, personnel, time and finance effectively;
- iv) Write, edit and publish newspaper and/or magazine articles;
- v) Distinguish and appreciate differences in communication in intercultural and international context; be sensitive to issues of gender in language and communication strategies; keep abreast with contemporary developments and issues in communication.

5. Mode of Delivery of the Programme

The programme shall be offered on fulltime, part-time, e-learning and distance learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i) Candidates must satisfy the general university admission requirements together with those in the Faculty of Arts and Social Sciences;
- ii) In addition, candidates must have obtained a minimum score of C+ in English or Kiswahili;

- iii) Candidates may be admitted to the B.A. (Comm. & Media) programme if they had a Diploma or equivalent of “credit” level or higher in Communication or Media from recognized institutions.
- iv) Mature age candidates will also be admitted in the B.A. (Communication & Media) programme, depending on their prior academic qualifications and work experience relevant to Communication and Media and related areas as determined by the Department;
- v) The number of students registering for the course will be restricted and determined by the Department. The Department also reserves the right to set up special qualifying exams or interview applicants to determine selection into the programme.

6.2 Credit Transfers in the programme

Credit transfer shall be done in accordance to Egerton University Statute 36(3) of 2013.

6.3 Course Structure and Duration

The course requirement guidelines shall follow the Egerton University ISO procedure for teaching (EU/AA/OP/6 rev3).

6.4 Student Assessment

Student assessment shall be in accordance with Egerton University Statute 36 (6) of 2013.

6.5 Grading system

Grading of examinations shall be done in accordance with Egerton University Statute 36 (6) of 2013

6.6 Examinations Regulations

All examinations in the programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(5) of 2013.

6.7 Moderation of Examinations

Moderation of exams shall follow the guidelines stipulated in Egerton University ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, the student must successfully complete a minimum of **135 CFs**. 108 CFs shall be in communication and media courses, and the remaining 27 CFs shall consist of both the common core courses asterisked (*) and courses from other disciplines.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute 36(6) of 2013.

7. Course Evaluation

Course evaluation shall be guided by ISO procedure on teaching effectiveness and evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme is hosted by the Department of Literature, Languages and Linguistics, in the Faculty of Arts and Social Sciences. The Programme academic leader shall be appointed in accordance with University Standards and Guideliness (2014).

8.2 Programme Evaluation

The programme shall undergo an internal evaluation at the end of its academic cycle in accordance with ISO procedures EU/VC/OP/05.

8.3 Course Coding

Each communication and media course has been coded using the abbreviation "COMM" followed by three (3) numeral digits to be interpreted as follows:

- ✓ First digit indicates year or level of study;
- ✓ Second digit indicates the semester in which the course is offered;
- ✓ Third digit indicates sequencing of the courses in one semester.

9. Courses/Units offered for the Programme

(a) Summary of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
COMM 111	Introduction to Communication	45	0	3.0

COMM 112	Historical Development of Communication	45	0	3.0
COMM 113	Communicative English	45	0	3.0
*SOCI 101	Introduction to Sociology	45	0	3.0
*COMP 101	Introduction to Computer Applications	45	15	3.5
*ENSC 100	Environmental Education	45	0	3.0
TOTAL		270	15	18.5

YEAR 1 SEMESTER 2

COMM 121	Study and Academic Communication Skills	45	0	3.0
COMM 122	Introduction to Business Communication	45	0	3.0
COMM 123	Introduction to Mass Communication	45	0	3.0
COMM 124	Rhetoric	45	0	3.0
*KISW 122	Communication and Language Skills in Kiswahili	45	0	3.0
*EPSC 121	Introduction to Psychology	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1

COMM 211	Information Technology	45	15	3.5
COMM 212	Culture and Communication	45	0	3.0
COMM 213	Desk Top Publishing	30	30	3.0
COMM 214	Photo-journalism	30	30	3.0
Either				
COMM 215	Written and Oral Communication in Business	45	0	3.0
COMM	English for Specific	45	0	3.0

216	Purposes			
TOTAL		240	15	18.5

Or

COMM 217	Print Media	30	15	3.0
COMM 218	Electronic Media	30	30	3.0
TOTAL		210	110	18.5

YEAR 2 SEMESTER 2

COMM 221	Interpersonal Communication	45	0	3.0
COMM 222	Gender Issues in Communication	45	0	3.0
COMM 223	Public Speaking	30	30	3.0
COMM 224	Communication and Critical Thinking	45	0	3.0

Either

COMM 225	Organizational Communication	45	0	3.0
COMM 226	Foundations of Public Relations	30	15	3.0
TOTAL		245	45	18.0

Or

CODE	TITLE	L	P	CF
COMM 227	News Writing and Reporting	30	30	3.0
COMM 228	Graphics for Visual Communication	30	15	3.0
TOTAL		225	60	18.0

YEAR 3 SEMESTER 1

COMM 311	Foundations of Advertising	45	0	3.0
COMM 312	Interpretation, Translation and Transcription	45	0	3.0
COMM 313	Communication Research Methods	45	0	3.0
COMM 314	Internet Technologies and Communication	45	15	3.5

Either

COMM 315	Communication in a Global Context	45	0	3.0
COMM	Communication in	45	0	3.0

316	Marketing and Sales			
TOTAL		270	15	18.5

Or

COMM 317	Written Communication for Broadcasting	30	30	3.0
COMM 318	Audio/Video production	15	45	3.5
TOTAL		225	90	19.0

YEAR 3 SEMESTER 2

COMM 321	Information Technology, Communication and Social Change	45	0	3.0
COMM 322	Advertising Communication Strategies	30	30	3.0
COMM 323	Development Communication	45	0	3.0
COMM 324	Advanced Research Methods	15	30	3.0

Either

COMM 325	Communication, Leadership and Management	45	0	3.0
COMM 326	Public Relations Strategies	30	30	3.0
COMM 329	Field Attachment (Conducted between Y3& 4)	0	120	4.0
TOTAL		210	210	22.0

Or

COMM 327	Media and Society	45	0	3.0
COMM 328	Editing	30	30	3.0
COMM 329: Field Attachment (Conducted between Y3&4)		0	120	4.0
TOTAL		210	210	22.0

YEAR 4 SEMESTER I

COMM 411	Communication Seminar I (Kiswahili)	15	30	3.0
COMM 412	Technical Writing	45	15	3.5
COMM 413	Communication Research Proposal Writing	0	60	2.0

COMM 414	Digital Graphics and Communication	15	30	3.0
*EPSC 427	Personality and Group Dynamics	45	0	3.0
*LINS 401	Information in Society	45	0	3.0
TOTAL		165	135	17.5

YEAR 4 SEMESTER 2

COMM 421	Communication Seminar II (English)	15	30	3.0
COMM 422	Communication and Diplomacy	30	30	3.0
COMM 423	Legal Issues in Media and Communication	45	0	3.0
COMM 424	Communication and Ethics	45	0	3.0
COMM 425	Contemporary Issues in Communication	45	0	3.0
COMM 426	Communication Research Project	0	60	2.0
*BENT 421	Innovation and Enterprise Development	45	0	3.0
TOTAL		225	120	20.0

(c) COURSE DESCRIPTIONS

COMM 111: Introduction to Communication [Y1S1 45/0 CF 3.0]

Defining communication, functions of communication; socialization; social needs for communication, distinguish news/options/facts/comments etc; shaping of intellectual skills, information gathering/storage and retrieval; making of informed decisions, transmitting cultural knowledge, transmitting knowledge in education, science and technology; expression of needs for personal growth, creative expression and entertainment; categories of communication; personal and inter-personal, oral/written/printed, verbal and non-verbal (effects of body language, dress and display signals on communication); graphic communication-pictorial/posters/charts/films and video; elements of communication: source, medium, audience/feedback; Values/attitudes/stereotyping, different needs; Common communication problems.

COMM 112: Historical Development of Communication [Y1S1 45/0 CF 3.0]

Reasons for studying the development of Communication; Development of communication and communication technologies: The socio-economic and political conditions that spur development of communication and communication technologies; general impact of the development of communication and communication technologies; Development of human speech: key theories, Importance of language to human communication, Divine theories, Invention theories, Necessity theories, Evolutionary theory; Ancient long distance communications, their history and limitations: fire, smoke signals, beacons, maritime flags, horns, drums, human messengers, pigeons; Development of Writing and the literate culture: Origins and development of writing, Key writing systems and their history, strengths and weaknesses: pictographic, ideographic, logographic, syllabic, alphabetic; The impact of writing on human society; Printing and the press: development of paper, block printing, moveable press, the socio-political and economic impact of the printing press; Development of the mass media: the socio-political and economic conditions for development of mass media, the development of the typewriter, development of books, development of newspaper, development of magazine, photography, motion pictures, radio, television, video games; the socio-political and economic impact of mass media; Development of the computer and the internet; Development of the mobile gadgets; The socio-political and economic impact of the internet and mobile gadgets.

COMM 113: Communicative English [Y1S1 45/0 CF 3.0]

Communicative functions of language; Communicative English; Varieties of English: written/spoken, standard/dialect; regional; formal/informal. Different types of nouns: singular/plural of irregular nouns, nouns in apposition, pronouns and determiners. Characteristics of the tense system: -verbs and their functions; auxiliaries, agreement, finite/noun-finite verbs; clauses and different types of sentences: simple, compound, complex. Statements, questions, responses and requests; conjunctions and connectives. Emphasis on the use of these concepts in day to day communication.

COMM 121: Study and Academic Communication Skills [Y1S2 45/0 CF 3.0]

Becoming an independent learner; organization and planning study of a programme; Study habits: intensive study, distributed study, study groups, self-evaluation, extensive study i.e. reading beyond and around one's subject area. Understanding academic work; importance of motivation, methods of conceptualization, use of mnemonics like SQ3R – study method, mnemonics, summary-writing, note-taking techniques in lectures/tutorials, abbreviations, symbols, different note-making formats, discourse markers and functions. Library user skills; types of libraries, types of information sources, organization of information sources, assessing and retrieving information sources, acknowledging sources of information. The concept of academic writing; Academic writing process: topic selection, focusing, outlining information gathering and drafting; Types of essays and organizational structures; Referencing styles in academic writing.

COMM 122: Introduction to Business Communication [Y1S2 45/0 CF 3.0]

An overview of business communication: The importance of communication in business organizations, methods of business communication, principles of effective business communication e.g. brevity, accuracy, clarity and correct format; Barriers to effective communication in business; Types of business communications:- business correspondence e.g. memoranda, official letters, acknowledgements, tax reports, insurance forms/claims, complaints, invitations, email and fax messages, meetings documentation, recruitment correspondence, reports; range of relevant assignments to reinforce learning; Role of ICT in business communication.

COMM 123: Introduction to Mass Communication [Y1S245/0 CF 3.0]

The communication process as it relates to mass communication; Definition of mass communication; The nature of mass communication; Theories of mass communication; Functions of mass communication; Making sense of mass media business: The economy of mass media, Production of media content, genres of mass media, Distribution of media content, Exhibition of media content; Print Media: The general

characteristics of print media, The development, unique characteristics, types, function and production processes of Books, Newspapers, Magazines; Broadcast Media: The general characteristics of broadcast media, The development, unique characteristics, types, function and production processes of Film (Moving Pictures), Radio, Television, Music recordings; New media: The characteristics of New media, The development, unique characteristics of internet based mass communication platforms (Facebook, WhatsApp, twitter, Instagram, Blogs etc); Media effects; Media literacy. (*Prerequisites COMM 111, COMM 112*).

COMM 124: Rhetoric [Y1S2 45/0 CF 3.0]

Analyze and practice the four classic rhetorical modes: description, narration, exposition and argumentation; various approaches to organizational structures of presenting information such as cause/effect, comparison/contrast, process analysis, classification and division, exemplification and definition; the essentials of effective writing development of thesis statements, outlining prewriting, revision, engagement of audience, organization, voice, diction, style, grammar and sentence structure; techniques for assessing or critiquing their own and others' writing; rhetorical language in various domains (in politics, leadership, worship), persuasive versus informative/argumentative/tactful/tentative language.

COMM 211: Information Technology [Y2S1 45 /15 CF3.5]

Introduction to information communication technologies, definition of IT, computer families, components of IT system [hardware and software]; common operating software, application software; Hardware system, input and output devices; The internet, virtual world, and cyberspace relationship; Objectives and functions of IT, areas of application of IT, Impact of IT on communication and media, society and corporate world (both negative and positive impacts); benefits of IT, ethical issues in the use of IT.

COMM 212: Culture and Communication [Y2S1 45/0 CF3.0]

Definitions of culture, communication and intercultural communication; the relationship of culture, language and communication, relevance of cultural studies in

communication, theories of culture, components of culture, intercultural communication ethics, dimensions of culture, the pragmatics of culture and communication, cultures within cultures, contacts within cultures, barriers to intercultural communication, The Sapir/Whorf hypothesis, non-verbal communication, face and politeness, culture and perception. Intercultural communication competence, Universals in communication, Culture shock.

COMM 213: Desk Top Publishing [Y2S1 30/30 CF 3.0]

This course is designed to develop student understanding and skills in the different software used in desktop publishing. Students should learn layouts and design principles in DTP. The curriculum should emphasize: importing text files; integrating text graphics in producing different publications using either windows based (Page Maker) or Macintosh platforms up to camera ready stage. Creating boxes and rules; paragraphs typography, text box and frame specifications; tabulation; using graphics, drop caps (initial letters). Students will be required to produce materials using the learned skills.

COMM 214: Photo-Journalism [Y2S1 30/30 CF 3.0]

The concept of photojournalism; Camera operations- The lens and the camera; still, cine, television cameras photography; press photography; Lighting- Available light and how to use it, Controlled light (studio & remote) darkroom processes, picture composition, reporting with the camera; Editing-in-the-camera; legal and ethical restrictions in photo-journalism; Aesthetics and Criticism of journalistic photos; The Feature Story Photographs(s); On-the-spot coverage of breaking events (objective photography)-shooting to record reality.

(Students to undertake a practical field project under close supervision of the lecturer and write an examinable report which will form part of the assessment).

COMM 215: Written and Oral Communication in Business [Y2S1 45/0 CF 3.0]

Definition of concepts: written and oral communication, business writing; Writing in business context. Business writing processes; Business writing Stages, planning,

Researching audience, Audience analysis, Adapting situation, Reviewing message; revising, Business writing qualities for effective written message; Persuasive messages, Persuasive messages in business; Copywriting; Communication documents, their description, use, strengths and weaknesses: Business letter: Two major classifications of business letter; Good news letters and Bad news letters; Steps of writing a business letter; Executive Summaries; defining executive summaries, Contents of an executive summary, Formulating and summarizing information from different sources, Common errors in writing summaries, Business reports: Need for business reports; Types of business reports; Newsletters, Brochures/Pamphlets; Flyers, Contents and purpose of a newsletter, Brochures/Pamphlets and Flyers, Press releases, Purposes of press releases, Advertisements, Purposes for writing ads, written ads for production, Importance of Oral communication in business; oral presentations in business; Profiling the business occasion, audience and location; Preparation for business presentations- planning and writing the presentation/purpose/needs/expectations of the audience. Types and Structure of Business presentations; Types of visual aids in business presentations; Effective use of audio-visual aids Dealing with questions and feedback from audience in business presentations; Using the telephone: making a call, answering a call, taking a message, conference calls. Practical presentations and exercises based on business and professional topics.

COMM 216: English for Specific Purposes [Y2S1 45/0 CF 3.0]

The development of ESP: historical and theoretical perspectives; specific genre of technical English with specific communication goals and careers; Definitions of Style and Register; Different levels of formality; formal/informal. Description of various registers: Legal, medical, journalistic, political etc in terms of difference in vocabulary and sentence structure. Interactive versus non-interactive language (dialogue Vs monologue) spoken and written language.

COMM 217: Print Media [Y2S1 30/15 CF 3.0]

Introduction to print media; Forms of print media; History of print making; Printing Process; Modern print

media technology; Internet based newspapers; Print on demand culture; Types of print media literature (Articles; the interview articles, the personality profile article, the general expository articles, the critical review, magazine analysis, query letters); magazine and newspaper production; letters to the editor, reviews, soft news versus hard news, magazine writing, newspaper pull-outs.

(Students are expected to write in-depth publishable articles and also publish a magazine of their own).

COMM 218: Electronic Media [Y2S1 30/30 CF 3.0]

Meaning and types of media; Characteristics of various media; The history and development of Radio and television; The communicative nature of radio and television; The functions and power of the press and radio: theory and research; Critical research issues in journalism, press and radio studies; Functions of radio, advantages of radio as a communication, channel running radio stations; music stations news/talk radio stations, full service radio stations; Radio programming formats/styles; Operating the radio; Radio on-air and production studios; Working in Radio: on-air position e.g. announcer, DeeJay etc, off air positions e.g. manager, programme director traffic director, copy writer, sales manager, chief engineer; Writing for radio, radio commercials, music, sound effects, public service announcements; Electronic media aesthetics. **(Students to use the electronic media studio for mandatory practical sessions that account for 50% of the course work and assessment).**

COMM 221: Interpersonal Communication [Y2S2 45/0 CF 3.0]

Introduction to the interpersonal communication concept; Dimensions of interpersonal communication; Principles of interpersonal communication; Theories of Interpersonal Communication: Symbolic interaction theory; Expectancy violations theory; Constructivism; Social penetration theory; Uncertainty reduction theory; Social information processing theory; Relational dialectics; Communication privacy management theory; Social judgment theory; Elaboration likelihood model; Cognitive dissonance theory; Diffusion of innovations theory. Interpersonal relationships; perception process, Self Perception and Self Concept - societal and cultural influences on self-concept; Interpersonal Relationships;

The impact of the tone and emotions on personal and professional relationships and communication; Power in Interpersonal Communication; Conflict in Interpersonal Relationship; communicating electronically-role of technology in interpersonal context.

COMM 222: Gender Issues in Communication [Y2S2 45/0 CF 3.0]

Communication and gender; key concepts in communication and gender (gender, sex, sexism, sex roles, gender roles, gender empowerment, gendered discrimination, misogyny, language gender ideology and power, etc), Contemporary issues in gender and communication; Gendered stereotypes; Theories of gender and communication (feminism, Critical Discourse analysis, Hegemonic masculinities and Discourse Historical Approach) Gender and media; Intercultural communication in a gendered perspective; Gender in computer mediated communication; Practical analysis of male and female talk.

COMM 223: Public Speaking [Y2S2 30/30 CF 3.0]

Nature of public speaking; Functions of public speaking; Elements of public speaking: speaker, message, audience, channel, context; Types of speeches: Approaches of speech presentation; Ethical considerations and norms for public speakers and listeners; Effective listening as a skill for speakers and audiences; Contexts for speaking; Stages in speech presentation -introduction, body, conclusion; Effective use of Non-verbal features in public speaking; Technology in public speaking: using power point presentations- features of effective power point slides.

(N/B Students will be required to prepare and present speeches and power point presentations on current and topical issues for grading).

COMM 224: Communication and Critical Thinking [Y2S2 45/0 CF 3.0]

Definition of Critical thinking; The relationship between communication and critical thinking; Barriers to critical thinking; Argument and argumentation in critical thinking; the nature of arguments and their components, the contexts of arguments, audiences, opponents that arguments address, logical indicators in argument, arguments without logical indicators; Types of arguments: deductive and inductive, good and bad, valid

and invalid, strong and weak, sound and unsound; Argument diagrams; Non-arguments: explanations, descriptions and summaries; Assumptions and implicit arguments; Reasons for the use of implicit arguments; Fallacies in argumentation: Fallacies of Distraction, Appeals to motives in place of support, Changing the subject, Inductive fallacies, Fallacies involving statistical syllogisms, Causal fallacies, Missing the point, Category errors, Fallacies of definition; Finding and evaluating sources of evidence in critical thinking; Primary and secondary source, authenticity, credibility, currency, validity, reliability, relevant and irrelevant evidence, representative samples, triangulation; Critical reading and note-making; Critical and analytical writing; Critical oral presentation.

COMM 225: Organizational Communication [Y2S2 45/0 CF 3.0]

Communication function and structure in organizations; Definitions, Background; Benefits of studying organizational communication, Formal/informal structures; Objectives of communication in organizations; Networks of communication; Barriers to communication and solutions; Organizational communication theories: Cultural approach to organizations, Critical theory of communication in organizations. Organizational culture; Corporate communication; Role of interviews in organizations.

(Students to pay academic visit to existing local and international organizations based in Kenya and write a report on the various organizational structures observed).

COMM 226: Foundations of Public Relations [Y2S2 30/30 CF 3.0]

Definitions of the Public Relations concept; the historical development of history of public relations; the functions and role of public relations; Principles of public relations; Theories of public relations; Public relations distinguished from marketing, advertising, publicity and advocacy; planning public relations programmes; the publics of public relations- internal and external; Management aspects in public relations – planning, organizing decision making, leading; setting missions, visions, goals; Additionally, this course will examine the ethics involved in researching and writing for public relations contexts.

(N/B Mandatory academic trip/tour to selected Public Relations firms and/or organizations/government departments with established PR structures and produces a report of the activities to be compiled and bound).

COMM 227: News Writing in Print Media [Y2S2 30/30 CF 3.0]

Types of news; Human interest, political, crime, courts, entertainment, environment, disasters, accidents, sports, investigative piece etc; Organisational structure of editorial department; Attributes of a good news reporter; Sources of news, gathering of news stories, types of interviews; Professional writing techniques, dealing with press statements/releases, news conferences, meetings, rallies; Legal and ethical issues in news writing.

(Students are expected to produce a newspaper covering all types of news that will form part of the grade for the course).

COMM 228: Graphics for Visual Communication [Y2S2 30/15 CF 3.0]

Introduction to graphic design; understanding typography; the value of type sizes and style, the effective treatment of type on a page, typesetting; photographs and illustrations on a page for effective communication; Effective use of white space; handling colour creatively and dynamically; Publication layout and techniques; Magazine design; Cover and inside pages; Graphic design in advertising and packaging; Print production process; Computer graphic design, Exhibition display in various media.

COMM 311: Foundations of Advertising [Y3S1 45/0 CF 3.0]

Definition and the brief history of advertising, social and economic influence of advertising, Structure and relationship of advertisers, media and agencies;;Theories of advertising; Advertising media: newspapers, magazines, out-of-home, radio, television, direct mail, new media, viral marketing and guerrilla marketing; Message delivery platform; Research techniques that support message placement including primary and secondary research methodologies; Media planning.

COMM 312: Interpretation, Translation and Transcription [Y3S1 45/0 CF 3.0]

Historical survey of various approaches to translation; Definition of translation and interpretation; Theories of actual translation; Usefulness of translation in communication and media; Approaches to types of materials to be translated, Types of translations and adequacy to communication needs; Problems of aesthetics and translation.

COMM 313: Communication Research Methods [Y3S1 45/0 CF 3.0]

Overview of the concepts, methods, and tools by which communication research is designed, conducted, interpreted, and critically evaluated, Scientific and non-scientific research; Characteristics of science; Concepts of research; Types of research; Classification of research, Research process; Philosophical rationales undergirding research approaches; Designing a research topic, Communication research methods: survey research, content analysis, experimental approaches, interviewing, discourse analysis, field research, and historical methods; Ethical principles governing the process of research.

COMM 314: Internet Technologies and Communication [Y3S145/15 CF 3.5]

Basic principles of internet operation, the concepts of the World Wide Web and its resources including basic Internet tools. Varieties of Internet applications and advanced search techniques. Browsing library catalogues and reserve books, communicating with and tracing route to the Internet provider, configuring e-mail, accessing updated drivers and software to protect against viruses, downloading and creating browse-able copies to view off-line, creating files and saving to work off-line. Class activities will include theory and practical exercises.

Prerequisites: Any computer literacy course.

COMM 315: Communication in a Global Context [Y3S1 45/0 CF 3.0]

The concept of globalization – definitions, history of globalization; Indicators of globalization; Map skills and major areas in the world; Effects of globalization; Cultural, political and democratic; Ecological; Economical; Technological; Anti-globalization/global

justice movement: Positive frame; Negative frame; Neutral frame; Impact of globalization on communication.

COMM 316: Communication in Marketing and Sales [Y3S1 45/0 CF 3.0]

Introduction: communication elements in marketing, economic, social and ethical issues in marketing communications: source, message and medium factors, consumer behaviour perspectives, attention, comprehension and recall, marketing mix; Product planning and development; positioning; Brand awareness, attitudes and feelings; Creative strategy: planning and development, execution and evaluation; Communication elements in sales management, communication with the prospects, persuasion; Sales promotion: sales promotion and consumer behaviour, objectives, budget allocation, design issues, planning guidelines and evaluation; Sales promotion tools and techniques: buyer/seller interaction, personal contacts, use of telephone, letters, establishing the rapport; Presentation: writing sales proposals, oral presentations, demonstrations, closing and follow-up and desirable characteristics of a good sales person.

COMM 317: Written Communication for Broadcasting [Y3S1 30/30 CF 3.0]

Introduction to Broadcast media-Radio and Television; Types of writing for broadcasting: programmes writing; talk shows, features and documentaries; Writing stages; Writing for the visual media; The screen language professional script format; writing and developing a story, plot, theme, characterization, dialogue, sound, music, setting scenes, writing a television documentary, television news, sports and editorial commentaries; The story board audience, reader/producer considerations; Data gathering and recording, pre-writing and planning; Drafting and outlining, editing and re-writing; Audience consideration, writing for children, and diverse audiences; Extensive reading for writing purposes; sports, music, gender, politics environment etc; Writing commercials; Persuasion entertainment, information dissemination and education; Writing dialogues, critique and analyzing information.

(N/B Emphasis will be put on practical work using the Egerton electronic media studio and other electronic broadcast media).

COMM 318: Audio-Video Production [Y3S1 15/45 CF 3.5]

The concept of audiography; Theory of oral-aural communication and tools of production; The control room tape recorders, microphones acoustics sound effects, voicing editing production, form and style, selection time, space programme formats (talks, interviews, features magazines, documentaries) portable tape recorders; Tools of production: the camera, camera chats movements, picture composition, lighting, scripting; Television studios, electronic editing, post production presentations.

(The students to undertake a mandatory audio-video production project).

COMM 321: Information Technology, Communication and Social Change [Y3S2 45/0 CF 3.0]

Introduction to Information communication technologies; Defining ICT; Components of ICT[internet, virtual world, and cyberspace]; Communication systems, Social change; ICT infrastructure systems; Impact of ICT on the media and the society; Focus on different societies [European, American, Asian, African; Kenyan context]; Diffusion of innovation; Communication use in the introduction, spread and adoption of new ideas; Globalizations and major issues on the society; Digital broadcasting, its history, Digital migration and its implications in the media industry and society; Ethical and controversial issues in the adoption of ICT.

COMM 322: Advertising Production [Y3S2 30/30 CF 3.0]

Planning execution and control of advertising media programmes; Fundamental characteristics of the media buying and selling process; Techniques and methods used in advertising media planning process; Role of strategy in the creation and design of advertising; Writing effective copy for print and broadcast media; Advertising production and design for print, electronic and new media platforms; Review of historical and contemporary advertising and marketing communication campaigns; Analyze consumer, business-to-business, national, and local campaigns including volunteer, not-for-profit public service advertising.

NB: Students will work in team groups to create and present a completely integrated advertising campaign supporting and coordinating all strategy, creative, media, and sales promotion aspects as part of their continuous assessment for the course.

(Mandatory Field visit to advertising firms and preparing a report on advertising production as instructed by the lecturer in charge).

(Prerequisite: COMM 311).

COMM 323: Development Communication [Y3S2 45/0 CF 3.0]

The history of development and communication; Theories of development communication; the use of communication to promote development in varied sectors – education, agriculture, health, politics, economy, social; Realization of sustainable development; Communication for development and different media approaches- talk media, traditional social groupings, rural radio; Communication and development in Kenya and Africa.

COMM 324: Advanced Research Methods [Y3S2 15/30 CF 3.0]

Qualitative and quantitative research frameworks; Ethical and professional research practice; Writing of research objectives and research questions; Writing literature review; Research Design; Population and sampling; Data collection instruments; Tests of sound measurement and levels of scale; Data organisation, analysis and interpretation; Ethical and logistical issues in research. **(Prerequisite: COMM 313).**

COMM 325: Communication, Leadership and Management [Y3S2 45/0 CF 3.0]

Fundamental concepts in leadership: levels of leadership, leadership theories, styles, functions and responsibilities, human needs, cohesion, followership, qualities of followers, ten rules of desirable followership; Group dynamics and media leadership: characteristics of groups, types, norms, cohesiveness, functions, media and professional ethics, code of ethics, ethical dilemma, the ethical reasoning processes; Psychology for media leadership: models of human behaviour, learning, motivation, personality, perception, attitudes, emotions, social factors; Interface between: leadership and management, leadership and

communication, management and communication, responsibilities and functions; Communication management and process; Levels of management, media management: fundamental leadership skills, roles of a manager; Time management: characteristics of time, essentials for good time management, factors affecting time management, DO's and DON'Ts of time management; Change management: long-term objectives calling for change, resistance to change, reasons for resistance, instances when opposition to change is strong, overcoming resistance, the change process.

COMM 326: Public Relations Strategies [Y3S2 30/30 CF 3.0]

This course is designed to enhance the students' practical interaction with the concept of Public Relations; the course connects theory to practical applications by framing research methodology in the context of planning; this course will also explore approaches and techniques for conducting research and writing within key public relations contexts. Students in this course will examine and utilize research techniques and methodologies that are essential for public relations professionals. Focus will also be on Media and Public Relations: Changing media in communication-Components of this course will include: journalistic research, copywriting, research and writing for broadcast, web research, writing for the Web, transforming technical information for general audiences, and media release writing. Utilizing analysis techniques, public relations tactics, and hands-on projects ; Crisis communication and building a positive reputation through the strategic management of communications with internal and external audiences during good times and bad times-students will evaluate crisis situations, create and implement a strategic crisis communication plan for a selected organization; and learn to coach the corporate spokesperson and manage the media, while maintaining the organization's reputation. Working in collaborative teams, students complete a project that demonstrates planning and managing communication for organizational goals based on information obtained in the field.

(Mandatory Field visit to Public Relations firms and Public Relations Departments in government and

private organizations and produce a report as instructed by the lecturer in charge).

COMM 327: Media and Society [Y3S2 45/0 CF 3.0]

Concept of media; Types of media, concept of society; Communication, media and society – the historical, contemporary and international dimensions; The concepts of the public; social and individual effects of media, media and self; interaction with media, problems and challenges of media, responsibility of the media consumer and media politics and propaganda; Effects of media on society.

COMM 328: Editing [Y3S2 30/30 CF 3.0]

The concept of editing; Role and function of the editor; Sub-editing; Principles and practices in editing copy; Editing illustrations and pictures for publication; Editing news for print and electronic media, editing feature stories for print and electronic media, introduction to typography and headline writing; Editing symbols and abbreviations.

(N/B Students will carry out actual editing for existing journals and newsrooms e.g.Egerton FM radio –hands on).

COMM 329: Field/Industrial Attachment [Y3S3 0/120 CF 4.0]

Students to be attached to firms, government Departments, NGO and other recognized places where they can apply skills and theoretical knowledge acquired in six semesters of the programme. Assessment to be conducted by University supervisors, heads of respective host organizations and students' own Attachment Reports.

COMM 411: Seminar I – Kiswahili [Y4S1 45/0 CF 3.0]

Kozi hii italenga kufafanua dhana ya uwasilishaji, vigezo vya wasilisho zuri, aina mbalimbali za mawasilisho na jinsi yakuyaandaa (uwandalizi wa wasilisho). Sifa za sauti na nafasi yake katika uwasilishaji. Nafasi ya mkao, mwili na mtazamo wa macho katika uwasilishaji. Tofauti kati ya mawasilisho na ripoti zilizoandikwa. Makosa mbalimbali katika maandalizi ya wasilisho-utumizi mbaya wa viambatawasilisho, wasilisho ghushi/bandia, na habari nyingi zisizo muhimu, nk. Makosa katika matumizi ya

luga ya Kiswahili kama luga ya uwasilishaji. Umuhimu wa ikisiri na vidokezo vya wasilisho, umuhimu wa semi na kwa mtumiziluga. Changamoto zinazokumba luga ya Kiswahili katika mawasiliano.

LAZIMA: Uwasilishaji wa wanafunzi kugeza stadi zao za uandalizi na utekelezaji wa mawasilisho mbalimbali kama vile vipindi tofautitofauti katika vyombo vya habari, taaluma za kiusomi; uwasilishi wamapendekezo, mahojiano kwa ajili yakazi, barua zakucha kazi, n.k.

COMM 412: Technical Writing [Y4S1 45/15 CF 3.0]

Introduction to technical writing; Audiences in technical writing; Designing usable information in technical writing; Conducting research for technical writing; The technical writing process; structure of technical writing; Graphics and visual information in technical writing; Pie charts, bar charts, tables, photographs, maps; Technical writing formats: Email, memorandum, letters, resumes, cover letters, instructions, reports, proposals.

COMM 413 Communication Research Proposal Writing [Y4S1 0/60 CF 2.0]

The student is expected to write a research proposal. The student will examine a particular aspect of communication within a specific context, review how communication theory has been used in previous scholarly studies and then develop a research proposal clearly outlining the introduction, literature review and methodology of the planned study. Students will also be required to prepare their data collection instruments. The proposal will serve as an introduction, rationale and review of literature which is the first part of any scholarly communication study. The proposal will then be approved by the students' allocated supervisor.

COMM 414: Digital Graphics and Communication [Y4S1 15/30 CF 3.0]

Graphic design history; Visual communication concepts and tools; Fundamentals of typography design and layout; Basic design and Photoshop Illustrator; Developing graphics for print, advertising, corporate identity, and other media; Colour theory and its implications for designers and artists; Space and the use of colour to solve spatial problems; Colour harmony and the way colours interact, as well as colour qualities and combinations; Digital Images: Ordinary and powerful

effective images; Human vision; Light properties and digital graphic design; Effective graphic design communication skills; Animation Concept.

COMM 421: Seminar II– English [Y4S2 15/30 CF 3.0]

Learners will prepare and participate in weekly seminars on current issues and career options in communication and media, involving class presentations on topical issues in the field of communication and media. The course explores the wide range of communication careers spanning the media and strategic communications fields. Presentations centre on unique perspectives regarding challenges and opportunities in advertising, news reporting, public relations, broadcast, radio, Integrated Marketing Communication, new media, and communication and media law. The student will then write a seminar paper on a topical issue in communication and media assigned by the course lecturer.

COMM 422: Communication and Diplomacy [Y4S2 30/30 CF 3.0]

Definitions, Functions and instruments of diplomacy; History of diplomacy; Basic terms and concepts of diplomacy; Categories of diplomacy; Basics of world politics (sovereignty, anarchy, LOA, security dilemma etc.); Modern diplomacy and theories of world politics (Realism, Liberalism); Forums for cooperation; Enforcement and change; Negotiation; Bargaining; Conflict resolution; Diplomatic protocol; Role of effective communication in Diplomatic interactions.

(N/B Mandatory academic trip: Students to undertake mock diplomatic mission assignments in actual existing embassies and high commissions in Kenya).

COMM 423: Legal Issues in Media and Communication [Y4S2 45/0 CF 3.0]

Definition of law; Functions of law; Types of law: civil, criminal, contract, tort; Sources of law in Kenya; Court system in Kenya; The relationship between communication and law; Freedom of speech as a foundational communication law; Law of confidentiality; Law of torts and communication: Defamation law Invasion of privacy law, Nuisance law, law on pornography, obscenity, indecency; Intellectual

property law: Patent law, Copyright law, Trademarks law; Communication law public order and safety: Communication law and public order, Communication law and public security, Hate speech law; Government records and law courts reporting; Access to government records and proceedings; Accessing and communicating court proceedings; Communication law and the cyberspace: Definition of cyberspace, Characteristics of the cyberspace, Types of cybercrime, Legal framework in monitoring and punishing cybercrime, Challenges in monitoring and punishing cybercrime.

COMM 424: Communication and Ethics [Y4S2 45/0 CF 3.0]

Definition of ethics, what is the study of ethics, concepts of ethics; Ethical issues involved in communication; Media coverage of issues sensitive or potentially harmful to nature; Ethical theories of a variety of thinkers and philosophers; Ethical issues in communication; Ethics in advertising, ethics in persuasion, ethics in mass media and ethics of organizational communication; Research ethics; Case studies.

COMM 425: Contemporary Issues in Communication [Y4S2 45/0 CF 3.0]

Specific course content will change to reflect topics of most important and current interest or concern. Current examples might include the effect of the media on social violence, contemporary communication strategies in corporations, or the effectiveness of 3rd party diplomatic tactics in resolving regional conflicts; ICT and communication.

COMM 426 Communication Research Project [Y4S2 0/60 CF 2.0]

Students will carry out their own original study based on the approved proposal in COMM 413. They will conduct an actual research study that will be completed by the end of the semester. The study project will put into practice the design, instrumentation, and analysis skills acquired in COMM 313 and 324. The written report will be prepared in accordance with the University project proposal writing guidelines.

Prerequisites: COMM 313, COMM 324 and COMM 413.

9.2 SERVICE COURSES OFFERED TO OTHER DEPARTMENT

COMS 111: Communication Skills (Y1S1 45 CF 3.0)

Concept of academic reading and writing; Functions of academic writing; Characteristics of academic reading and academic writing; academic reading process - building and enhancing ability to interpret content and analyse the organisation of ideas in written texts; Reading discipline specific texts; Reading for a writing tasks; the academic writing process- topic selection, focusing, outlining information gathering and drafting; Paragraph development; Types of essays and organisational structures; parts of an essay; Referencing styles in academic writing –plagiarism, avoiding accidental plagiarism; advancing from essay writing to research and report writing Preparation for an oral presentation of a research paper; parts of an oral presentation – introduction, middle and conclusion.

9.3 Matrix Aligning Courses/units to Programme Learning Outcomes

Programme Learning Outcomes(PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
Develop and refine skills in effective academic writing, communication and media and in specialized technical fields	COMM 113; COMM 121; COMM 124; KISW 122	3.0 3.0 3.0 3.0	COMM 215; COMM 216; COMM 224	3.0 3.0 3.0	COMM 313; COMM 317; COMM 324; COMM 328	3.0 3.0 3.0 3.0	COMM 411 COMM 412 COMM 413	2.0 3.5 2.0
Carry out independent research in their area of specialization and familiarize themselves with information gathering, retrieval and dissemination techniques	COMP 101; COMM 121	3.5 3.0	COMM 211; COMM 214; COMM 228;	3.5 3.0 3.0	COMM 312; COMM 313; COMM 314; COMM 324; COMM 328	3.0 3.0 3.5 3.0 3.0	COMM 411; COMM 412; COMM 413; COMM 414; COMM 421; COMM 423; COMM 424; COMM 426; LINS 401	2.0 3.5 2.0 3.0 2.0 3.0 2.0 3.0 3.0
Organize, supervise and evaluate effective communication tools; manage and control facilities, personnel, time and finance effectively	EPSC 121; SOCI 101; ENSCI 100	3.0 3.0 3.0	COMM 211; COMM 213; COMM 214; COMM 217; COMM 218; COMM 223; COMM 224; COMM 225;	3.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0	COMM 311; COMM 312; COMM 314; COMM 316; COMM 317; COMM 318; COMM 322; COMM 323;	3.0 3.0 3.5 3.0 3.0 3.5 3.0 3.0	COMM 412; COMM 413; COMM 414; COMM 422; COMM 426; EPSC 427; BENT 421;	3.5 2.0 3.0 3.0 2.0 3.0 3.0

			COMM 226; COMM 228	3.0 3.0	COMM 324; COMM 325; COMM 326; COMM 328; COMM 329;	3.0 3.0 3.0 3.0 4.0		
Write, edit and publish newspaper and/or magazine articles	COMM 113; COMM 121; COMM 122; COMM 124; KISW 122	3.0 3.0 3.0 3.0 3.0	COMM 213; COMM 215; COMM 216; COMM 217; COMM 227; COMM 228	3.0 3.0 3.0 3.0 3.0 3.0	COMM 312; COMM 322; COMM 326; COMM 328; COMM 329	3.0 3.0 3.0 3.0 3.0	COMM 412; COMM413; COMM 421; COMM 426	3.5 2.0 2.0 2.0
Distinguish and appreciate differences in communication in intercultural and international context; be sensitive to issues of gender in language and communication strategies; keep abreast with contemporary developments and issues in communication	COMM 111; SOCI 101 ENSCI 100; COMM 123; EPSC 121	3.0 3.0 3.0 3.0 3.0	COMM 212; COMM 221; COMM 222; COMM 223;	3.0 3.0 3.0 3.0	COMM 312; COMM 315; COMM 323; COMM 325; COMM 326; COMM 327	3.0 3.0 3.0 3.0 3.0 3.0	COMM 422; COMM 425; EPSC 427; LINS 401	3.0 3.0 3.0 3.0

N/B * Indicates courses that belong to other University Departments adopted as they appear in the University Catalogue.

DEPARTMENT OF PHILOSOPHY, HISTORY AND RELIGION

BACHELOR OF ARTS - HISTORY AND INTERNATIONAL STUDIES

1. Philosophy of the Programme

To expose students to local, Regional and global issues in the historical and contemporary perspectives and equip them with relevant intellectual and analytical skills to serve the National International arena.

2. Rationale

The BA (History and International Studies) programme is customized to contribute to realizing Egerton University's Vision of a world class university for the advancement of humanity. In accordance with the proposition that human history is infinitely diverse, the programme incorporates a wide variety of courses. The programme will help in forging an informed awareness of the unity inherent in human diversity as well as equipping the graduates to face the challenges of globalization. Similarly, the programme encompasses the University's Mission to, inter alia, disseminate significant knowledge and offer exemplary education in order to innovatively influence national development. The diverse course offerings should assist in forging a national identity and cohesion, while contributing to international understanding. Graduates of the programme will therefore be equipped with knowledge, skills and attitudes that will enable them to operate effectively in a global village that emphasizes national cohesion, regional cooperation and integration, as well as a functional global society.

3. Goal of the Programme

Produce graduates who are knowledgeable in local and international issues and their implications on human well being.

4. Programme Learning Outcomes

At the end of the programme, the graduates will:

PLO 1 Have acquired knowledge, skills and attitudes in a broad based multidisciplinary academic foundation.

PLO 2: Be equipped with analytical skills to enable them to participate in Global development.

PLO 3: Apply the knowledge skills and attitudes gained to serve local and international institutions effectively.

5. Mode of delivery

This Programme will be delivered on full time, e-learning, or open and distance learning modes.

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i) All candidates to be admitted to the degree programme of Bachelor of Arts – International Studies must satisfy the minimum entrance requirements stipulated in the University Statutes;
- ii) Candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade of C+ and at least a C+ in the subject for which they are applying. The departments may have specific requirements for admission.
- iii) Candidates with a minimum of two principals at A-level in relevant fields MAY also be admitted.
- iv) Any other equivalent qualification from a recognized institution MAY be considered.

6.2 Regulation on Credit Transfer

Credit transfer programme shall adhere to Egerton University statutes of 2013 articles 36 (3).

6.3 Course Requirements

The Requirements for this programme shall also adhere to ISO procedure for teaching as stipulated in (EU/AA/OP/06 rev 3)

6.4 Student Assessment Policy /Criteria

Egerton University Statute 36 (6) of 2013 on student assessment Policy/Criteria shall be applicable.

6.5 Grading System

The grading of examination for these programme shall be conducted in accordance with Egerton University Statute 36 (6) shall apply.

6.6 Examination Regulations

The examinations regulations as stipulated in the Egerton University Statute 36 (5) shall be applicable

6.7 Moderation of Examination

ISO procedure on moderation of examinations as stipulated in EU/AA/OP/07 shall be applicable.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated period.

6.9 Classification of Degrees

Degree Classification shall be in accordance with Egerton University Statute 36 (17).

7. Course Evaluation

All courses will be evaluated at the end of the programme cycle. Using a tool that captures course content, instructional process, infrastructure and relevant staff for delivery as well instructional and reference materials.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the department of Philosophy, History and Religion, the Faculty of Arts and Social Sciences. The programme academic leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme evaluation

The BA in History and International Studies programme shall be reviewed after running the full cycle of four years and will be subjected to ISO Procedure for academic Programme review, EU/VC/OP/04.

8.3 Course coding

Coding of courses in the BA in History and International Studies programme shall be HINS, in alignment with the Egerton University system of course coding.

- The first figure represents the year of study in which a particular course is being offered.
- The second digit represents the level; i.e. the semester when offered and
- The last digit denotes ranking of the course within that field e.g. HINS 111 is a first year introductory course and the first in the series.

9. Courses/ Units offered for the Programme

9.1 Schedule of Courses

The course offered by the programme shall be:

a) Common Core courses

The following are the University common core courses that shall be offered:

b) The schedule of courses in the programme organized on semester basis:

YEAR 1 SEMESTER 1

Code	Course Title	L	P	CF
HIST 111	Introduction to Academic History	45	0	3.0
HIST 112	Sources of African History	45	0	3.0
HIST 113	The Making of Kenya	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
HINS 111	Introduction to Diplomacy	45	0	3.0
HINS 112	Introduction to International Relations	45	0	3.0
Total		270	0	18.0

YEAR 1 SEMESTER 2

Code	Course Title	L	P	CF
HIST 121	Topics in African History	45	0	3.0
HIST 122	Themes in East African History	45	0	3.0
HIST 123	History of Science and Technology	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0

HINS 122	Introduction to Peace and Conflict Studies	45	0	3.0
HINS 123	Introduction to Political Studies	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 1

Code	Course Title	L	P	CF
HIST 211	Survey of World History	45	0	3.0
HIST 212	Topics in the History of Agriculture	45	0	3.0
HINS 212	Communication Dynamics in Conflict Resolution	45	0	3.0
HIST 318	Selected topics in African Economic History	45	0	3.0
HINS 211	Regional Conflicts and conflict Resolution in Africa	45	0	3.0
HINS 213	Foundations of international law	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 2

Code	Course Title	L	P	CF
HIST 221	Topics in Governance and Constitutions	45	0	3.0
HIST 222	Philosophy of History	45	0	3.0
HIST 223	History of land and Agriculture in Kenya	45	0	3.0
HINS 221	Introduction to Africa's International Relations	45	0	3.0
HINS 222	Human Rights in International Relations	45	0	3.0
Total		225	0	15.0

YEAR 3 SEMESTER 1- Core

Code	Course Title	L	P	CF
HIST 311	Methods of Historical Research	45	0	3.0
HIST 312	Historical Studies in the Economic Institutions			

	of Africa			
HINS 311	Contemporary Theories and Ideologies in International Relations	45	0	3.0
HINS 312	United Nations Organization	45	0	3.0
HINS 313	Diplomacy in Historical Perspectives	45	0	3.0
HINS 314	Field attachment	0	120	4.0
Total		225	120	16.0

YEAR 3 SEMESTER 2 - Core

Code	Course Title	L	P	CF
HIST 322	Topics in the Global History of Agriculture	45	0	3.0
HIST 323	History of Economic Thought	45	0	3.0
HINS 321	Government and Politics in Africa	45	0	3.0
HINS 322	Research methods in International Relations	45	0	3.0
Total		180	0	12.0

YEAR 3 SEMESTER 2 – Elective Courses

Code	Course Title	L	P	CF
HIST 314	History of Kenyan Labour movement	45	0	3.0
HIST 318	Global Studies of Indigenous People	45	0	3.0
HINS 323	Comparative Study of Foreign Policy	45	0	3.0
HINS 324	Diplomatic simulation Exercise	45	0	3.0
HINS 32	The Dynamics of Ethno-Political Conflict	45	0	3.0

YEAR 4 SEMESTER 1 - Core

Code	Course Title	L	P	CF
HIST 411	Historiography	45	0	3.0

HIST 412	Studies in the African Diaspora and Pan-Africanism	45	0	3.0
HIST 413	Research Seminar	15	30	2.0
HINS 411	Kenya's Foreign Policy	45	0	3.0
HINS 412	Globalization of World Politics	45	0	3.0
Total		195	30	14.0

Electives

Code	Course Title	L	P	CF
HIST 415	Imperial and Commonwealth History	45	0	3.0
HIST 416	Perspectives in Africa's International Relations	45	0	3.0
HIST 417	History of China	45	0	3.0
HINS 413	Comparative Political Systems	45	0	3.0
HINS 414	Approaches to Peace Studies and Strategies	45	0	3.0
HINS 415	International Political Economy	45	0	3.0

YEAR 4 SEMESTER 2 - Core

Code	Course Title	L	P	CF
HIST 421	Africa in World History: Conceptual Issues	45	0	3.0
HIST 422	Global Studies in Conflict and Conflict Resolution	45	0	3.0
HIST 423	Research Project	0	120	4.0
HINS 415	United States Foreign Policy	45	0	3.0
HINS 422	US-Africa Relations	45	0	3.0
Total		180	120	12.0

Electives

Code	Course Title	L	P	CF
HIST 424	Historical Studies of International	45	0	3.0

	Organizations			
HIST 427	International Working Class Movement	45	0	3.0
HIST 428	Armed Conflict in Africa	45	0	3.0
HINS 423	China's Foreign Policy	45	0	3.0
HINS 424	Ethical and Religious Perspective of Peace and Conflict	45	0	3.0
HINS 425	Internship/ Research project			
Total		180	0	12.0

(c) COURSE DESCRIPTIONS

HINS 111: Introduction to Diplomacy

Diplomatic history: the origins and practice of diplomacy. The Vienna Convention. Rules and goals of diplomacy. Types of diplomacy: Multilateral and bilateral diplomacy; Track one and track two diplomacy. Principles and theories of diplomacy: Realism and realpolitik, Power transition. Polarity and balance of power. Bipolarity and multi-polarity. Third-party intervention and preventive diplomacy. International politics and diplomacy. Perception and misperception in international politics. . Diplomatic law. International law and diplomacy. (Y1S1)

HINS 112: Introduction to International Relations

The practice of international relations in global affairs: introduction to IR and international studies. Theories of IR: Marxism, globalisation, liberalism, realism, modernization, dependency, functionalism etc. IR and the new World Order, Significance of IR in world politics. Origin of nation-states and contemporary state systems, types of states & sovereignty. Power and the Balance of power and the security dilemma. The concept of Foreign policy: decision making, determinants of foreign policy, Actors in the international system: State and Non-states actors. (Y1S1)

HINS 122: Introduction to Peace and Conflict Studies

Introduction to peace and conflict studies. Definition of peace and conflict. Theories and issues about peace, violence and conflict. Types of conflicts. The nature and functions of conflict. Causes and sources of conflict. Theories of Peace: Positive versus negative peace, Gandhian Peace, Capitalist Peace and Small peace. Gender and cultural dimension of conflict. Women and children in Conflict situation. Peace movements. Interests and goals of conflict resolution. Conflict management and resolution: Western Conflict Resolution methods, Alternative Conflict Resolution Methods, Case studies. Peace-building, peacemaking and conflict transformation. (Y1S2)

HINS 123: Introduction To Political Studies

Origin of Political thought, ideologies and philosophies. Contemporary world political systems and ideologies: political parties and the electorate, comparative political systems. Theoretical and critical thinking on comparative politics. Open societies vis a vis closed societies. Federalism and unilateralism. Major theories in comparative politics such as political systems, state, civil society, political culture, rational choice, institutionalism. Socio-political economy of states, issues of democracy and development and democratic and non-democratic transitions in world politics, rightists vs leftist vs centrists. An educational trip to Kenya's parliament (Y1S2)

HINS 211: Regional Conflicts And Conflict Resolution In Africa

Surveys of past and present trends in conflict and conflict resolutions in Africa: Southern Africa, West Africa, Great lakes region and the Horn of Africa. Cold War and intra-state conflicts in Africa. The role of military in conflict resolution in Africa: ECOMOG, AMISOM etc. The role of regional and international organizations in the management of African Conflicts. The refugee crisis and Child Soldiers in Africa. An educational trip to a Refugee camp (Y2S1)

HINS 212: Communication Dynamics In Conflict Resolution

Definition of communication and conflict. Communication styles in conflict. The power of

communication in conflict and conflict resolution. Thomas Kilman's model, Communication, culture and conflict. Group dynamics and conflict. Third party intervention: Negotiation and mediation. Theories and philosophy of mediation. Types and approaches of mediation. The mediation process & styles. Mediation practice, procedure and strategies. Facilitation and Negotiation in Mediation. Intervention and monitoring peace agreements. Compliance and implementation. Challenges of mediation negotiation. Case Studies of inter and intrastate conflicts. Simulation exercise. (Y2 S 1)

HINS 213: Foundations of International Law

Introduction to the roles and functions of International law. Procedures and Substantive Law of nations. Theories, concepts, doctrines and rules of international law. Domestic law versus international law. Relevance of international law in international relations. Types of international laws: environmental law, international humanitarian law, human rights law etc. The international legal system and the adjudication of international law & its limitations. The application of international law to states, individuals. ICC and its mandate. Global case studies. International morality and ethical arguments in the history of slavery, racism, forced labour and colonialism based on international law. (Y2 S 1)

HINS 221: African International Relations

Introduction to African international Relations. History of African International relations, origin and role of nation-states in Africa. Actors in African international relations. Africa in post-colonial and post-Cold War periods. Pan-Africanism and the search for African unity, contemporary Africa and the Global Economy: New International Economic Order, Africa's economic Disequilibrium. African regional co-operation and integration initiatives: AU, IGAD, EAC, SADC, ECOWAS. Conflict in the relations of African states. Diplomacy and security cooperation in Africa: African Union peace keeping operations: ECOMOG, AMISOM (Y2 S 2)

HINS 222: Human Rights in International Relations

Introduction to human rights. Definition of international Relations and Human Rights. Theoretical issues and

context. Schools of thought in International Relations: Realism, liberalism and constructivism. Human rights in the Cold War Era. Development of the legal norms of human rights; the norm cascade. Emergence of INGOs. Insertion of human rights into Diplomacy. The period after the Cold War. The challenge to the Torture Convention after 9/11. Human Rights and State practice. Internalization. Responsibility to protect (R2P). International Human Rights Organizations. Their rights and roles. (Y2 S 2)

HINS 311: Government and Politics in Africa

Pre-colonial political systems and developments in Africa. Colonialism and colonial impact. Nationalism and independence. Nationalism and transfer of power. African politics since Independence. Trends in African politics: Pluralism to one party states, military coups, revolutionary to autocracy, regime change and civil wars in Africa. Political liberation and Economic reform: political parties, Structural Adjustment Programmes. Contemporary movements towards democracy in Africa: multiparty politics, challenges to democratic practice in Africa. Relationship between political and economic systems in Africa: the role of regional economic integration and cooperation in Africa. The place of African politics in the international system (Y3S1)

HINS 313: Contemporary Theories and Ideologies in International Relations

Introduction to contemporary theoretical debates in IR such as the theory of critical thinking, modernism & post-modernism, capitalism, consumerism, the politics of economic hegemony, the place of gender issues and feminism in IR, functionalism and constructivism in international affairs and global politics. The effect of these theories and ideologies on global affairs and world politics. Modern ideologies and systems of modern governments with emphasis on democracy as an ideology, capitalism and authoritarianism etc. (Y3S1)

HINS 321: International Organizations

History of International Organizations. Survey of leading international Organizations such as UN, WTO, WSF, and their impact on world affairs and global politics. Origin of the UN, its structure, organs and agencies. UN agendas, procedural rules, deliberations,

and decision making processes. UN roles and challenges in world conflict situations, UN peace keeping efforts and challenges, UN mediation efforts. Challenges to the calls to reform the UN processes. Simulations of UNGA. Multi- National Organizations and their role in global affairs. An educational trip to EAC headquarters in Arusha and UN offices in Gigiri, Nairobi (Y3S1)

HINS 323: Diplomacy in Historical Perspectives

The historical roots of diplomacy in ancient Europe and Asia. Medieval European diplomacy. The history of modern diplomacy: the Renaissance; the sixteenth-century; the modern period. Diplomatic techniques in the indigenous African setting. Contemporary diplomacy: the legal framework; bilateral and multilateral diplomacy; the diplomacy of international organization. Definitions and roles: representation; the diplomatic corps and personnel; privileges and immunities; diplomatic protocol. Simulations in diplomatic negotiation. An external resource person i.e. a diplomat or an Ambassador to give lecture and insights or visit to a chosen Embassy or High Commission (Y3S1)

HINS 312: Research Methods in International Relations

Introduction to research methods in International Relations. Study on the major types of research methods applied in IR. Types of research methods and different types/methods of data collection and analysis. Applied critical analysis of data collection and resource materials and its synthesis. The art of writing scholarly research papers (Y3S2)

HINS 322: Comparative Study of Foreign Policy

The course will involve an analysis of the foreign policies of at least two selected major powers and a look at constant and variable factors that determine their Foreign Policy decision-making process. It will focus on the following aspects: approaches to foreign policy; proximity and cooperative interaction; power and persuasion; the fear of war as an instrument of foreign policy on comparative basis. Techniques of Bilateral and multilateral relations amongst nation-states. Challenges in the management and resolution of international conflicts. Realism, nationalism and interest in foreign policy. Rational deterrence theory.

Reciprocity in international relations. Power, alliances and escalation of international conflict. (Y3S2)

HINS 314: Diplomatic Simulation Exercise

Practical aspects of diplomacy. Simulation debates on contemporary global issues. Application of learnt theoretical knowledge to practice in Foreign Service and diplomacy. The practice of diplomatic language, mannerism, writing of communiqués, negotiations and practice of mediation, arbitration. Dressing, diplomatic diary & speech delivery. Rules of debate and procedures in conferences. Sponsoring of motions and debates in general assemblies and conferences. Drafting of resolutions and documents such as letters of credence, policy statements, policy papers, composite briefs, diplomatic notes, protest notes, negotiations on bilateral and multilateral agreements (Y3S2)

HINS 324: The Dynamics of Ethnopolitical Conflict

Theories of ethno-political conflict. Ethnic politics at the global level. The geopolitical context of contemporary ethno-political conflict. Ethno-political conflict and international peace and security. Democratization and ethnic conflicts. The Cold War and its impact on ethnic conflicts. The ethnic challenge to international relations. Ethnic cleansing and genocide: case studies. The role of the International Criminal Court (ICC). Human rights and social justice. (Y3S2)

HINS 411: Comparative Political Systems

Political Systems: trends and transformation in world politics - Federal and unitary, parliamentary and presidential systems, bicameral system, party politics and electoral systems, Coalition governments. Case studies and emphasis on major powers such as the US, Great Britain, France, Japan, Germany, Russia, China and selected countries in Africa such as Kenya, Ghana, Nigeria and South Africa and in South America as well other selected Asian countries (Y4S1)

HINS 412: Kenya's Foreign Policy

Development of Kenya as a nation state. Kenya and the Contemporary World, Issues in Foreign policy and diplomacy in pre-colonial Kenya. British foreign policy in Kenya during the Colonial Period. Kenya's foreign policy in Post-Colonial Period: various theoretical

frameworks: radical vs. conservative. Determinants and constraints that influence foreign policy formulation in Kenya. Kenya's foreign policy during Jomo Kenyatta, Moi, Kibaki and Uhuru Kenyatta Eras. Kenya's regional and international cooperation. Kenya Foreign policy towards states in the East African region and the world. The role of Kenya in global strategic geopolitics: peace keeping, peace building and regional security and cooperation initiatives. A field trip to the Ministry of Foreign Affairs and International Trade or a resource person from the office to give lecture. (Y4S1)

HINS 413: Approaches to Peace Studies and Strategies

The scope of peace studies. Nature and significance of security in international relations. The idea of peace in the world religions. Historical overview of Utopians. Chronology of peace treaties since Napoleon Bonaparte: Europe; Asia; Africa; the Americas. Superpower approaches to international security: arms treaties; troop reductions; disarmament; détente; summitry. The transnational movement to end the Cold War. Advocates of non-violent civil disobedience: Henry David Thoreau; Mahatma Gandhi; Chief Albert J. Lutuli; Martin Luther King, Jr. International peace-keeping, conflict prevention & humanitarian intervention since 1945. Insurgent warfare & terrorism, mediation processes, and peace-building and peacemaking. Case studies. Towards a culture of peace in the world. (Y4S1)

HINS 415: United States of America Foreign Policy

The course seeks to combine a substantive focus on contemporary American foreign policy decision making and analysis with the context of the case study method approach to learning. The Monroe doctrine: The policy of containment. US foreign policy in the Cold War period. Case studies of US foreign policy: Europe; the Middle East; South East Asia, Latin America and Africa. US foreign policy in the Cold War period. Case studies of US foreign policy: Europe; the Middle East; south East Asia, Latin America and Africa. US foreign policy since the end of the Cold War. The link between foreign policy and decision making, institutions, presidential and congressional powers. Defence and arms control, trade policy, sanctions, intervention, ethics in foreign policy. Negotiation, group leadership and persuasion in America foreign policy. Shapers of

modern US foreign policy: Henry Kissinger. Current issues in US foreign policy: the war on terrorism and its implications on world security. US-Sino relations. A resource person from US Embassy be invited to give a talk (Y4S2)

HINS 414: International Political Economy

The political economy theory, the development of international economic environment. The dynamic international economic interactions and its effects on international relations: power and wealth; the state and the market. International trade, liberalized markets, free trade versus protectionism. Multinational Corporations in developing countries. The North-South Divide in International trade. Poverty and aid in developing countries and bargains and negotiations with Developed South. Contending relations in international economy: protectionism, the state and socio-political forces. Trade as a foreign policy tool. International monetary system: the Bretton Woods Institutions. Emerging trends in International Political Economy. (Y4S1)

HINS 421: The Globalization of World Politics

Globalization and world affairs. Introduction to global politics. The evolution of international society. Theories of world politics: realism, liberalism, neo-realism and neo-liberalism, social constructivism, etc., changing character of war, international law and human security. Global trade and finance, international political economy in the age of globalization, transnational and international organization in global politics, environmental issues, terrorism and globalization. Humanitarian intervention in world politics, Globalization in future: Globalization and transformation of political community, Globalization in post-cold-war order. (Y4S1)

HINS 422: US-Africa Relations

History of US-Africa relations. US position on imperialism in Africa and on Africa's quest for independence, Slave trade and its effects on US-Africa relations. Emerging issues that have continually shaped US-Africa relations e.g. AGOA and its effect on the socio-political economy of African states. Issues of Aid and dependency Contemporary relations of African countries with the US with selected Case studies. US policy formulation and stand and their effects on Africa

(Y4S2)

HINS 423: China's Foreign Policy

Introduction to China's Foreign policy decision making process. Institutions of foreign policy in China. History of China's foreign policy. Recent developments in China's foreign policy. Trans-national issues: territorial disputes; historical injustices, etc. China's Foreign policy in International affairs. China and the United Nations. Role of China in International affairs and in international treaties. US-Sino relations. Sino-Africa relations and effects on socio-economic development. China's relations with other Asian countries. China's role in pacification of East Asia. China and the Middle East, etc. A resource person from Chinese Embassy be invited to give a talk **(Y4S2)**

HINS 424: Ethical and Religious Perspective of Peace and Conflict

War and ethics. Religion and war: Crusades and Jihads. Christian realism. Religious pacifism. The just war theory. Types and forms of terrorism. Modern terrorism and its spread: case studies. War on Terror, Theory of change framework. Insurgency warfare and its impact on international peace and security. Negotiating with terrorist. Case studies **(Y4S2)**

HINS 425: Internship/ Research Project

Students in this programme will serve as interns in local International Institutions for a Period of three months and will be assessed according to Egerton University procedures

9.2 MATRIX OF ALIGNMENT OF COURSES/UNITS TO PROGRAMME LEARNING OUTCOMES

Programme Learning Outcomes (PLO)	Year 1	CF	Year 2	CF	Year 3	CF	Year 4	CF
	Courses		Courses		Courses		Courses	
PLO 1 Have acquired knowledge, skills and attitudes in a broad based multidisciplinary academic foundation.	• The Making of Kenya. • Sources of African History. • Themes in East African History. • Introduction to Academic Communication Skills. • Introduction to Diplomacy	3.0 3.0 3.0	• Survey of World History I • History of the Middle East • Communication Dynamics in Conflict Resolution	3.0	• Methods of Historical Research • Historical Studies in the Economic • Institutions of Africa • Contemporary Theories and Ideologies in International Relations	3.0 3.0	• Disease & Society in Contemporary Africa • Armed Conflict in Independent Africa	3.0
PLO 2: Be equipped with analytical skills to enable them to participate in Global development.	• Introduction to International Relations • Topics in African History • Themes in East African History	3.0	• Selected topics in African Economic History • Regional Conflicts and conflict Resolution in Africa • Foundations of international law	3.0	• International Organizations • Diplomacy in Historical Perspectives • Field attachment • Historical Topics in Governance and Constitution • Survey of European History • Government and Politics in Africa		• Kenya's Foreign Policy • Globalization of World Politics • History of the Middle East • History of Political Thought • Imperial and Commonwealth History • Perspectives in Africa's • International Relations • History of China • Global Studies in Conflict and Conflict Resolution • Comparative Political Systems • Approaches to Peace Studies and Strategies	3.0
PLO 3: Apply the knowledge skills and attitudes gained to serve local and international institutions effectively.	• World History: Conceptual Issues • Introduction to Human Rights • Introduction to Peace and Conflict Studies • Introduction to Political	3.0	• Survey of World History II • Philosophy of History • History of land and Agriculture in Kenya • African International Relations	3.0	• Topics in Global history of Agriculture • Historical topics in Governance and constitution • History of Economic Thought	•	• International Political Economy • Themes in the History of Latin America and Caribbean • Selected Topics in	3.0

	Studies		• Human Rights in International Relations		• History of Kenyan Labour movement • Global Studies of Indigenous People • Research methods in International Relations • Comparative Study of Foreign Policy • Diplomatic simulation Exercise • The Dynamics of Ethno-Political Conflict		African Economic History • United States Foreign Policy • US-Africa Relations	

DEPARTMENT OF PEACE, SECURITY AND SOCIAL STUDIES

DIPLOMA IN CRIMINOLOGY AND SECURITY STUDIES

1. Philosophy of the Programme

This programme seeks to produce, generate and disseminate knowledge and skills on security management, crime prevention, and rehabilitation services to promote national security and development.

2. Rationale

2.1 Needs Assessment

The Diploma programme was created as a response to market demand, as well as the fact that Egerton University offers a degree programme in criminology and security studies. The Diploma programme is designed to meet the need gap of those students who join the Egerton degree programme from other tertiary institutions. It is expected therefore that graduates from this programme will feed the Egerton University degree programme in criminology and Security studies.

2.2 Stakeholder Involvement

In addition to market survey and bench marking from other national and international institution offering criminology and security studies, programme development involved key stakeholders who gave their suggestions. They included experts in criminology and security studies. The programme was developed in line with the Procedures for Curriculum Development and those of Egerton University.

2.3 Justification

The Diploma in criminology and security studies is designed to equip students with knowledge on security management, crime prevention and rehabilitation services. Thus, the graduates of this programme will be prepared to take up managerial positions in the public sector especially in; the police service, prisons and probation departments. The private sector will find the graduates useful in security management and related roles. In general, it is expected that this two year programme will complement and sustain the professionalization of the police, prison and probation services in Kenya, East Africa and beyond. In addition,

the diploma programme provides ideal foundation for a degree programme in criminology and security studies either at Egerton University or other institutions of higher learning.

3. Goals of the Programme

The programme provides an in-depth study of social life, social causes and consequences of criminal and deviant human behaviour.

4. Programme Learning Outcomes

The graduates will be able to use and apply the acquired knowledge and skills to:

PLO 1: Analyze criminal and security issues in society.

PLO 2: Provide relevant rehabilitation and probation services in security organizations.

PLO 3: Enhanced levels of security and criminal rehabilitations and reforms in the prison institutions and society generally.

PLO 4: Undertake relevant measures by using the acquired skills and knowledge to enhance peace and security in society.

5. Mode of Delivery

The programme will be offered on a full-time (Day, evening, weekend) and e-learning modes at Egerton University Nakuru Town College Campus, Nairobi City Campus and E-campus.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Any applicant who meets the minimum entry requirements for admission into the programme C (Plain), may be admitted into this programme.

However, admission may also be granted to certificate holders with at least a credit or its equivalent in Criminology or Police Science from recognized institutions by Egerton University and at least two (2) years working experience in a relevant field.

6.2 Regulation on Credit Transfer

There will be no provision for credit transfers into this programme.

6.3 Course Requirement

The programme shall require that student attend classes fully under the guidance of lecturers concerned. Lecturers shall be guided by ISO procedure for teaching number (EU/AA/OP/06 rev 3)

6.4 Students Assessment policy

Assessment in this programme will be done as per the Egerton University Statute No. 36 (6), 2013.

6.5 Grading System

The grading of examinations for this diploma programme will be conducted in accordance with the Egerton University Statute No. 36(6), 2013.

6.6. Examination regulation

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute No 36 (5), 2013.

6.7 Moderation of Examination

Moderation of examinations in this programme will be in accordance with the Egerton University statutes no. 36, 2013 and the relevant ISO procedures in examination processing no. EU/AA/OP/07.

6.8 Graduation Requirement

The Diploma in Criminology and Security Studies programme will extend for a period of six semesters organized in three academic years. A student will be deemed to have passed an academic semester only after successful completion and sitting for examinations of all the units in the academic semester. Each of the six academic semesters will comprise of 6 course units. To graduate a student will be required to take and pass ALL scheduled courses (108 CFs) within the stipulated period.

6.9 Classification of Diploma

Diploma classification will be in accordance with Egerton University Statutes No.36 (17), 2013.

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects as per ISO procedure on Teaching Effectiveness and Evaluation (Doc No. EU/VC/OP/04)

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme will be hosted in Department of Peace, Security and Social Studies, the Faculty of Arts and Social Sciences. The programme academic leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall undergo an internal evaluation at the end of each Programme academic cycle (4years). ISO Procedure no. EU/VC/OP/04 on academic Programme evaluation shall apply.

8.3 Course Coding

The criminology courses are coded as follows; "CRSS" which stands for Criminology and Security Studies. It is followed by 4 digits, starting with Zero which is interpreted as follows:-

- (0) interpreted to mean a diploma program;
- The second digit (1) or (2) represents the year of study;
- The third digit represents the semester in which the unit is offered;
- The fourth digit represents the course ranking in the programme.

9. Courses /Units Offered for the Programme

9.1 Summary of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
CRSS 0111	Introduction to Criminology	45	0	3.0
COMS 0111	Communication Skills	45	0	3.0
CRSS 0112	Introduction to Theories of crime	45	0	3.0
CRSS 0113	Guidance and Counselling	45	0	3.0
CRSS 0115	Juvenile Criminology	45	0	3.0
CRSS 0116	Introduction to Psychology	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
CRSS 0121	Introduction to Fraud Management	45	0	3.0
CRSS 0122	Introduction to Organizational Security	45	0	3.0
CRSS 0123	Organized Crimes	45	0	3.0
CRSS 0124	Human Rights and Crime	45	0	3.0
CRSS 0125	Introduction to Crime Prevention Strategies	45	0	3.0
CRSS 0126	Basic Research Methods	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER I

CODE	TITLE	L	P	CF
CRSS 0211	Introduction to Computer Security And Fraud	45	0	3.0
CRSS 0212	Security Management	45	0	3.0
CRSS 0213	Security Investigation	45	0	3.0
CRSS 0214	Crime and Conflict Management	45	0	3.0

CRSS 0215	Terrorism and Threat Assessment	45	0	3.0
CRSS 0216	Introduction to Criminal Investigation	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
CRSS 0221	Crime Scene Management	45	0	3.0
CRSS 0222	Human Rights Law	45	0	3.0
CRSS 0223	Disaster Management	45	0	3.0
CRSS 0224	Correctional Institutions and Counselling	45	0	3.0
CRSS 0225	Crime Patterns and Analysis	45	0	3.0
CRSS 0226	Drug Abuse and Intervention	45	0	3.0
TOTAL		270	0	18.0
CRSS 0227	Field Attachment	120		4.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
CRSS 0311	Sociology of Deviant Behaviour	45	0	3.0
CRSS 0312	Social Stratification and Crime	45	0	3.0
CRSS 0313	Technology and Crime	45	0	3.0
CRSS 0314	Seminar in Contemporary Criminal Issues in Society	45	0	3.0
CRSS 0315	Attachment Report		90	3.0
TOTAL		270	90	15.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
CRSS 0321	Crime Information and Media	45	0	3.0
CRSS 0322	Gender and Crime	45	0	3.0

CRSS 0323	Victimology	45	0	3.0
CRSS 0324	Drug and Substance Abuse and Crime	45	0	3.0
CRSS 0325	Culture and Crime	45	0	3.0
CRSS 0326	Introduction to security management	45	0	3.0
TOTAL		270	0	15.0

(b) Course Descriptions

CRSS 0111: Introduction to Criminology (45/0: CF 3.0) Y1S1)

Introduction to Criminology, Classification and Measurement of Crime, the concept of Crime, Homicide, Robbery, Violence and Gun control, Family crimes, rape and sexual assault, Terrorism, Burglary/stealing, drugs and substance abuse related crimes, organized crimes.

COMS 0111: Communication Skills (45/0: CF 3.0) Y1S1)

Communication: definition, elements, process, purposes, qualities, and barriers. Oral communication: Public speaking, persuasion, interviews, committee meetings and tutorial discussion. Listening skills: Efficient listening, barriers to listening. Writing skills: efficient reading, barriers, skimming, scanning and study reading. Visual communication: chalkboard, transparencies, stencils, slides, films, and television. Public communication: public relations and advertising. Sources of Information: interviews, questionnaires, library, observation, and experiments.

CRSS 0112: Introduction to Theories of Crime (45/0: CF 3.0) Y1S1)

Definition of theories of theories of crime and deviance. The scientific methods of developing theories of crime. The relativity of crime and deviance among different societies. Historical development of criminal law and criminal justice systems in France and England. The different types of individualistic theories; classical and neoclassical, scientific criminology, positivistic theories, hereditary and constitutional theories, psychological and body type theories.

CRSS 0113: Guidance and Counseling (45/0: CF 3.0) Y1S1)

Definition of basic terms and concepts. Resources, skills, approaches and techniques in guidance and counseling in security profession. Application of Psychological test. Career challenges, awareness and occupational challenges and occupational development. Analysis of psychological and social problems of work and role performance. The role of counselors and social workers in security profession.

CRSS 0114: Juvenile Criminology (45/0: CF 3.0) Y1S1)

Individual perspectives on delinquency, social structures and delinquency, social process approach to delinquency, social reaction perspectives on delinquency, family and delinquency, peer groups and delinquency, schools and delinquency, drug use and delinquency, controlling juvenile offenders, gender and delinquency, suicide and delinquency, treatment and rehabilitation of juvenile offenders.

CRSS 0115: Introduction to Psychology (45/0: CF 3.0) Y1S1)

Introduction to Psychology and Counselling, Biological Foundations, Personality and Counselling, Emotions in Counselling, Memory in Counselling, Cognitions in Counselling: (A) Thinking and Information Processing, Decision-Making, Problem Solving, Sensation and Perception, Introduction to Consciousness and States of Consciousness, Altered States of Consciousness, Social Psychology of Self and Relationships.

CRSS 0121: Introduction to Fraud Management (45/0: CF 3.0) Y1S2)

Concepts in Fraud Investigation, Prevention and Detection, Fraud Data Analysis process and solution to Fraud Data Problem. Cheque frauds; deposit account frauds, purchased bill frauds and prevention, hypothecation fraud, and prevention, loan frauds and prevention. Forged currency note, counterfeiting by colour copiers, counterfeits: cheques, traveller cheques, bank drafts, cheque frauds, Credit card frauds. Cheque writers and type writers, Fingerprints, Seals and stamps, Counterfeit coins. Computer frauds in banks. The Abilities to Identify Symptoms of Fraud, Red flags of

Fraud, Fraud data analysis, reactive approaches to fraud detection

CRSS 0122: Introduction to Organizational Security (45/0: CF 3.0) Y1S2)

Definition of key terms and concepts, Historical evolution of organizational security management: Private security, Retail security, Institutional security, Security policy, Security policy reviews, Management of information Security; controls, authorization, and responsibilities, Introduction to Physical Security, Inspection programs, Dingle Theory, Physical Security Inspection Process, Physical security survey, Perimeter and Protective Barriers, Protective lighting and Utility Services, Locks, Doors and windows, Facility Access control, Security containers and storage Area, Intrusion Detection Systems, The security guard Force, Closed Circuit Television, Automated Information Systems Security, Asset protection and Loss control

CRSS 0123: Organized Crimes (45/0: CF 3.0) Y1S2)

Definition of organized crime, historical background, types of organized crime: Local and transnational, characteristics of organized crime, relationship with various schools of criminology, domestic and International legal provisions, and proposed reforms in dealing with organized crime.

CRSS 0124: Human Rights and Crime (45/0: CF 3.0) Y1S2)

Introduction to Human Rights, History and Role of Constitutional Court, Interpretation The Limitation Clause, Vulnerable Persons, Victims Rights, Arrest and Detention, Use of Force, Search and Seizure, Admissions Confusions and Pointing out, Right to Information Bail, Administrative Justice, Right to a fair Trial, Exclusion of Unconstitutional Obtained Evidence.

CRSS 0125: Introduction to Crime Prevention (45/0: CF 3.0) Y1S2)

Introduction to Crime Prevention, Approaches to Crime Prevention, Crime Prevention Planning, Businesses as Victims of Crime, Businesses Crime Prevention, Community Crime Prevention, School Based Crime Based Crime Prevention, Policing for Crime Prevention, Crime

Prevention Through Environment Design, Crime Prevention Through Punishment, Comparative Crime Prevention: Developing National Crime Prevention Programs, Planning and Implementing Crime Prevention Programmes.

CRSS 0126: Research Methods (45/0: CF 3.0) Y1S2)

Introduction to Research, Basic Terms in Research, Problem Identification, Review of Literature, Research Design/Methodology Writing a Research Proposal, Developing Research Instruments, Presentation and Analysis of Data, Ethical Issues in Research, Research Report Writing.

CRSS 0211: Introduction to Computer Security (45/0: CF 3.0) Y2S1)

History of Cyberspace Crime, Cyberspace and Criminal Behaviour, Computer Hacking/ Hackers, Data Piracy, Prosecution and Law Enforcement Initiatives. Application of First and Fourth Amendments to Computer Related Investigations and Forensics, Computer Data Analysis, Law Enforcement and Litigation.

CRSS 0212: Security Management (45/0: CF 3.0) Y2S1

Introduction to Security Management, Definition of Terms in Security Management, Security Management Organizations, Historical Evolution of Security Management, Private Security, Retail Security, Institutional Security, Information Security, Commercial Security, Executive, Personnel Security, Workplace Violence Security, Event Security, Field and Career Opportunities

CRSS 0213: Security Investigations (45/0: CF 3.0) Y2S1

Introduction to Security Investigation. History and Contemporary structure of investigation. Crime security Investigator, Methods of Security Investigation. Security Investigation I, II and III. Approaching Crime Scene I and II. Evidence at Crime Scene. Health and Safety at Crime Scene. Criminal Law Courts. Arson and Fire Investigation, Bomb Investigations. Burglary Investigation. Computer Crime

CRSS 0214: Crime and Conflict Management (45/0: CF 3.0) Y2S1

Introduction to Conflicts, causes/ sources of conflicts, Theoretical perspectives of conflicts, Enmity and Enmification, Levels of conflict, Conflict Management Strategies, Communication and Conflict Resolution, Conflicts and power, Group Dynamics in Conflicts, History and Conflicts Resolution, Positive and Negative Attitudes in Conflict Management and negotiations.

CRSS 0215: Terrorism and Threat Assessment (45/0: CF 3.0) Y2S1

Introduction to Terrorists studies, Characteristics of Terrorists Psyche Terrorists of Religion and Terrorism, Types of Terrorism: Suicide, Terrorisms, Biological Terrorism and the Law, Response to Terrorist Threat, Tactics to Counter Terrorism. National Response and Strategy, Mail Terrorism, Investigative Techniques.

CRSS 0216: Introduction to Criminal Investigation (45/0: CF 3.0) Y2S1

Introduction to crime investigation, methods of criminal investigation, characteristics of a good criminal investigator; crime scene procedures, general crime scene considerations, analysis, processing of crime scene, physical evidence; basic concepts concerning physical evidence and methods, observation and collection of physical evidence, preservation of physical evidence, comparison and analysis of evidence, crime scene restriction, case preparation, witnesses and suspects in criminal investigation.

CRSS 0221: Crime Scene Management (45/0: CF 3.0) Y2S2

Introduction to Crime Scene Management. The Crime Scene, Tactics and Techniques in Crime Investigation, Modus Operandi, Investigation as a Corporate Function, Rights and Powers of The Investigators, Investigation of Specific Corporate Bodies, Investigation and Corporate Governance. (There will be practical work for crime scene management techniques).

CRSS 0222: Human Rights Law (45/0: CF 3.0) Y2S2

Human rights: definition of concepts and norms: notions and concepts of human rights, human rights in

historical and cultural contexts; legal and political analysis of human rights organizations and activities: historical development of international human rights instruments and organizations, institutional mechanisms within the UN system and evaluation of their effectiveness, roles of governments, non-governmental organizations and experts; current issues in human rights: human rights and development, linking development and human rights: conceptual issues, rights-based approaches to development; current issues in human rights: current issues in human rights: transitional justice and human rights: crimes against humanity, collective and individual responsibility, and justice, national persecutions, truth commissions, international criminal tribunals and the international criminal court, case studies; human rights education: pedagogical approaches to human rights education, political issues in human rights education, actors.

CRSS 0223: Disaster Management (45/0: CF 3.0) Y2S2

Introduction to disasters. Definition and meaning of disasters, characteristics and types. Types, causes and effects of disasters; Introduction to disaster management, definition, objectives, scope and disaster management. Concepts and terms in disaster management, disaster Classification, relief system, important terms in disaster management, phases of disaster, response, phases of refugee relief operations and key concepts. Elements of disaster management; risk Disaster preparedness; Disaster response: types of responses, science and technology, education and training, mass media, regulatory measures. Rehabilitation and reconstruction; Resource mobilization; Duties and responsibilities of personnel, equipment, other services possibly needed in an emergency, finance, logistics, management of disaster resources. Policy measures.

CRSS 0224: Correctional Institutions and Counselling (45/0: CF 3.0) Y2S2

Prison as a place of treatment, treatment opportunities in practice, effectiveness of correctional intervention, economic efficiency of correctional intervention programs, research on correctional treatment, guideline for effective interventions, evidence based practice. An overview of the foundations of offender counselling

and rehabilitation. Psychodynamic, behavioural and group approaches, Diagnosis, assessment and classification as the core strategies for identifying and responding to important security, mental health and treatment needs of the offender, Contemporary approaches to offender rehabilitation including cognitive behavioral, social learning and family therapy because of their effectiveness in changing antisocial behaviors. Treatment for sex offenders, substance abusers, and offenders diagnosed with antisocial personality disorder are effectively addressed.

CRSS 0225: Crime Patterns Analysis (45/0: CF 3.0) Y2S2

Crime pattern analysis and criminology, crime pattern theories(activity theory, rationale choice, perspective theory, and crime pattern)analysis based on the individual offender and a fusion of two, crime pattern analysis in practice (stages of crime pattern analysis),preparation and data collection, investigation of crime patterns. Special considerations (command posts and perimeters, mass arrests), Major non-criminal situations e.g. Aircrafts, fire response, Hazardous materials, VIP and dignitary protection. Major Criminal situations; critical incidents, suspicious items, bomb threats. Incidences against persons, incidences against property, miscellaneous criminal, miscellaneous non-criminal incidences .e.g. transportation of large amount of cash, penal reforms

CRSS 0226: Drug Abuse and Intervention (45/0: CF 3.0) Y2S2

General introduction; causes of drug abuse; common signs and symptoms of drug use; social perception of drug use; modes of administration; classes of recreational drugs-stimulants, depressants, hallucinogens, cannabinoids, nicotine and inhalants, and their mode of action; medical uses of recreational drugs; social and medical effects of recreational drug use; challenges facing drug users; interventions on recreational drug use: demand reduction; supply reduction, harm reduction and rehabilitation; and legal framework on recreational drugs

CRSS 0227: Field Attachment (0/90: CF 3.0) Y2S2

At the end of second year semester two of study, students are expected to be attached to relevant

organizations for a period of eight weeks to help them gain practical knowledge relevant to the programme learning outcomes. Each student must be assigned supervisor from where they are attached who should ensure that the learner completes the scheduled learning activities. This is done by filling in a log book detailing what is learned each day. Upon completion of the attachment period, each student should be evaluated by the supervisor and assessed by a lecturer of the programme using tools designed for that purpose. A student finally prepares a detailed attachment report which is submitted to the department for examination by the lecturer who assessed the student.

CRSS 0311: Sociology of Deviant Behaviour (0/45: CF 3.0) Y3S1

Definition of deviance; typologies of deviance, types of deviance; Deviant acts; Deviant Habits; Mental illness; Theories of deviance; control of deviance.

CRSS 0312: Social Stratification and Crime (45/0: CF 3.0) Y3S1

Definition of stratification, definition of crime, types of stratification, causes of stratification; theories of stratification, stratification and crime; crime and class; education and crime; ethnicity and crime; gender and crime; race and crime; level of income and crime; occupation structure and crime.

CRSS 0313: Technology and Crime (45/0: CF 3.0) Y3S1

The concept of technology, common types of technology in crime e.g. Social Media Deception, E-Banking Fraud, Email Scam, Online Social Networking Traps, Online Blackmail, Online Business Fraud. Social media and influence in crime. Impact of technology on crime. Technology and crime fighting. Technology and policing for crime. High-technology crime countermeasures.

CRSS 0314: Seminar in Contemporary Criminal Issues in Society (45/0: CF 3.0) Y3S1

Topical presentations on contemporary issues in crime and deviance in modern society. Students to do library and online researches relate to current situations and

possible solutions in criminal law and criminal justice systems.

CRSS 0315: Attachment Report (0/90: CF 3.0) Y3S1

Upon completion of attachment, a student shall write a detailed attachment report that will be submitted to the department for examination.

CRSS 0321: Crime Information and Media (45/0: CF 3.0) Y3S1

Definitions: crime; media; information. Link between crime, information and media. Crime Information Systems. Media information. Media influence on crime perception-theories of media influence. Types of mass media that report crime: main stream; National Media; Local media; Web-based Media. Types of news covered: Hard news; Soft news; Columns; Editorials. Media Focus on crime. Management of media crime information.

CRSS 0322: Gender and Crime (45/0: CF 3.0) Y3S2

Definition of terms and concepts. The relationship between gender and crime. Types of gender crimes, causes and implications. Theories of gender crimes, crimes control and treatment measures by gender.

CRSS 0323: Victimology (45/0: CF 3.0) Y3S2

Definition of victimology, victimization and social implications. Victimization and its consequences. Legal results of victims in the criminal justice systems. Victim support systems and redress policies.

CRSS 0324: Drug and Substance Abuse and Crime (45/0: CF 3.0) Y3S2

Definition of drugs, substance and crimes. Prevalence and causes. Law enforcement mechanisms against drugs and substances. Aspects of preventions and treatment. Gender aspects in drug and substance abuse.

CRSS 0325: Culture and Crime

Definitions of crime and culture, the notions of crime and culture, cultural representations of crime; sub cultures and crime in society; crime across cultural groups, street culture and crime, organizational culture and crime. Cultural solutions to crime. Subcultures and their criminalization; popular culture.

**CRSS 0326: Introduction to Security Management
(45/0: CF 3.0) Y3S2)**

Definitions of security, management and security management; concepts of security management; importance of security management; structure and organization of security in Kenya, provision of security services in Kenya; public safety and control; provision of security in different societies. Contemporary security management challenges. Law and security; Specialized security needs and services.

9.3 DIPLOMA IN CRIMINOLOGY AND SECURITY STUDIES PROGRAMME LEARNING OUTCOME MATRIX

Programme Learning Outcomes (PLO)	YEAR ONE		YEAR TWO		YEAR THREE	
	Courses	CF	Courses	CF	Courses	C.F
PLO 1: Analyze criminal and security issues in society.	Introduction to Theories of crime	3	Introduction to Computer Security and Fraud	3	Culture and Crime	3
	Guidance and Counselling	3	Security Management	3	Drug and Substance Abuse and Crime	3
	Juvenile Criminology	3	Security Investigation	3	Gender and Crime	3
	Communication Skills	3	Crime and Conflict Management		Crime Information and Media	3
	Introduction to Criminology	3	Terrorism and Threat Assessment	3	Seminar in Contemporary Criminal Issues in Society	3
	Introduction to Fraud Management	3	Introduction to Criminal Investigation	3	Technology and Crime	3
	Introduction to Organizational Security	3	Human Rights Law	3	Social Stratification and Crime	3
	Human Rights and Crime	3			Sociology of Deviant Behaviour	3
PLO 2: Provide relevant rehabilitation and probation services in security organizations.	Introduction to Psychology	3	Security Investigation	3	Culture and Crime	3
	Introduction to Crime Prevention Strategies	3	Crime and Conflict Management	3	Drug and Substance Abuse and Crime	3
			Human Rights Law	3	Victimology	3
					Gender and Crime	3
					Crime Information and Media	3
					Criminal Issues in Society	3
					Technology and Crime	3
PLO 3: Enhanced levels of security and criminal rehabilitations and reforms in the prison institutions and society generally.	Introduction to Psychology	3	Security Investigation	3	Culture and Crime	3
	Introduction to Organizational Security	3	Crime and Conflict Management	3	Drug and Substance Abuse and Crime	3
	Basic Research Methods	3	Terrorism and Threat Assessment	3	Gender and Crime	3
			Introduction to Criminal Investigation	3	Crime Information and Media	3
			Drug Abuse and Intervention	3	Technology and Crime	3
			Human Rights Law	3	Social Stratification and Crime	3
PLO 4: Undertake relevant measures by using the acquired skills and knowledge to enhance peace and security in society.	Introduction to Psychology	3	Drug Abuse and Intervention	3	Culture and Crime	3
	Organized Crimes	3	Disaster Management	3	Drug and Substance Abuse and Crime	3
	Basic Research Methods	3	Correctional Institutions and Counselling	3	Crime Information and Media	3
			Crime Patterns and Analysis		Seminar in Contemporary Criminal Issues in Society	3
			Crime Scene Management	3	Sociology of Deviant Behaviour	3
					Field Attachment	3

BACHELOR OF ARTS IN CRIMINOLOGY AND SECURITY STUDIES

1. Philosophy of the Programme

This programme endeavours to offer detailed and relevant skills and knowledge necessary in promoting national development, security management, crime prevention, and rehabilitation services. It also seeks to complement and sustain the professionalization of the police, prison and probation services in Kenya, East Africa and beyond.

2. Rationale

The Bachelor of Arts degree in Criminology and Security Studies is designed to equip students with knowledge on security management, crime prevention and rehabilitation services. Thus, the graduates of this programme will be prepared to take up managerial positions in the public sector especially in the police and military service; prisons; and probation departments. The private sector will find the graduates useful in security management and related roles. In general, it is expected that this four year programme will complement and sustain the professionalization of the police, prison and probation services in East Africa and beyond. In addition, the degree provides ideal foundation for postgraduate studies in the various criminology and security studies fields that students can pursue in the department or in other institutions of higher learning.

3. Goal of the Programme

The main objective of the programme is to provide an in-depth study of social life, social causes and consequences of criminal and deviant human behaviour. This is structured into three areas of specialized options with respective objectives:

- i) Rehabilitation and probation services.
- ii) Security and disaster management.
- iii) Crime and forensic investigation.

4. Programme Learning Outcomes

The graduates will be able to use and apply the acquired knowledge and skills to:

- i) Analyze criminal and security issues in society.

- ii) Provide relevant rehabilitation and probation services in security organizations.
- iii) Enhance improved levels of security and disaster management in organizations and the society generally.
- iv) Undertake criminal and forensic investigations to enhance peace and security in society.
- v) Undertake further studies.

5. Mode of Delivery

B.A Criminology and Security Studies will be offered on a full-time (Day, Evening, weekend) and E-learning mode.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Any applicant who meets the minimum entry requirements for admission into the University in general and Faculty of Arts and Social Sciences in particular, may be admitted into this programme.

Admission may also be granted to Diploma holders with at least a credit or its equivalent in criminology or Police Science from a recognized institution. However, the Diploma entry grade must have been a minimum of C plain at secondary school level.

Students will be required to major in any of the following options in fourth year:

- i. Rehabilitation and probation services.
- ii. Security and disaster management.
- iii. Crime and forensic investigation.

6.2 Regulation on Credit Transfer

Diploma holders seeking for admission in this programme may qualify for credit transfer to the programme in agreement with the Egerton University Statute 36(3) of 2013.

6.3 Course requirement

The course requirements shall be guided by ISO procedure for teaching number (EU/AA/OP/06 rev 3)

6.4 Students Assessment policy

Assessment in this programme will be done as per the Egerton University Statute No. 36(6), 2013.

6.5 Grading System

The grading of examinations for this diploma programme will be conducted in accordance with the Egerton University Statute No. 36(6), 2013.

6.6. Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute No 36, 2013 and ISO procedures number EU/AA/OP/07 will apply.

6.7 Moderation of Examination

Moderation of examinations in this programme will be in accordance with the Egerton University statutes no. 36, 2013 and ISO procedures in examination processing number EU/AA/OP/07.

6.8 Graduation Requirement

To graduate a student shall be required to take and pass a minimum of 144 CFs of scheduled courses within the stipulated period.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute No.36 (17), 2013.

7. Course Evaluation

All courses will be evaluated using ISO procedure on teaching effectiveness and evaluation. (EU/VC/OP/04).

8. Administration and Management of the Programme

8.1 Host Department and Programme Academic Leader

B.A Criminology and Security Studies is hosted by the Department of Peace, Security and Social Studies, Faculty of Arts and Social Sciences. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall undergo an internal evaluation at the end of each programme's academic cycle. ISO Procedure no. EU/VC/OP/04 on academic Programme evaluation shall apply.

8.3 Course Coding

The criminology courses are coded as “CRSS” which stands for Criminology and Security Studies. This is followed by three digits.

- The first digit 1, 2, 3 or 4 shall represent the year of study;
- The second digit is either (0) or (1) where 0 represents compulsory/core courses and 1 denotes elective courses.
- The last digit denotes the course ranking in the discipline.

In fourth year, students are expected to choose an option of their choice and coding system will be as follows:

- The first digit (4), will represent fourth year of study
- The second digit shall be interpreted as follow:
 - (0) represents core courses
 - (1) represents Rehabilitation and probation services option.
 - (2) represents Security and disaster management option;
 - (3) represents Crime and forensic investigation option.

9. Courses /Units Offered for the Programme

a. Schedule of Courses

(a) University Common Core Courses

(b) Distribution of courses

YEAR1 SEMESTER 1

CODE	TITLE	L	P	CF
CRSS 100	Introduction to Criminology	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
CRSS 101	Introduction to Criminal Law	45	0	3.0
SOCI 101	Introduction to Sociology	45	0	3.0
CRSS 102	Juvenile Criminology	45	0	3.0
EPSC 121	Introduction to Psychology	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
CRSS 104	Theories of Psychological Counselling	45	0	3.0
CRSS 105	Counselling in Criminal Justice	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
SIHL 100	Society and International Humanitarian Law	45	0	3.0
SOCI 102	Introduction to Anthropology	45	0	3.0
SOCI 104	Introduction to Social Work	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER I

CODE	TITLE	L	P	CF
COMP 101	Computer Applications	45	15	3.5
CRSS 200	Criminal Justice System	45	0	3.0
CRSS 201	Psychology of Criminal Behaviour	45	0	3.0
CRSS 202	Law of Evidence	45	0	3.0
CRSS 203	Foundations of Theories of Crime	45	0	3.0
SOCI 204	Social Institutions	45	0	3.0
TOTAL		270	15	18.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
BACT1 10	Principles of Accounting 1	45	0	3.0
CRSS 204	Criminal Investigation	45	0	3.0
CRSS 205	Introduction to Rehabilitation of offenders	45	0	3.0
CRSS 207	Crime and Conflict Management	45	0	3.0
CRSS 208	Crime and Public Relations	45	0	3.0
SOCI 211	Collective Behaviour and social movements	45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
CRSS 300	Criminal Justice Management	45	0	3.0
CRSS 301	Social Group Work	45	0	3.0
CRSS 302	Ethics in Criminal Justice	45	0	3.0
CRSS 303	Social Issues in disciplined forces	45	0	3.0
CRSS 304	Forensic Accounting	45	0	3.0
CRSS 305	Theories of Crime	45	0	3.0
CRSS 310	Gender and Crime	45	0	3.0
TOTAL		270	0	21.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
CRSS 306	Crime prevention	45	0	3.0
CRSS 307	Criminal procedure	45	0	3.0
CRSS 308	Courtroom psychology	45	0	3.0
CRSS 309	Institutional Attachment and Report	0	120	4.0
SOCI 302	Social statistics I	45	0	3.0
SOCI 306	Social Policy and Administration	45	0	3.0
TOTAL		225	120	19.0

YEAR 4 SEMESTER 1

OPTION: I (REHABILITATION AND PROBATION SERVICES)

CODE	TITLE	L	P	CF
CRSS 401	Research methods	45	0	3.0
CRSS 411	Rehabilitation of mentally challenged Offenders	45	0	3.0
CRSS 412	Rehabilitation of Sexual Offenders	45	0	3.0
CRSS 413	Rehabilitation of substance abuse offenders	45	0	3.0
CRSS 414	Correctional Services in Kenya	45	0	3.0
SOCI 403	Social Statistics II	45	0	3.0

TOTAL	270	0	18.0

YEAR 4 SEMESTER 2

OPTION: I (REHABILITATION AND PROBATION SERVICES)

CODE	TITLE	L	P	CF
CRSS 415	Crime and Punishment	45	0	3.0
CRSS 416	Human Rights and Criminal Justice	45	0	3.0
CRSS 417	Restorative Justice	45	0	3.0
CRSS 418	Victimology	45	0	3.0
SOCI 412	Sociology of Deviant Behaviour	45	0	3.0
TOTAL		225	0	15.0

YEAR 4 SEMESTER I

OPTION II: (SECURITY AND DISASTER MANAGEMENT)

CODE	TITLE	L	P	CF
BBAM 420	Strategic Management	45	0	3.0
SOCI 403	Social Statistics II	45	0	3.0
CRSS 401	Research methods	45	0	3.0
CRSS 422	Physical Security	45	0	3.0
CRSS 423	Emerging Issues in security	45	0	3.0
CRSS 424	Emergency Management	45	0	3.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER II

CODE	TITLE	L	P	CF
CRSS 425	Fire and Safety Protection	45	0	3.0
CRSS 426	Computer security	45	0	3.0
CRSS 427	Security investigations	45	0	3.0
CRSS 428	Risk management for security managers	45	0	3.0
CRSS 429	Terrorism and Threat Assessment	45	0	3.0

SOCI 409	Disaster Management	45	0	3.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER I

OPTION 3: (CRIME AND FORENSIC INVESTIGATION)

CODE	TITLE	L	P	CF
CRSS 401	Research Methods	45	0	3.0
SOCI 403	Social Statistics II	45	0	3.0
CRSS 431	Forensic Methods and Techniques	45	0	3.0
CRSS 432	Crime Scene Management	45	0	3.0
CRSS 433	Intelligence	45	0	3.0
CRSS 434	Criminal identification and profiling	45	0	3.0
CRSS 435	Litigation process	45	0	3.0
TOTAL		285	0	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
CRSS 416	Human Rights and Criminal Justice	45	0	3.0
CRSS 429	Terrorism and Threat Assessment	45	0	3.0
CRSS 436	Forensic interviewing	45	0	3.0
CRSS 437	Project Management For Forensic Investigators	45	0	3.0
CRSS 438	Fraud Management	45	0	3.0
SOCI 415	Conflict Resolution and Management	45	0	3.0
TOTAL		270	0	18.0

(c) Course Description

CRSS 100: Introduction to Criminology (45/0: CF 3.0) Y1S1

Introduction to Criminology, Classification and Measurement of Crime, the concept of Crime, Homicide, Robbery, Violence and Gun control, Family crimes, rape and sexual assault, Terrorism, Burglary/stealing, drugs and substance abuse related crimes, organized crimes.

CRSS 101: Introduction to Criminal Law (45/0: CF 3.0) Y1S1

Introduction to criminal law, theft, robbery, burglary, murder, abortion, Narcotics, sexual offenses, corruption, assault and indecent assault, requirement of culpability in general, unlawfulness. Administration of law and the right to be heard.

CRSS 102: Juvenile Criminology (45/0: CF 3.0) Y1S1

Individual perspectives on delinquency, social structures and delinquency, social process approach to delinquency, social reaction perspectives on delinquency, family and delinquency, peer groups and delinquency, schools and delinquency, drug use and delinquency, controlling juvenile offenders, gender and delinquency, suicide and delinquency, treatment and rehabilitation of juvenile offenders.

CRSS 104: Theories of Psychological Counselling (45/0: CF 3.0) Y1S2

Introduction to Theories of Psychological Counselling, Psychoanalytic Counselling, Behavioural Therapy, Rational Emotive Behaviour Therapy (R.E.B.T), Person-Centred Counselling, Gestalt Counselling, Solution- Focused. Brief Counselling, Egan's Developmental Eclecticism, Susan Gilmore's Comprehensive Theory of Eclectic/Integrative Counselling, Personal Construct Theory, Transactional Analysis (TA), Introduction to Family Systems and Frankles' perspective.

CRSS 105: Counselling in the Criminal Justice (45/0: CF 3.0) Y1S2

Introduction to Counselling in Criminal Justice System, Counselling Relationship, Counselling skills: Theory, Counselling Skills: Practice, Introduction to Group Work, Counselling Process in Criminal Justice Beginning Stage, Counselling Process in Criminal Justice Counselling –Middle Phase, Counselling Process in the Criminal Justice Counselling–The Ending phase of Counselling, Group Counselling – Eclectic Group counselling, Group Counselling Practice, Effectiveness of Counselling in Criminal Justice System, Clinical Practicum preparedness.

CRSS 200: Criminal Justice System (45/0: CF 3.0) Y2S1

Criminal Justice System, Police, Prosecution, Courts, Lawyers and Judges, Process in Criminal Justice, Prisons, Probation and Community Service Orders, Punishment and Sentencing, Parole, Juvenile Justice, Justice for Victims. Forms of justice and the common good.

CRSS 201: Psychology of Criminal Behaviour (45/0: CF 3.0) Y2S1

Criminal Behaviour and Learning Theory, Cognition and Crime, Violence and Social Factors, Personalities and Crime, Moralities and Offending, Brain Damage and Offending, Psychodynamic Models, Psychodynamic Theories of Crime in General, Understanding Violent Offending: Understanding Violent Offending: Theoretical Perceptive, Psychophysiology, Genetics, Bioethics and Crime.

CRSS 202: The Law of Evidence (45/0: CF 3.0) Y2S1

Introduction to Law of Evidence, Admissibility of Evidence, Hearsay Evidence, Opinion Evidence, Admission and Confessions, Real Evidence, Documentary Evidence, Evidence of Uncertain Classification, Onus of Proof, Course of Testimony, Opinion Evidence, Privilege.

CRSS 203: Foundations of Theories of Crime

Definition of theories of crime and deviance. The difference between criminal and deviant behaviours. Scientific methods of developing theories of crime and deviance. The relativity of crime and deviance. Individualistic theories of crime and deviance. The historical development of criminal law and criminal justice systems in Western Europe. Classical school, positive school. Scientific, constitutional radical criminology, feminist criminology, psychological, heredity and biological approach.

CRSS 204: Criminal Investigation (45/0: CF 3.0) Y2S2

Introduction to crime investigation, methods of criminal investigation, characteristics of a good criminal investigator; crime scene procedures, general crime scene considerations, analysis, processing of crime scene, physical evidence; basic concepts

concerning physical evidence and methods, observation and collection of physical evidence, preservation of physical evidence, comparison and analysis of evidence, crime scene restriction, case preparation, witnesses and suspects in criminal investigation.

CRSS 205: Introduction to Rehabilitation of Offenders (45/0: CF 3.0) Y2S2

Introduction to Treatment and Rehabilitation, Humanistic Approach, Psychodynamic Interventions, Treatment and Rehabilitation of Mentally Disordered offenders, Treatment and Rehabilitation of Sex Offenders, Treatment and Rehabilitation of Offenders in The Community, Treatment and Rehabilitation of Substance Abuse Offenders, Cognitive Behaviour Intervention, Ethical and Legal Concerns in Treatment and Rehabilitation of Offenders, Treatment and Rehabilitation of Criminal Psychopaths, Aggression and Violent Crime, Personal Attributes of Offenders.

CRSS 207: Crime and Conflict Management (45/0: CF 3.0) Y2S2

Introduction to Conflicts, causes/ sources of conflicts, Theoretical perspectives of conflicts, Enmity and Enmification, Levels of conflict, Conflict Management Strategies, Communication and Conflict Resolution, Conflicts and power, Group Dynamics in Conflicts, History and Conflicts Resolution, Positive and Negative Attitudes in Conflict Management and negotiations.

CRSS 208: Crime and Public Relations (45/0: CF 3.0) Y2S2

Introduction to Public Relations, importance and Purpose of Public Relations in Criminal Justice System, Contemporary Trends of Public Relations, The role of Public Relations in organizational Management, Public Relations Tactics in written communication, Public Relations Tactics in dealing with the media, Public Relations in crisis situations, Public Relations ethical and Legal Issues, Public Relations Planning, Strategies and Management, Public Relations Evaluation.

CRSS 300: Criminal Justice Management (45/0: CF 3.0) Y3S1

Criminal Justice Management Approaches, Manage Human Resources, Logistics, Finances Information and Change Labour Relations, Record Data and Write Reports use Skills Obtained to Initiate, Manage And Evaluate Crime, Prevention Criminal Rehabilitation and Restorative Projects and Programmes, Use Different Management Style Effectively.

CRSS 301: Social Group Work (45/0: CF 3.0) Y3S1

Introduction to group work, theoretical approaches to group work, developmental phases of group work, administration of group work, integration to research, ethical and professional issues, group processes, types of groups, observation of groups, group supervision, workshops and communal responsibility, service delivery and work ethics.

CRSS 302: Ethics in Criminal Justice (45/0: CF 3.0) Y3S1

Introduction to ethics, value of ethics confidentiality, value of confidentiality in counselling, confidentiality and legal dilemma confidentiality, gratuities abuse of power, sexual and romantic relationship, incarcerated persons, ethics in HIV/AIDS. Conscience as the key to human morals: Human act and act of the human person.

CRSS 303: Social Issues in Disciplined Services: (45/0: CF 3.0) Y3S1

Definition of social issues and social problems in the disciplined service, gender stereotyping, recruitment process, training, deployment, command structure, family life, job related issues, public-disciplined service relationship, role conflict, fears and anxieties, disciplined service staff welfare (e.g. nepotism, salaries, housing, office accommodation/environment, transfers etc), conflict resolution mechanisms, and emerging issues in disciplined service.

CRSS 304: Forensic Accounting: (45/0: CF 3.0) Y3S1

Forensic accounting concepts, knowledge on financial statement and fraud, fraudulent disturbance, theft of intellectual property and financial institutions fraud, methods of detecting and examining bribery, corruption

and asserts misappropriation, money laundering, fraud in E-commerce, resolution of fraud and cash theft.

CRSS 305: Theories of Crime (45/0: CF 3.0) Y3S2

The theoretical analysis beyond individualistic theories. The theories of under control; the control and over control theories. The contributions of scholars in explaining modern theories of crime and deviance such as the social disorganization, the neutralization, the elements of the social bond, social learning, the opportunity, the class culture theories, anomie and strain theory, status frustrations, the labelling and group conflict theories.

CRSS 306: Crime Prevention (45/0: CF 3.0) Y3S2

Introduction to Crime Prevention, Approaches to Crime Prevention, Crime Prevention Planning, Businesses as Victims of Crime, Businesses Crime Prevention, Community Crime Prevention, School Based Crime Prevention, Policing for Crime Prevention, Crime Prevention Through Environment Design, Crime Prevention Through Punishment, Comparative Crime Prevention: Developing National Crime Prevention Programs, Planning and Implementing Crime Prevention Programmes.

CRSS 307: Criminal Procedure: (45/0: CF 3.0) Y3S2

Fundamentals of Criminal Law and Origins and Sources, Organization of Criminal Justice System, Search and Seizure Search Warrants, Arrest, Interrogation and Identification, Pre-Trial Process Criminal Trial, Sentencing and Punishment, Appeal and Post Conviction Relief.

CRSS 308: Courtroom Psychology (45/0: CF 3.0) Y3S2

Introduction to the Judicial System, Reasoning and Decision Making, Psychology of Communication and Persuasion, Eye Witnesses, Memory, Memory Retrievals in the Courtroom, the Vulnerable Witness in Court, Jury Behaviour, State of Mind and Its Assessment, Expert Psychological Testimony, Making Legal Decisions about Children, Final Argument, Ethical Rules for Technical Experts.

CRSS 309: Institutional Attachment and Report

At the end of the third year semester two of study, students are expected to be attached to relevant organizations for a period of eight weeks to help them gain practical knowledge relevant to the programme learning outcomes. Each student must be assigned supervisor from where they are attached who should ensure that the learner completes the scheduled learning activities. This is done by filling in a log book detailing what is learned each day. Upon completion of the attachment period, each student should be evaluated by the supervisor and assessed by a lecturer of the programme using tools designed for that purpose in their place of attachment. A student finally prepares a detailed attachment report which is submitted to the department for examination by the lecturer who assessed the student.

CRSS 310: Gender Issues and Crime (45/0: CF 3.0) Y3S2

Basic terms and concepts in Gender and crime, social construction of Gender, understanding of the biological and cultural determinants in explaining gender differences. Analysis of types of crime by gender, theories and causes of gender crime, implications, methods of gender crime control and treatment of offenders.

SEMESTER 1 OPTION 1 (REHABILITATION AND PROBATION SERVICES)

CRSS 401: Research Methods (45/0: CF 3.0) Y4S1

Introduction to Research, Basic Terms in Research, Problem Identification, Review of Literature, Research Design/Methodology Writing a Research Proposal, Developing Research Instruments, Presentation and Analysis of Data Ethical Issues in Research, Research Report Writing.

CRSS 411: Rehabilitation of Mentally Challenged Offenders (45/0: CF 3.0) Y4S1

Mental Disorder, the profile of mentally challenged persons, the Legislative Framework and the Criminal Justice Process; The Treatment of Mentally challenged Offenders, Diverting Mentally Challenged Offenders, Mentally Challenged and risk behaviour. (A field visit to mental rehabilitation institutions).

CRSS 412: Rehabilitation of Sexual Offenders (45/0: CF 3.0) Y4S1

Offenders and Prevalence, Sex Offender Treatment, Sex Offenders in Prison, Sex Offenders and the Probation Services, Research on the Treatment of Sex Offenders Monitoring Sex Offenders in the Community. Re-integration of offenders in society. Life skills training for sex offered.

CRSS 413: Rehabilitation of Substance abuse Offenders (45/0: CF 3.0) Y4S1

Definitions, Historical Background, Prevalence of Drug Misuse, Drug Addiction, Crime and Law Enforcement, Courts and Drugs Prevention Initiative, The Treatment of Drug Addicts, Legislations and Policy on Narcotic drugs and drug trafficking. Psychological, Social and Economic implications of drug abuse (A practical session and a visit to rehabilitation centres).

CRSS 414: Correctional Services in Kenya (45/0: CF 3.0) Y4S1

Prison as a Place of Treatment, Treatment Opportunities in Practice, Effectiveness of Correctional Intervention, Economic Efficiency of Correctional Intervention Programs, Research on Correctional Treatment, Guideline for Effective Interventions, Evidence Based Practice.

YEAR 4 SEMESTER 2

SEMESTER 2 OPTION 1 (REHABILITATION AND PROBATION SERVICES)

CRSS 415: Crime and Punishment (45/0: CF 3.0) Y4S2

The Rise of Corporal Punishment, Convict Labour, Imprisonment, the Reformatory Movement, Punishment as Retribution, Punishment as Sublimated Vengeance, Punishment as Deference, Punishment as Deterrence Punishment as Incapacitation, Punishment as Rehabilitation.

CRSS 416: Human Rights and Criminal Justice (45/0: CF 3.0) Y4S2

Introduction to Human Rights, History and Role of Constitutional Court, Interpretation The Limitation Clause, Vulnerable Persons, Victims Rights, Arrest and

Detention, Use of Force, Search and Seizure, Admissions Confusions and Pointing out, Right to Information Bail, Administrative Justice , Right to a fair Trial, Exclusion of Unconstitutional Obtained Evidence.

CRSS 417: Restorative Justice (45/0: CF 3.0) Y4S2

Foundations of the Restorative Justice Movement, Policy Implications for Victims, Types of Restorative Justice Approaches, Restorative Justice and Victims, Limits of Restorative Justice, Performance of Restorative Justice Processes, Concerns in Victimology, Checks and Balances in Restorative Justice, Implications for Restoration Justice.

CRSS 418: Victimology (45/0: CF 3.0) Y4S2

Definition of Victims, Victimization and Victimology, Increase in Victim Visibility, Victims Identifier and Attributes, Victimization and its Effects, Victims' Rights, Victims and the Criminal Justice System, Victim Support.

OPTION II (SECURITY AND DISASTER MANAGEMENT)

CRSS 422: Physical Security (45/0: CF 3.0) Y4S1

Introduction to Physical Security, and the Inspection Programs, Physical Security Inspection Process, Perimeter and Protective Barriers, Protective Lighting and Utility Services, alarm systems, surveillance systems, the security guard force, entry/access control, and automated systems security, asset protection, loss and control; introduction to security design, biometrics, access control readers, security design, closed circuit television (CCTVs).

CRSS 423: Emerging Issues in Security (45/0: CF 3.0) Y4S1

Overview of emerging issues in security internationally, regionally, and nationally such as terrorism, radicalization, cyber crime, drug and human trafficking, piracy, vigilantism; challenges of emerging security issues; and policy framework in emerging security issues.

CRSS 424: Emergency Management (45/0: CF 3.0) Y4S1

Introduction to Emergency Management, Designing an Emergency Management System, Designing an Incident Command System (ICS) Patient Routing and Triage, Community Threat Analysis/ Assessment, Response Agency Management System, Disaster Resources Management First Aid, Crisis Management, Communication in Emergency Management, Training.

YEAR 4 SEMESTER II

CRSS 425: Fire Safety and Protection (45/0: CF 3.0) Y4S1

Introduction to Fires, the Chemistry of Fires, Fire Hazards Identification, Fire Safety Audits, Fire Control and Extinguishments, Basic Fire Prevention, Fire Safety Strategies, Fire Detection Systems, Automated Sprinklers Strategies, Fire Safety Legislative Systems, Fire Recovery and Reconstruction/ Aftermath. A practical demonstration for fire fighting for students.

CRSS 426: Computer Security(45/0: CF 3.0) Y4S2

History of Cyberspace Crime, Cyberspace and Criminal Behaviour, Computer Hacking/ Hackers, Data Piracy, Prosecution and Law Enforcement Initiatives. Application of First and Fourth Amendments to Computer Related Investigations and Forensics, Computer Data Analysis, Law Enforcement and Litigation.

CRSS 427: Security Investigations (45/0: CF 3.0) Y4S2

Introduction to Security Investigation, Methods of Security Investigation I, Methods of Security Investigation II, Crime Scene Management I, Crime Scene Management II, Theft Investigation, Burglary Investigation, Computer Crime Investigations, Arson and Fire Investigation, Bomb Investigations, Workplace Investigations, Undercover Investigations. (There will be practical work in investigations).

CRSS 428: Risk Management for Security Managers (45/0: CF 3.0) Y4S2

Introduction to Risk Management, Risk

Management Process Identification, Site Specific Threat Assessment, Risk Assessment, Cost - Benefit Analysis, Risk Management Policy Development, Vulnerability Identification and Assessment, Threat Identification and Assessment.

CRSS 429: Terrorism and Threat Assessment (45/0: CF 3.0) Y4S2

Introduction to Terrorists studies, Characteristics of Terrorists Psyche Terrorists of Religion and Terrorism, Types of Terrorism: Suicide, Terrorisms, Biological Terrorism and the Law, Response to Terrorist Threat, Tactics to Counter Terrorism. National Response and Strategy, Mail Terrorism, Investigative Techniques.

CRSS 431: Forensic Methods and Techniques (45/0: CF 3.0) Y4S1

Introduction to Forensic Investigation, Forensic Techniques, Bringing Perpetrator to Book, Different Methods of Investigation, Qualities of Forensic investigation and Investigators, The Responsibilities of Forensic Investigators in A Crime Scene. Attitudes, Precaution and accountability in a crime scene.

CRSS 432: Crime Scene Management (45/0: CF 3.0) Y4S1

Introduction to Crime Scene Management. The Crime Scene, Tactics and Techniques in Crime Investigation, Modus Operandi, Investigation as a Corporate Function, Rights and Powers of The Investigators, Investigation of Specific Corporate Bodies, Investigation and Corporate Governance.

CRSS 433: Intelligence (45/0: CF 3.0) Y4S1

Introduction to Intelligence, Informers, Agents, Surveillance, Undercover, Bets Intelligence Approach, Intelligence Gathering Process, Knowledge on Surveillance. Foot Surveillance, Car Surveillance, Air Surveillance and Combined Technical Surveillance.

CRSS 434: Criminal Identification and Profiling (45/0: CF 3.0) Y4S1

Skills in Identification, Listening to Victims, Techniques used in Identification, Observation, Macroscopic, Microscopic, Physical Evidence, Crime

Scene, Finger Prints, Handwriting, Human Remains, Impressions, Imprint.

CRSS 435: Litigation Process (45/0: CF 3.0) Y4S1

Introduction to litigation, gathering evidence, role of the investigators role of the prosecutors, role in the court, skills in court, scrutiny, presenting evidence in court and admissibility, techniques used by the investigator.

YEAR 4 SEMESTER 2

CRSS 416: Human Rights and Criminal Justice

Introduction to human rights, history and role of constitutional court, interpretation, the limitation clause, vulnerable persons, victim's rights, arrests and detention, use of force, search and seizure, admissions confusions and pointing out, right to information, Bail, Administrative Justice, Right to fair Trial, Exclusion of unconstitutional obtained evidence.

CRSS 429: Terrorism and Threat Assessment

Introduction to terrorist studies, characteristics of terrorists, religion and terrorism, types of terrorism: suicide, terrorism, Biological terrorism and the law, response to terrorism to terrorist threat, tactics to counter terrorism. National response and strategy, mail terrorism. Investigative techniques.

CRSS 436: Forensic Interviewing (45/0: CF 3.0) Y4S1

Introduction to Interviewing, Admissibility in Court, Skills in forensic interviewing, Methods in Interviewing, Guidelines for Interviewing Suspects and Witnesses, Strategies for Interviewing. Challenges of forensic Interviewing.

CRSS 437: Project Management for Forensic Investigators (45/0: CF 3.0) Y4S1

Introduction to forensic Project Management, Principles of forensic Project Management, forensic Project Life Cycle, Role of forensic Project Manager, Role of forensic Project Team, Planning of Projects, Management of Projects, Quality and Time Management, Forensic Management Systems, Computer Applications, Project Awareness.

CRSS 438: Fraud Management (45/0: CF 3.0) Y4S1

Skills and techniques of fraud detection and prevention. Concepts in fraud investigation, prevention and detection. Fraud data analysis process and solution and fraud data problem. The ability to identify symptoms of fraud, red flags of fraud. Reactive approaches and policies to fraud detection, management and prosecution.

BACHELOR OF ARTS IN CRIMINOLOGY AND SECURITY STUDIES PROGRAMME LEARNING OUTCOMES MATRIX

Programme Learning Outcomes	Y1		Y2		Y3		Y4	
	Course Title	CF	Course Title	CF	Course Title	CF	Course Title	CF
Analyze criminal and security issues in society.	Introduction to Criminology	3	Computer applications	3	Criminal Justice Management	3	Social Statistics	3
	Academic Communication Skills	3	Criminal justice system	3	Social Group Work	3	Research Methods	3
	Introduction to Criminal Law	3	Criminal investigation	3	Ethics in Criminal Justice	3	Emerging Issues in Security	3
	Society and International Humanitarian Law	3	Psychology of Criminal Behaviour	3	Social Issues in Disciplined Forces	3	Crime Scene Management	3
	Juvenile Criminology	3	Law of Evidence	3	Forensic Accounting	3	Forensic Methods and Techniques	3
	Introduction to Psychology	3	Social Institutions	3	Theories of Crime	3	Intelligence	3
	Introduction to Anthropology	3	Crime and Public Relations	3	Gender and Crime	3	Criminal Identification and Profiling	3
	Introduction to sociology	3	Collective Behaviour and Social Movement	3	Crime Prevention	3	Litigation	3
	Introduction to Social Work	3	Foundations of Theories of Crime	3	Criminal Procedure	3	Forensic Interviewing	3
	Theories of Psychological Counselling	3			Social Policy and Administration	3	Fraud Management	3
					Social Statistics	3	Project Management for Forensic Investigators	3
					Institutional Attachment and Report	3		
Provide relevant rehabilitation and probation services in security organizations.	Introduction to Criminology	3	Introduction to Rehabilitation of offenders	3	Criminal Justice Management	3	Rehabilitation of Mentally Challenged offenders	3
	Communication Skills	3	Criminal Procedures	3	Social Group Work	3	Rehabilitation of Sexual Offenders	
	Introduction to Criminal Law	3	Court Room Psychology	3	Ethics in Criminal Justice	3	Correctional Services in Kenya	3
	Society and International Humanitarian Law	3	Social Group Work	3	Social Issues in Disciplined Forces	3	Strategic Management	3
	Juvenile Criminology	3	Ethics in Criminal Justice Management	3	Forensic Accounting	3		3
	Introduction to Psychology	3			Theories of Crime	3		
	Introduction to Anthropology	3			Gender and Crime	3		
	Introduction to sociology	3			Crime Prevention	3		
	Introduction to Social Work	3			Criminal Procedure	3		
	Theories of Psychological Counselling	3			Social Policy and Administration	3		
					Social Statistics	3		
		3			Institutional Attachment and Report			
Enhance levels of security and disaster management in organizations and the society.	Introduction to Criminology	3	Collective Behaviour and Social Movement	3	Social Group Work	3	Crime and Punishment	3
	Communication Skills	3	Foundations of Theories of Crime	3	Criminal Justice Management	3	Human rights and criminal justice	3
	Introduction to Criminal Law	3	Crime and Conflict Management	3	Ethics in Criminal Justice		Restorative Justice	3
	Society and International	3	Crime and Public Relations	3	Social Issues in Disciplined	3	Sociology of Deviant Behaviour	3

	Humanitarian Law				Services			
	Juvenile Criminology	3			Institutional Attachment and Report	3	Victimology	3
	Introduction to Psychology	3					Emergency Management	3
	Introduction to Anthropology	3					Disaster Management	3
	Introduction to sociology	3						
	Introduction to Social Work	3						
Undertake criminal and forensic investigations to enhance peace and security in society.	Introduction to Criminology	3	Crime and Conflict Management	3	Criminal Justice Management	3	Social Statistics	3
	Communication Skills	3		3	Ethics in Criminal Justice		Research Methods	3
	Introduction to Criminal Law	3	Social Institution	3	Social Issues in Disciplined forces	3	Forensic Methods and Techniques	3
	Society and International Humanitarian Law	3	Criminal Investigation		Forensic Accounting		Crime Scene Management	
	Juvenile Criminology	3	Collective Behaviour and Social Movements	3	Theories of Crime	3	Criminal Identification and Profiling	3
	Introduction to Psychology	3	Psychology of Criminal Behaviour	3	Crime Prevention	3	Forensic Interview	3
	Introduction to Anthropology	3			Criminal Procedure	3	Project Management for Forensic Investigators	3
	Introduction to sociology	3				3	Fraud Management	3
	Introduction to Social Work	3				3	Litigation Process	3
Undertake further studies.	ALL COURSES		ALL COURSES		ALL COURSES		ALL COURSES	

BACHELOR OF ARTS IN SOCIOLOGY AND RELIGIOUS STUDIES

1. Philosophy of the Programme

The Philosophy behind the Bachelor of Arts in Sociology and Religious studies programme is to give the students opportunity to develop and equip themselves with social analytical skills from interrelated academic disciplines: Sociology and Religious studies, which are an integral part of societal dynamics.

2. Rationale

The Bachelor of Arts degree in sociology and religious studies offers a combination of humanistic and social science knowledge required in human attitude formation necessary for personal management and policy development in society. It provides managerial and analytical skills to graduates in handling social issues such as ethics, child labour, family, nepotism, tribalism, human rights, religious formations, religious fundamentalism and unemployment among others. It equips students with skills in handling the challenges of dialogue between faith and culture, Religion and society, the kingdom of God and temporal realities. The programme thus offers a wide range of opportunities to graduates in the job market especially in religious and non religious organizations, governmental and non-governmental organizations dealing with human welfare.

3. Goal of the Programme

The main objective of Sociology and Religious studies Programme is to educate and expose students to issues relating to social religious development, social issues affecting families, communities, government and non-governmental organizations.

4. Programme Learning Outcomes

The graduates will be able to use and apply the acquired knowledge and skills to:

- i) integrate sociological and religious theoretical and practical knowledge and skills.
- ii) apply sociological and religious knowledge and skills to develop research proposals and undertake relevant research.

- iii) evaluate and analyze different social and religious issues and challenges in contemporary society.
- iv) assist in policy development matters that require sociological and religious knowledge.
- v) undertake post graduate studies in Sociology, Religious Studies and related fields.

5. Mode of Delivery

This programme will be delivered on full time, part-time, e-learning, or open and distance learning modes

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i) All candidates to be admitted to the degree programme of Bachelor of Arts in Sociology and Religious Studies must satisfy the minimum entrance requirements stipulated in the University Statutes regarding admission.
- ii) Candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade of C+ and at least a C+ in the subject for which they are applying. The departments may have specific requirements for admission.
- iii) Candidates with a minimum of two principals at A-level in relevant fields MAY also be admitted.
- iv) Any other equivalent qualification from a recognized institution MAY be considered.

6.2 Regulation on Credit Transfer

Credit transfer in the programme shall adhere to Egerton University Statutes of 2013 articles 36 (3) (d).

6.3 Course Requirements

The Requirements for this programme shall also adhere to ISO procedure for teaching as stipulated in (EU/AA/OP/06 rev 3).

6.4 Student Assessment Policy /Criteria

Statutes 36 (6) on student assessment Policy/Criteria shall be applicable.

6.5 Grading System

The grading of examination for these programme shall be conducted in accordance with Egerton University Statutes 36 (6) of 2013 shall be applicable

6.6 Examination Regulations

The examinations regulations as stipulated in the Egerton University Statute 36 (5) of 2013 ISO procedures number EU/AA/OP/07 shall be applicable.

6.7 Moderation of Examination

ISO procedure on moderation of examinations as stipulated in EU/AA/OP/07 shall be applicable.

6.8 Graduation Requirements

To graduate a student shall be required to take a minimum of 72 CFs from Sociology and 72 CFs from religious studies respectively.

6.9 Classification of Degrees

Degree Classification shall be in accordance with Egerton University Statute 36 (17) of 2013.

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

BA in Sociology and Religious Studies programme is hosted by Departments of Peace, Security and Social Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The BA Sociology and Religious Studies - option programme shall undergo an internal programme evaluation (self-assessment) at the end of each programme's academic cycle. ISO Procedure for academic Programme, EU/VC/OP/04, shall apply.

8.3 Course coding

Coding of courses in the BA in Sociology and Religious Studies programme shall be aligned to the departmental codes of courses offered by the various servicing departments, followed by a three digit figure.

For **Religious studies**, the course code is denoted by four capital letters namely “**REST**” which stands for Religious Studies, followed by three digits;

- the first digit represents the year in which a particular course is being offered.
- The second digit represents the level; for instance 1-semester 1, 2-semester 2 and 0-principle course.
- The third digit is the serial number of the course within that field.

For **Sociology courses**, the course code is denoted by four capital letters namely; “**SOCI**” which refers to Sociology, followed by three digits.

- The first digit 1, 2, 3 or 4 shall represent the year of study,
- The second digit,
 - (0) represents compulsory/core courses and
 - (1) denotes elective courses.
- The last digit denotes the course ranking in the discipline.

9.0 Courses/ Units offered for the Programme

9.1 Schedule of Courses

(a) University Common Core Courses

(b) Distribution of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C F
REST 100	Religion and Ethics in Society	45	0	3.0
REST 101	Introduction to the study of Religion	45	0	3.0
SOCI 101	Introduction to Sociology	45	0	3.0
SOCI 102	Introduction to Anthropology	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
REST 102	Sociology of Religion	45	0	3.0
REST 103	African Religion	45	0	3.0
SOCI 103	Rural Sociology	45	0	3.0
SOCI 104	Introduction to Social work	30	30	3.0
COMP 101	Introduction to Computer Application	45	15	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
TOTAL		255	45	18.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0
SOCI 201	Methods of Social Research I	45	0	3.0
SOCI 202	Community Development and Social Welfare	45	0	3.0
SIHL 100	Society and International Human Law	45	0	3.0
TOTAL		270	0	15.5

Electives (any two, one from each discipline)

CODE	TITLE	L	P	CF
REST 201	Religion, work and Leisure	45	0	3.0
REST 205	Hermeneutics	45	0	3.0
REST 209	History of Islam in Africa	45	0	3.0
SOCI 211	Collective Behaviour and Social Movement	45	0	3.0
SOCI 212	Sociology of the Family	45	0	3.0
TOTAL		225	0	15.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
REST 207	Philosophy of Religion	45	0	3.0
REST 208	Comparative Religion	45	0	3.0
SOCI 203	Social Structures of Eastern African Societies	45	0	3.0
SOCI 204	Social Institutions	45	0	3.0

ELECTIVES (ANY ONE)

CODE	TITLE	L	P	CF
REST 309	Religion and Science	45	0	3.0
REST 412	Psychology of Religion	45	0	3.0
PSYC 112	Human Growth and Development	45	0	3.0
SOCI 213	Social Roles	45	0	3.0
SOCI 215	Culture and Social Services	45	0	3.0

YEAR 3 SEMESTER I

CODE	TITLE	L	P	CF
REST 300	Church History I	45	0	3.0
REST 314	Belief Systems in Kenya	45	0	3.0
SOCI 301	Foundation of Sociological Theories	45	0	3.0
SOCI 304	Social Psychology	45	0	3.0
TOTAL		180	0	12.0

Electives (any two, one from each discipline)

CODE	TITLE	L	P	CF
REST 307	Religion and Politics in Africa	45	0	3.0
REST 310	Themes in Quran and Hadith	40	0	3.0
SOCI 311	Urban Sociology	45	0	3.0
SOCI 315	Formal Organizations	45	0	3.0
SOCI 316	Race, Ethnicity and Stratification	45	0	3.0
		225	0	15.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
REST 316	Religion and Contemporary Ethical Issues	45	0	3.0
REST 312	Phenomenology of Religion	45	0	3.0
SOCI 305	Methods of Social Research II	30	30	3.0
SOCI 306	Social Policy and Administration	45	0	3.0
		165	30	12.0

Electives (any two, one from each discipline)

CODE	TITLE	L	P	CF
REST 311	Religion and Environment	45	0	3.0
REST 313	Islamic Theology and Philosophy	45	0	3.0
SOCI 312	Sociology of work and Occupation	45	0	3.0
SOCI 313	Sociology of Family Planning and Population Policies	45	0	3.0
SOCI 314	Gender Issues & Development	45	0	3.0
SOCI 317	Contemporary Social Issues	45	0	3.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
REST 400	New Religious Movements	45	0	3.0
REST 401	History of Christianity in East Africa	45	0	3.0
SOCI 401	Contemporary Sociological Theory	45	0	3.0
SOCI 402	Environmental Sociology	45	0	3.0
		180	0	12.0

Electives (any two, one from each discipline)

CODE	TITLE	L	P	CF
REST 404	Analysis of Selected Biblical Texts	45	0	3.0
REST 410	Contemporary Sociological Thought	45	0	3.0
REST 411	Theology of the Old Testament	45	0	3.0
SOCI	Sociology of Mass	45	0	3.0

411	Communication			
SOCI 412	Sociology of Deviant Behavior	45	0	3.0
SOCI 415	Conflict Resolution and Management	45	0	3.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
REST 407	Religion and Development in Africa	45	0	3.0
REST 409	Liberation Theology	45	0	3.0
SOCI 406	Social Change and Development	45	0	3.0
SOCI 409	Disaster Management	45	0	3.0
		180	0	12.0

Electives (any two, one from each discipline)

CODE	TITLE	L	P	CF
REST 406	Christian Theology in Africa	45	0	3.0
REST 413	Theology of the New Testament	45	0	3.0
REST 414	Religion, Culture and Communication	45	0	3.0
REST 415	Islamic Law	45	0	3.0
REST 416	Islamic Mysticism	45	0	3.0
REST 418	Modern Trends in Islam	45	0	3.0
REST 419	Islamic Finance and Banking	45	0	3.0
SOCI 413	Political Sociology	45	0	3.0
SOCI 414	Human Ecology	45	0	3.0
SOCI 416	Medical Sociology	30	30	3.0
TOTAL		450	30	30.0

(c) Course Descriptions**(i) RELIGIOUS STUDIES****REST 100: Religion and Ethics in Society (45/0: CF 3.0) Y1S1**

General approaches to ethics in contemporary society. Freedom and responsibility. Happiness, social life, family, the individual and the state. The role of religion in influencing ethical orientation in society. Religion and political systems. Church and State: the great debate between their relation.

REST 101: Introduction to the Study of Religion (45/0: CF 3.0) Y1S1

Religion as a phenomenon. The various approaches to the study of religion; philosophical; psychological; sociological; contributions of such scholars, as S. Freud, R. Otto, M. Eliade; P. Tillich and E. Durkheim, K. Marx and M. Weber.

REST 102: Sociology of Religion (45/0: CF 3.0) Y1S2

The course probes into such theories as evolution, functionalism and social class formation. The reciprocal relationship between major types of religiosity and special groups in history. The current approaches and issues, including symbolisms, secularism with examples from the Christian world, Islamic world and other areas. Emphasis will be laid on examples from the African Continent

REST 200: Introduction to Biblical Studies (45/0: CF 3.0) Y2S1

New and Old Testaments condensed. General issues about the Bible: Definition. How to study the Bible:—Biblical criticisms, canonicity. Formation and composition of the Bible themes: Salvation history, Election. Old Testament as a Promise and New Testament as a record of fulfilment.

REST 201: Religion, Work and Leisure (45/0: CF 3.0) Y2S1

Introduction to the concept of work and leisure in relation to religion, theories of work, and leisure, the relationship between religion, work and leisure in society as well as benefits and challenges inherent in this relationship. Discuss aspects of voluntarism, religious tourism and leisure activities linked to religion.

REST 203: Introduction to Islam (45/0: CF 3.0) Y2S1

Salient religious and political features. Order during the early period. Modes of life, economic activities, structures of authority and how these are spelt out in the Holy Quran. The basic themes of Islam with special reference to selected passages in the Holy Quran and works of Islamic schools.

REST 207: Philosophy of Religion (45/0: CF 3.0) Y2S2

The nature or religion. Classical arguments pertinent to the existence of god. Problems of religious language. Nature of mysticism. The concept of revelation. Relation between religion and ethics, modern theism and atheism. The existentialists, positivist and pragmatic approaches to religion. *(Prerequisite REST 100)*

REST 208: Comparative Religion (45/0: CF 3.0) Y2S2

The origins of religion. Functionalist study of religion, Religion in pre-literate societies. Religion and cultural diversity. Theological and ethical doctrines of major and minor world religions, Founders of world religions. Revelation and cultural ideals. Devil worshipping and religious freedom. Theosophy, religious fundamentalism. Inter-religious dialogue: Universal ecumenism and globalization. *(Prerequisite REST 102 and 103)*

REST 209: History of Islam in Africa (45/0 CF 3.0 Y3 S2)

Overview of the development of Islam in Africa from 7th century onwards, spread along the coastal areas of Africa, Islam during European colonialism to the present, regional focus on North Africa, the Sahara, sub-Saharan West Africa, the Horn of Africa, South Africa and East Africa. Islamisation /Arabianisation of Africa, Thematic areas: current issues in contemporary African Islam, dynamics of religious reform, Islam and the state, Islam and socio-economical developments, relations between Muslims and members of other religious traditions in Africa, emergence of transnational Islamic finance, developmental organizations and radicalization, War on terrorism and questions related to ethnic and religious identities.

REST 300: Church History I (45/0: 3.0 CF) Y3S1

The approach is thematic, touching on issues such as Background to the formation of Christianity, Roman, Greek and Jewish factors of the AD 1st Century Palestine. Apostolic Church. The church under Persecution – church and state coalition – Constantine and the Edict of Milan; - Conciliarism: church council that defined creeds – Rise of Papacy and Papal Authority.

REST 301: Research Methods in Religion (45/0: CF3.0)

Theories relating to needs and functions of Modern research Methods in religion, Nature of scientific systems; theological research, open and close adaptive systems, sampling, data collection and analysis.

REST 307: Religion and Politics in Africa (45/0: CF3.0)

Nature of a Theocentric State, The Missionaries and the Foundation of States in Africa; the relationship between Church and State, Concepts of African Political Systems, the role of Religious Movements in pre and Post- Independent African States: Church and Political Liberation; Human rights and African Government.

REST 309: Religion and Science (45/0 CF 3.0 Y3 S2)

Various definitions of Science and religion. The limitations and scope of the two disciplines, the sources of conflict between science and religion and mitigation. Thematic areas: miracles, cloning, surrogate motherhood, organ transplant and industry, abortion – theology and cosmology, evolution and Religion, continuity and discontinuity between Religion and Science.

REST 310: Themes in Quran and Hadith (45/0 CF 3.0 Y3 S2)

Introduction to the two principal textual sources of the Islamic tradition: The Qur'an and the Hadith, interplay between these sources, structure, content and style, textual compilation histories, contestations over interpretation, exegesis and commentaries from the early period to present day, status relation to relative

function and social life. Early Qur'anic scholarship, codes and preservation of Holy Texts, development of Hadith literature, Quran and Hadith today.

REST 311: Religion and Environment (45/0: CF 3.0) Y3S2

Importance of environment, environmental ethics, African traditional Religion and environment, Christianity and environment, Islam and environment, causes of environmental degradation in Kenya, Africa and the World, impact of environmental degradation on communities, issues in environmental and existential health, preventing environmental degradation, the Kenyan constitution and the environment

REST 313: Islamic Theology and Philosophy (45/0 CF 3.0 Y3 S2)

Philosophers and theologians in classical Islam, primary sources and their English translation, Islamic intellectuals and movements between ninth and twelfth centuries, examination of the nature of God, the immortality of the human soul, causality and miracles, and the creation of the world. Thematic issues: Fundamental Muslim belief, the Unity of Allah, Prophet-hood, the Day of Judgment, the Angels, the Revealed Books, emergence of Muslim Thought, rise of factions: The *Khawarij*, the *Shi'a*, the *Murji'a*, the *Qadariyya*, the *Jabriyya*, the *Ahl-al-Hadith* and the Sufis, Hellenistic challenge, The *Mu'tazila*, the *Hanabila* and the *Ash'ariyya*, The Philosophers and the Sufis, Developments in Sufism and the growth of the Sufi orders, The era of imitation. Islamic theology and philosophy in contemporary times.

REST 315: Research Project (45/0: CF 3.0) Y3S2

With the guidance of academic member of staff a student will select a research topic, from a given area, conduct a research and submit a written report between 7,000 and 10,000 words.

REST 316: Religion and Contemporary Ethical Issues (45/0: CF 3.0) Y3S2

Examination of religious implication arising from drug abuse, alcoholism, child abuse, delinquency, sexuality, abortion, tribalism and social conflicts. Issues of war. death penalty and capital punishment.

REST 400: New Religious Movements in Africa. (45/0 CF 3.0 Y4 S1)

Definitions, examples of NRM drawn from across Africa e.g. *diniya Musambwa, Mungiki, Mumboism*, House of Yahweh, *Mary Akatsa, Kimbanguism in Central Africa, Shona movements in south Africa, Harrist Churches of Ivory Coast*, new Pentecostal and indigenous groups, backgrounds of founders, underlying causes, characteristics, doctrines and impact on followers and society at large. Thematic issues: Causes of NRM, recruitment, growth and missionary tactics, the relationships between NRM and mainstream religious groups, Discussions on emerging NRM. Media portrayal of NRM. Future of NRM, classification and typologies of NRM. (PREREQUISITE: REST 102) (Y4S1)

REST 401: History of Christianity in East Africa (45/0: CF 3.0) Y4S1

The rise and decline of early Christian missions in the coastal regions of East Africa. The nineteenth century European Missionary activity in Kenya, Tanzania and Uganda. The twentieth century growth of Christian church. Problems and issues of Pentecostalism, ecumenism, evangelical fundamentalism. (*Prerequisite of REST 300, 305 and 400*)

REST 405: Feminist Interpretation of the Bible (45/0: CF 3.0)

Definition of feminism. Language used in interpreting certain Biblical passages. How women are viewed in religious communities. Contributions of women in theology, feminism. Feminist scholars such as Elizabeth Fiorenza, Rosemary Ruether, Ann Nasimiyu as case studies.

REST 406: Christian Theology in Africa (45/0: CF 3.0) Y4S2

Indigenisation and contextualization of Christianity, Moratorium debate. Church and politics. African Christianity and Theology of Reconstruction. The Ecumenical Movement. African Liberation Theologies and Christian theology.

REST 407: Religion and Development in Africa (45/0: CF 3.0) Y4S2

The role of religion in National Development, African Traditional Religion. Christianity and Islam Informal and formal religious approaches. Religion and Education, agriculture, environment, medicine, economics, politics and civil law. Religion and social theories.

REST 408: Religion and Humanity (45/0: CF 3.0) Y4S2

The role of religion in personal and communal development; man versus God, the material versus the spiritual world. Existentialism and the urge to dominate creation. Is man his own creation? Genetics and cloning, man and medicine.

REST 411: Theology of the Old Testament (45/0: CF 3.0) Y4S2

The Bible, the words of God; Creation, The Fall, Promise of Salvation; Election of Israel and Covenant with God: The Prophetic Witness, God's Wisdom, Theological Theme and Explanation (*Prerequisite: REST 200*).

REST 412: Psychology of Religion (45/0: CF 3.0) Y2S2

S. Freud, C. Jung and religious experiences. Religion and human psychology, Mysticism, faith religious conversion, growth and commitment. Neurosis, nature of psychology of religion. Scope and theological interpretation; logotherapy and psychotherapy. Personality theories and human development.

REST 413: Theology of the New Testament (45/0: CF 3.0) Y4S2

The person and mission of Jesus Christ. The theology of the Gospel, St. Paul and Pauline writings. The Christological controversy and the theology of other New Testament writings. Authorship, Pentecostal approach and Biblical Hermeneutics.

REST 414: Religion, Culture and Communication (45/0: CF 3.0) Y4S2

Problems of definition. Changing society and

environment, cultural rites, myths, liturgy. Religious participation: role of specialists; generation economic and cultural gaps. Impact of modern media. Indigenous methods of communication. Religion and mass media, communication.

REST 415: Islamic Law (45/0 CF 3.0 Y4 S2)

Islamic law (*Shariah*) as a defining feature of Islamic faith in the world. The quran as basis of Islamic law, origins of Islamic law, its initial growth in the formative age of Islam, Islamic law and Islamic civilization, various schools of jurisprudence and related scholars, its place in colonial and modern states in world as well some of the pertinent issues related to application of Islamic law in the world today. (Course requirement: field trip)

REST 416 Islamic Mysticism (45/0 CF 3.0 Y4 S1)

This course is a survey of the large complex of Islamic intellectual and social perspectives subsumed under the term Sufism. Sufi mystical philosophies, liturgical practices, and social organizations have been a major part of the Islamic tradition in all historical periods, and Sufism has also served as a primary creative force behind Islamic aesthetic expression in poetry, music, and the visual arts. In this course, we will attempt to understand the various significations of Sufism by addressing both the world of ideas and socio-cultural practices. The course is divided into four modules: central themes and concepts going back to the earliest individuals who identified themselves as Sufis; the lives and works of two medieval Sufis; Sufi cosmology and metaphysics; Sufism as a global and multifarious trend in the modern world.

REST 418: Modern Trends in Islam (45/0 CF 3.0 Y4 S2)

Current political and social conditions of the Muslim world, rise of pan-regional militant groups such as Boko Haram, Al-Shabaab to the Islamic State in Iraq, Contemporary Islamic religious movements e.g Sunni and Shi'i Islam and their social, political and historical contexts.

REST 419: Islamic Finance and Banking (45/0 CF 3.0 Y4 S2)

Islamic banking and finance and its history. Introduction to Islamic Banking and Finance in Africa and Kenyan in particular. Thematic issues: The origins and the most important concepts of Islamic Finance; The rationale behind the development of the Islamic finance industry, The nature and scope of the Islamic finance industry in relation to its conventional counterpart; the main principles of Islamic banking and finance, Key Islamic financial contracts, as used by the industry, that is, *Murabaha* and *Musharaka* contracts, *Ijara* and *Istisna'a* financing methods, *Salam* and *Takaful* insurance, The Islamic financial infrastructure, Kenyan and international financial institutions and *Shariah* regulatory bodies. (Course requires relevant resource person).

(ii) SOCIOLOGY**SIHL 100: Society and International Humanitarian Law (45/0: CF 3.0) Y2S1)**

Introduction to International Humanitarian Law. The four Geneva Conventions and Additional Protocols. Theoretical approaches to an historical development of armed conflicts and the law of war. Rules and Principles in armed conflict. Protection of the wounded, the sick and the shipwrecked and combatant's status. Protection of prisoners of war, protection of the civilian population in the hands of the enemy. Role of the medical personnel and of humanitarian actors. The socio-economic, social and psychological implications of armed conflicts and their management. Armed conflicts of a non-international character. Human Rights and International Humanitarian Law. Refugees and armed conflicts. African traditional forms of Law and Justice with regard to armed conflicts and victims of the same. Practical aspects of conflicts preparedness.

SOCI 101: Introduction to Sociology (45/0: CF 3.0) Y1S1

Introduction to the origins of sociology; basic concepts, principles and processes, including socialization, social groups, race relations, culture, stratification, and elementary forms of social organization, globalization, social change, social institutions, deviance and social control.

SOCI 102: Introduction to Anthropology (45/0: CF 3.0) Y1S1

The nature and scope of anthropology. Definition of Anthropology, Growth and Development of the Discipline, Relationship between the discipline and other social sciences. The significance of our evolutionary past for an understanding of the contemporary conditions of mankind. Definition and understanding of cultural concepts; ethnocentrism, culture relativism, acculturations and socialization, culture and development.

SOCI 103: Rural Sociology (45/0: CF 3.0) Y1S2

Application of Sociological concepts to the rural environment. The effects of rural life upon personality in developing countries in general and in East Africa specifically. Rural issues such as land tenure, land use and settlement patterns, social change and development.

SOCI 104: Introduction to Social work (30/30: CF 3.0) Y1S2

Introduction to social work. Definitions of concepts, historical development, theoretical grounding of social work, approaches in welfare science, policy, ethical and professional issues, principles of social work. The need for social work, social group works, record keeping, responsibilities of social workers to clients, community and the profession, values in social work relationships, solving ethical and legal issues in social work, challenges in dealing with special needs of clients and solutions.

SOCI 201: Methods of Social Research I (45/0: CF 3.0) Y2S1

Introduction of research; social research, definition of basic terms in research, inductive and deductive approaches to research, scientific research, ethical considerations in research, basic types of research, research designs. Basic tools used in conducting social research, such as observation; experimentation and survey techniques. Students will be taught to write research proposals, data collection and analysis, etc.

SOCI 202: Community Development and Social Welfare (45/0: CF 3.0) Y2S1

Processes and techniques of community

development. Effective methods for improving the general well-being of community residents through community development. Problems of community development and social welfare. The role of local authorities and voluntary agencies.

SOCI 203: Social Structure of East African Societies (45/0: CF 3.0) Y2S2

The sociological issues and theories used in the study of East African Societies. Traditional, social, political and economic organizations, colonialism, decolonization and political change in the region.

SOCI 204: Social Institutions (45/0: CF 3.0) Y2S2

The structure and functions of social institutions, such as family, education, religion, economic, political, health and medicare. Institutional change, challenges and social and social organization

SOCI 211: Collective Behaviour and Social Movements (45/0: CF 3.0) Y2S1

Definition of Collective behaviour and social movements. The preconditions for collective behaviour in modern society. Types and contexts of collective behaviours and social movements. The theories and explanations of collective behaviours and social movements. The link between collective behaviour, social movement and social change, social dynamics and social transformations in society.

SOCI 212: Sociology of the family(45/0: CF 3.0) Y2S1

The internal dynamics of the family, decision making process, authority structure, division of labour, socialization patterns, family conflict, social policy and the family, the family and the economy, religion, overall societal change and stratification patterns. Rural-Urban patterns and historical changes in the structure of the family.

SOCI 213: Social Roles (45/0: CF 3.0) Y2S2

Contemporary role theory and related concepts such as social status and social interaction, age, sex, vocational, social class and other role types. The socialization process, personal adjustment, group situations and social change.

SOCI 215: Culture and Social Services (45/0: CF 3.0) Y2S2

Meaning and types. Cultural pluralism and social class. Cultural traditions and modern interactions. Law, customs and morality. Gender roles and responsibilities in society. Social services: meaning, types, government involvement, non-governmental organizations (private sector) involvement. Cost of providing and benefits from social services. National youth service.

SOCI 301: Foundation of Sociological Theory (45/0: CF 3.0) Y3S1

The main types of sociological theory. The contribution of Auguste Comte, Karl Marx, Emile Durkheim, Max Weber and others who have contributed to the development of the discipline of sociology.

SOCI 304: Social Psychology (45/0: CF 3.0) Y3S1

Concepts and theories of individual behaviour in society. Personality development, socialization, attitude formation and change. social motivation issues. The link between Sociology and Psychology in theory and research. Sociological and Psychological explanations of conformity and deviation. Symbolic interaction in Sociology and psychology.

SOCI 305: Methods of Social Research II (30/30: CF 3.0) Y3S2

Scientific methods of social research; including research design; levels of measurement in research, sources of data and data collection, qualitative and quantitative techniques for measurement and inference of social data. Students will be taught how to write research report (*Prerequisite: SOCI 201*)

SOCI 306: Social Policy and Administration (45/0: CF 3.0) Y3S2

Introduction to social policy and administration. The basic terms and concepts. Social policy formulation process and implementation, and strategies for dealing effectively with social problems. Analysis of social policy programmes and their administration. The models of social service provision, monitoring and evaluation of social policies and services.

SOCI 311: Urban Sociology (45/0: CF 3.0) Y3S2

Concepts e.g. urban community, development and welfare. The history, nature and norms of urban communities. Theoretical foundations, ecological and demographic characteristics. The cause of urbanizations and sources of urban community development services. Rural-urban migration. Urban health, housing, water, education and transport services. Self-help organizations in urban areas. Research issues in urban community development and social welfare. Socio-economic and political issues in urban communities in Kenya.

SOCI 312: Sociology of Work and Occupations (45/0: CF 3.0) Y3S2

The meaning of work and leisure in modern society, work commitment, Socialization into work roles, impact of occupational segregations by sex and race, and occupational structures; unemployment and politics; career mobility; and improvement of work life and leisure, Industrial Psychology, industrial relations

SOCI 313: Sociology of Family Planning and Population policies (45/0: CF 3.0) Y3S2

Definition of concepts. Historical and current trends in family planning in developing and developed countries. Population growth projections and family planning. The socio-cultural, political, economic and gender issues in family planning. Family planning policies, programmes and contraceptive methods as differentials in population and family planning.

SOCI 314: Gender Issues and Development (45/0: CF 3.0) Y3S2

An overview of the recent history of approaches to women and development. The economic, political, educational, cultural and religious factors contributing to socially ascribed roles attributed to masculinity and femininity. The structure and dynamic of gender relations to the analysis of social organization and social progress; and the forces that affect men and women's ability to direct and benefit dominance at the household, community, national and international levels and their ramifying effects on major societal institutions such as the family, the school, the church, the economy and the polity.

SOCI 316: Race, Ethnicity and Stratification (45/0: CF 3.0) Y3S2

The general nature of race/tribe and ethnic relation in society including such aspects as cultural and structural assimilation, cultural pluralism, and social class. How race and ethnic inequalities are institutionalized, legitimized and established as stratification systems; slavery, caste and estates.

SOCI 317: Contemporary Social Issues (45/0: CF 3.0) Y3S1

Definition and meaning of a social problem. Different types. Classifications and general effects. Beliefs and values: factors affecting beliefs and values, reasons for beliefs and values. Specific social problems: types, causes and manifestations, results, possible solutions. Causes of social problems in schools, community. Importance of planning to eradicate them, role

SOCI 401: Contemporary Sociological Theory (45/0: CF 3.0) Y4S1

Modern and post modern theoretical approaches in Sociology. Definition of contemporary sociological theory and sociological imaginations. The link between classical theory and contemporary sociological theory. The different types of Contemporary Sociological Theories, such as neo-Functionalism; neo-Marxist theory. Analysis of new theories such as Feminism; social exchange; structuration theory; post modernism etc (*Prerequisite: SOCI 301*)

SOCI 402: Environmental Sociology (45/0: CF 3.0) Y4S1

Planned and replanned environment. Concepts e.g. environment vs ecology, conservation, degradation, rehabilitation, pollutions. Global, African and Kenyan environmental policies, protection law and extension services. Environment and population growth. Socio-economic activities and politics in environmental chance, effects and influence on social life. Forms of environmental pollution e.g. global, continental, regional, industrial and domestic. Micro-vs macro conflict in environmental pollution and policy. Research issues in environment and pollution in Africa and Kenya. Sustainable development and intergenerational equity.

SOCI 406: Social Change and Development (45/0: CF 3.0) Y4S2

Classical and recent theories of social change and development. Different kinds of social change and the factors that facilitate them or the means by which they are brought about. Techniques of development planning, project implementation and evaluation with references to Eastern Africa.

SOCI 409: Disaster Management (45/0: CF 3.0) Y4S2

Definition of basic concepts and terms. Different types of disasters i.e natural and man –made. Causes and types of disasters, disaster prevention, preparedness and relief. Early warning systems and various disaster policies at regional and national levels. Disaster management cycles. Disaster management and public awareness. The role of Technology in disaster management. The physical, health, psychological and emotional and socio- economical impact of disasters. The vulnerable groups in disasters and policy measures.

SOCI 411: Sociology of Mass Communication (45/0: CF 3.0) Y4S1

Nature and scope of communications, models of the communication process; qualities of mass communication. Functions of communication in organizations and its general functions in society, communication in organizations and the various communication networks used. Types of media e.g. press, television, radio, cinema etc and their functions. The impact of media in society.

SOCI 412: Sociology of Deviant Behaviour (45/0: CF 3.0) Y4S1

Definition of deviance and related Concepts. Processes by which some actions of society become deviant. Particular forms of deviance such as mental illness, suicide, riots, prostitution's, use of drugs, vice and white colour crime. General theories of the causes of deviance. Consequences of deviance; management, control and treatment of deviants.

SOCI 413: Political Sociology (45/0: CF 3.0) Y4S2

The contribution of sociology to the study of politics, including the political aspects of social

systems, the social context action, and the social basis of power. The relationship of political and economic elites with the social groups in East African societies

SOCI 414: Human Ecology (45/0: CF 3.0) Y4S2

Concepts and definition of human ecology and environment. Human ecology systems, organisation and changing patterns and structures. Planned and unplanned human ecology e.g. integrated and/or special settlement areas. The social-cultural economic and political consideration e.g. environmental refugees due to drought, wars, industrial accidents. Implications of human settlement on planning, programmes and policies in Kenya and Africa in general.

SOCI 415: Conflict Resolution and Management (45/0: CF 3.0) Y4S1

Definition, types and levels of conflict. Causes of conflicts in society. Social conflicts as a theory of social change. Social harmony versus class conflict. Social inequality and conflict. Social conflict and violence. Social function of conflict and violence. Psychological, socio- economic, cultural and political implications of conflicts. Methods and theories of conflict prevention and management. The role of national and international organizations and Institutions in conflict management

SOCI 416: Medical Sociology (30/30: CF 3.0) Y4S2

The sociology of health and illness behaviour and the social structure of systems which deliver health services, including social constraints on illness, medical organizations and profession and the application of the illness model to deviant forms of behaviour. Social and cultural factors in the cause of and treatment of illness, sociological analysis of the structure and function of health agencies and occupations.

9.2 MATRIX OF ALIGNMENT OF PROGRAMME LEARNING OUTCOMES (PLO) FOR SOCI/REST

	Year 1		Year 2		Year 3			Year 4	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Y3	CF	Y4	CF	
To give students a broad based and multidisciplinary academic foundation;	Introduction to Sociology	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0	
	Introduction to Anthropology	3.0	Community Development and Social Welfare	3.0	Social Psychology	3.0	Environmental Sociology	3.0	
	Rural Sociology	3.0			Urban Sociology	3.0	Sociology of Mass Communication	3.0	
	Introduction to Social Work		Society and International Humanitarian Law	3.0	Race, Ethnicity and Stratification	3.0	Sociology of Deviant Behaviour	3.0	
	Introduction to Philosophy	3.0	Collective Behaviour and Social Movement		Methods of Social Research II	3.0	Conflict Resolution and Management	3.0	
	Philosophy and Society	3.0	Sociology of the Family		Social Policy and Administration	3.0	Social Change and Development	3.0	
	Law and Society	3.0	Social Structures of East African Societies	3.0	Sociology of Work and Occupation	3.0	Disaster Management	3.0	
	Ancient Philosophy	3.0	Social Institutions	3.0	Sociology of Family Planning and Population Policies	3.0	Political Sociology	3.0	
			Social Roles	3.0	Gender and Development		Human Ecology	3.0	
			Medieval Philosophy	3.0	Modern Philosophy		Medical Sociology	3.0	
			Philosophy of Religion	3.0	Philosophy of Language		Philosophy of Mind	3.0	
					Contemporary Philosophy		Philosophy of Science	3.0	
					Philosophy of History				
	ii) To provide students with broad and relevant knowledge in Arts, Humanities and Social Sciences that is sufficient to expose them to numerous job opportunities.	Introduction to Sociology	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0
		Introduction to Anthropology	3.0	Community Development and Social Welfare	3.0	Urban Sociology	3.0	Sociology of Deviant Behaviour	3.0
Government and Society		3.0	Social Structures of East African Societies	3.0	Race, Ethnicity and Stratification	3.0	Conflict Resolution and Management	3.0	
			Social Institutions	3.0	Methods of Social Research II	3.0	Social Change and Development	3.0	
			Social Roles	3.0	Social Policy and Administration	3.0	Disaster Management	3.0	
			Epistemology	3.0	Sociology of Work and Occupation	3.0	Human Ecology	3.0	
					Gender and Development		African Social Philosophy	3.0	

					African Philosophy		Metaphysics	
iii) To equip students with analytical skills to enable them to participate in social, economic and political development.	Critical Thinking	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0
	Introduction to Logic	3.0	Community Development and Social Welfare	3.0	Methods of Social Research II	3.0	Environmental Sociology	3.0
	Symbolic Logic	3.0	Collective Behaviour and Social Movement	3.0	Social Policy and Administration	3.0	Sociology of Mass Communication	3.0
			Social Structures of East African Societies	3.0	Gender and Development	3.0	Medical Sociology	3.0
			Social Institutions	3.0	Social and Political Philosophy		Feminist philosophy	3.0
			Problems of Philosophy	3.0	Philosophy of Law		Aesthetics	3.0
iv) To train graduates who are able to teach, conduct research and handle societal responsibilities in private and public enterprises	Rural Sociology	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0
	Introduction to Social Work	3.0	Community Development and Social Welfare	3.0	Social Psychology	3.0	Environmental Sociology	3.0
	Introduction to Human Rights	3.0	Collective Behaviours and Social Movement	3.0	Urban Sociology	3.0	Sociology of Mass Communication	3.0
	Ethics, Integrity and National Values	3.0	Sociology of the Family	3.0	Race, Ethnicity and Stratification	3.0	Sociology of Deviant Behaviour	3.0
	Ethics	3.0	Social Structures of East African Societies	3.0	Methods of Social Research II	3.0	Conflict Resolution and Management	3.0
			Social Roles	3.0	Social Policy and Administration	3.0	Social Change and Development	3.0
					Sociology of Work and Occupation	3.0	Disaster Management	3.0
					Sociology of Family Planning and Population Policies	3.0	Political Sociology	3.0
					Gender and Development		Human Ecology	3.0
					Research Methods in Philosophy		Medical Sociology	3.0
							Philosophy and Development	3.0
							Applied Ethics	3.0
Year 1			Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Y3	CF	Y4	CF
Integrate Sociological and	Introduction to Sociology	3.0	Methods of Social Research I	3.0	Foundations of Sociological		Contemporary	

Religious, theoretical and Practical Knowledge and Skills	Introduction to Anthropology Rural Sociology Introduction to Social Work	3.0 3.0 3.0	Community Development and Social Welfare Society and International Humanitarian Law Collective Behaviour and Social Movement Sociology of the Family Social Structures of East African Societies Social Institutions Social Roles	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Theories	3.0	Sociological Theories	3.0
					Social Psychology	3.0	Environmental Sociology	3.0
					Urban Sociology	3.0 3.0	Sociology of Mass Communication	3.0
					Race, Ethnicity and Stratification	3.0	Sociology of Deviant Behaviour	3.0
					Methods of Social Research II	3.0	Conflict Resolution and Management	3.0
					Social Policy and Administration	3.0 3.0	Social Change and Development	3.0
					Sociology of Work and Occupation	3.0	Disaster Management	3.0 3.0
					Sociology of Family Planning and Population Policies	3.0	Political Sociology	3.0
					Gender and Development		Human Ecology	
							Medical Sociology	
Apply Sociological and Religious knowledge, skills to develop research proposals and undertake relevant research	Introduction to Sociology Introduction to Anthropology	3.0 3.0	Methods of Social Research I Community Development and Social Welfare Social Structures of East African Societies Social Institutions Social Roles	3.0 3.0 3.0 3.0 3.0 3.0 3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0
					Urban Sociology	3.0	Sociology of Deviant Behaviour	3.0
					Race, Ethnicity and Stratification	3.0	Conflict Resolution and Management	3.0
					Methods of Social Research II	3.0	Social Change and Development	3.0
					Social Policy and Administration	3.0	Disaster Management	3.0 3.0
					Sociology of Work and Occupation	3.0	Human Ecology	
					Gender and Development			

Have capacity to evaluate and analyze different social and religious issues and challenges in contemporary society			Methods of Social Research I Community Development and Social Welfare Collective Behavior and Social Movement Social Structures of East African Societies Social Institutions	3.0 3.0 3.0 3.0	Foundations of Sociological Theories Methods of Social Research II Social Policy and Administration Gender and Development	3.0 3.0 3.0 3.0	Contemporary Sociological Theories Environmental Sociology Sociology of Mass Communication Medical Sociology	3.0 3.0 3.0
Assist in policy development matters that require sociological and religious knowledge	Rural Sociology Introduction to Social Work	3.0 3.0	Methods of Social Research I Community Development and Social Welfare Collective Behaviour and Social Movement Sociology of the Family Social Structures of East African Societies Social Roles	3.0 3.0 3.0 3.0 3.0 3.0	Foundations of Sociological Theories Social Psychology Urban Sociology Race, Ethnicity and Stratification Methods of Social Research II Social Policy and Administration Sociology of Work and Occupation Sociology of Family Planning and Population Policies Gender and Development	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Contemporary Sociological Theories Environmental Sociology Sociology of Mass Communication Sociology of Deviant Behaviour Conflict Resolution and Management Social Change and Development Disaster Management Political Sociology Human Ecology Medical Sociology	3.0 3.0 3.0 3.0 3.0 3.0 3.0
Undertake postgraduate studies in Sociology, Religious Studies and related fields	ALL COURSES	3.0 @	ALL COURSES	3.0 @	ALL COURSES	3.0 @	ALL COURSES	3.0 @

BACHELOR OF ARTS

1. Philosophy of the Programme

Inspiring human development through generation and dissemination of significant knowledge and skills with an emphasis on a multidisciplinary approach to emerging issues in the arts, humanities and social sciences.

2. Rationale

The programme is tailored to impart broad based knowledge and skills in the arts, humanities and social sciences so as to address contemporary social, economic, political, religious, historical, linguistically, environmental and related challenges in the society. It is informed by the multifaceted nature of contemporary societal challenges which require persons trained and skilled in multidisciplinary approaches to problem solving. The programme therefore targets students who are interested in relevant broad based knowledge to address the many challenges in society. The programme offers a variety of disciplines from which students can make their choices: Philosophy, History, Religion, Sociology, Languages, Economics and Geography. The Bachelor of Arts degree is a prerequisite for post graduate degrees: Masters and PhD in Social Sciences and Humanities and other professional courses as may be required by other Universities outside Kenya.

3. Goal of the Programme

The programme provides students with a rational mindset to approach issues in society critically and have a holistic world view in dealing with challenges in life. Students admitted into this Programme are advised to study across disciplines for the sake of the job market although they are also free to specialize in any of the following disciplines within the programme: Bachelor of Arts in Philosophy, Religious Studies, English and Linguistics, Literature, Kiswahili, Sociology, History, Economics, Geography or Mathematics.

Graduates of the programme will find placement in the civil service, Foreign Service, NGO's and international organizations, leadership, consultancies and advising on critical issues in society.

4. Programme Learning Outcomes

Graduates of the programme are expected:

- i. to have acquire a broad based multidisciplinary academic foundation
- ii. be equipped with analytical skills to enable them to participate in social, economic and political development. to teach, conduct research and handle societal responsibilities in private and public enterprises.

5. Mode of delivery

The programme will be delivered on full time, e-learning, blended, modular or open and distance learning modes.

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i) All candidates to be admitted to the degree programme of Bachelor of Arts must satisfy the minimum entrance requirements stipulated in the University Statutes;
- ii) Candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade of C+ and at least a C+ in the subject for which they are applying for. The departments may have specific requirements for admission.
- iii) Candidates with a minimum of two principals at A-level in relevant fields MAY also be admitted.
- iv) Any other equivalent qualification from a recognized institution MAY be considered.

6.2 Regulation on Credit Transfer

Credit transfer in the programme shall adhere to Egerton University statutes 36 (3) of 2013. .

6.3 Course Requirements

The Requirements for this programme shall also adhere to ISO procedure for teaching as stipulated in (EU/AA/OP/06 rev 3)

6.4 Student Assessment Policy /Criteria

Statutes 36 (6) on student assessment Policy/Criteria shall be applicable.

6.5 Grading System

The grading of examination for these programme shall be conducted in accordance with Egerton University Statutes 36 (6) of 2013.

6.6 Examination Regulations

The examinations regulations as stipulated in the Egerton University Statute 36 (5) of 2013 shall be applicable.

6.7 Moderation of Examination

ISO procedure on moderation of examinations as stipulated in EU/AA/OP/07 shall be applicable.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated period.

6.9 Classification of Degrees

Degree Classification shall be in accordance with Egerton University Statute 36 (17) of 2013.

7. Course Evaluation

All courses will be evaluated at the end of the programme cycle. Using tools that captures: course content, instructional process, infrastructure and relevant staff for delivery as well instructional and reference materials.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the Faculty of Arts and Social Sciences, serviced by various departments and managed by a Programme Academic Leader who shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The BA General- option programme shall undergo an internal programme evaluation (self-assessment) at the end of each programme's academic cycle. ISO Procedure for academic Programme, EU/VC/OP/04, shall apply.

8.3 Course coding

Coding of courses in the BA programme shall be aligned to the departmental codes of the courses offered by the various servicing departments. (i.e., ECON for Economic; ENGL for English; HIST for History; KISW for Kiswahili; LITT for Literature; PHIL for Philosophy; REST for Religious Studies; and SOCI for Sociology). This is followed by a three digits.

- The first digit represents the year in which a particular course is being offered.
- The second digit represents the level; for instance 1-semester 1, 2-semester 2 and 0-principle course.
- The third digit is the serial number of the course within that field e.g. PHIL 101 is a first year introductory course and the first in the series.

Each department shall code their course as appropriate.

9. Courses/ Units offered for the Programme

a) University common core courses

b) The courses/units offered shall include:

ECONOMICS

YEAR I SEMESTER I

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of Microeconomics	45	0	3.0
ECON 130	Introduction to Mathematics for Economics	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0
OTHERS**		180	0	12.0
TOTAL		360	0	24.0

YEAR I SEMESTER II

ECON 121	Principles of Macroeconomics	45	0	3.0
ECON 140	Contemporary Economic Issues in Africa	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
Others**		180	0	12.0
TOTAL		315	0	21.0

YEAR II SEMESTER I

ECON 212	Intermediate Microeconomics Theory	45	0	3.0
ECON 230	Mathematics for Economists I	45	0	3.0
ECON 233	Economic Statistics I	45	0	3.0
Others**		180	0	12.0
TOTAL		315	0	21.0

YEAR II SEMESTER II

ECON 222	Intermediate Macroeconomics Theory	45	0	3.0
ECON 231	Mathematics for Economists II	45	0	3.0
ECON 234	Economic Statistics II	45	0	3.0
Others**		180	0	12.0
TOTAL		315	0	21.0

NB: OTHERS** stands for Courses as recommended in other 2 disciplines

YEAR III SEMESTER I CORE COURSES

ECON 303	Economic Development I	45	0	3.0
ECON 313	Advanced Microeconomics	45	0	3.0
ECON 331	Econometrics I	45	0	3.0
ECON 360	Research Methodology	45	0	3.0
Others**		90	0	6.0
TOTAL		270	0	18.0

ELECTIVES (AT LEAST TWO)

ECON 301	History of Economic Thought I	45	0	3.0
ECON 355	Economics of Industry	45	0	3.0

YEAR III SEMESTER II CORE COURSES

ECON 304	Economic Development II	45	0	3.0
ECON 323	Advanced Macroeconomics	45	0	3.0
ECON	Econometrics II	45	0	3.0

332				
ECON 351	Economics of Money and Banking	45	0	3.0
Others**		90	0	6.0
TOTAL		270	0	18.0

ELECTIVES (AT LEAST TWO)

ECON 302	History of Economic Thought II	45	0	3.0
ECON 341	Research Methodology II	45	0	3.0
ECON 352	Agricultural Development Policy	45	0	3.0
ECON 353	Economics of Labor	45	0	3.0
ECON 354	World Food Economy	45	0	3.0
ECON 357	Urban and Regional Economics (1 st SEM)	45	0	3.0
ECON 361	Industrial/Field Attachment	0	120	4.0

YEAR IV SEMESTER I CORE COURSES

ECON 441	International Economics I	45	0	3.0
ECON 434	Operations Research (core for 3311)	45	0	3.0
ECON 452	Public Finance and Fiscal Policy	45	0	3.0
Others**		135	0	9.0
TOTAL		270	0	18.0

ELECTIVES (AT LEAST THREE)

ECON 453	Economics of Public Policy	45	0	3.0
ECON 456	Economics of Education	45	0	3.0
ECON 455	Environmental Economics	45	0	3.0

YEAR IV SEMESTER II CORE COURSES

		LEC	PRAC	C.F
ECON 442	International Economics II	45	0	3.0
ECON 459	Project Planning Monitoring and Evaluation	45	0	3.0
ECON 460	Research Project in Economics (core for	45	0	3.0

	331)			
	Others**	135	0	9.0
TOTAL		270	0	18.0

ELECTIVES (AT LEAST THREE)

ECON 460	Monitoring and Evaluation in Economics	45	0	3.0
ECON 461	New Institutional Economics	45	0	3.0
ECON 462	Entrepreneurship Economics	45	0	3.0
ECON 454	Economics of Health	45	0	3.0

ENGLISH

a) Common Core Courses

Course Code	Course Title	Year of Study	Semester of offer
COMS 111	Communication Skills	1	1

b) Schedule of Courses

Y1S1

CODE	TITLE	L	P	C.F.
ENGL 111	Introduction to Language and Linguistics	45	0	3.0
ENGL 112	Introduction to Phonetics and Phonology	45	0	3.0
TOTAL		90	0	9.0

Y1S2

CODE	TITLE	L	P	C.F.
ENGL 121	History and Development of the English Language	45	0	3.0
ENGL 122	Introduction to the Grammar of English	45	0	3.0
TOTAL		90	0	9.0

Y2S1

CODE	TITLE	L	P	C.F.
ENGL 211	Introduction to Morphology and Syntax	45	0	3.0
ENGL 212	Sociolinguistics	45	0	3.0
TOTAL		90	0	9.0

Y2S2

CODE	TITLE	L	P	C.F.
ENGL221	Phonology of English	45	0	3.0
ENGL222	Aspects of Grammatical Analysis	45	0	3.0
TOTAL		90	0	6.0

Y3S1

CORE COURSES

CODE	TITLE	L	P	C.F.
ENGL 311	Research Methods in Linguistics	45	0	3.0
ENGL 312	Description of Grammatical structures in English	45	0	3.0
ENGL 313	Translation and Interpretation	45	0	3.0
ENGL 314	Psycholinguistics	45	0	3.0
TOTAL				

ELECTIVES (Student to take one option)

CODE	TITLE	L	P	C.F.
ENGL 315	Philosophy of Language	45	0	3.0
ENGL 316	Spatial Linguistics	45	0	3.0
ENGL 317	Language and Gender	45	0	3.0
ENGL 318	Cognitive Linguistics	45	0	3.0
TOTAL		180	0	9.0

Y3S2

CODE	TITLE	L	P	C.F.
ENGL321	Historical and Comparative Linguistics	45	0	3.0
ENGL 322	Second Language Acquisition	45	0	3.0
ENGL323	Language and culture	45	0	3.0
ENGL 324	Functional Grammar	45	0	3.0
TOTAL		180	0	9.0

ELECTIVES (Student to take one option)

CODE	TITLE	L	P	C.F.
ENGL 325	Linguistics and Language teaching	45	0	3.0
ENGL 326	English style and register	45	0	3.0
ENGL 327	Rhetoric and Writing	45	0	3.0
ENGL 328	Comparative and Bantu studies	45	0	3.0
TOTAL		180	0	9.0

Y4S1

CODE	TITLE	L	P	C.F.
ENGL 411	Semantics and Pragmatics	45	0	3.0
ENGL 412	Advanced Phonetics and Phonology	45	0	3.0
ENGL 413	Research Project	0	120	3.0
ENGL 414	Advanced Description of Modern English	45	0	3.0
TOTAL		135	120	12.0

ELECTIVES (Student to take one option)

CODE	TITLE	L	P	C.F.
ENGL 415	Dialectology	45	0	3.0
ENGL 416	Computational Linguistics	45	0	3.0
ENGL 417	English for Specific Purposes	45	0	3.0
TOTAL		135	0	9.0

Y4S2

CODE	TITLE	L	P	C.F.
ENGL 421	Discourse Analysis	45	0	3.0
ENGL 422	Advanced Syntax	45	0	3.0
ENGL 423	Language Planning and Policy			
ENGL 424	Corpus Linguistics			
TOTAL		90	0	6.0

ELECTIVES (Student to take one option)

CODE	TITLE	L	P	C.F.
ENGL 425	Seminar	45	0	3.0
ENGL 426	Linguistics and the Study of Literature	45	0	3.0
ENGL 427	Comparative Nilotic Language Studies	45	0	3.0
TOTAL		45	0	3.0

COURSE DESCRIPTIONS

ENGL 111: Introduction to Language and Linguistics (45/0: CF 3.0) Y1S1

Theoretical definitions of language. Properties features of human and non-human language. Theories on the origin and development of language. Form and function of written and spoken language. The major writing systems of the world; their forms, strengths and weaknesses. Introduction to Linguistics; definitions and why it's a science, scope and relationship with other disciplines. Definitions and illustrations of core areas of linguistics: Phonetics, phonology morphology, syntax semantics and pragmatics. A survey of inter-disciplinary branches of linguistics such as Discourse analysis, historical and comparative linguistics, sociolinguistics psycholinguistics, etc. Classification of Languages in Kenya. Focus on the sociolinguistic geography of Kenya. The role of English, Kiswahili and indigenous languages.

ENGL 112: Introduction to Phonetics and Phonology (45/0: CF 3.0) Y1S1

Broad definition of phonetics and phonology. Branches of phonetics: Articulatory, auditory and acoustic. Physiology and anatomy of speech production. Air-stream mechanisms production of consonants and vowels. Articulatory modifications.. The IPA chart. Broad and narrow phonetic transcriptions. Phonemes and allophones. Aspiration, voicing and devoicing. Techniques used in the discovery of distinct phonemes and distribution of allophones. Introduction to phonological processes and supra-segmental features.

ENGL 121: History and Development of the English Language (45/0: CF 3.0) Y1S2

A brief introduction to the techniques used in historical and Comparative Linguistics. The notion of language family: the Indo-European family of languages. The origin, development and spread of English to the present. Characteristics of the major dialects of English; British, American, Australian etc. Varieties of English; the 'Englishes' spoken in the world today. English as a language of international communication: contemporary issues.

ENGL 122 : Introduction to the Grammar of English (45/0: CF3.0) Y1S2

Definition of "grammar". The notion "word" and the different definitional criteria Criteria for word classification: structural, functional and semantic approaches Specific word classes in English using traditional grammar (parts of speech) viz. nouns, verbs, adjectives etc, and their subclasses. Types and function of phrases: Noun phrase, verb phrase etc subject, verb, object, complement and adjunct. Word-formation processes: Compounding, acronymy, blends, clipping, etc.

ENGL 211: Introduction to Morphology and Syntax (45/0: CF 3.0) Y2S1

Schools of linguistics. Distinction between morphology and syntax and their relationship with general grammar. Focus on the structural approach to linguistic analysis of English and other languages. Word structure: affixes – prefixes, infixes and suffixes. Morphemes, morphs, allomorphs and zero-morphs. Morpheme types. Derivation and inflection. Morphophonemic alternations. Morphological typology: agglutinative, isolating, inflecting, polysynthetic and infixing languages. Structuralist theories of morphology: Item and Arrangement, Item and Process, Word and Paradigm. The notions word, phrase, clause and sentence. Syntagmatic and paradigmatic relations in syntax. Constituency and dependency relations. The immediate constituents approach and phrase structure analysis in sentences.

ENGL 212: Sociolinguistics (45/0: CF 3.0) Y2S1

The complex relationship between language and society from a range of sociolinguistic perspectives. Language variety and change in a social context: class, age social status, ethnicity, gender. Sociolinguistic models of style and code-switching/code-mixing. Regional and social language variation, multilingual societies, regional and immigrant minority languages, language and ethnicity, language planning and policy, standardization, and language and gender. Sociolinguistic situations around the world: multilingualism and diglossia, pidgins and creoles, new "Englishes" and other globalised forms of language. Key research methods in the field of sociolinguistics

ENGL 221: Phonology of English (45/0: CF 3.0) Y2S2

The phonemic description of English. Fortis/Lenis distinction in consonants. The English vowels: Short and long vowels, diphthongs and triphthongs in English. The place and manner of articulation of specific English phonemes. Structure of the English syllable. Sounds in a speech continuum: assimilation, elision, linking and juncture. The English prosodic system: significance of stress, length, tone and intonation. The Chomsky and Halle distinctive feature analysis in phonemes. The approach used in generative phonology. Varieties of English production e.g. received Pronunciation, American English and East African English, etc. varieties affecting non- native speakers of English in the production and conceptualization of sounds in a discourse framework.

ENGL 222 : Aspects of Grammatical Analysis (45/0: CF 3.0) Y2S2

Some principles and tenets in traditional structural schools of grammar of. Definition of clause, sentence; Sentence types in English and the relationship between specific sentence types such as: active-passive, positive-negative, assertive-interrogative etc. Use of functional labels such as subject, predicate, complement in language. Some grammatical categories, number, tense, aspect, mood, gender, etc. Finite and non-finite verb usage. Restrictive and non-restrictive adjectival usage.

CORE COURSES

ENGL 311: Research Methods in Linguistics (45/0: CF 3.0) Y3S1

This course introduces students to different issues relating to social science methodology and fieldwork methods in Linguistic research. Part of the course involves an evaluation of the basic assumptions underpinning research in linguistics, particularly in the areas of language acquisition, sociolinguistics and discourse analysis. Topics include: Identifying a researchable linguistic topic; specifying variables in linguistic research: language variables vs social variables; reviewing related literature; stating a linguistic research problem; formulating appropriate research questions and stating the relevant assumptions/ hypotheses; choosing a research design; determination of sample size; methods of collecting, processing,

presenting and analyzing linguistic data. Tips on writing a good research report. . Issues of plagiarism. Referencing and bibliography. Footnotes, Appendices. Proof reading. Editing. Binding. The aim of this course is to equip students with the skills to evaluate and conduct their own research.

ENGL 312: Description of Grammatical structures in English (45/0: CF 3.0)

The form and function of English phrases: The verb phrase – auxiliary structure in English, verb complementation; the noun phrase; prepositional phrase; adjective phrase; adverb phrase. Subordination and coordination

ENGL 313: Translation and Interpretation (45/0: CF 3.0) Y3S1

Definitions; Semantic equivalence Distinctions between translation and interpretation. Importance (functions) of translation and interpretation Evaluation of historical and theoretical approaches to translation; Translation theories such as the cultural theory, comparative stylistic theory, linguistic theory of translation etc.. Different techniques used in translation e.g. meaning, theme, literal etc. Methods of translation and interpretation; manual, machine, machine-assisted Approaches to different types of texts (Oral and written texts). Types of translation and Interpretation. Exposure to a variety of translated texts e.g legal documents, scientific texts, literacy texts (fiction and nonfiction) etc. Translation problems and principles of revolving them.

ENGL 314: Psycholinguistics (45/0:3.0 CF) Y3S1

Introduction: Definitions, History and Different forms of psycholinguistic inquiry, Issues in psycholinguistics: Relationship between language and the mind; Current Issues in Psycholinguistics eg Nativism, Modularity, Linguistic Universals. Process of Language comprehension: Recognition, Parsing and Interpretation. Mechanisms of Speech Production; Lexical Selection and Assemblage of words;“Slip of Tongue”, the Human Brain, Aphasia and other neurolinguistic disorders. Mechanisms of Language acquisition: Biological Foundations, Cognition and Caregiver Language, Phonology, Syntax, and Semantics.

ENGL 315: Philosophy of Language (45/0: CF 3.0) Y3S1

Language in the transactional and interactional paradigms. Cognitivist and behaviourist approaches. Language thought and culture. Sentences, meaning and truth values; truth conditional semantics. The principles of bivalence and compositionality. Logical connectives: negation, conjunction, disjunction, conditional and bi-conditional. Entailment and analyticity. Logical truth and validity: the logical form of arguments. The notion possible world. Deixis: demonstratives, reference and sense. Speaker meaning and speaker reference. Non-literal uses of language: metaphor, irony etc. Speech acts. Language and modularity of mind. Current thinking in the philosophy of language: contributions from Africa and the rest of the world.

ENGL 316: Spatial Linguistics (45/0: CF 3.0) Y3S1

The language families of the world. Focus on specific cluster such as Indo-European, Eurasia, the specific and the new world. Languages and language patterns in Africa. Assess the spatiotemporal factors that determine the observed dispersal. Focus on specific languages in Kenya: the regional, geographical, locational dialects and determine whether language or dialectal distances affect mutual intelligibility. Detailed study of Kiswahili and its dialects.

ENGL 317: Language and Gender (45/0:3.0 CF) Y3S1

Theoretical perspectives in the study of language and gender, the role of gender in the expression and creation of gender identities, gender differences in discourse, language structure and use. Nature and function of gender differences in communication on a cross-cultural basis. Acquisition of gendered ways of speaking, sexism in language, stereotypes in language and gender. Language, power, ideology and dominance in relation to gender, gender and politeness. Male/female communication and miscommunication, language and gender in the classroom, case studies in language use and gender. New perspectives on language and gender.

ENGL 318: Cognitive Linguistics (45/0: CF 3.0) Y3S1

An overview of some of the main aims, assumptions and commitments of the cognitive linguistics, sketch of

some of the descriptive analyses and theoretical positions that are representative of cognitive linguistics: Universals and variation in language, thought and experience; Language in use: knowledge of language, language change and language acquisition. Focus on some of the best developed research frameworks in cognitive linguistics: e.g. cognitive semantics and cognitive approaches to grammar.

CORE COURSES

ENGL 321: Historical and Comparative Linguistics (45/0: CF 3.0) Y3S2

The scope of historical and comparative linguistics. Synchronic versus diachronic Linguistics. Lexical comparisons between English, Latin and Greek to demonstrate genetic relatedness. Classifications of languages: Typological classification; Areal classification; Genealogical classification. A survey and evaluation of various dialects of Kenyan languages. Models of language and linguistics communities: Family model; Family tree model; Wave model. Methods in comparative linguistics: Comparative reconstruction method; Internal reconstruction; Glottochronology /Lexicostatistics. Broadening of language materials; Dialect geography. Major language families of the world. Causes, processes and types of language change at phonological, morphological and syntactic levels. Sound change laws; Grimm’s law, Verner’s law, Dahl’s law. Evidence and role of written records in historical linguistics.

ENGL 322: Second Language Acquisition (45/0: CF 3.0) Y3S2

Language Acquisition theory and practice in relation to Linguistic theory; General and Applied linguistics: a review. First language acquisition and second language acquisition: conventional views and perspectives. The growth and development of Theoretical S.L.A perspectives: Behaviourism vs innatist streams of theory--contractive analysis, the Inter-language hypothesis, S.D. Krashen’s theory of SLA, the morpheme studies; error analysis. Cognitivism; the theory of UG and the LAD and other current approaches. Procedures used in data collection and analysis in S.L.A. studies.

ENGL 323: Language and Culture (45/0: CF 3.0) Y3S2

How different cultures and languages represent, organize and express thought, knowledge, and emotion. Relations between language and thought, language and reality, and language and logic. Comparative examples from a variety of the world's languages and cultures. Discussion of topics ranging from the culturally specific to the universal. Basic understanding of the literature and concepts that inform the study of language in its cultural contexts: origins and evolution of language, language death, theories of culture, cultural and linguistic relativity, ethnography and communication. Special emphasis to the work of Whorf and his critics – Linguistic relativity, Linguistic determinism, World view; Folk classification in various cultures, kinship terms, colour terms, prototypes, paradigms; Role of metaphor in (re)making of systems of classification; Role of technologies of representation - Basic description of alphabets, syllabaries and pictographic writing. Cuneiform writing systems. Orality and Literacy. Discussion of the ways technologies of representation interact with verbal communication. The memory systems of cultures.

ENGL 324: Functional Grammar (45/0: CF 3.0) Y3S2

Theoretical definitions of functional grammar. Functional grammar within systematic linguistics. Focus on the distributions between various schools of functionalism: a historical view point in the development of functionalism within the Prague school and the post-Prague theoretical formulation of functionalism leading to Hallidayan mode of functional grammar. The analysis of English sentences within anyone of these functionalisms.

ENGL 325: Linguistics and Language Teaching (45/0: CF 3.0) Y3S2

The application of linguistics to language teaching. Psycho linguistics: theories of language acquisition and learning. Performance models and language teaching. Facilitating transfer and interference. Error analysis. Goals of linguistic theory competence and performance. The notions of acceptability and appropriateness theory relevance to language teaching. Theories and methods in language teaching and language learning: the

naturalistic theory, the behaviourist theory, the cognitive approach, etc. The contribution of theoretical language teaching. Syllabus models. Language in the classrooms: teaching of specific language phonology, semantics, etc. The theory of language testing; the construction of different types of language tests. The use of basic statistical techniques. Role of theory in language teaching and learning.

ENGL 326: English Style and Register (45/0: CF 3.0) Y3S2

Definitions of the concepts “style” and “register”. Differences in style between written and spoken English. Types of style and register e.g formal/informal/causal etc. Variation in the structure of sentences resulting from different styles. Variation in style in relation to topic, subject matter, situation, addresser-addressee relationship, profession etc. Stylistic characteristics of different genres of writing e.g poetic writing, exposition, description etc.

ENGL 327: Rhetoric and Writing (45/0: CF 3.0) Y3S2

A brief comparison between classical and contemporary Rhetoric. The importance and characteristics of effective writing. Analyze and practice classical rhetorical modes; description, narration, exposition, argument. Various approaches of presenting information; cause and effect, comparison/contrast, process analysis, classification and division, exemplification and definition. The process of effective writing: Prewriting, outlining, drafting, revision, editing and proof-reading. Essentials of effective writing; audience, organization, voice, style, diction, grammar and sentence structure. Critical writing.

ENGL 328: Comparative Bantu Language Studies(45/0: CF 3.0) Y3S2

Conventions of classification of Human Languages: Language families; history and classification of Bantu as a language family. Linguistic structural similarity as core factor of clustering of language types; analysis of major phonological and morphological processes of Bantu languages, the syntactic and semantic structures of Bantu languages; the reconstruction of proto-Bantu on the basis of comparison of systems of Bantu

Languages. Diffusional influences of non-Bantu languages on Bantu languages, and vice-versa.

ENGL 411: Semantics and Pragmatics (45/0: CF 3.0) Y4S1

Semantics: definition, scope and perspectives in semantics; The semiotic triangle: language, mind, world and meaning; key semantics concepts: Lexemes, Sense, reference, denotation, connotation, compositionality, levels of meaning; Meaning the dictionary and the thesaurus; The units of meaning: Words and morphemes, meanings below the morpheme: sound symbolism, meanings above the word level: idioms; Types of meaning: meanings as referents/denotations, meanings as concepts/mental representations, meanings as brain states, meanings as uses; Sense relations: synonym, hyponym, antonym, homophones and homonyms, polysemy, metonymy; Sense relations and componential analysis; Semantic roles: Agent and theme, instrument and experience, location, source, goal etc.; Collocation. Pragmatics: Definition of pragmatics and backgrounds; Deixis: the relation of reference to the origin of the utterance; Reference and inference; Presupposition and entailment; Cooperation and implicature; Speech acts; Politeness and impoliteness.

ENGL 412: Advanced Phonetics and Phonology (45/0:CF 3.0) Y4S1

Distinction between phonetics, phonology and phonemics. The notions phone, phoneme and allophone. Theoretical views of the phoneme: phonetic, phonological and psychological. Practical phonemics and discovery procedures. Further exercises in broad and narrow transcriptions. Introduction to diacritics. Primary, secondary and complex articulations. Further work on acoustic phonetics: issues of sound quality, pitch and frequency, amplitude and intensity, duration and time. Instrumental speech processing – spectrographic analysis. The syllable structure onset, coda, peak. Rhyme. Prosodic phonology: stress length, tone and intonation, vowel harmony, etc. Schools of phonology: strengths and weaknesses. Current directions in phonological theory and practice

ENGL 413: Research Project (0/120: CF 4.0) Y4S1

A research paper of between 5000 and 8000 words to be written by each student of an approved topic that deals

with the English language or linguistics. This should be on any aspect on the structure of language, language use, teaching and learning. Course provides opportunity for students to acquire and master methods of collating, analysing and interpreting data, and of composing a scholarly paper. Each student to be guided by a supervisor after general introductory lectures on basic research methodology.

ENGL 414: Advanced Description of Modern English (45/0: CF 3.0) Y4S1

Revisit definitions of sentence; the sentence as an abstract unit of language; syntactic versus semantic criteria for definition. The clause and sentence. Types of clauses. Constituent structures. Justification for word-level and phrasal-level categories. Distributional evidence for categorization. Observational, descriptive and explanatory adequacy. The categories: Inherent categorization and strict subcategorization frames. The noun, verb, adverb, adjective and prepositional phrases. Constituency and dependency relations. The clause as a category. Mechanics of coordination and Subordination. The use of words within grammar.

ENGL 415: Dialectology (45/0: CF 3.0) Y4S1

Current theories in dialectology. Methodology in dialectology. Survey and evaluation of various dialects of English and African languages. The linguistic principles which govern the demarcation of dialects in language. Specific differences and similarities among various dialects.

ENGL 416: Computational Linguistics (45/0: CF 3.0) Y4S1

The computers and natural language. Computational linguistics and theoretical linguistics. Syntactic analysis including recursion, parsing, context-free vs context-sensitive grammars. Semantic analysis including semantic constraints and formal semantics. Information structuring and discourse analysis. Speech processing, text processing and machine translation. Dictionary and dictionary generation in computational linguistics. Other applications in computational linguistics.

ENGL 417: English for Specific Purposes (45/0: CF 3.0) Y4S1

Definition of style and register. Different levels of formality; informal. Description of various register: legal, medical, journalistic, political etc in terms of difference in vocabulary and sentence structure. Language and pedagogy. Interactive non- interactive language (dialogue vs monologue) spoken and written language.

ENGL 421: Discourse Analysis (45/0: CF 3.0) Y4S2

General functions of language: transactional and interactional paradigms. The form and functions of spoken and written texts. Discourse types: everyday discourse, literary discourse, political discourse, media discourse, academic discourse, electronic discourse, etc. Pragmatic approaches to discourse analysis: conversational implicatures, presuppositions, inferences. The role of contextual features in the creation and interpretation of discourse. Topics and variations, information structure. Cohesion and coherence. The notions: theme and rheme, given and new. Speech acts, reference in a text and the use of referring and non-referring expressions. The processing of discourse texts.

ENGL 422: Advanced Syntax (45/0: CF 3.0) Y4S2

Revisiting the concepts of grammar, syntax. The phrase as a syntactic unit; notions phrasal categories. Phrase Structure Grammars; basic and re-write rules, lexicon. Methods of representing syntactic structure: labeled brackets, triangles, tree diagrams, phrase structure rules. Structural ambiguity. The Standard Theories and Transformational grammars: Deep vs Surface structures; movement, verb movement, I movement, insertion, deletion, substitution in passive, negative and question transformations etc. Government and Binding: X-bar theory, bounding, c-command etc.

ENGL 423: Language Planning and Policy (45/0: CF 3.0) Y4S2

Language and society. Language variation vis-à-vis geographical location and socio cultural milieu. Language planning with relation to bilingualism/multilingualism. Language and nation: nation states and state nations. Language planning: the micro-perspective. Language planning and policy: the macro-perspective, i.e., in relation to national goals and

objectives. Dominance and choice: Language rights. Language choice versus relegation. Language for nationalist and nationalist functions. Case studies; Israel, Kenya, Tanzania, Welsh and Breton. Language development; standardisation and orthography. Role of the applied linguist.

ENGL 424: Linguistics and the Study of Literature (45/0: CF 3.0) Y4S2

The general functions of language. Forms of language: written and spoken. Focus on form and function of specific vocabulary in specific paradigms e.g. familiar and farfetched words. Circumlocution, malapropos, neologisms. Use of slang, cliché etc. Linguistic variations in word order so as to create emphasis. On meaning variations within tautological, redundant and ironic expressions. Expressions that are ambiguous and systematic, linguistic techniques of disambiguating them. The use of archaism and the substitution of such with expressions from contemporary English.

ENGL 425: Seminar (45/0: CF 3.0) Y4S2

Intensive guided reading and seminar presentation. Review of topics to be decided by both the students and the lecturer in various areas within the English Language and Communication Studies courses. Practice of communication skill through simulations, lecture-lets, short presentations, discussions and the brainstorming sessions, writing and presenting authentic projects, critiquing and providing feedback. Involves organizing, dramatization and other methods that lead to better conceptualization of the subject matter in selected areas of specialization.

ENGL 426: Corpus Linguistics

Through problem-based tasks the students learn how to use machine-readable corpora as a basis for linguistic description and language learning Introduction to the main tenets of corpus linguistics and the methods and techniques used to work with large collections of spoken or written electronic data. Main topics: corpus design:-data collection, archiving and markup; corpus typology: spoken and written corpora; monolingual vs multilingual; native vs learner; diachronic vs synchronic; major electronic corpora: British National Corpus, International Corpus of English, International Corpus of Learner English, MICASE, Louvain

International Database of Spoken English Interlanguage, etc. -corpus annotation (POS-tagging, lemmatization, parsing, semantic tagging, prosodic annotation, error tagging). -automated analysis of lexis, grammar and discourse. Links between corpus linguistics and foreign language learning, contrastive and translation studies and natural language processing

**ENGL 427: Comparative Nilotic Language Studies
(45/0: CF 3.0) Y4S2**

History and classification of Nilotic languages, linguistics, sociological, genetic, geographical distribution of Nilotic languages. Syntactic and semantic structures of Nilotic languages and the reconstruction of Proto-Nilotic. Non- Nilotic influences on Nilotic languages.

	Year 1		Year 2		Year 3		Year 4		
Programme Learning Outcomes (PLO)									
	Courses	CF	Courses	CF	Y3	CF	Y4	CF	
To give students a broad based and multidisciplinary academic foundation; .	Introduction to Language and Linguistics History and Development of the English Language Introduction to Academic Communication Skills	3.0	Sociolinguistics	3.0	Research Methods in Linguistics	3.0	Semantics and Pragmatics Discourse Analysis Language Planning and Policy Linguistics and the Study of Literature	3.0	
		3.0		3.0	Translation and Interpretation	3.0		3.0	
		3.0		3.0	Language and Gender Language and culture	3.0 3.0		3.0	
		3.0		Linguistics and Language Teaching	3.0				
		3.0							
ii) To provide students with broad and relevant knowledge in Arts, Humanities and Social Sciences that is sufficient to expose them to numerous job opportunities.	Introduction to Language and Linguistics History and Development of the English Language Introduction to the Grammar of English Introduction to Phonetics and Phonology	3.0	Introduction to Morphology and Syntax Sociolinguistics Phonology of English Aspects of Grammatical Analysis	3.0	Description of Grammatical structures in English	3.0	Semantics and Pragmatics Advanced Phonetics and Phonology Advanced Description of Modern English Discourse Analysis Advanced Syntax Language Planning and Policy Corpus Linguistics Linguistics and the Study of Literature	3.0	
		3.0		3.0	Translation and Interpretation	3.0		3.0	
		3.0		3.0	Psycholinguistics	3.0		3.0	
		3.0		3.0	Philosophy of Language	3.0		3.0	
		3.0		3.0	Historical and Comparative Linguistics	3.0		3.0	
		3.0		3.0	Second Language Acquisition	3.0		3.0	
		3.0		3.0	Language and culture	3.0		3.0	
		3.0		3.0	Functional Grammar	3.0		3.0	
		3.0		3.0	Linguistics and Language Teaching	3.0		3.0	
		3.0		3.0					
iii) To equip students with analytical skills to enable them to participate in social, economic and political development.	Introduction to Academic Communication Skills	3.0	Sociolinguistics	3.0	Research Methods in Linguistics Translation and Interpretation Language and Gender Second Language Acquisition Language and culture Linguistics and Language Teaching	3.0	Advanced Phonetics and Phonology Advanced Description of Modern English Research Project Discourse Analysis Language Planning and Policy	3.0	
				3.0		3.0		3.0	3.0
				3.0		3.0		3.0	3.0
				3.0		3.0		3.0	3.0
				3.0		3.0		3.0	3.0

iv) To train graduates who are able to teach, conduct research and handle societal responsibilities in private and public enterprises	Introduction to Language and Linguistics	3.0	Sociolinguistics	3.0	Translation and Interpretation	3.0	Semantics and Pragmatics	3.0
	History and Development of the English Language	3.0	Introduction to Morphology and Syntax	3.0	Psycholinguistics	3.0	Advanced Phonetics and Phonology	3.0
	Introduction to the Grammar of English	3.0	Phonology of English	3.0	Language and Gender	3.0	Advanced Description of Modern English	3.0
	Introduction to Phonetics and Phonology	3.0	Aspects of Grammatical Analysis	3.0	Historical and Comparative Linguistics	3.0	Research Project	3.0
				3.0	Second Language Acquisition	3.0	Discourse Analysis	3.0
				3.0	Language and culture	3.0	Language Planning and Policy	3.0
				3.0	Linguistics and Language Teaching	3.0	Corpus Linguistics	3.0

HISTORY

YEAR 1 SEMESTER 1

Code	Course Title	L	P	CF
HIST 111	Introduction to Academic History	45	0	3.0
HIST 112	Sources of African History	45	0	3.0
HIST 113	The Making of Kenya	45	0	3.0
Total		135	0	9.0

YEAR 1 SEMESTER 2

Code	Course Title	L	P	CF
HIST 121	Topics in African History	45	0	3.0
HIST 122	Themes in East African History	45	0	3.0
HIST 123	History of science and Technology	45	0	3.0
Total		135	0	9.0

YEAR 2 SEMESTER 1

Code	Course Title	L	P	CF
HIST 211	Survey of World History	45	0	3.0
HIST 212	Topics in the History of Agriculture	45	0	3.0
HIST 213	Survey of European History	45	0	3.0
Total		135	0	9.0

YEAR 2 SEMESTER 2

Code	Course Title	L	P	CF
HIST 221	Topics in Governance and Constitutions	45	0	3.0
HIST 222	Philosophy of History	45	0	3.0
HIST 223	History of land and Agriculture in Kenya	45	0	3.0
Total		135	0	9.0

YEAR 3 SEMESTER 1

Core Courses

Code	Course Title	L	P	CF
HIST 311	Methods of Historical Research	15	30	2.0
HIST 312	Historical Studies in the Economic Institutions of Africa	45	0	3.0
Total		60	30	5.0

Elective Courses

Code	Course Title	L	P	CF
HIST 313	History of African Women	45	0	3.0
HIST 314	History of Kenya Labour movement	45	0	3.0
HIST 315	Historical Studies in International Organizations	45	0	3.0
HIST 316	Selected Topics in African Economic History	45	0	3.0
317	History of the Middle East	45	0	3.0

YEAR 3 SEMESTER 2

Core Courses

Code	Course Title	L	P	CF
HIST 322	Topics in the Global History of Agriculture	45	0	3.0
HIST 323	History of Economic Thought	45	0	3.0

Elective Courses

Code	Course Title	L	P	CF
HIST 324	African Labour History	45	0	3.0
HIST 325	Ancient and Medieval Civilizations of Asia	45	0	3.0
HIST 326	Military Thought and Strategic Studies	45	0	3.0
HIST 327	Themes in the History of Latin America and	45	0	4.0

	the Caribbean			
HIST 328	Military History of Africa	45	0	3.0

YEAR 4 SEMESTER 1

Core Courses

Code	Course Title	L	P	CF
HIST 411	Historiography	45	0	3.0
HIST 412	Studies in the African Diaspora and Pan-Africanism	45	0	3.0
HIST 413	Research Seminar	15	30	2.0

Elective Courses

Code	Course Title	L	P	CF
HIST 414	History of Political Thought	45	0	3.0
HIST 415	Imperial and Commonwealth History	45	0	3.0
HIST 416	Perspectives in Africa's International Relations	45	0	3.0
HIST 417	History of China	45	0	3.0
HIST 418	Disease and Society in Contemporary Africa	45	0	3.0
HIST 419	Guided Reading	30	30	3.0

YEAR 4 SEMESTER 2- Core

Code	Course Title	L	P	CF
HIST 421	Africa in World History: Conceptual Issues	45	0	3.0
HIST 422	Global Studies in Conflict and Conflict Resolution	45	0	3.0
HIST 423	Research Project	0	120	4.0
Total		90	120	10.0

Elective Courses

Code	Course Title	L	P	CF
HIST	Historical Studies	45	0	3.0

424	of International Organizations			
HIST 425	History of Japan	45	0	3.0
HIST 426	History of India	45	0	3.0
HIST 427	International Working Class Movement	45	0	3.0
HIST 428	Armed Conflict in Africa	45	0	3.0

(c) COURSE DESCRIPTIONS

HIST 111: Introduction to Academic History (30/30: CF 3.0) Y1S1

The subject- matter, definitions and uses of history. Prolegomena to reading and writing History. Varieties of history: political, economic, social, religious, intellectual, military, international, women's history, history of science, art history, history of popular culture. The inter-disciplinarily of history - the African example. Studying contemporary, recent or current history - problems and prospects. The significance of historical controversy. Vignettes of selected eminent historians: Eric Williams; Walter Rodney; B A Ogot. Examination technique.

HIST 112: Sources of African History (30/30: CF 3.0) Y2S1

The study of African history as an independent and autonomous focus of scholarship is a recent development. Until the late colonial period, it was widely believed among western scholarship that Africa, South of the Sahara, had no 'civilization' and thus no history. Others insisted that even if there were events of historical nature, such history was unknown and unknowable, since African societies, for the most part, were non-literate and as such left no records that historians could study. But using an array of sources, these scholars have been successful in showing that Africa not only had a history, but that its history and the writing of it date back to ancient antiquity. Among the topics to be covered, include: scientific racism and its impact on the writing of African history; the multi-disciplinary nature of sources of African history, theory

and practice of archaeology in Africa; Oral Tradition as history; social anthropology; historical linguistics; written sources of African history; the Kenya National Archives; Genetics, palynology, literature and other auxiliary disciplines in relation to history; and African historiography since 1963. **Field Work /Academic Trip**

HIST 113: The Making of Kenya (45/30: CF 4.0) Y1S1

Writing national history: problems and prospects. Traditions of origin; migrations, settlement, and ethnic interaction. The Coast, the interior and the outside world: precolonial contacts. Prelude to colonialism: European explorations and missionary activity. The Scramble and Partition in the making of Kenya. From Protectorate to Crown Colony. Immigrant communities in the national demographic profile: Asians; Europeans; Africans. Boundary making in colonial and post-colonial times: national; provincial; district. The making of independent Kenya: from 'multi-racialism' to Republican status. Towards an integrated Kenyan Nation: symbols; promotional factors in the socio-economic, political and cultural spheres.

Fieldwork/Academic Trips to select Historical sites in the Country

HIST 121: Topics in African History (45/0: CF 3.0) Y1S2

Africa as the cradle of humankind and civilization: Egypt and the Nile Valley. Early contacts with the outside world: trade and migrations. Early spread of Christianity and Islam. The era of early European voyages of exploration. Precursors of colonialism: explorers, traders and missionaries. The scramble for and partition of Africa. Africans' response to the imposition of colonial rule: case studies. Impact of colonial rule. Nationalism and decolonization process. Armed liberation struggle: the former Portuguese colonies and Southern Africa. African unity. Challenges of post-independence. **Field work/Academic Trips**

HIST 122: Themes in East African History (45/0: CF 3.0) Y1S2

The pre-colonial state in East African history: case studies. Regional exchange in pre-colonial times. East Africa in the international trade system to the late

nineteenth century. The Scramble and Partition in the making of East Africa. Colonial conquest and the African reaction - comparative studies. East Africa under colonial domination. Nationalism and decolonization: similarities and contrasts. Independent East Africa: strategies for development; towards regional integration. **Field Work/ Academic History**

HIST 123: History of Science and Technology (45/0 CF 3.0), Y1S2

Technology in prehistoric society. Science and technology in Ancient Egypt. Science and civilization in selected civilization e.g. ancient China, India, and other regions of Asia. Science in Classical Antiquity. Technology of the African Iron Age. Scientific ideas in medieval Europe. Classical Islamic science and technology. The Renaissance in the history of science. The Scientific Revolution: from Nicolas Copernicus to Isaac Newton. Science and technology in the Industrial Revolution. The Western impact and Africa's technological underdevelopment in pre-colonial and colonial times. The contemporary revolution in science and technology. The Information Technology Revolution. The current state and future prospects of science and technology in Africa.

HIST 211-Survey of World History (45/0: CF 3.0), Y2S1

Evolution of the Neolithic revolution, Iron Age technology; ancient institutions (political, economic and social) of the Egyptian, Mesopotamian, Chinese, Meso-American civilizations Greek, Roman Civilizations, analysis of World religions for example Hinduism, Christianity and Islam. Expansion and spread of peoples; emergence of scientific culture; rise and development of world economic systems; religious, social and political revolutions, world trade including slave trade; imperialism and international conflict; Africa's place in world history; education, science and technology; European rivalry, alliances and the causes of the First World War. The Second World War and its implication on selected regions; Thepost World War Period- the cold war and the United Nations role in post 1945; Globalisation and Africa's place

HIST 212: Topics in the History of Agriculture (45/0: CF 3.0) Y2S1

The debate on the origins and spread of the Neolithic Revolution. The relationship between the natural environment and the invention of agriculture. Cradles of agriculture outside Africa: the Fertile Crescent; South East Asia; America, etc. The primary cradles of agriculture in Africa. The origins and spread of the domesticated animals of Africa. Agricultural changes of ancient and medieval times: regional surveys. The Age of Exploration and the further spread of cultivated plants and domesticated animals. The impact of the Atlantic Slave Trade on African agriculture. The Agrarian Revolution in Europe. Scientific farming in contemporary times: the USA and Canada; Western Europe; Australia and New Zealand; Russia and Eastern Europe, etc. Imperialism, colonialism and agriculture: case studies from Asia and Africa. Trends towards an Agricultural Revolution in the developing world. The food problem in world politics. (*Field Work/Academic Trips*)

HIST 213: Survey of European History (30/30: CF 3.0) Y2S1

European prehistory. The Indo-European phenomenon in linguistics and archaeology. Classical Antiquity: Greece; Rome. The Classical heritage in European culture. The middle Ages: the Byzantine Empire – historical overview; the Barbarian conquests; the triumph of Christendom; the rise of nation-states; the emergence of capitalism. From the Dark Ages to the Renaissance: the medieval world outlook and its dissolution. The Protestant Reformation. The Age of Absolutism. Concept and spread of the Industrial Revolution. The Age of Revolution: 1789-1848. Nationalism and nationalist movements. Radical ideological trends. The Age of Empire: impulses to the 'New Imperialism'. Europe in the First World War. The Russian Revolutions. Europe in the inter-war years: the rise of fascism. Europe in the Second World War. The era of the Cold War. The movement for European integration. The collapse of communism in Eastern Europe and the Soviet Union. Europe in the post-Cold War period.

HIST 221: Topics in Governance and Constitution (45/0: CF 3.0) Y2S2

Early systems of government: Asia; Classical Antiquity; medieval Europe; the pre-Columbian civilizations of the Americas; classical forms of Islamic theocracy. Theories, government and governance of European empires: 1450 - 1800. Later systems of government: absolutism; constitutional monarchies; federalism versus unitarism; socialism and communism; Islamic regimes. Constitutions and systems of government of the contemporary world: classification and historical retrospect. Typology of government in independent Africa: monarchies; one-party states; military regimes; socialist orientation; multi-partyism. The 'Second Liberation' constitutional reforms of the 1990s in Africa.

HIST 222: Philosophy of History (45/0: CF 3.0) Y2S2

The relationship between history and philosophy, the nature of historical knowledge, the speculative and analytical (critical) philosophy of history, the positivists and relativist debates on history, historical explanation, objectivity and subjectivity in history, the nature and function of narrative in historiography, problems of relevance and importance in historical judgment, causation in history, scope of historical inquiry, history as re-enactment of past experience and history as progress, development of spectacular philosophy of history from the Ancient Greeks. History as science and as art. Causation and historical explanation. Historical fact. Objectivity and subjectivity. The historical imagination. Historical judgement. Chance and necessity in history. Historical time: cyclical progression - Ibn Khaldun, A.J. Toynbee; unilinear progression - St. Augustine, G.W.F. Hegel, K. Marx; 'African time' - J.S. Mbiti, and J. Ki-Zerbo, etc. Theories of history: the theological explanation; the Great Idea theory - Hegel; the Great Man theory - Thomas Carlyle; racist and related doctrines - de Gobineau, etc; the materialist conception of history - the classical concepts, A. Gramsci's contribution, etc. Theoretical frameworks in African historiography: structural functionalism; modernization theory; underdevelopment and dependency theory; articulation of modes of production theory, etc. Other theoretical approaches: the 'Annales School'; the world systems theory; post-modernism; subaltern studies, etc.

HIST 223: History of Land and Agriculture in Kenya (45/0: CF 3.0) Y2S2

The geographical setting. Hunter-gatherers, pastoralism, fishing and cultivation in the indigenous setting. Introduction of exotic crops and animals. Land tenure systems of precolonial Kenya. The ecological catastrophe of the late nineteenth century. Origins of European settlement in Kenya. The evolution of colonial land policy and agrarian law. Genesis of historical land injustices: case study of the Report of the (Sir Morris Carter) Kenya Land Commission, 1934. Settler and African agriculture up to the Great Depression. Agricultural developments during World War II and its aftermath. Land reform and the diversification of African agriculture during the State of Emergency. The land issue in the politics of decolonization. The era of independence: the persistence of the land question; resource conflicts in the Arid and Semi-Arid Lands; farming and the issue of food security.

Field Work/Academic Trips

HIST 311: Methods of Historical Research (30/30: CF 2.0) Y3S1

The course examines history as a discipline; historical method; history and social sciences; the nature of historical research; identification of historical problem; sources of history; collection of evidence; analysis and interpretation of data; objectivity in data interpretation; report writing and research ethics.

HIST 312: Historical Studies in the Economic Institutions of Africa (45/0: CF 3.0) Y3S1

Economic groupings of colonial Africa: the British zone; the French zone. Regional economic bodies of independent Africa: the Economic Organization of West African States; the Southern Africa Development Community; the East African Community; the Preferential Trade Area / Common Market of East and Southern Africa; the Inter-Governmental Authority on Development. Economic bodies of The African Union. Towards a single currency for Africa and other continental economic trends.

HIST 313: African Women in History (45/0: CF 3.0) Y3S1

Gender as a category of historical analysis: review of the literature. Sources for the study of women's history.

Theoretical approaches in women studies: theories of patriarchy; psychoanalytic theory; Marxist feminism, etc. Women in the early history of world religions: Buddhism; Hinduism; Confucianism; Judeo-Christianity; Islam. Women in the feudal societies of medieval Europe and Asia: case studies - England, France, Russia, India, China. Women in the indigenous civilizations of America and Oceania. The women of the African Diaspora under slavery. Women monarchs of modern Europe. The Industrial Revolution of the nineteenth century and its consequences for women. Women in the age of the 'New Imperialism': dynamics of change in the metropolises; colonial empires and sexual opportunity. Women and world socialism: outstanding personalities - Beatrice Webb, Rosa Luxemburg, N. Krupskaya, Clara Zetkin, Dolores Ibarruri, Madame T. Binh, Angela Davis, etc; policy and practice - the USSR and Eastern Europe, China, North Korea, the countries of Indochina, Cuba. Women in the contemporary West: the issues - the family, education, work, politics, religion, culture, gender relations. Women in twentieth-century political leadership: the European monarchs; S. Bandaranaike, Golda Meier, Indira Gandhi, Margaret Thatcher, Isabella Peron, Violetta Chamorro, Corazon Aquino, etc. Emerging themes in women studies and gender analysis.

HIST 314: History of the Kenyan Labour Movement (45/0: CF 3.0) Y3S1

Introduction: review of the primary sources and historiography. Formation of the labour force: the labour question during the colonial conquest; forced labour; economic methods of compulsion and the migrant labour system; towards labour stabilization - the colonial period and after. The labour movement: early forms of protest; the inter-war years; trade unionism from the Second World War to independence. Developments after independence.

HIST 316: Selected Topics in African Economic History (45/0: CF 3.0) Y3S1

Key concept and theoretical issues. Discovery and diffusion of metals in the African continent. The Trans-Saharan Trade. Indian Ocean commerce. The Atlantic Slave Trade: areas of provenance; the cliometricians' debate; the economics of abolition; the impact on

Africa. The East African Slave Trade. Economy and society during the renaissance of Egypt, 1805 - 81. The economics of the Scramble and Partition. The colonial economy - overview. The social repercussions of colonial rule. Economic dimensions of the British and French transfer of power in Tropical Africa. Corporate interests and the liberation of Southern Africa. The era of independence: the rise and fall of Development Theory; comparative strategies of economic decolonization; the debt trap.

HIST 317: History of the Middle East 45/0: CF 3.0) Y3S1

Historical background and how geography influenced its history; Ancient civilizations, Palestine and its inhabitants: Canaanites, Philistines and Hebrews; The Middle East under Greek and Roman domination; The Christian crusades; The rise of Islam and Islamic empires: Safavids, Mamluks; The Ottoman empire and its rivalries with European powers; The Eastern question, the Zionist movement; The Middle East in World War One, and the Mandate system and the Second World War; The creation of Israel and subsequent wars; The Middle East in World politics, the quest for peace and international diplomacy.

HIST 322: Topics in the Global History of Agriculture (45/0: CF 3.0) Y3S1

Encyclopedic prologue: *The Cambridge World History of Food*. The debate on the origins and spread of the Neolithic Revolution. Dating the early history of agriculture. Cradles of agriculture: the Fertile Crescent; South-East Asia; the Americas; Africa. The history of the domesticated animals of Africa. Dispersion and diffusion of seeds, food plants and agricultural techniques in the Age of Exploration. The Agrarian Revolution in Europe. Historical Perspectives on scientific farming. Towards the Green Revolution: India; Africa. The world food problem and other topical issues. Early systems of government: Asia; Classical Antiquity; medieval Europe; the pre-Columbian civilizations of the Americas; classical forms of Islamic theocracy. Theories, government and governance of European empires: 1450 - 1800. Later systems of government: absolutism; constitutional monarchies; federalism versus unitarism; socialism and communism; Islamic regimes. Constitutions and systems of

government of the contemporary world: classification and historical retrospect. Typology of government in independent Africa: monarchies; one-party states; military regimes; socialist orientation; multi-partyism. The 'Second Liberation' constitutional reforms of The 1990s in Africa.

HIST 323: History of Economic Thought (45/0: CF 3.0) Y3S2

Stone Age economics. Economic ideas in ancient Africa, Asia, and pre-Hispanic Meso-America. Economic thought in Classical Antiquity. Economic ideas of the European Middle Ages. Economic ideas of the classical age of Islam. Mercantilism. Classical political economy: David Hume, Adam Smith and David Ricardo. Malthus and Malthusianism. Benjamin Franklin and trans-Atlantic Economics. French economists of the Age of Enlightenment. John Stuart Mill. The Economic Romanticists and Nationalists. The Utopian Socialists: Saint-Simon; Charles Fourier; Robert Owen. Socioeconomic thought in pre-revolutionary Russia. The classics of Marxist political economy: K. Marx, F. Engels, V.I. Lenin. Neo-classical Economics: W.S. Jevons, the Austrian School, Leon Walras. The Keynesian Revolution. Twentieth-century mainstream and radical Western Economics: North America; Europe. Contemporary Marxist political economy. The economists of Asia. Dependency and underdevelopment theories: the Latin American school. The evolution of economic thought in Africa - an overview. Trends in post-Cold War economic thought.

HIST 324: African Labour History (45/0: CF 3.0) Y3S2

Introduction: pre-colonial forms of labour. The labour question during the colonial conquest: the Portuguese, Belgian, German, British, and French zones. The African working class in the inter-war period: structure and composition - the industrial, agricultural and service sectors; working conditions; labour legislation, etc. Towards the formation of a stable labour force: case studies. The labour movement: beginnings; rise and development of trade unionism to the end of colonial rule; developments after independence.

HIST 325: Ancient and Medieval Civilizations of Asia (45/0: CF3.0) Y3S2

The prehistoric background. Forerunners of historic cultures. Ancient civilizations of West Asia: Mesopotamia; the Hittite kingdom; Phoenicia; the peoples of Palestine; the Persian Empire. Ancient India: the Dravidians; Aryan conquest; the Mauryan Empire; the religion, culture and science of ancient India. Ancient China: the Shang-Yin period; the Chou and Chin dynasty; the Han dynasty; the religion, science, philosophy, arts and crafts of ancient China. Korea: from Confucianism to Buddhism. Early Japan: Shintoism and Buddhism. The Arab Empire: the pre-Islamic age; the coming of Islam; the Caliphate - the Umayyad, Abbasid and Fatimid dynasties; the achievements of classical Islamic civilization. The formation of the Mongol state and Jenghis Khan's conquests in Central Asia and Trans-Caucasia. The Ottoman Empire to the mid-fifteenth century. India: the evolution of feudalism; the Mughal Empire. China: the Tang dynasty; the flowering of science and culture; centralization under the Sung dynasty; the Ming dynasty; the feudal system. Japan: the Nara and Heian periods; the rise of the Samurai; the Shogunate; the Tokugawa period. South East Asia: feudalism in Indonesia, Vietnam, Cambodia, Laos, Thailand and Burma; developments in the Philippines and Malaysia. Asia on the eve of the European expansion.

HIST 326: Military Thought and Strategic Studies (45/0: CF 3.0) Y3S2

The scope of war and strategic studies. The classical strategic thought of Sun Tzu and Karl von Clausewitz and the critics. From Niccolo Machiavelli and Gustavus Adolphus to the strategists of total war. The ethics of war - historical overview. Military leadership: great commanders of history - Alexander the Great (356 - 23 Before Christian era (BCE), Hannibal Barca (247 - 183 BCE), Julius Caesar (100 - 4 BCE), Napoleon Bonaparte (1769 - 1821) Christian Era (CE); generals and generalship in selected historical campaigns. The evolution of Warfare: infantry; cavalry; artillery and armour; sea power and naval warfare; airpower. The Cold War military alliances and the arms race. Espionage and intelligence. Insurgencies and counter-insurgencies: case studies. The concepts of people's war and guerrilla warfare: Mao Zedong; Vo

Nguyen Giap; and Che Guevara. African strategists in national liberation wars: Amilcar Cabral, Samora Machel *et al.* Political extremism, terrorism and other forms of Unconventional warfare.

HIST 327: Themes in the History of Latin America and the Caribbean (45/0: CF 3.0) Y3S2

Early civilizations of Latin America: the Mayas; Aztecs; Incas. The peoples and cultures of the Caribbean: the Arawaks, Ciboney and Caribs. European exploration, conquest and colonization. African slavery and race relations: a comparative study of Brazil and Jamaica. Slave resistance and rebellions. The Maroon communities. Toussaint L'Ouverture and the St. Domingue Revolution. Nationalist ideologies and movements for independence in Latin America to 1830: the activities of Francisco de Miranda, San Martin, Simon Bolivar, etc. Latin America: economic and political transformations in the nineteenth century; the African contribution to the development of society and culture; political developments of the first half of the twentieth century; the military in politics; the democratic process. The Caribbean: the abolition of slavery; Indian indentured labour; race relations - the Indians and Africans; the coming of independence to the West Indies. Cuba - from Spanish colonialism to socialism under Fidel Castro. US relations with the countries of Latin America and the Caribbean.

HIST 328: Military History of Africa (45/0: CF 3.0) Y3S2

Review of military studies in Africa. The military technology of prehistoric man. Africans in the wars and battles of the ancient world. The African military presence in medieval Europe. The military factor in the history of the western Sudanic empires and kingdoms to the fifteenth century. Warfare and violence in Atlantic Africa, 1500 - 1800. The military in the nineteenth century. Jihads of the Western Sudan. Wars of imperial conquest in Africa, 1830 - 1914. The preservation of Ethiopia's independence in the late nineteenth century. The military aspect of the anti-colonial resistance: case studies. Africans in early colonial armies. The African participation in World War I. The Fascist war against Ethiopia. Africa in the Second World War. The armed struggle for independence: Kenya; Algeria; the Portuguese colonies; Zimbabwe; Namibia. Violence

and counterviolence in apartheid South Africa. The military in post-colonial African society. The preservation of Ethiopia's independence in the late nineteenth century. The military organization of the anti-colonial resistance: case studies. The Anglo-Boer War, 1899 - 1902. Africans in colonial armies: the 'Teraillers Senegalais' of French West Africa (1857 - 1960); the King's African Rifles (1902 - 64); the Carrier Corps (1914 - 18). Fascist Italy's war against Ethiopia. World War II: the course of the war on African soil; African soldier's injury revolutions: the Mfecane; the other theatres of war. The military aspect in the struggle for independence: Kenya; Algeria; the Portuguese colonies; Zimbabwe; Namibia. Violence and counter-violence in apartheid South Africa. The military in postcolonial African society.

HIST 411: Historiography (45/0: CF 3.0) Y4S1

Classical historiography - Herodotus, Thucydides, Polybius, Livy, Tacitus, Plutarch. European and Asian historiography of medieval times. The rise of scientific historiography in modern Europe: Machiavelli; Voltaire; Edward Gibbon; G. Vico; G.W.F. Hegel; K. Marx, F. Engels, G. Plekhanov, V.I. Lenin; Leopold von Ranke and the positivists. The development of historical studies in the contemporary West: continental Europe; Britain; the USA. History in Russia and Eastern Europe. The historiography of selected countries of Asia in contemporary times. The historiography of Latin America and the Caribbean. History in ancient Africa: Egypt, etc. The pre-scientific historiography of Africa: oral history; the chronicles tradition of the Western Sudan, the East Coast, and Ethiopia. The syncretic historiography of colonial Africa: the amateur historians of West Africa - Carl Reindorf, Samuel Johnson, U. Egharevba, etc; the amateur historians of East Africa - Sir Apolo Kagga, Joseph Nyakatura, F.X. Lwamgira, etc. Colonial historiography. The emergence of the scientific historiography of Africa: the contributions of the historians of Western Europe and North America, Russia and Eastern Europe, Asia, Latin America, and the Caribbean. The pioneer African scientific historians: K. Onwuka Dike, Boubou Hama, A. Hampate Ba, Cheikh Anta Diop, Joseph Ki-Zerbo, T. Obenga, D.T. Niane, E. Mveng, J.F. Ade Ajayi, A. Adu Boahen, Tadesse Tamrat, B.A. Ogot, Semakula Kiwanuka, I.N. Kimambo, etc. The infrastructure of African

historiography: past and present. New directions in the historiography of Africa.

HIST 412: Studies in the African Diaspora and Pan-Africanism (45/0: CF 3.0) Y4S1

Introduction to Diaspora Studies. Africans in the classical world - the state of race relations. The African Diaspora in Asia -the race question. The African presence in medieval Europe. The African Diaspora in the Western hemisphere: territorial dimensions; racism. The symbolism of Haiti. Africans in modern Europe including Russia. Liberation ideologies of the nineteenth century - emigrationism, separatism, and integrationism in the United States. African Americans in the Reconstruction period. The emergence of an African identity and African consciousness in the Diaspora - the case of the United States and the Caribbean. The race question in the age of the 'New Imperialism'. Jim Crowism in the United States. Ideas of Afro-American self improvement: Booker T. Washington versus W.E.B. Du Bois. The Harlem Renaissance. Colonialism and racism in Africa and the Caribbean. The Pan-Africanist Movement: origins; outstanding personalities; African students in the USA and the metropolises in the colonial period; the symbolism of Ethiopia; the Pan-Africanist Congresses. The anti-colonial struggle in Africa and the Caribbean and Pan-African solidarity. The Civil Rights Movement in the United States. The Black Power Movement in the United States, the Caribbean, etc. Pan-Africanism and the anti-apartheid struggle in South Africa. Current trends in Pan-Africanism and the Pan-Africanist Movement. Discernible tendencies for the future. Ancient and medieval systems of government: Asia; Classical Antiquity; the monarchies of medieval Europe - case studies; the pre-Columbian civilizations of America; classical forms of Islamic theocracy. Modern and contemporary systems of government: absolutism; constitutional monarchies; dominions; republicanism; federalism; socialism and communism; Islamic regimes, etc. Varieties of governance in Africa - from Pharaonic times to the eve of colonial rule. Typology of government in independent Africa: monarchies; one-party states; military regimes; multi-partyism, etc. Colonial administrative structures and policies in Kenya. Political parties of colonial and post-colonial Kenya. Constitutionalism in Kenya: the colonial period;

the Independence Constitution; post independence changes.

HIST 413: Research Seminar (15/30: CF 2.0) Y4S1

Presentation of research findings in a History-workshop type setting. Discussions based on prescribed readings relevant to each student's research project.

HIST 414: History of Political Thought (45/0: CF 3.0) Y4S1

Studying political theorists in context. Politics and religion in ancient Egypt. Politics and law in Mesopotamia. Political ideas in the early history of Zoroastrianism, Buddhism and Confucianism. Political philosophers of Classical Antiquity: Plato; Aristotle; Cicero. Medieval political thought: St Augustine; Thomas Aquinas; Marsiglio of Padua. The classical Islamic hadith tradition. Theorists of the state: Niccolò Machiavelli; Jean Bodin. Political ideas of the Protestant Reformation. The Social Contract theorists: Thomas Hobbes; John Locke; J-J Rousseau and the philosophes; Edmund Burke; John Stuart Mill. Politics in the Hegelian system. Liberalism: definitions; historical overview. Utopian Socialism: Saint-Simon, Charles Fourier, Robert Owen. The classics of Marxism: Karl Marx, F Engels, V I Lenin. Later Marxian leaders: Joseph Stalin, Leon Trotsky, Mao Zedong, Kim Il Sung, Fidel Castro. Social democracy. Fascism and related doctrines. Politics and nationalism in Asia: Sun YatSen, Mahatma Gandhi, Jawaharlal Nehru. Revolutionary Islamic thought: Ayatollah Ruhollah Khomeini, Ayatollah Murtaza Mutahhari, and the Iranian Revolution. The socio-political thought of proto-colonial and early colonial Africa. The political views of African leaders of the independence epoch and after: Gamal Abd al-Nasser, Patrice Emery Lumumba, Kwame Nkrumah, Jomo Kenyatta, Sekou Toure, Leopold Sedar Senghor, Julius Nyerere, Amílcar Cabral, Agostinho Neto, Samora Moises Machel, Muammar Kadhafi, Nelson Mandela et al.

HIST 415: Imperial and Commonwealth History (45/0: CF 3.0) Y4S1

Background to empire: England in the Age of Exploration. Colonization in the seventeenth century: North America; West African trading posts; India. Eighteenth-century imperial rivalries: the Seven Years

War. The American War of Independence. The French Revolutionary and Napoleonic Wars. The Industrial Revolution, anti-slavery, and the growth of empire. The 'New Imperialism' and British expansion in Africa, Asia, and the Pacific Islands. The First World War and the Mandate System: Palestine; Germany's African colonies. The empire at its zenith: territorial extent; administrative and political system, etc. The decline of empire - an overview. The Commonwealth: definitions. Emergence of dominions: the Durham Report, 1839; Canada, 1867; Australia, 1901; New Zealand, 1907; South Africa, 1910. Further developments in the dominions: the First World War and the Versailles Peace Treaty, 1919; the Treaty of Lausanne, 1923; the Imperial Conference, 1926; the Statute of Westminster, 1931. The British Empire and Commonwealth in the Second World War. The end of empire: the Indian subcontinent; Burma; Palestine; Ireland; the East Indies; the West Indies; Africa; Hong Kong, etc. The Commonwealth of Nations in the international relations system.

HIST 416: Perspectives in Africa's International Relations (45/0: CF 3.0) Y4S1

The historian in the study of international relations. General international relations theory and its critique: materialist explanations of imperialism and war; idealism; realism; behaviouralism; the opposed-systems approach; transnationalism and interdependence; neorealism; the alternative world futures approach, etc. Theoretical approaches in the study of Africa's international relations: applications; problems; prospects. The late nineteenth-century Partition of Africa as an international relations problem. Colonial Africa in world politics: the First World War and its aftermath; the case of Ethiopia and Liberia; the Second World War and its consequences. Pan-Africanism, Africa's decolonization, and the Cold War. The liberation of Southern Africa in global politics. Africa in the international relations system of the post-Cold War period.

HIST 417: History of China (45/0: CF 3.0) Y4S1

Sources of Chinese history. Prehistory. Ancient China: the Shang and Zhou dynasties. Origins of Chinese writing. Confucianism and Taoism. The emergence of centralized states - the Qin and Han dynasties. China's Golden Age. The spread of Buddhism. The Mongol

conquest. The Tang dynasty. The Sung dynasty. The development of feudalism. Ming society: commercial expansion; cultural innovations. Manchu rule. The Qing empire. The arrival of Western colonialism and Chinese resistance. Republicanism, warlordism, nationalism and the revolutionary movement: 1920s–40s. The proclamation of the People's Republic of China. Development strategies: the Great Leap Forward; the Great Proletarian Cultural Revolution; the Four Modernizations, and after. Land and maritime territorial issues. The People's Republic of China as a global power.

HIST 418: Disease and Society in Contemporary Africa (45/0: CF 3.0) Y4S1

Food and the health conditions of Africans under colonial rule. The HIV/AIDS pandemic: origins; spread; impact and consequences. Other pandemics and natural disasters in contemporary Africa. Health care in independent Kenya: conventional medical care; indigenous practices; alternative medicine.

HIST 419: Guided Reading (30/30: CF 3.0) Y4S1

Guided study of at least four selected topics of special interest based on at least five prescribed texts.

HIST 421: Africa in World History: Conceptual Issues (45/0: 3.0 CF) Y4S2

Interpretations of the scope of world history: the authors of Classical Antiquity; medieval European writers; Ibn Khaldun; Renaissance thought; G.W.F. Hegel and other modern European thinkers; contemporary Western approaches - the *Cambridge Modern History*, Oswald Spengler, A.J. Toynbee, etc. The view from Asia - Jawaharlal Nehru's *Glimpses of World History*, etc. The periodization of world history and Africa: Western conceptions; the historical materialist approach; the case of Africa-Endre Sik and his critics, *The Cambridge History of Africa*, the (UNESCO) *General History of Africa*, etc. The Afrocentric view of the place of Africa in world history – the evolution of a concept. Prospects for the reintegration of Africa into world-history studies: the (UNESCO) *History of Humanity* project, etc.

HIST 422: Global Studies in Conflict and Conflict Resolution (45/0: CF 3.0) Y4S2

The art of war in the twentieth century: conventional warfare - the First and Second World Wars, the Arab-Israeli wars, etc; guerrilla warfare - the Latin American experience; people's war - China, Vietnam, etc. The development of military technology: conventional arms; chemical and biological weapons; atomic and nuclear armaments; Star Wars programmes, etc. The Cold War military alliances: NATO; the Warsaw Pact; CENTO; SEATO, etc. The Military Industrial Complex and the arms race. Espionage, intelligence, and international terrorism. The idea of peace in history: the ancient world; the world religions; varieties of peace-making in pre-colonial Africa; peace in the philosophical and social thought of modern and contemporary times. The concept of a world peace system: the Congress System of nineteenth-century Europe; the League of Nations; the United Nations Organization. International and regional organizations in the search for security: the Non-Aligned Movement; the Commonwealth; the Organization of African Unity; the League of Arab States, etc. Towards a nuclear-free world: the politics and diplomacy of disarmament. The prospects of peace in the post-Cold War world.

HIST 423: Research Project (0/120: CF 4.0) Y4S2

Supervised writing up of the research project of approximately 10,000 words, excluding the footnotes, appendices and bibliography. Submission of the research project in the standard departmental format. Where applicable transcription of oral interviews to be deposited with the research archive of the department. Research project to be examined on content, organization and documentation.

HIST 424: Historical Studies in International Organizations (45/0: CF 3.0) Y4S2

The state and the international organization as alternative actors in the world system. Classifications: inter-governmental organizations (IGOs); non-governmental organizations (NGOs). Chronology of international organizations. Global IGOs: precursors - the Hague System, the League of Nations; the UNO – historical retrospect and international agreements. Regional IGOs: case studies - the European Union, Organization of American States, the League of Arab

States, Organization of the Islamic Conference. The quest for African Unity: from the OAU to the African Union. Criteria for evaluating IGOs. NGOs: historical survey. The changing roles of transnational organizations in the post-Cold War era.

HIST 425: History of Japan (45/0: CF 3.0) Y4S2

Historical sources. Origins of the Japanese. Early Japan. The Taika reform. The Yamato state. Shintoism. Chinese and Korean influence. Buddhism. The Nara and Heian periods. Japanese feudalism. The Kamakura Shogunate and the rise of the Samurai. The Ashikaga. Decline of the central government; civil wars. The Nobunaga and Heideyoshi Shogun. National unification. Japan and the West: early contacts. Tokugawa Japan. The Western intrusion of the mid-nineteenth century. The Meiji Restoration. The second phase of modernization and militarism. Japan and the Manchuria crisis. Japan in the Second World War. The Allied occupation. Emergence of Japan as an economic superpower. National politics. Japan in regional and global politics. Japan's relations with Africa. Prospects for the twenty-first century.

HIST 426: History of India (45/0: CF 3.0) Y4S2

Sources of Indian history. Prehistory and early culture. The Dravidians. Aryan conquest. The Vedic period. Hinduism and the caste system. Jainism and Buddhism. The epic age. The Mauryan empire. The age of the Guptas. The post-Mauryan period. The culture and science of ancient India. The Muslim invasion. The evolution of feudalism. The Mughal empire. Rise and growth of the Maratha power. The Sikhs. India in the age of European expansion. Anglo-French rivalry. East India Company rule. The revolt of 1857. The British Raj. Emigration in the nineteenth century and the emergence of the Indian Diaspora. The nationalist movement. India in the Second World War. The end of British rule and the partition of the subcontinent. Independent India's economy: the Green Revolution; industrialization, etc. Foreign relations: the neighbours; the Non-Aligned Movement; Africa; India in global politics. Prospects for the twenty-first century.

HIST 427: The International Working Class Movement (45/0: CF 3.0) Y4S2

Workers before the Industrial Revolution. Emergence of the wage labour system. The Industrial Revolution and early workers' organizations. Workers in the socio-political, ideological and labour movements of the first half of the nineteenth century: case studies. The First International. The Paris Commune, 1871. The working class in the age of the 'New Imperialism'. The Second International. The working class in the Russian Revolutions: 1905-7; February and October 1917. The First World War and its aftermath. The Third International. The working class and the labour movement in the inter-war years: the Soviet Union; Western Europe; the USA. Workers in World War II. The politics of labour in the Cold War. The working class under socialism - theory and practice since World War II. Developments in the working class and labour movements of the Western world from the 1960s. Workers in colonialism, nationalism and independence: theoretical and historiographical perspectives from Africa, Asia and Latin America.

HIST 428: Armed Conflicts in Independent Africa (45/0: 3.0 CF) Y4S2

Exploration of the historical background, causes, course and consequences of armed conflict in post-colonial Africa. Evaluation of the methods employed in the resolution of specific conflicts.

Africa.

KISWAHILI

Mpangilio wa Kozi wa Tuzo

MWAKA WA 1 MUHULA WA 1 KOZI ZA KIMSINGI

KODI	JINA	MH	MJ	UZ
KISW111	Misingi ya Lugha na Isimu	45	0	3.0
KISW112	Historia na Maendeleo ya Kiswahili	45	0	3.0
JUMLA		90	0	6.0

MWAKA WA 1 MUHULA WA 2

KISW 121	Misingi ya Fasihi	45	0	3.0
KISW122	Stadi za Mawasiliano na Matumizi ya Lugha katika Kiswahili	45	0	3.0
JUMLA		90	0	6.0

MWAKA WA 2 MUHULA WA 1

KISW 211	Fonetiki na Fonolojia	45	0	3.0
KISW 212	Nadharia za Uhakiki wa Fasihi	45	0	3.0
JUMLA		90	0	6.0

MWAKA WA 2 MUHULA WA 2

KISW 221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 222	Tanzu za Fasihi Simulizi	45	0	3.0
JUMLA		90	0	6.0

MWAKA WA 3 MUHULA WA 1 KOZI ZA KIMSINGI

KISW 311	Mbinu za Utafiti	45	0	3.0
KISW 312	Hadithi Fupi na Riwaya katika Kiswahili	45	0	3.0
KISW 313	Mofolojia na Mofonemiki	45	0	3.0
JUMLA		135	0	9.0

(ZA KUTEUA)

KISW 314	Uchanganuzi wa Usemi na Matini	45	0	3.0

KISW 315	Mtindo na Elimumtindo	45	0	3.0
KISW 316	Isimu tumikizi	45	0	3.0
JUMLA		135	0	9.0
KISW 317	Uandishi Bunifu	45	0	3.0
KISW 318	Upataji wa Lugha	45	0	3.0
KISW 319	Hali ya Sasa ya Kiswahili	45	0	3.0
JUMLA		135	0	9.0

MWAKA WA 3 MUHULA WA 2 ZA KIMSINGI

KISW 321	Fasihi ya Watoto	0	120	4.0
KISW 322	Fasihi ya Kale ya Kiswahili	45	0	3.0
KISW 323	Sintaksi ya Kiswahili	45	0	3.0
JUMLA		90	120	10.0

(ZA KUTEUA)

KISW 324	Ukalimani na Tafsiri	45	0	3.0
KISW 325	Lugha na Jinsia	45	0	3.0
KISW 326	Mradi wa Utafiti	45	0	3.0
KISW 328	Lugha za Kibantu	45	0	3.0
KISW 329	Mbinu za Uhariri	45	0	3.0
JUMLA		270	0	18.0

MWAKA WA 4 MUHULA WA 1 (KOZI ZA KIMSINGI)

KISW 411	Isimujamii	45	0	3.0
KISW 412	Historia na Maendeleo ya Ushairi wa Kiswahili	45	0	3.0
KISW 413	Isimu Historia na Linganishi	45	0	3.0
KISW 414	Fasihi Tafsiriwa	45	0	3.0
JUMLA		180	0	12.0

(ZA KUTEUA)

KISW 415	Isimu Nafsia	45	0	3.0
KISW 416	Uandishi bunifu tekelezi	45	0	3.0
KISW 417	Fonetiki Zamifu	45	0	3.0
KISW 418	Tathmini ya Vifaa vya Ufundishaji wa Kiswahili	45	0	3.0
KISW 419	Lugha barani Afrika	45	0	3.0
JUMLA		225	120	23.0

MWAKA WA 4 MUHULA WA 2 KOZI ZA KIMSINGI)

KISW 421	Fasihi Linganishi	45	0	3.0
KISW 422	Semantiki na Pragmatiki	45	0	3.0
KISW 423	Tamthilia ya Kiswahili	45	0	3.0
KISW 424	Elimulahaja	45	0	3.0
TOTAL		180	0	12.0

(ZA KUTEUA)

KISW 425	Othografia Leksikolojia na Leksikografia	45	0	3.0
KISW 426	Sanaa ya Maigizo	0	90	3.0
KISW 427	Historia na Maendeleo ya Uhakiki wa Fasihi ya Kiswahili	45	0	3.0
KISW 428	Lugha na Falsafa	45	0	3.0
KISW 429	Semina (ya msingi 3.3.1.1, kuteua 3.3.2.2.)	15	30	2.0
TOTAL		150	120	14.0

Ufafanuzi wa Kazi**KISW 111: Misingi ya Lugha na Isimu**

Lugha kwa ujumla: tofauti baina ya lugha ya mwanadamu na mawasiliano mengine ya wanyama, tofauti katika ya mfumo wa lugha ya kimaandishi, mazungumzo na ishara. Asili ya lugha na nadharia za

lugha. Umuhimu wa lugha katika jamii. Fasili ya lugha na sifa zake. Upeo wa mtaala wa isimu na uhusiano wake na taaluma nyingine. Matawi ya isimu. Fasili na ufafanuzi wa istilahi: Fonetiki, Fonolojia, Mofolojia, Sintaksia, Semantiki, Pragmatiki na matini (usemi). Mapitio ya mwingilianowamatawi ya isimu kama vile Isimu historia, linganishi, Isimujamii na Isimunafsia, n.k.

KISW 112: Historia na Maendeleo ya Kiswahili

Nadharia tete mbalimbali kuhusu asili na chimbuko la Waswahili na Kiswahili. Maandishi ya kwanza na fasihi awali ya kiswahili. Kuenea kwa Kiswahili na msambao wa lahaja za Kiswahili katika Mwambao wa Afrika Mashariki. Sababu mbalimbali zilizothiri kuenea kwa Kiswahili katika vipindi mbalimbali (kabla na baada ya ukoloni). Mchakato wa Usanifishaji wa Kiswahili. Nafasi ya Kiswahili katika mataifa huru ya Afrika Masharikina ulimwenguni. Utafiti wa nyanjani (ziara) katika maeneo asilia ya Waswahili katika mwambao wa Afrika Mashariki.

KISW 121: Misingi ya Fasihi

Misingi ya nadharia na mbinu za uhakiki wa fasihi andishi ya Kiswahili. Uchunguzi wa nyanja za fasihi ya Kiswahili kama vile riwaya, tamthilia, ushairi, hadithi fupi wasifu, tawasifu nk. utangulizi wa fasihi simulizi ya Kiswahili na nyanja zake kama vile: semi, hadithi, ngano na masimulizi na nafasi yake katika utamaduni wa Waswahili fasihi simulizi na ulumbi wa kisanii katika lugha za Kiafrika.

KISW 122: Stadi za Mawasiliano na Matumizi ya Lugha

Ufafanuzi wa dhana muhimu; lugha, mawasiliano na stadi za mawasiliano; Dhima ya mawasiliano; Aina za mawasiliano; Mchakato wa mawasiliano; Lugha ya Kiswahili kama nyenzo ya mawasiliano; Mawasiliano miondoko. Historia na Maendeleo ya Mifumo ya Mawasiliano; Mifumo ya kale ya mawasiliano; Mifumo ya kisasa ya mawasiliano. Stadi za Lugha; Stadi ya kusikiliza (usikivu na kuelewa); Stadi ya kuongea; Stadi ya kusoma. Mbinu za kusoma; Stadi ya kuandika: Uakifishaji, Hatua za uandishi, Urejeleaji na udondoaji, Aina za uandishi. Mawasiliano na Nyanja Zingine; Vikwazo katika mawasiliano; Sajili na tafsiri katika mawasiliano.

KISW 211: Fonetiki na Fonolojia

Fonetiki: viungo vinavyotumika katika utoaji sauti, Ala za sauti, mahali na jinsi au namna ya kutamka sauti za lugha. Matawi ya fonetiki (fonetiki tamkaji, fonetiki sikizi na fonetiki mawimbi) Ishara za Abjadi ya Kimataifa ya kifonetiki (IPA) na unukuzi wa kifonetiki: mazoezi katika utamkaji wa sauti mahsusi na pia katika unukuzi na utambuzi wa ishara za kifonetiki . Fonolojia: baadhi ya fasili na migogoro. Dhana ya fonimu na mikabala ya fonimu k.v. fonimu kama uhalisia wa kifonetiki, fonimu kama uhalisia wa kisaikolojia na fonimu kama uhalisia wa kifonolojia. Dhana ya sifa bainifu. Uchanganuzi na utambulisho wa fonimu kulingana na mikabala tofauti (jozi ndogo, mgao kamilishani, ufanano wa kifonetiki, umbo huru, usawazisho, usawazishano changamano). Silabi na sifa za kiarudhi (kiimbo, toni, kidatu, mkazo, wa kifonolojia- n.k.

KISW 212: Nadharia za Uhakiki wa Fasihi

Ufafanuzi wa dhana muhimu; Uhusiano wa Fasihi na Jamii; Umuhimu wa nadharia; Aina za nadharia; Sifa za nadharia; Shabaha za uhakiki; Mipaka ya uhakiki; Aina za uhakiki; Nadharia na utafiti katika fasihi andishi. Matapo ya Fasihi: Urasimi; Ulimbwende; Uhalisia; Usasa na Usasaleo. Nadharia za uhakiki na uhakiki: Udhanaishi/utamaushi; Ufeministi; Umuundo; Umaumbo, Umaksi; Uhalisia Ajabu. Matumizi ya nadharia hizi katika kuchambua kazi teule za Kiswahili kwa kuzingatia.

KISW 221: Misingi ya Sarufi ya Kiswahili

Maana ya sarufi, historia ya sarufi Nadharia za kimapokeo na za kisasa kuhusu sarufi ya kiswahili. Vipashio vya lugha : Sauti, silabi, maneno, virai, vishazi na sentensi katika Kiswahili. Viwango vya kisarufi : sarufi matamshi. maumbo, miundo na sarufi maana. Mfumo wa ngeli katika Kiswahili na upatanishi wa kisarufi. Njeo na hali. Unyambuaji na uambishaji wa maneno.

KISW 222: Hadithi Fupi na Riwaya ya Kiswahili

Mapitio ya tanzu za maandishi ya nathari katika Kiswahili kama vile Insha, hekaya, novella na riwaya kwa kutumia mifano mahususi kupambanua sifa za kila mojawapo. Uchunguzi wa maendeleo ya kihistoria ya tanzu za maandishi ya nathari katika Kiswahili,

maudhui, miundo, wahusika na uhusika wao, matumizi ya lugha na sifa nyingine za mtindo. Uchunganuzi wa kazi za waandishi wa riwaya za Kiswahili kama vile S. Robert, S.A Mohammed, E., Kezilahabi, M.S. Mohammed, M.S. Abdullah nk

KISW 311: Mbinu za Utafiti

Msingi wa hali na umuhimu wa utafiti. Uainishaji wa utafiti. Istilahi za kimsingi katika utafiti. Mbinu za ukusanyaji deta (hojaji, mahojiano, Utazamaji) na uchanganuzi wa deta zinazotumika katika taaluma za fasihi, lugha na isimu. Vipengele vya pendekezo la utafiti Kutambua mada/tatizo la utafiti, kufanya utafiti wa nyanjani/ maktabani, mbinu za kuandika ripoti na kuwasilisha ripoti. Ihusishe utafiti halisi wa nyanjani-chuoni.

KISW 312: Tanzu za Fasihi Simulizi

Ufafanuzi wa dhana muhimu; nadharia kuhusu asili ya fasihi simulizi; Ushahidi kuwa mzazi wa Fasihi Andishi ni Fasihi Simulizi; Fanani, Hadhira, Mukadha na Utendaji kama msingi wa Fasihi Simulizi; Dhima ya Fasihi Simulizi; Uhusiano wa Fasihi na jamii. Mijadala kuhusu uainishaji wa fasihi simulizi; Tanzu za Fasihi Simulizi; vigezo vya uainishaji; Matatizo ya kuainisha Fasihi Simulizi; mifanyiko ya kitanzu; Tanzu na vipera vya Fasihi Simulizi: Semi banifu, Ngano, Maigizo na Ushairi. Athari ya TEHAMA kwa Fasihi Simulizi katika. Utafiti wa Fasihi Simulizi. Fani na Maudhui katika tanzu za fasihi simulizi. Uhakiki wa Fasihi Simulizi Kinadharia: Uamilifu; Ufeministi; Mwingilianomatini; Umuundo, n.k.

KISW 313: Fasihi ya Kale ya Kiswahili

Tanzu za fasihi simulizi katika Kiswahili na /umuhimu/nafasa yao katika fasihi ya kale ya Kiswahili. Desturi za nyimbo, shairi na tenzi miongoni mwa Waswahili. Maendeleo ya ushairi wa Kiswahili kabla ya Karne ya ishirini. Asili ya Ushairi wa Kiswahili na maandishi mengine ya kale. Athari za vielelezo vya kigeni kama vile Qasida kwa Ushairi wa Kiswahili. Sheria za kiarudhi katika ushairi wa Kiswahili. Uchambuzi na uhakiki wa muundo na mtindo, matumizi ya lugha, ploti na maudhui katika ushairi wa kale wa washairi kama vile Muyaka, Liyongo, Nguvumali, Nassir, Kijumwa, Ali Koti, Mwanakupona Mshamu nk.

KISW 314: Mofolojia na Mofofonemiki

Fasili ya mofolojiana mofofonemiki, dhana ya neno : mitizamo, aina na uamilifu wake. Mofolojia na masharti ya uchanganuzi wa datakimaelezo. Dhana za mofu, mofimu na alomofu. Kubainisha na kutenganisha mofu, mofimu na alomofu kwa kulinganisha maumbo. Dhana za viambishi, mizizi na mashina, tangamano irabu, uradidi n.k. Mifanyiko ya kimofolojia na kimofofonemiki katika Kiswahili.

KISW 315: Uchanganuzi wa Usemi na Matini

Fasili ya istilahi usemi, matini na uchanganuzi. Uainishaji wa matini : kitaaluma, kiuamilifu, kimtindo n.k. Majukumu ya matini. Uchanganuzi usemi kama taaluma ya kiisimu na kifasihi. Mikabala ya kinadharia ya usemi ya kimuundo na kiamilifu. Tofauti kati ya matini semwa na matini andikwa kwa upande wa miundo yao ya kimatini na kusemi. Hali ya kiisimu ya usemi: mukadha, hali na matini. Matini na muwala. Mbinu za kuchanganua matini semwa na andikwa za Kiswahili.

KISW 316: Mtindo na Elimumtindo

Fasili ya istilahi mtindo na elimumtindo. Mapitio ya mikabala mbalimbali ya mtindo Tofauti kati ya mtindo na rejeta Utathmini wa mitindo tofauti katika nyanja tofauti kama vile riwaya, tamthilia na ushairi. Uchambuzi wa sifa mbalimbali za mtindo kwa kurejelea kazi za fasihi za waandishi tofauti wa Kiswahili

KISW 317: Isimu Tumikizi

Fasili na mawanda/upeo wa isimu-tumikizi. Isimu tumikizi kama taaluma ya kiusomi. Mambo ya kisaikolojia na kibayolojia katika upataji lugha. Ufundishaji wa lugha ya pili : nadharia na mitazamo. Silabasi ya lugha ya Kiswahili. Utathimini wa lugha. Uzalishaji wa vifaa vya kufundishia kiswahili.

KISW 318 : Uandishi Bunifu

Kaida za kifasihi katika uandishi bunifu. Mwongozo wa jinsi ya kujifunza uandishi bunifu. Tathmini ya maumbo ya riwaya, tamthilia, nathari, tawasifu, hadithi fupi na tanzu nyingine za fasihi. Wanafunzi watafanya majaribio ya kuandika kazi za kifasihi kama vile riwaya, tamthilia, ushairi, wasifu na hadithi fupi nk. Kila mwanafunzi atahitajika kuandaa mradi wa

maandishi ya kubuni katika utanzu wowote wa fasihi. Mradi huu utasimamiwa na kutahiniwa na mhadhiri wa kozi hii.

KISW 319A: Upataji Lugha

Kujifunza lugha na upataji lugha. Ulinganifu wa upataji wa lugha ya kwanza na upataji wa lugha ya pili. Mikabala ya kinadharia: Uchambuzi linganishikiakili uchambuzi makosa. Kuibuka kwa nadharia za kihulka. Mambo yanayoathiri upataji lugha: mtaala katika uchanganuzi wa utendaji na jinsi ya kufasiri ushahidi wa maingiliano ya lugha (interlanguage). Mbinu za ukusanyaji na uchanganuzi wa data kaitika mtaala wa upataji wa lugha ya pili (SLA). Vielelezo vya kisasa katika kueleza vipengele mbalimbali vya upataji wa lugha ya pili (SLA)

KISW 319B: Mtaala wa Kiswahili

Hali ya sasa ya mtaala wa Kiswahili. Kiswahili kama lugha ya taifa na lugha rasmi katika mataifa ya Afrika mashariki. Kiswahili kama lugha sambazi kama jumuiya ya kimataifa. Kiswahili katika vyombo vya habari vya humu nchini na kimataifa. Kiswahili kama somo na ufundwaji wake katika shule za msingi, upili, vyuo vikuu vya Afrika Mashariki na taasisi nyingine za elimu ulimwenguni. Matatizo yanayokumba Kiswahili kama lugha na pia kama somo wakati wa sasa. Mustakabali wa mtaala wa Kiswahili.

KISW 321: Mradi wa Utafiti

Kwa ruhusa ya idara, wanafunzi ambao wameonyesha kipawa cha usomi wa kitaalam wanaweza kuruhusiwa kufanya mradi wa utafiti katika kipengele chochote cha cha fasihi, isimu au lugha katika Kiswahili. Idara itateua msimamizi kwa kila mwanafunzi, mbali na kushirikisha mada, mtindo na uwasilishaji wa ripoti.

KISW 322: Nadharia na Mbinu za Utafiti katika Fasihi Simulizi

Kozi hii ni mwendelezo wa kozi ya KISW 312. Utafiti nyanjani katika fasihi simulizi; historia na maendeleo ya utafiti wa fasihi simulizi ya Kiafrika na ile ya Kiswahili maandalizi ya utafiti katika fasihi simulizi – makala dhanishi na pendekezo la utafiti; mbinu za utafiti wa nyanjani: miktadha ya utendaji, uwasilishaji wa tanzu mbalimbali na fanani na uhawilishaji; uchanganuzi wa data na uwasilishaji wa matokeo – mchango wa

nadharia za uhakiki na mikabala ya utafiti wa kiuthamano katika kuhakiki fasihi simulizi; uandaaji wa ripoti; Maadili na Changamoto katika Utafiti wa Fasihi Simulizi; Wanafunzi kufanya utafiti miongoni mwa jamii ya Waswahili kwa siku zisizopungua tano na kuandika ripoti itakayobeba alama 20 za tamrini. Maswali yote kwenye mtihani wa mwisho yahuzishe tajiriba ya utafiti nyanjani.

KISW 323: Sintaksia ya Kiswahili

Fasili na mawanda ya sintaksia Dhana za kimsingi za sintaksia: kategoria za sintaksia, umahiri wa kisarufi na wa kimawasiliano. Nadharia za sintaksia : sarufi mapokeo, uchanganuzi kiambajengo kifuasi, sarufi miundo, sarufi geuzumbo. Upatanifu na umilikifu. Dhima ya leksia. Mpangilio wa maneno katika tungo ya Kiswahili. Aina za tungo : virai, vishazi na sentensi. Aina za sentensi katika Kiswahili kiuamilifu na kimuundo. Makosa ya kisintaksia katika Kiswahili.

KISW 324: Fasihi ya Watoto

Fasili ya fasihi ya watoto. Fasihi ya watoto katika Kiswahili. Mapitio ya kijumla ya fasihi ya watoto iliyopo sasa katika tanzu zote za fasihi. Mitazamo mbalimbali ya uandishi wa watoto. Chanzo cha fasihi ya watoto (km fasihi simulizi na ushairi). Fasihi simulizi na fasihi ya watoto. Mahali na nafasi ya fasihi ya watoto katika fasihi na jamii. Uchambuzi wa kazi mabimbali za fasihi za watoto. Wanafunzi kutunga kazi yoyote ya fasihi ya watoto.

KISW 325: Ukalimani na Tafsiri

Ufafanuzi wa Ukalimani, Ukafsi, Ufasili na Tafsiri; Nadharia ya Ukalimani; Nduni za Mkalimani; Aina za Ukalimani; Tofauti na mfanano kati ya Ukalimani na Tafsiri; Umuhimu wa Ukalimani; Uhakiki wa Ukalimani. Tafsiri; Historia ya tafsiri; Aina za tafsiri; Umuhimu wa tafsiri. Uhusiano wa Ukalimani/Tafsiri na Taaluma Mbalimbali; Matawi ya Isimu: Isimu linganishi, Isimu Jamii, Isimu Maana, Isimu Amali, Elimu Mitindo, Isimu Kokotozi, Isimu Tumikizi, Isimu Razini na Isimu Mtandao; Taaluma nyinginezo: Mantiki, Falsafa, Stadi za Mawasiliano, Uundaji wa Istilahi na Uchanganuzi Hakiki wa Usemi. Nadharia ya tafsiri; Nadharia ya Isimu Linganishi; Nadharia ya Isimu Jamii; Nadharia ya Mawasiliano. Mchakato wa tafsiri; Uainishaji wa Matini za Kufasiri; Mikabala ya uainishaji matini; hatua za kufasiri; Zana za Tafsiri;

Vikwazo katika kufasiri; Kuhakiki tafsiri mbalimbali.

KISW 326: Lugha na Jinsia

Dhana ya jinsia na dhana ya Uana, tofauti kati ya Jinsia na Uana, Tafi na nadharia za kiisimujamii zinaoongoza usomi wa jinsia na lugha; Wasomi (Robin Lakoff, Zimmermann & West, Fishman, Deborah Tannen, Deborah Cameron, Jennifer Coates). Maswala ya jinsia na lugha katika matumizi- darasani/elimu, vitabu vya watoto, magazeti; taasisi; Jinsia katika mazungumoz ya kawaida (uchanganuzi)

KISW 329A: Lugha za Kibantu

Msingi wa historia ya uainishaji wa lugha za Kibantu - (isimu, isimujamii, kinasaba na kijiografia). Uchanganuzi wa michakato mikuu ya kifonolojia na kimofolojia katika lugha za kibantu. Miundo ya kisintaksia na kisemantiki ya lugha za kibantu na umuhimu wake katika uundaji upya wa Bantu-mame (Proto-Bantu). Athari za lugha zisizo za kibantu kwa lugha za kibantu.

KISW 329B: Mbinu za Uhariri

Mhariri: sifa zake, aina na majukumu. Kupata na kuteua miswada, kuikuza na kuipiga chapa. Vifaa vya mhariri: Kuhariri kwa mpigajichapa, kusahihisha prufu na kuunganisha na kuchapisha. Kufanya kazi na mwandishi; mbinu za kuandika mashairi, riwaya, tamthilia, vitabu vya shule vya kusoma, hadithi fupi na vitabu vya watoto. Kuhariri vitabu vya marejeo, mwanzo, matini na kazi ya mwisho. Mitindo ya kudondoa. Kuhariri jarida la kitaaluma na maswala yanayohusiana nayo. Uhariri wa magazeti na matatizo yanayohusiana na hilo. Msingi wa mchakato wa uzalishaji na mikakati ya uuzaji. Mazingira ya uhariri

KISW 411: Isimujamii

Lugha na Jamii: Isimujamii na taaluma nyingine zianohusiana. Dhana za kimsingi na mawanda ya Isimujamii. Tofauti wa lugha, Lugha na Lahaja; lahaja za kijiografia na lahaja za kijamii. Aina na majukumu ya lugha km lugha ya ya mawasiliano ya kikundi, lugha ya mawasiliano mapana, lugha sambazi, Pijini na Krioli. Uwili lugha na wingilugha, Diglosia, mipango na sera ya lugha za kitaifa na kimaeneo. Uhusiano kati ya matumizi ya lugha na miktadha ya kijamii, Lugha na maingiliano ya binadamu.

Ethnografia ya mawasiliano. Usuli wa kihistoria na hali ya kiisimujamii nchini Kenya na afrika mashariki Mielekeo ya lugha, kuimarisha na kuhamisha lugha, tofauti wa lugha, lugha mwiko. Uhusiano wa maswala hayo yote ya kiisimujamii katika lugha ya kiswahili na lugha nyingine za Kiafrika. Kufa na kufufuliwa kwa lugha.

KISW 412: Historia na Mandeleo ya Ushairi wa Kiswahili

Sifa za kimaudhui na kiumbo za ushairi wa kisasa wa Kiswahili. Arudhi na kaida za kijadi katika ushairi wa kiswahili. Maendeleo ya kisasa katika ushairi wa Kiswahili kwa upande wa maudhui na umbo. Ulinganishi wa sifa za kimtindo kiisimu na kimaudhui katika ushairi wa kijadi na mashairi ya kisasa. Mapitio na uchanganuzi kuhakiki wa kazi za washairi kama vile S. Robert, M. Mnyampala, K.A. Abedi, A. Nassir, A. Abdalla, S.A. Mohamed, E. Kezilahabi, M.N. Mulokozi, K.K. Kahigi, A. Mazrui n.k.

KISW 413: Isimu Historia na Linganishi

Mchakato wa mabadiliko ya lugha na sheria zinazotawala mtaala wa kihistoria linganishi kv. mabadiliko ya lugha kifonolojia, mofolojia sintaksia na kisemantiki . Analojia. Mbinu zinazotumika katika uainishaji wa lugha za ulimwengu kwa kulisitiza lugha za afrika kwa jumla na hususan za kenya. Uchunguzi wa kina wa mabadiliko ya kihistoria (dayakroniki) na ya wakati wa sasa (sinkroniki) ya lugha na jinsi mabadiliko haya yanavyodhihirika katika Kiswahili

KISW 414: Fasihi Tafsiriwa

Maana na aina za tafsiri; Nduni za mfasiri; Mjadala wa uhalali wa fasihi-tafsiriwa katika Kiswahili; Nafasi ya fasihi-tafsiriwa katika fasihi ya Kiswahili. Tafsiri Katika Fasihi; Nadharia za tafsiri katika fasihi; Upekee wa tafsiri katika fasihi; Tafsiri katika ushairi; Tafsiri ya tamthilia; Tafsiri ya kazi za kinathari (riwaya na hadithi fupi). Mbinu za Uhakiki wa Tafsiri; Ulinganishaji; Upimaji wa Uasilia; Upimaji wa Usumekaji; Upimaji wa Uelewekaji; Tafsiri Rejeshi. Uhakiki wa fasihi tafsiriwa kwa kulinganisha kazi chasili na lengwa (Vitabu viteule); Ubora wa fasihi-tafsiriwa; Fani: Msuko, mtindo, falsafa, madhari, wahuika na matumizi ya lugha; Maudhui: ujumbe, dhamira, maadili, itikadi;

Kinadharia. Uchambuzi wa kazi teule za Fasihi Tafsiriwa; ushairi, tamthilia, riwaya, hadithi fupi.

KISW 415: Isimu Nafsia

Upeo wa isimu nafsia. Misingi ya kibaolojia ya kupata/kurithi lugha. Majeraha katika ubongo – ya Broca, Wernicke na Thumulus. Nadharia za upataji za upataji lugha: Urazini, Chomsky, Ujerabati. Mbinu za upataji lugha ya kwanza. Lugha, ubongo na maarifa. Lugha na hulka na mielekeo. Hatua za upataji lugha kwa mtoto. Uhusiano wa lugha, fikira na jamii.

KISW 417: Fonetiki Zamifu

Mtaala wa kina kinadharia na kiutendaji wa sauti za lugha asilia, fonetiki akustika na fonetiki tamkizi. Vipande sauti katika mfumo wa sauti, mazoezi ya utamkaji halisi wa sauti mbalimbali na unukuzi wazo kwa kutumia ishara za alfabeti ya kimataifa ya fonetiki.

KISW 418: Tathmini ya Vifaa vya Ufundishaji wa Kiswahili

Tathmini ya matini za sarufi ya Kiswahili zilizochapishwa kwa mkabala wa nadharia za sarufi za kimapokeo na za kisasa hasa kazi kama vile za Steere, Madan, Simpson, Ashton, Polome, Broomfield. Kapinga, Mbaabu nk. Tathimini ya kazi mbalimbali za Kiswahili – kama vile kazi za E. Kezilahabi, R. Shaaban, A. S. Mohamed, R. Mohamed nk. Uhakiki wa mitaala ya Kiswahili kwa shule za msingi na za upili Uthimini wa vifaa vingine vya kufundishia kama vile redio, runinga, chati, kanda za sauti, n.k.

KISW 419: Lugha Barani Afrika

Msambao wa watu katika bara la Afrika- uchunguzi wa kitamaduni na kiisimu. Majukumu ya makundi ya lugha tofauti Afrika: Wabantu na Wanailoti, Wakushitiki na Wanailoti. Majukumu ya lugha za Kiafrika katika jukwaa la kitaifa na kimataifa. Msambao wa lugha kizi kimaeneo ya jiografia. Sifa za kimsingi za kiisimu za lugha hizi: sifa za kifonolojia, za kisemantiki za kileksia nk. Uchunguzi linganishi wa lugha mbalimbali za mojawapo ya vikundi hivi k.v. Wabantu Afrika Mashariki, Afrika Magharibi au Afrika Kusini.

KISW 421: Fasihi Linganishi

Dhana ya Fasihi Linganishi; Dhana za Kimsingi katika Fasihi Linganishi; Nadharia kuhusu mfanano katika fasihi; Mikururo ya mawazo: Ujerumani, Ufaransa, Marekani na Kilimwengu; Umuhimu wa Fasihi Linganishi. Ulinganishaji wa Fasihi Kitanzu; Fasihi Simulizi, Hadithi, Semi Banifu, Ushairi na Maigizo; Fasihi Andishi, Ushairi, Riwaya, Tamthilia na Hadithi fupi. Fasihi Linganishi Kifani; Kimaudhui; Kimikondo; Kijanibu; Kinadharia. Athari ya Fasihi Tafsiriwa katika Fasihi ya Kiswahili; Mchango wa Fasihi Tafsiriwa katika Fasihi ya Kiswahili; Ulinganishaji wa Fasihi Tafsiriwa na Fasihi Asilia; Matatizo ya kufasiri kazi za fasihi.

KISW 422: Semantiki na Pragmatiki

Fasili ya semantiki na pragmatiki. Nadharia za kimapokeo na za kisasa za maana. Nafasi ya semantiki katika nadharia za kiisimu. Maana katika lugha asilia na matokeo ya uchanganuzi wa kisemantiki katika nadharia ya isimu. Hali ya ishara za kiisimu: umbo fahiwa na umaanishaji. Uchanganuzi wa vijenzi, umaanisho na kasoro. Dhana za kimsingi za semantiki: utata, mahusiano ya maneo - polisemia, homonimi, sinonimi, hiponimia na antonimi. Vitendo neni, lugha kama chombo cha mawasiliano, uhusisho dhana awali, usonde na umaanishaji. Uhusiano kati ya nadharia ya semantiki, sintaksia na pragmatiki. Ukuaji na maendeleo ya pragmatiki: dhana awali nk.

KISW 423: Historia na Maendeleo ya Tamthilia ya Kiswahili

Maendeleo ya tamthilia ya Kiswahili kimaudhui na Ki-muundo, Nadharia za kidrama zilizoathiri tamthilia ya Kiswahili kama vile za Aristotle, za Shakespeare za kiepiki .Drama of the Absurd Drama ya nk. Maudhui, matumizi ya lugha wahusika na athari za kidrama mbali na sifa nyinginezo za kimtindo katika tamthilia ya Kiswahili. Uhakiki wa kazi za wanatamthilia wa Kiswahili kama vile E. Hussein, P. Muhando. M. Mulokozi, E. Mbogo, J. Kitsao, C.N. Chacha, D. Mulwa, Kithaka wa Mberia, Almin Mazui n.k.

KISW 424: Elimuluhaja

Nadharia za kisasa katika elimuluhaja. Mapitio na utathimini wa lahaja tofauti za Kiswahili kwa misingi ya sheria za kiisimu zinazotawala mipaka na

utambulisho wa lahaja za lugha. Tofauti mahususi na mfanano kati ya lahaja tofauti za Kiswahili. Mbinu za kuainisha lahaja mbalimbali za lugha moja, hasa za Kiswahili. Wanafunzi kufanya utafiti kwa kutembelea maeneo kunakozungumzwa lahaja za Kiswahili (mwambao wa Pwani) kwa siku tano na kuandika ripoti itakayobeba alama 20 za tamrini. Maswali yote ya mtihani yatahusisha tajiriba ya wanafunzi nyanjani.

KISW 425: Othografia na Leksikografia

Sheria za kimsingi za othografia na leksikografia. Matatizo na nafasi ya leksikografia na othografia katika Kiswahili na lugha nyingine za Kiafrika. Maendeleo ya maandishi katika lugha za Kiafrika nchini Kenya.

KISW 426: Sanaa ya Maigizo

Dhana ya maigizo. Nadharia na sheria mbali mabli za sanna ya maigizo. Uchanganuzi wa kazi za maigizo kama vile vitabu burudani (maonyesho) ya muziki katika kiswahili kwa kuzingatia uhakiki na ujumisia. Mwongozo wa jinsi ya kuandaa kazi za maigizo katika Kiswahili kwa minajili ya maigizo kwenye jukwaa, redio, runinga. Wanafunzi watashiriki kwa kutayarisha na kuigiza kazi mahususi za maigizo katika Kiswahili. Mazoezi katika uandishi na uzalishaji wa miswada: kv, uteuzi wa wahusika, washiriki, maleba na uongozozi na uelekezi wa jukwaa. Kila mwanafunzi atateua na kutayarisha muradi katika kipengele kimojawapo cha hayo maeneo yaliyotajwa chini ya ouongozi wa muhadhiri wa kozi.

KISW 427: Historia na Maendeleo ya uhakiki wa Fasihi ya Kiswahili

Maendeleo ya kihistoria ya Uhakiki wa fasihi katika Kiswahili. Uhakiki wa awali wa wamishenari na wavumbuzi wa Kizungu kama vile Allen, Harries, Hichens, Knappert nk. Nafasi na majukumu yauhakiki katika maendeleo ya fasihi ya Kiswahili kuanzia enzi za wakoloni hadi wakati wa sasa. Utathimini wa mikabala ambayo imetumika katika kuandika kuhusu fasihi ya Kiswahili kama vile umaumbo, Umuundo, Umarx ufeministi nk. Kazi muhimu za uhakiki katika Kiswahili Mustakabali wa uhakiki wa fasihi katika Kiswahili

KISW 428: Lugha na Falsafa

Nadharia za kimapokeo za maendeleo ya lugha kama

mchakato wa kimantiki wa binadamu. Mikabala ya Utabia na utambuzi ya lugha. Mchango wa Wanafalsafa Mahsus katika lugha, Maana katika lugha, sarufi maumbo na ubunifu katika lugha. Jazanda na tamathali nyinginezo za usemi. Lugha na matazamo wa kilimwengu.

KISW 429: Seminar

Uwasilishaji wa wanafunzi binafsi au vikundi wa mada mbalimbali na mijadala ya mada katika isimu na fasihi katika Kiswahili chini ya usimamizi na uelekezaji wa mhadhiri. Kozi hii hutolewa kama kozi ya kimsingi kwa wanafunzi wenye kufuata mfumo wa 3.3.1.1 lakini pia kama kozi ya kuteua kwa wale wanaostahili hata katika mfumo wa 3.3.2.2

LITERATURE

YEAR 1 SEMESTER 1

CORE COURSES				
LITT 111	Introduction to Literary Criticism	45	0	3.0
LITT 112	Creative Writing	45	0	3.0
Common Core Course				
COMS 111	Communication Skills	45	0	3.0
	TOTAL	135	0	9.0

YEAR 1 SEMESTER 2

CORE COURSES				
LITT 123	Elements of Style	45	0	3.0
LITT 124	Kenyan Literature	45	0	3.0
	TOTAL	90	0	6.0

YEAR 2 SEMESTER 1

CORE COURSES				
LITT 211	Theatre Arts	45	0	3.0
LITT 212	Literary Theory	45	0	3.0
	TOTAL	90	0	6.0

YEAR 2 SEMESTER 2

CORE COURSES				
LITT 223	Academic Writing	45	0	3.0
LITT 224	East African Literature	45	0	3.0
Common Core Course				
COMP 101	Introduction to Computer Application	45	15	3.5
	TOTAL	135	15	9.5

YEAR 3 SEMESTER 1

CORE COURSES				
LITT 311	West African Literature	45	0	3.0
LITT 312	Genres of Oral	45	0	3.0

Literature				
Common Core Course				
PHIL 104	Philosophy and Society	45	0	3.0
Elective Courses (Each candidate shall select one)				
LITT 313	Popular Literature of the World	45	0	3.0
LITT 314	African American Literature	45	0	3.0
LITT 315	Chinese Literature	45	0	3.0
	TOTAL	180	0	12.0

YEAR 3 SEMESTER 2

CORE COURSES				
LITT 321	Theory and Methods of Oral Literature	45	0	3.0
LITT 322	Literary Stylistics	45	0	3.0
Elective Courses (Each candidate shall select one)				
LITT 323	Caribbean Literature	45	0	3.0
LITT 324	Literature and Gender	45	0	3.0
LITT 325	Mainstream American Literature	45	0	3.0
LITT 326	Field Attachment	0	120	4.0
	TOTAL	135	0	9.0
	or	135	120	13

YEAR 4 SEMESTER 1

CORE COURSES				
LITT 411	Southern African Literature	45	0	3.0
LITT 412	European Literature I (From Classical Greek to the Enlightenment)	45	0	3.0
Elective Courses (Each candidate shall select one)				
LITT 413	Children's Literature	45	0	3.0
LITT 414	Indian Literature	45	0	3.0
LITT 415	Japanese Literature	45	0	3.0
	TOTAL	135	0	9

YEAR 4 SEMESTER 2

CORE COURSES				
LITT	North African	45	0	3.0

421	Literature			
LITT 422	European Literature II (From Romanticism to Post-Modernism)	45	0	3.0
Elective Courses (Each candidate shall select one)				
LITT 423	African Diasporic Literature	45	0	3.0
LITT 424	Latin American Literature	45	0	3.0
LITT 425	Research Project	15	60	3.0
	TOTAL	135	0	9.0
	or	105	60	9.0

COURSE DESCRIPTIONS

LITT 111: Introduction to Literary Criticism (45/0: CF 3.0)

Y1S1

The nature of literature. Literature and society. Genres of literature. Forms of fiction. Elements of fiction. Narrative devices. Rhetorical devices. Reading strategies. Writing strategies. Types of essays. Research: library research; field research. Citation and documentation in literature: in-text citation; references (works cited); the MLA system; the APA system; the internet. Representative works (prose-fiction, poetry, drama, etc.) drawn from appropriate cultural, theoretical, historical, and intellectual formations.

LITT 112: Creative Writing (45/0: CF 3.0)

Y1S1

The course nurtures and develops the undergraduate students' interest in creative writing. The student is expected to study and assimilate different literary genres and the techniques that go into writing. Students are also prepared to develop a short creative work during the semester: a short story, a collection of poetry, non-fiction, short plays or non-fiction (personal journals, diaries, book reviews, travel feature stories). Close reading of excerpts from literary works for critical appraisal of plot, setting, character, literary techniques. On authors: Discussion on/with creative writers on writing (book interviews, personal communication etc). Writing genre: the techniques of writing the novel, the short story, drama and poetry. Creative writing as a process: Preliminary stages to creative writing. Sources of ideas. Creating a writer's portfolio. Writing concept

notes and developing storyboards. Developing the writing talent. Generating ideas to write. Creative writing as a profession and a hobby. Qualities of good writing: Significance of diction, clarity of expression and other linguistic strategies. Impact on audience. Structuring one's work: working with paragraphs, structure, essay types, formats. Selecting stories. Choosing style. Developing characters. Writing the first draft. Revising. Writing in the age of digital media. Writing workshops. Publishing.

LITT 123: Elements of Style (45/0: CF 3.0)

Y1S2

Definition of key words. General consideration of literary style. Literary genres: Poetry, drama, prose, biography, autobiography, essay, and letters. Emphasis on style used by various authors to write. Examination of various literary genres. Close look at choice of words, varied sentence constructions, paragraphs and literary devices such as alliteration, assonance, rhyme, rhythm, repetition, and personification. Appreciation of language use in literature: Emphasis on use of figurative language and use of symbolism with examples from literary texts.

LITT 124: Kenyan Literature (45/0: CF 3.0)

Y1S2

The literature written in the English language or translated into English from local languages within the context of post-colonial Kenya. The historical, cultural, theoretical, and ideological sources of the literature. The genres. The forms. The movements. Post-colonialism. Postindependence. The thematic concerns. The narrative, stylistic, and rhetorical devices. Ngugi wa Thiong'o. His novels, poetry, drama, and essays. Marjorie Oludhe Macgoye. Grace Ogot. Meja Mwangi. Margaret Ogola. Kenyan settler literature. Karen Blixen. *Out of Africa*. Elspeth Huxley. *The Flame Trees of Thika*. Beryl Markham. *West with the Night*. The new generation of Kenyan writers. Binyavanga Wainaina. Yvonne Adhiambo Owuor. Stephen Partington.

LITT 211: Theatre Arts (45/0: CF 3.0)

Y2S1

This course introduces students to the concept of theatre as an art form. The first part surveys the history of theatre, covering the epochs of drama: the Medieval,

Elizabethan, and modern drama, audience, the role of the gods and performance techniques. Dramatic genres: Comedy, tragedy, tragicomedy, melodrama, farce. Styles of theatre production: Realism, naturalism, expressionism, theatre of the absurd etc, and their influence on modern drama. The second part links theory to actual performance. Performance roles: The actor, the producer, the directors, the critic. Preparing actors. Preparing staging practices: Choreography, auditions, blocking and stage positions. Designs and Functions: The stage craft designs, scenery, costumes, lighting, décor and stage props. The roles of improvisation, voice production and body language in acting and stage management. The mechanics of play production: Writing/choosing a script/play for stage performance. Auditions and auditioning methods. The process of play directing: Choosing the cast, developing concept and style of presentation, technical elements. Rehearsal, rehearsal techniques. From Script to Stage: Play directing: working with the cast to produce a short play during the semester. The importance of theatre and drama in education.

LITT 212: Literary Theory (45/0: CF 3.0)

Y2S1

Literary theory as a concept. Contemporary literary theory versus humanistic theories. Ferdinand de Saussure and the linguistic system. Formalism. New Criticism. Poststructuralism. Jacques Derrida. Deconstruction. Psychoanalysis. Sigmund Freud. Jacques Lacan. Historicism. New Historicism. Marxist and materialist analysis. Ideology. Louis Althusser. Cultural studies. Feminist literary criticism. Reader response criticism. Postcolonial criticism. Frantz Fanon. Application of the theories to texts drawn from wide-ranging genres and forms.

LITT 223: Academic Writing (45/0: CF 3.0)

Y2S2

Defining your purpose. Assessing your audience. Finding and exploring ideas for writing. Writing collaboratively. Narrowing your topic to reach a thesis. Formulating a working thesis. Outlining. Writing drafts. Paragraphing. Including details. Developing idea. Making your writing flow. Writing introductions and conclusions. Revising and editing. Getting feedback. Writing and revising a title. Editing and preparing the

document. Format and design. Proofreading. Planning research. Using primary and secondary sources. Designing interviews and questionnaires. Using the library. Online research. The internet. Keeping track of research: Working bibliography; Annotation; notes; summarising; paraphrasing; quoting sources. Synthesising information. Citing sources: The MLA style. The APA style. Special writing situations: College; writing about literature; writing an essay test. Diction. Tone. Figurative language. Bias. Expressions. Sentence review. Parallelism. Standard English. Sentence fragments. Run-ons. Comma splices. Fuzzy syntax. Faulty prediction. Verbs. Tenses. The passive voice. Subject verb agreement. Singular subjects. Collective nouns; Compound subjects. Pronouns. Adjectives and adverbs. Clauses. Prepositions. Commas. Apostrophes. Quotation marks. Writing dialogue. Double and single quotation marks. Quotation marks with titles of short works. Semicolons. Other punctuation marks. Italics. Capitalisation. The lowercase. Abbreviation. Numbering. Figures. Hyphenation. Underscoring. Underlining. Italics online. Capitals online. Hyphens online. Asterisks. Angle brackets. Abbreviations on line. Spelling.

LITT 224: East African Literature (45/0: CF 3.0) Y2S2

The literature of Burundi, Rwanda, Tanzania, and Uganda (excluding Kenya, which is otherwise part of it). Historical context; Colonialism and decolonisation; Political and social processes which have affected the form and function of writing in East Africa. Oral literature and performance. History of writing in African languages. The emergence and transformation of literary culture in the region after World War II. Institutions of literary production. Literature in English and French: Poetry; Drama; Prose fiction; Non-fiction. Nationalism and literature. The crisis of decolonisation. Major themes. Literature by non-indigenous writers. Widely recognised writers: Central thematic concerns, formal innovations, and place in the tradition of East African letters. Writing in an age of globalisation. Self-publishing and the emergence of small presses since the 1990s. Critical approaches to East African literature. Gilbert Gatore, Immaculée Ilibagiza (Rwanda); Gabriel Ruhumbika, Peter Palangyo, M. G. Vassanji, Elieshi Lema (Tanzania); Okot p'Bitek, Taban lo Liyong, John

Nagenda, Peter Nazareth, John Ruganda, Mary Okurut, Goretti Kyomuhendo (Uganda).

LITT 311: West African Literature (45/0: CF 3.0) Y3S1

Postcolonial literature from West African countries: Benin, Gambia, Liberia, Nigeria, Burkina Faso, Ghana, Mali, Mauritania, Senegal, Guinea, Sierra Leone, Cape Verde, Guinea, Guinea-Bissau, Niger, Togo, Ivory Coast, written in the English language or in English translation. Background of West African writing. The historical, cultural, national, political, theoretical, ideological and structural contexts sources of the literature. Onitsha Market and the development of Nigerian writing. The genres. The forms. The movements. Some of the authors: The Negritude writers. Amos Tutuola, Chinua Achebe. Wole Soyinka. Ayi Kwei Armah. Flora Nwapa. Christopher Okigbo. Mariama Ba, Ben Okri, Chimamanda Ngozi Adichie etc. Recent trends in West African Writing and representative texts.

LITT 312: Genres of Oral Literature (45/0: CF 3.0) Y3S1

Oral Literature: Postcolonial politics of a discipline. Terminologies and implications for the study of oral literature. Orality and mediation. The concept genre. Genre conventions. Genre as evolving and transitory. Indigenous versus scholarly classification oral materials. Conventional genres: Praise poetry. Narrative genres. Songs and chants. Witticisms: Riddles, proverbs, puns and tongue twisters. The epic tradition. Oral literature and popular culture. Popular culture and genre. Historical and biographical genres. Genre as context and performance. Audience and creativity in genre.

LITT 313: Popular Literature of the World (45/0: CF 3.0) Y3S1

Popular literature and the canon. The history of popular genres such as horror, science fiction, romance, pornography, fantasy, and detective fiction. Popular genres as reflection of aspirations and cultural anxieties about matters such as politics and gender. An introduction to contemporary theories of the popular. Popular literature in postcolonial Africa. The Irish Gothic. British and American horror. Victorian popular literature. Popular culture, orality and mediation.

Electronic media and the popular. Cyberculture, the dime novel; popular poetry and song; comic books and graphic novels; and Chick Lit.

LITT 314: African American Literature (45/0: CF 3.0) Y3S1

The literature of the African American community from the period of slavery to the present. The cultural, intellectual, theoretical, and ideological foundation of African American literature. African American prose-fiction, nonfiction prose, drama, and poetry. The thematic and stylistic concerns of African American literature. Processes of identity formation in African American literature. The slave narrative: Olaudah Equiano, Frederick Douglass, Harriet Jacobs, Martin Robison Delany, etc. The Period of Reconstruction: Frances, Ellen Watkins Harper, George Moses Horton, Jean Paul Larence Dunbar, Charles W. Chestnut, etc. The Great Migration and the Harlem Renaissance: James Weldon Johnson, Claude McKay, Jean Toomer, Jesse Facet, W.E.B. Dubois, Booker T. Washington, Countee Cullen, Nella Larsen, Zora Neal Hurston, Langston Hughes, etc. The post-World War Years: Richard Wright, Ralph Ellison, Lorraine Hansberry, etc. The literature of the Civil Rights Movement and after: James Baldwin, Alex Haley, Maya Angelou, Toni Morison, Alice Walker, Gwendolyn Brooks, LeRoi Jones, Amiri Baraka, Don Lee (Haki Madhubuti), Sonia Sanchez, Nikki Giovanni, June Jordan, Michael Harper, Yusef Komnyakaa, Rita Dove, etc.

LITT 315: Chinese Literature (45/0: CF 3.0) Y3S1

A survey of English translations of Chinese literature. Historical, political and cultural perspectives to Chinese literature. Representative authors selected on the basis of cultural and historical significance. Introduction to leading authors, genres and literary movements. Major aspects of the Chinese heritage. Background to Chinese Literature. Poetry: Features of the ancient and classical poetry. Prose: Development. Literature in the Han Dynasty. The classical prose fiction. Chinese oral renditions. Confucian and Daoist traditions. Contemporary Chinese literature: 18th century to the present day. The challenge of modernism in 20th Century Chinese poetry: Xu Zhimo, Guo Moruo. The cultural significance of Chinese cinema. Western

influence on Chinese theatre. Political satire and censorship in Chinese literature. Realism in Chinese literature: Lu Xun, Yu Hua. Modernity in China: Lu Xun. 1930s and 1940s China: Eileen Chang. The Maoist period: Yang Mo. The New Era in China: Zhang Jie, Mo Yan, Gao Xingjian. Chinese-American experiences: Amy Tan, Ha Jin.

LITT 321: Theory and Methods in Oral Literature (45/0: CF 3.0) Y3S2

Theory as an organising principle. Terminologies such as folklore, oral tradition, verbal art, orature, popular culture, orality and their theoretical implications. Historical geographical and anthropological school. Psychoanalytic theory. Structuralist theories. Poststructuralist theories. Oral formulaic theory. Feminist theories. Performance-centered theories. Oral performance and the body. Text, textuality and orality. Dialogism/intertextuality. Context. The field. Methods and field techniques. Data collection. Recording the artist. Transcription and translation. Photography. Field ethics. Storage of data. Data analysis report writing. Students shall undertake a seven-day fieldwork.

Prerequisite – LITT 312

LITT 322: Literary Stylistics (45/0: CF 3.0) Y3S2

The course introduces the concept of stylistics from a literary perspective of language. It covers topics on the nature and function of language, and considers the effects of semantic, syntactic, lexical and phonological features inherent in the construction of literary discourse. It deals with the language of literature, paying specific attention to textual analysis of specific selected literary texts. Introduction to literary stylistics: Language in literature. Literariness and language. Style as the nexus between language and literature. The meaning of style. Importance of context in literary analysis. Describing the language of literature: Levels of stylistic analysis at the morphological, phonological, syntactic, lexical and semantic aspects of language, in selected literary texts and excerpts. Variations in language: Pattern of language in literature, the language of literature (foregrounding, deviations, parallelism, figurative language, metaphor, metonymy, synecdoche, narrative and point of view). Understanding semantic deviation in literature: Selected course texts for stylistic

analysis. Language as medium in literature: Understanding poetic license, register and other linguistic deviations in literature. Analysing specific literary texts: Poetic, narrative and dramatic techniques in literature.

LITT 323: Caribbean Literature (45/0: CF 3.0) Y3S2

Verbal traditions in the Caribbean; Carnival and folk origins of West Indian drama; Caribbean literature in French; Caribbean literature in Spanish; Anglophone Caribbean literature; Postcolonial Caribbean literature; Postcolonial Caribbean identities. Thematic and formal links between African literature and Caribbean literature. Caribbean literature as a process of collective self-fashioning under the circumstances of the dramatic history of the region and its complex racial and cultural opposition. Ideological and intellectual concerns that have driven Caribbean expression since the 18th century. Contemporary West Indian literature in English as a focal area of literary modernism. West Indian literary renaissance represented by George Lamming, Wilson Harris, Edward Kamau Brathwaite, Lorna Goodison, consecrated by Derek Walcott's Nobel Literature Prize win in 1993. Aimé Césaire as champion of the Surrealist movement. The innovative work of francophone Caribbean writers Edouard Glissant, Simone Schwarz-Bart, Maryse Condé, René Depestre, Jean Métellus and Frankétienne. The influence of Nicholas Guillén ("magic realism") and Pales Matos on modern literature in the Spanish speaking world.

LITT 324: Literature and Gender (45/0: CF 3.0) Y3S2

Representations of gender in literature drawn from wide-ranging theoretical, cultural, geographical, formal, and generic backgrounds. The perspectives brought to gender by such theoretical frameworks as post-structuralism, psychoanalysis, Marxism, feminism, postcolonial studies, etc. Definitions of terms such as "gender", "patriarchy", "femininity", "masculinities", etc. The various socio-cultural contexts within which gender is constructed: the home, the workplace, politics, etc. The feminist movement. The relationship between men and women in the home, the workplace, and politics, as represented in literature.

LITT 325: Mainstream American Literature (45/0: CF 3.0) Y3S2

The literature of American writers of European origin from the colonial period to the present. The cultural, intellectual, theoretical, and ideological foundation of American literature. The thematic and stylistic concerns of American literature. Selections from representative epochs, movements, genres, and major writers. American prose. Exploration narratives. Histories. Religious writings. Travel narratives. The first American works of fiction. The Westward expansion in fiction. American Romanticism (the late 1700 and early 1800). Transcendentalism. Ralph Waldo Emerson. Henry David Thoreau, etc. Good and Evil. Nathaniel Hawthorne. Herman Melville, Edgar Allan Poe, etc. Sentimental fiction. Harriet Beecher Stowe, Susan Warner, etc. The Civil War and after. Regionalism. The South and the West of the Appalachian Mountains. Rural Northern New England. The West. The industrial city. The emergence of feminist literature. Kate Chopin. Realism and Naturalism (1800s to 1900s): Samuel Langhorne Clemens (Mark Twain). Psychological Realism. Henry James. Social Realism and Naturalism. Theodore Dreiser. The Lost Generation (Post-World I Literature): Ernest Hemingway, F. Scott Fitzgerald, etc. The Experimental Writers. The Great Depression and its legacy. Regionalism. The West. The South. William Faulkner. 1945 to present: War Narratives. Norman Mailer. The Beat Generation: Jack Kerouac, William S. Burroughs, etc. Experimentation. Vladimir Nabokov, J.D. Salinger, etc. American poetry. The beginnings (1600 to 1783). New England Puritan poetry. Anne Bradstreet, Edward Taylor, etc. Southern Satire. Ebenezer Cook, Richard Lewis, etc. Revolutionary era patriotic poetry. The Connecticut Wits (or Hartford Wits). David Humphreys, John Trumbull, Joel Barlow, etc. The nineteenth century. The Fireside Poets. Abolitionist poetry. Mid-Century innovation. Walt Whitman, Emily Dickinson, Edgar Allan Poe, Herman Melville, etc. Toward the 20th century. William Vaughn Moody, Stephen Crane, etc. The twentieth century: Regionalism. Midwestern America: Edgar Lee Masters, etc. New England. Robert Frost, etc. Modernism. The expatriates. Ezra Pound, Hilda Doolittle, etc. The Whitman Tradition. Imagism. After Modernism (the 1950s and 1960s). The Confessional Poets. Robert Lowell, Randall Jarrell, etc. New directions in American

poetry: Richard Wilbur, Donald Justice, Anthony Hecht, etc. The Beats. Lawrence Ferlinghetti, Gregory, etc. Deep Image Poetry. Robert Bly, James Wright, etc. The New York School: John Ashbery, Frank O'Hara, Susan Howe, etc.

LITT 326: Field Attachment (0/120: CF 4.0) Y3S2

Field Attachment is a session when students go out to the field to get exposed and familiarise themselves with the working environment. They are typically attached to Publishing Houses, District, Provincial and National Information Centres, Newspapers Offices and Printing Houses. Students acquire practical training skills and develop an understanding of the environmental, political, economic and social influences on management and work performance. Students are expected to use skills studied in Literature, i.e. writing, reporting, recording, documentation, etc. The attachment instils in the students the right kind of work attitudes, collaborative and interpersonal skills as well as professionalism through interactions with potential employers. During the attachment, students get to understand the history, vision, and mission of the respective institution/organisation, the short- and long-term objectives and policies of the institution/organisation; they learn to appreciate the challenges faced by the institution/organisation and how these challenges are overcome; they participate actively in the day-to-day activities of the institution/organisation; use personal initiative to contribute positively to the institution/organisation. Students learn to display professionalism, competency and moral integrity in the places of attachment; they adhere to the institution's/organisation's code of conduct, as well as the relevant rules and regulations as outlined in the Egerton University Statutes and the Student's Handbook. The duration of the attachment is eight (8) weeks.

LITT 411: Southern African Literature (45/0: CF 3.0) Y4S1

The literature of Southern African region, namely, South Africa, Botswana, Lesotho, Swaziland, Zimbabwe, Mozambique, Angola, Malawi, Zambia, Namibia. Representative texts of diverse genres are studied, based on their thematic concerns and style. A

broad survey of the colonial/apartheid history of Southern Africa. Themes: Racism, migrancy, exile, disillusionment. Apartheid: Novels/short stories of Olive Shreiner, Sol Plaatje, Alan Paton, Peter Abrahams, Richard Rive, Alex La Guma, Nadine Gordimer, Bessie Head, Steve Biko, Zakes Mda, J.M. Coetzee; plays of Athol Fugard; poetry of Dennis Brutus, Mazisi Kunene. Legacies of apartheid: Mark Behr, André Brink, Breyten Breytenbach, Achmat Dangor, Damon Galgut, Ivan Vladislavić, Zoë Wicomb. Post-apartheid/-colonial histories, identities, autobiography: Antjie Krog, Thando Mgqolozana, Niq Mhlongo, Phaswane Mpe, K. Sello Duiker, Njabulo Ndebele, Kopano Matlwa, Sindiwe Magona, Lauren Beukes, Rachel Zadok. Zimbabwe: Racism and social conditions: Tsitsi Dangarembga, Chenjerai Hove, Doris Lessing, Dambudzo Marechera, Charles Mungoshi, Yvonne Vera. Lesotho: Thomas Mofolo. Zambia: Dominic Mulaisho. Black liberation struggle in Angola and Mozambique: Poetry of António Jacinto, Agostinho Neto, José Craveirinha, Noémia de Sousa. Novels/short stories of Mia Couto, Luis Bernardo Honwana, Pepetela, José Luandino Vieira. Post-colonial disillusionment in Malawian poetry: Steve Chimombo, Frank Chipasula, Jack Mapanje. Cosmopolitanism: Zukiswa Wanner, NoViolet Bulawayo, Stanley Kenani.

LITT 412: European Literature I (From Classical Greece to Enlightenment) (45/0: CF 3.0) Y4S1

Survey of European literature from the Classical period (Ancient Greece and Rome) to the Enlightenment. The historical/cultural/intellectual/ideological background of the literature. Periods. Movements. Major writers. 800-700 century Greece: Homer. The epic. *The Iliad*. *The Odyssey*. The Homeric poems. 5th-century Greece. Tragedy. Aeschylus. Euripides. Sophocles. Classical drama: Comedy. Aristophanes. Ancient Rome. Poetry. Tragedy. Comedy. Virgil. *The Aeneid*. The Middle Ages (Medieval Era). Poetry. *Bouwulf*. The Romance. The transition to the Renaissance. Geoffrey Chaucer. *The Canterbury Tales*. Dante. *Divine Comedy*. Boccaccio. The Renaissance. Poetry. Drama. Prose. Renaissance (Elizabethan) Theatre. William Shakespeare. Tragedy. Comedy. Tragicomedy. Edmund Spenser. *Faerie Queen*. Christopher Marlowe. John Donne. Philip Sydney. Walter Raleigh. John Calvin. Thomas Moore. *Utopia*. The Enlightenment and Neo-Classicism. The

Restoration Period. The Augustan Period. The Age of Johnson. The Essay. Parody. Satire. Letters. Fables. Melodrama. Rhyming with Couplets. Alexander Pope. Moliere. The rise of the novel. Samuel Richardson. Daniel Defoe. Jonathan Swift, etc. Autobiography: Jean-Jacques Rousseau.

LITT 413: Children's Literature (45/0: CF 3.0) Y4S1

A critical approach to the study of literature for children (oral and written, both within and outside the African context). Theoretical study of texts from different cultural backgrounds. Field research by students. Principles governing writing. Illustration, editing and publishing of prose fiction for children. Reading experiences of children. The child's world. Children and the library. Stages of reading development. Fiction for children. Popular adult books for children (reading of truly adult literature through popular forms). The shocker (the inevitable lure of shocking books to children). Significant modern literature for children. Classics for children. Poetry for children. Fact and fiction in children's literature. Non-fiction for children. Approaching children's literature.

LITT 414: Indian Literature (45/0: CF 3.0)

Y4S1

Multilingualism in the Indian sub-continent. Themes of alienation in Indian literature. The sense of place, self-identity and the historical consciousness of Indian literature. The emergence of Indian literature in English as a major literary discipline. Modern Indian literature informing the Indians' resistance to British rule and the development of political consciousness. Themes and styles of Indian literature in English. Ancient epics, e.g. Ramayana. Selected works by Ahmed Ali, R. Rk. Narayan, Raja Rao, Mulk Raj Anand, Kamal Markandaya, Anita Desai, Babani Bhattacharya, etc. Comparison of the themes and techniques of these writers with those employed by other Third World writers.

LITT 415: Japanese Literature (45/0: CF 3.0)

Y4S1

Major genres of Japanese literature (prose, poetry and drama). Sub-genres (diary, journal, essay and dialogue). Japanese myths and legends. Detailed analysis of Kojiki (Record of ancient Japan). Tale of Genji, Court

Japanese Literature and drama and forms of performing arts such as Noh with masked drama, Bunraku with puppets performed against backdrop of Joruri and accompanied by Sanisen. Kabuki with unmasked actors performed by Anagata. Proverbs, sayings. Stories compiled by Sayuni Kawahi. Japanese literature of the Menji period. Study of texts: *Hakai* by Toson, *Yugikuni* by Kawabata Yasunari, works by Mishima Yukio, Shushaka Endo, Junichiro Tanizaki. Post-World War II writings of Kono Tackeo, Abe Kob, Yasuoka Shotaro, Kojima Nabuo, Ozu Yasujiro, Takeda Taijun, Kurahashi, Daisaku Ikeda. The course will be taught in the English language using English translations of Japanese literature texts.

LITT 421: North African Literature (45/0: CF 3.0) Y4S2

The literature of Egypt, and the Maghreb countries of Algeria, Morocco and Tunisia – in English translation. Arab and Berber oral traditions in North Africa; North African literature in Arabic; North African literature in French. The spread of Arabic in Africa with the advent of Islam. Early religious treatises; poetry; scholarly and religious prose; geographical and travel literature during the Middle Ages. The beginnings of Modern Arabic literature in Arabic in newspapers and periodicals. The tradition of Arabic creative writing in Egypt. Thriving national literature in Arabic in the Maghreb after colonialism. The flowering of French-language literature in the twentieth century. Arabophone and Francophone works representative of the diverse cultural, social and political histories of the region. Issues of linguistic and ethnic pluralism, colonialism, nationalist rhetoric, Arabisation policies and Islamic reform. Engagement of literature with the history of French imperialism in the Maghreb in relation to dominant and emerging narratives of national identity, language and culture. First major literary figures in the twentieth century Arabic literature: Abu'l- Qasim al-Shabbi, Muhammad Husayn Haytal, Tawfiq al-Hakim, and Taha Husayn. Foremost contemporary literary giants in Arabic: Naguib Mahfouz, Nawal El Saadawi (Egypt); Abdelhamid Benhedouga, Tahar Quettar (Algeria); Leila Abouzeid, Khannata Bannuna, Abdelmajid Benjelloun, Mohamed Zafzaf (Morocco); al-Bashir Khurayyif, Arusiyya al-Naluti, Alia Tabai (Tunisia). The most widely recognised francophone

writers: Rachid Boudjedra, Mohammed Dib, Assia Djabar, Kateb Yacine, (Algeria); Driss Chraïbi, Tahar Ben Jelloun (Morocco); Albert Memmi (Tunisia).

LITT 422: European Literature II (From Romanticism to Post-Modernism) (45/0: CF 3.0) Y4S2

Survey of European literature from Romanticism to Postmodernism. The theoretical, cultural, ideological, intellectual context of the literature: Romanticism, Realism, Naturalism, Modernism, and post-modernism. Representative authors. Britain. Poetry. William Blake, William Wordsworth, Samuel Coleridge, George Gordon Byron, Percy Bysshe Shelley, John Keats, etc. Prose. Jane Austen. Charles Lamb. Walter Scott. William Hazlitt. Drama. Horace Walpole. Robert Southey. France. Poetry. Victor Hugo. Alphonse de Lamartine. Prose. Francois-Rene de Chateaubriand. Germaine de Stael. Drama. Russia. Poetry. Mikhail Lermontov. Alexandre Pushkin. Nikolay Karamzin. Prose. Alexander Pushkin. Nikolay Gogol. Drama. Realism and Naturalism. Britain. Prose. Charlotte Bronte, Charles Dickens. George Eliot. Poetry. Drama. Oscar Wilde. France. Poetry. Victor Hugo. Prose. Alexandre Dumas. Stendhal (Marie-Henri Beyle). Honore de Balzac. Emile Zola. Poetry. Russia. Prose. Alexander Pushkin, Ivan Turgenev, Fyodor Dostoevsky, etc. Poetry. Drama. Leo Tolstoy. Aleksey Pisemsky. Anton Chekhov. Modernism. Britain. Prose. Virginia Woolf. Poetry. T.S. Eliot. Ezra Pound. France. Poetry. Charles de Beaudelaire. Postmodernism. Britain. France. **(Prerequisite: LITT 412)**

ITT 423: African Diasporic Literature (45/0: CF 3.0) Y4S2

Historical circumstances of the emergence of African diasporic literature. The Pre-colonial and the New African Diaspora. Criteria of studying African diasporic literature; Themes and styles in the contexts of race, imperialism and globalisation; Engagement with the literary traditions of the West. The legacies of the past in the present; Agency and resistance; Engagement with Home (Africa); Return movements and memory; The sense of space and belonging; The Politics of representation; Double consciousness; Nationality; Transnationalism and Hybridity; Gender. The works of Olaudah Equiano; David Odhiambo (Kenya);

Abdulrazak Gurnah (Zanzibar); Gbenga Abgenugba, Chimamanda Ngozi Adichie, Segun Afolabi, Ike Oguine, Chika Unigwe (Nigeria); Ayi Kwei Armah, Amma Darko, Benjamin Kwakye, (Ghana); Aminatta Forna (Sierra Leone); Brian Chikwava, Tsitsi Dangarembga (Zimbabwe); Tayeb Salih (Sudan); Nuruddin Farah (Somalia); Dinaw Mengistu (Ethiopia).

LITT 424: Latin American Literature (45/0: CF 3.0) Y4S2

The literature written in Spanish, Portuguese or French in Central and South America from the 15th century to the present, studied in English translation. Literature written in the indigenous languages of Central and South America from the European Conquest onwards. The cultural, intellectual, theoretical, and ideological sources of Latin American literature. Native American literature: The genres: creation stories, stories about gods and their activities, histories of genealogies of rulers, the poetry, and oral literature of the Tupi Guarani of today's Paraguay, the Aztecs, the Inca of Peru, etc. The Colonial Period (from Conquest to Independence – 1800). The literature of the two cultural centres of the Spanish Empire: Lima, Peru: Carcillas de la Vega, Juan del Valle Caviedes. Mexico, the Vice-royalty of New Spain: Carlos de Sigüenza, Sor Juana Ines de la Cruz. The period of independence (1800 onwards): The emerging national characteristics of Latin American literature. The emergence of Chile and Argentina as literary pioneers. The nature of 19th century Latin American literature: Romanticism: Esteban Echeverria, Domingo Faustino, Jose Hernandez of Argentina. Andres Bello of Venezuela. Jorge Isaac of Colombia. The Modern Period (from the late 1888-1910): The concept of "Modernismo": Ruben Dario. The Latin American "Vanguard": Cesar Vallejo of Peru, Gabriela Mistral of Chile, Pablo Neruda of Chile, Octavio Paz of Mexico, Nicolas Guillen of Cuba, Ricardo Güiraldes of Argentina, Romulo Gallegos Freire of Venezuela, Juan Rulfo of Mexico. The twentieth century: The Post-Vanguard Period: Jorge Luis Borges of Argentina, Eduardo Mallea of Argentina, Jose Carlos Maritegui of Peru, Gabriel Garcia Marquez of Colombia. The Boom Period (the 1960s to the 1970s). Carlos Fuentes of Mexico, Mario Vargas Llosa of Peru, Julio Cortazar of Argentina. The 1970s to the present.

LITT 425: Research Project (15/60: CF 3.0) Y4S2

Students undertake research on a topic of their choice under supervision by a member of academic staff and complete an extended research paper. They are exposed to rules of conducting research on literary topics and the processes of preparing a literary essay. They are introduced to the forms of a literary thesis, such as objectives of the study, the focus, the significance, the argument, and the relevant literature for the topic. They are taught methods of field research, the constraints, and ways of overcoming the constraints. They learn about use of funds for research, methods of recording their observations in the field, and the use of communication technology. Students are instructed about problems of using written and oral sources and complementing those sources with interviews. They are taught how to keep diaries, and make interim reports of their findings. They learn how to come up with draft reports and ultimately how to compile final reports and then present them for examination. They are guided on how to use appendices, text supplements, indices as well as references, end- and footnotes, and bibliographies.

PHILOSOPHY

a) Common Core Courses

Course Code	Course Title	Year of Study	Semester
PHIL 104	Philosophy and Society	1	1
PHIL 105	Government and Society	1	2
PHIL 106	Law and Society	1	1
PHIL 107	Critical Thinking	1	1
HURI 100	Introduction to Human Rights	1	1/2
PHIL 108	Ethics, Integrity and National Values	1	1/2

b. Schedule of Courses

YEAR 1 SEMESTER 1-Core

Code	Course Title	L	P	CF
PHIL 100	Introduction to Philosophy	45	0	3.0
PHIL 101	Introduction to Logic	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
Total		135	0	9.0

YEAR 1 SEMESTER 2-Core

Code	Course Title	L	P	CF
PHIL 102	Symbolic Logic	45	0	3.0
PHIL 103	Ancient Philosophy	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
Total		135	0	9.0

YEAR 2 SEMESTER 1-Core

Code	Course Title	L	P	CF
PHIL 200	Medieval Philosophy	45	0	3.0
PHIL 201	Problems of Philosophy	45	0	3.0
PHIL 107	Critical Thinking	45	0	3.0
Total		135	0	9.0

YEAR 2 SEMESTER 2-Core

Code	Course Title	L	P	CF
PHIL 203	Ethics	45	0	3.0
PHIL 206	Epistemology	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
Total		135	45	9.0

Electives

Code	Course Title	L	P	CF
PHIL 204	Philosophy of Religion	45	0	3.0
Total		45	0	3.0

YEAR 3 SEMESTER 1-Core

Code	Course Title	L	P	CF
PHIL 300	African Philosophy	45	0	3.0
PHIL 301	Modern Philosophy	45	0	3.0
PHIL 302	Research Methods in Philosophy	45	0	3.0
Total		135	0	9.0

Electives

Course Code	Course Title	L	P	CF
PHIL 303	Philosophy of Language	45	0	3.0
Total		45	0	3.0

YEAR 3 SEMESTER 2-Core

Code	Course Title	L	P	CF
PHIL 304	Contemporary Philosophy	45	0	3.0
PHIL 305	Social and Political Philosophy	45	0	3.0
PHIL 306	Philosophy of Law	45	0	3.0
Total		135	0	9.0

Electives

Code	Course Title	L	P	CF
PHIL 307	Philosophy of History	45	0	3.0
Total		45	0	3.0

YEAR 4 SEMESTER 1-Core

Code	Course Title	L	P	CF
PHIL 400	African Social Philosophy	45	0	3.0
PHIL 401	Metaphysics	45	0	3.0
PHIL 402	Feminist Philosophy	45	0	3.0
Total		135	0	9.0

Electives

Code	Course Title	L	P	CF
PHIL 404	Philosophy of Mind	45	0	3.0
Total		45	0	3.0

YEAR 4 SEMESTER 2- Core

Code	Course Title	L	P	CF
PHIL 403	Aesthetics	45	0	3.0
PHIL 411	Philosophy and Development	45	0	3.0
PHIL 405	Applied Ethics	45	0	3.0
Total		135	0	9.0

Electives

Code	Course Title	L	P	CF
PHIL 409	Philosophy of Science	45	0	3.0
Total		90	0	6.0

(c) COURSE DESCRIPTIONS**PHIL 100: Introduction to Philosophy (45/0: CF 3.0) Y1 S1**

Introduction. A Brief historical development of Philosophy. Definition of philosophy and nature of philosophy. How philosophy begins. The Importance of studying philosophy. The contribution of philosophy to a liberal education. Branches of philosophy: Logic. Epistemology. Metaphysics. Ethics. Basic types of Philosophy. African Philosophy

HURI 100: Introduction to Human Rights (45/0: CF 3.0) Y1 S2

Definition of Human Rights. Characteristics of Human Rights. Categories of Human Rights. Sources of Human Rights. World wars and Human Rights. History and Development of Human Rights. The United Nations System. The role of the United Nations in the protection and promotion of Human Rights. The Good offices of the Secretary General. The Universal Periodic Review mechanism. The African Regional Human Rights Instruments and implementation. The Kenyan Human Rights system. History of constitutional development in Kenya. Select Rights. Challenges to the implementation of Human Rights. Human Rights and culture

PHIL 108: Ethics, Integrity and National Values (45/0: CF 3.0) Y1 S1 /2

Definition of ethics. Individual and family Ethics, Ethics and public service, Ethics and the Environment. Definition of integrity, importance of integrity to an individual, society, private and public spaces, globally. Written and unwritten sources of integrity. Constitutional requirement on integrity (Chapter 6 Constitution of Kenya-2010). Forms of breach of integrity in various sectors of society. Drivers of breach of integrity. Culture and integrity. Implications of breach of integrity to the society. Corruption, National Values. Definition of Nation. Definition of National Values. National values as enshrined in the Constitution of Kenya. Tenets of national values. Ideologies associated with National values since independence. Promotion of national values. Threats/Challenges to National values. Mitigating against the challenges to national values.

PHIL 101: Introduction to Logic (45/0: CF 3.0) Y1 S1

Introduction. Acts of the Mind (Simple apprehension, judgment and conception). Reasoning and different types of reasoning. Argument. Validity and strength of arguments. Syllogism. Language and Logic. Definitions. Fallacies.

PHIL 102: Symbolic Logic (45/0: CF 3.0) Y1 S2

Symbolization, translation and scheme of abbreviation. Sentential Connectives. Derivations. Truth tables and Inferential rules. *(Prerequisite: PHIL 101)*

PHIL 103: Ancient Philosophy (45/0: CF 3.0) Y1 S2

Pre-Socratic Philosophers: Milesian School, Eleatic School, Atomic School. Sophists. Socrates, Plato, Aristotle, Post-Aristotelian and Neo-Platonists.

PHIL 104: Philosophy and Society (45/0: CF 3.0) Y1 S1

Definition of Philosophy. Notion of Society. Academic and Popular usages of Philosophy. Importance of Philosophy. How philosophy creates a liberal thinker. Critical thinking. Branches of Philosophy. Fallacies. Philosophy and Ethical problems in society. Philosophy and issues of Governance. Philosophy and Religion. The nature of man.

PHIL 105: Government and Society (45/0: CF 3.0) Y1 S2

Introduction. Definition of terms. Basic concepts in Government and Society. The origin of the state. Theories on the Nature of the state. Political Authority and Obligation. Political legitimacy and justification. Functions of Government. The concept of good governance. Civic education. Citizenship. The rights and duties of a citizen. Loyalty and patriotism. African Social and Political Philosophy. Some Political Problems in Kenya.

PHIL 106: Law and Society (45/0: CF 3.0) Y1 S1

Introduction: Definition of Law. Definition of society. Classification of Law. The relationship between Law and Morality. Social functions of Law. Importance of basic knowledge in law. Sources of Kenya Law. Criminal Law. Punishment and Legal Responsibility. Civil Law. The Concept of Justice and the Rule of Law.

Structure of the judiciary. The Role of the Judiciary in the administration of Justice.

PHIL 107: Critical Thinking (45/0: CF 3.0) Y1S1

Definition of Critical Thinking. Types of Thinking. Critical thinking skills. Differences between critical and creative thinking. Importance of Critical Thinking. Inductive and deductive reasoning. Argument structure and identification, validity and strength of arguments, common fallacies in reasoning. Dilemmas. Obstacles to critical thinking. Applying critical thinking strategies to understanding current issues, belief systems and ethical positions

PHIL 200: Medieval Philosophy (45/0: CF 3.0) Y2 S1

From Classical to Medieval. Four Issues for Medieval Philosophers. Augustine: Faith, Certainty. Divine Illumination. Time. Evil, Free Will, Foreknowledge. Morality. Proper Desire, Two Cities. Dionysius. Pseudo-Dionysius: Positive and Negative Religious Language. Boethius: Universals and Divine Foreknowledge. Anselm: Ontological Argument. Guinilo's Criticism. Muslim and Jewish Philosophy: Averroes: Resolving Conflicts between Philosophy and Scripture. Maimonides: Interpreting Scripture Non-Literally. Aquinas: Twofold Truth and Proofs for God. Divine Simplicity. Religious Language. Morality and Natural Law. Scotus: Divine Illumination. Form-Matter. Divine Command Ethics. Ockham. The Razor. Nominalism

PHIL 201: Problems of Philosophy (45/0: CF 3.0) Y2 S1

Introduction. What is a philosophical problem. Nature of a philosophical problem. Problems about Man: Nature of man (Sociological, scientific, religious, psychological). Knowledge (objectivity and subjectivity). Mind-body problem. Freewill and determinism. Problems about nature: Reality and existence. The problem of being and change. Space and time. Problems about God: The problem of Transcendence. Arguments for and against existence. Nature of God (Attributes of God). Problems of good and evil. Immortality of the soul

PHIL 203: Ethics (45/0: CF 3.0) Y2 S2

Introduction. Approaches to the study of Ethics. Subject matter of Ethics. Determinants of Morality. Ethical theories. Ethical Principles. Sources of morality. African moral systems

This course requires an academic trip.

PHIL 204: Philosophy of Religion (ELECTIVE)

Nature of Religion. Approaches to Philosophy of Religion: Positivism. Pragmatism. Existentialism. verification of Religious Claims. Mysticism. Immortality of the Soul. Problems of religious language Problem of Evil. Arguments for and against the existence of God. Miracles. Revelation. Atheism and Agnosticism

PHIL 206: Epistemology (45/0: CF 3.0) Y2 S2

Definition of Epistemology. What is Knowledge? Popular sense and Philosophical Knowledge. Knowledge, truth and belief. Sources and validity of Knowledge. Validity of the sources of knowledge. Theories of Knowledge . Nature of knowledge and Reality. Common sense view (naïve realism). Epistemological Realism (objectivism). Epistemological idealism (subjectivism). Phenomenalism. Scientific method: simple view of scientific Method. Problem of Induction. Hypothetical method and falsifiability. Obstacles to knowledge

PHIL 300: African Philosophy (45/0: CF 3.0) Y3 S1

Introduction. Arguments for and Against African Philosophy. Sources of African Philosophy. Culture as fundamental. Trends of African Philosophy: Ethno-Philosophy. Professional Philosophy. Philosophic Sagacity. National ideological trends. African socialism. African Humanism. African Consciencism. Harambee. **This Course requires an academic Trip**

PHIL 301: Modern Philosophy (45/0: CF 3.0) Y3 S1

Scholasticism and Scientific Revolution. Continental Philosophy: Descartes. Spinoza. Leibniz. Bacon. Hobbes. Empiricism: Hume. Berkeley. Locke. Rousseau. Kant. German idealism

PHIL 302-Research Methods (45/0: CF 3.0) Y3 S1

Introduction and definition. The role of research in society. Types of research. Stages in research

development. Literature review. Research Methodology. Population and sampling. Sampling techniques. Data Collection/Methods: Questionnaire, interview and observation. Data Analysis and presentation. Research report components. Research proposal writing

PHIL 303: Philosophy of Language (45/0: CF 3.0) Y3 S1-Elective

Definition of Philosophy of Language and the Relevance of Philosophy Of Language. Historical development of philosophy of language-logical positivists. Meaning and reference: Definite descriptions. Proper names and reference. Analogy. Theories of meaning. Traditional theories of meaning. Ideational theory and Propositional. Pragmatic theories. Psychological theories. Semantics and Pragmatics

PHIL 304: Contemporary Philosophy (45/0: CF 3.0) Y3 S2

Philosophers of the nineteenth century: Hegel. Schopenhauer. Nietzsche. Martin Heidegger: Being and Time. Phenomenology. Jean-Paul Sartre: Existentialism. G.E. Moore. Movements and twentieth century philosophy: analytic and continental philosophy: Ludwig Wittgenstein. Pragmatism

PHIL 305: Social and Political Philosophy (45/0: CF 3.0) Y3 S2

Introduction: Definition of Government and State. Political legitimacy and Justification. Sources of political Authority and obligation. Theories on the nature of the state. Social and Political philosophies of various philosophers including: Plato, Aristotle, Thomas Hobbes, John Locke, Niccollo Machiavelli, Karl Marx and Friedrich Engels, John Stuart Mill, Jean Jacques Rousseau, Post independence Africa.

PHIL 306: Philosophy of Law (45/0: CF 3.0) Y3 S2

Introduction. Definition of Philosophy of Law. Scope of Philosophy of Law. Theories on the nature of Law: The natural law theory-St. Thomas Aquinas. Legal Positivism-John Austin. Pure Theory of Law-Kelsen. Laws as Norms-H.L.A. Hart. The bad man perspective-Oliver Wendell Holmes. Definitions of Law. Social Functions of Law. Importance of some basic knowledge of law. Sources of Kenya Law. The Concept of punishment. The Concept of Justice. The rule of law.

PHIL 307: Philosophy of History (45/0: CF 3.0) Y3S2 (Elective)

Philosophical account of nature and roots of historical explanations such as historical determinism and positivism. Epistemological and methodological issues in history. Nature of historical evidence, understanding and predictions. History and objectivity

PHIL 400: African Social Philosophy (45/0: CF 3.0) Y4 S1

Introduction. The concept of social Philosophy. African Social Theories (Political Aspects): African Socialism. African Humanism. African Capitalism. Pan-Africanism. African Social Theories (Cultural Aspects). Black Consciousness. Black Aesthetics. African Personality (who is a person? Negritude: Leopold Sedar Senghor. Okot P'Bitek and an African Culture. Amilcar Cabral: National Culture for Revolutionary Liberation. Analysis of Works of some leading African Social Theories. Frantz Fanon: Freedom and Revolutionary Violence. Kwame Nkrumah: Consciencism. Jomo Kenyatta: Harambee. Julius Nyerere: Ujamaa. Kenneth Kaunda: Humanism.

This course requires an academic trip

PHIL 401: Metaphysics (45/0: CF 3.0) Y4 S1

Definition of metaphysics. Branches of metaphysics. The notion of being. Relationship between metaphysics and other sciences. First principles of being. Metaphysical properties of being. Substance and accident. The principle of individuation Causality. Act and Potency-change and permanence.

PHIL 402: Feminist Philosophy (45/0: CF 3.0) Y4 S1

Introduction to Feminist Philosophy. Traditional views of women and their roles in the society. Discrimination against women. Women in philosophy. Women's rights in the society. Women liberation; social economic and political achievements

This course requires resource persons

PHIL 404: Philosophy of Mind (ELECTIVE) (45/0: CF 3.0) Y4 S1

Introduction. Mind- Body Problem. Theories of mind: Monistic. Dualistic. Materialism. Epiphenomenalism. Behaviourism. Identity Theories. Consciousness and its theories. Human mind and artificial intelligence.

Y4 S2

PHIL 403: Aesthetics (45/0: CF 3.0) Y4 S2

The study of aesthetics from a historical perspective: Plato and Aristotle. The scholastic tradition; renaissance and modern development in aesthetics. The cultural basis of aesthetics; the Western culture versus African culture. African aesthetics: The nature of African work of art; sculptures, music, painting, drama, poetry and architecture. The influence of African artists on the Western culture. The relevance of aesthetics to man, artistic creativity and how it expresses commitment to himself and to the world. Aesthetics as art of amusement and as an expression of human consciousness. Technical/industrial aesthetics, Art and Capitalism. **This course requires an academic trip**

PHIL 411: Philosophy and Development (45/0: CF 3.0) Y4 S2

Definition of development. Different dimensions of development. Definition of the philosophical perspective on development and the concomitant issues in contemporary Africa; philosophical analysis of different concepts of development and modern development; concepts of social progress and evaluation, Modernization and revolution. Social problems contingent on change and development; economic inequality and exploitation; colonialism and global economic relations; ethnicity, tribalism and racism; public concerns of environmental and moral pollution; life in the margin, marriage instability, street children, drug abuse and pornography.

PHIL 405: Applied Ethics (45/0: CF 3.0) Y4 S2

Introduction to Ethics and Applied Ethics. Medical Ethics (Healthcare Ethics). Abortion, euthanasia terminal illness and the right to life. In vitro-fertilisation, cloning, surrogate motherhood. Confidentiality in healthcare. Doctor-patient relationship. Bioethics: biotechnology- engineering, cloning, and new reproductive technologies. Media Ethics. Business Ethics. Environmental Ethics. Work Ethics (*Prerequisite*: PHIL 203)

PHIL 409: Philosophy of Science (45/0: CF 3.0) Y4 S2- Elective

Empirical meaning; verifiability, measurements, probability; causality; and determinism, theories of space and time; scientific methodology, objectivity and science, Natural law, ethics and science. The relationship between philosophy, science and technology.

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Y3	CF	Y4	CF
To give students a broad based and multidisciplinary academic foundation;	Introduction to Philosophy	3.0	Medieval Philosophy	3.0	Modern Philosophy	3.0	Philosophy of Mind	3.0
	Philosophy and Society	3.0	Philosophy of Religion	3.0	Philosophy of Language	3.0	Philosophy of Science	3.0
	Law and Society	3.0			Contemporary Philosophy	3.0		
	Ancient Philosophy	3.0			Philosophy of History	3.0		
ii) To provide students with broad and relevant knowledge in Arts, Humanities and Social Sciences that is sufficient to expose them to numerous job opportunities.	Government and Society	3.0	Epistemology	3.0	African Philosophy	3.0	African Social Philosophy	3.0
							Metaphysics	3.0
iii) To equip students with analytical skills to enable them to participate in social, economic and political development.	Critical Thinking	3.0	Problems of Philosophy	3.0	Social and Political Philosophy	3.0	Feminist philosophy	3.0
	Introduction to Logic	3.0			Philosophy of Law	3.0	Aesthetics	3.0
	Symbolic Logic	3.0						
iv) To train graduates who are able to teach, conduct research and handle societal responsibilities in private and public enterprises	Ethics, Integrity and National Values	3.0			Research Methods in Philosophy	3.0	Philosophy and Development	3.0
	Ethics	3.0					Applied Ethics	3.0

RELIGIOUS STUDIES

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
REST 100	Religion and Ethics in Society	45	0	3.0
REST 101	Introduction to the Study of Religion	45	0	3.0
COMS 111	Communication skills	45	0	3.0
YEAR 1	SEMESTER 2			
REST 102	Sociology of Religion	45	0	3.0
REST 103	African Religion	45	0	3.0
RESP 164	Religious Beliefs	45	0	3.0
HURI 100	Introduction to Human Rights	45	0	3.0
	TOTALS	265	0	18.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
PHIL 207	Philosophy of Religion	45	0	3.0
REST 208	Comparative Religion	45	0	3.0
REST 209	History of Islam in Africa	45	0	3.0
RESP 221	Character Building	45	0	3.0
	TOTAL	225	0	18.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
REST 300	Church History 1	45	0	3.0
REST 301	Research Methods in Religion	45	0	3.0

REST 314	Belief Systems in Kenya	45	0	3.0

YEAR 3 SEMESTER 2

REST 323	Religion and Contemporary Ethical Issues	45	0	3.0
REST 312	Phenomenology of Religion	45	0	3.0
REST 306	Church History II	45	0	3.0
	Electives			
REST 302	Religion, work and leisure	45	0	3.0
REST 303	Islamic Civilization and Culture	45	0	3.0
REST 307	Religion and Politics in Africa	45	0	3.0
REST 309	Religion and Science	45	0	3.0
REST 310	Themes in Quran and Hadith	45	0	3.0
REST 311	Religion and Environment	45	0	3.0
REST 312	Ecumenism in Africa	45	0	3.0
REST 313	Islamic Theology and Philosophy	45	0	3.0
REST 315	Research Project	45	0	3.0
	TOTALS	135		9 CF

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
REST 400	New Religious Movements in Africa	45	0	3.0
REST 401	History of Christianity in East Africa	45	0	3.0
	Electives			
REST 404	Analysis of Selected Religious Texts	45	0	3.0
REST 410	Contemporary Religious Thought	45	0	3.0

REST 411	Theology of the Old Testaments	45	0	3.0

YEAR 4 SEMESTER 2

REST 407	Religion and Development in Africa	45	0	3.0
REST 409	Liberation Theology	45	0	3.0
	Electives			
REST 406	Christian Theology in Africa	45	0	3.0
REST 413	Theology of the New Testament	45	0	3.0
REST 415	Themes in Islamic Law	45	0	3.0
REST 418	Modern Trends in Islam	45	0	3.0
	TOTALS	135	0	12.0

COURSE DESCRIPTIONS

REST 100: Religion and Ethics in Society (45/0 CF 3.0 Y1 S1)

General approaches to the study of ethics in contemporary society, freedom and responsibility, happiness, social life, family, the individual and the state. The role of religion in influencing ethical orientation in society, religion and political systems. Church and State: the great debate between their relations (Y1S1)

REST 101: Introduction to the Study of Religion (45/0 CF 3.0 Y1 S1)

Religion as a phenomenon. The various approaches to the study of religion; philosophical; psychological; sociological; historical. Contributions of such scholars, as Freud, R. Otto, Mircea, Eliade; P. Tillich and Emile Durkheim, Karl Marx and Max Weber. The course should include examples of world religions. (Y1S1).

REST 102: Sociology of Religion (45/0 CF 3.0 Y1 S2)

Sociological definition of religion, functionalism, religion and social class formation, Marxist theory of religion, religion and socialization, sociological

classification of religion and social change, religion and social control, current approaches and issues, including symbolism, secularism with examples from the Christian world, Islamic world and other areas. Emphasis will be laid on examples from the African Continent. Thematic Issues: religious personalities and practitioners, radicalization, Religion as ideology, contemporary sociologists of religion and Neo functionalism. **This course requires field Academic Trip**

REST 103: African Religion (45/0 CF 3.0 Y1 S2)

Definition of African Religion, sources for the study: early and contemporary studies. The concepts of God, worship, rites of passage, African cosmology or world view, theories of African Religion; Mbiti and Bolaji Idowu, characteristics of African Religion cf. Parrinder, place of African Religion in contemporary Society, African Religion in Diaspora, Brazil and Other Continents, and the Idea of Syncretism, The African view of humanity; kinship. Religious specialist, rites, morality, magic, witchcraft and sorcery. Medical and other mystical practices. African religions today and their prospects for the future. Is it ancestral worship, veneration or myths and reality? Demythologization of African religion (Y1S2)

RESP 164: Religious Beliefs (45/0 CF 3.0 L1 B2)

Philosophical, Psychological, Sociological and Historical approaches to various Religions. African Traditional Religions. Evolution, functionalism and development of the major types of religion: Christianity, Judaism, Islam, Buddhism, Hinduism and Non Christian Religions. Belief systems in Kenya. Contemporary schools of Religious thought. How Religious belief affect human behavior in Society

REST 200: Introduction to Biblical Studies (45/0 CF 3.0 Y2 S1)

New and Old Testaments condensed. General issues about the Bible: Definition. How to study the Bible: Biblical criticisms, canonicity. Formation and composition of the Bible themes: Salvation history, Election. Old Testament as a Promise and New Testament as a record of fulfillment. (Y2S1)

REST 203: Introduction to Islam (45/0 CF 3.0 Y2 S1)

Introduction to Islam; History of Arabia before the advent of Islam, life and times of Prophet Mohammad, legacy of the Prophet, brief history of the ideal caliphs and spread of Islam outside Arabia, pillars of Islam, articles of faith, scriptures of Islam, diversities within Kenya, schools of thought, contemporary thematic issues in Muslim world today.

REST 208: Comparative Religion (45/0 CF 3.0 Y2 S2)

Define religion and discuss various classifications, origins of religion, functionalist study of religion, Religion in pre-literate societies, survey of world Religions and cultural diversity, religion and culture, theological and ethical doctrines of major and minor world religions, founders of world religions, Revelation and cultural ideas, devil worship and religious freedom, theosophy, religious fundamentalism, inter-religious dialogue: Universal ecumenism and globalization. Thematic issues: brief history of the founders of the religions, Godhood in world religions, Key theological and doctrinal concepts, life, death, afterlife, salvation. (Course requirement: field trip). (PREREQUISITE OF REST 102 AND 103) Y2S2)

REST 209: History of Islam in Africa (45/0 CF 3.0 Y3 S2)

Overview of the development of Islam in Africa from 7th century onwards, spread along the coastal areas of Africa, Islam during European colonialism to the present, regional focus on North Africa, the Sahara, sub-Saharan West Africa, the Horn of Africa, South Africa and East Africa. Islamisation /Arabianisation of Africa, Thematic areas: current issues in contemporary African Islam, dynamics of religious reform, Islam and the state, Islam and socio-economical developments, relations between Muslims and members of other religious traditions in Africa, emergence of transnational Islamic finance, developmental organizations and radicalization, War on terrorism and questions related to ethnic and religious identities.

REST 211: Religious Beliefs and Practices (45/0 CF 3.0 L2 B1)

Philosophical, psychological, sociological and historical approaches to various religions. African traditional religions. Evolution, functionalism and development of the major types of religion: Christianity, Judaism, Islam, Buddhism, Hinduism and non-christian Religions. Belief systems in Kenya. Contemporary schools of Religious thought. How Religious belief affects human behavior in society.

REST 221: Character Building (45/0 CF 3.0 L2 B2)

Concept of character building. Goals of character building: personal and psychological, positive and self concept, interpersonal skills, responsibility, social goals (social beliefs and norms, intellectual traditions, preserving the environment). Faith as a psychic process and social influences in character building. Role and identity of the teacher/minister/pastor in religion relating to character building. Criteria for building character in the classroom. Human virtues: acceptance, trust, honesty, fairness, obedience and helpfulness.

REST 300: Church History I (45/0 CF 3.0 Y3 S1)

Background to the formation of Christianity, Roman, Greek and Jewish factors of the AD 1st Century Palestine, apostolic Church, church under persecution, church and state relationship, Constantine and the Edict of Milan, conciliarism, church creeds – Rise of Papacy and Papal authority and medieval Christianity (Y3S1).

REST 301: Research Methods in Religion (45/0 CF 3.0 Y3 S1)

Theories relating to needs and functions of Modern research Methods in religion, Nature of scientific systems; theological research, open and close adaptive systems, Qualitative and Quantitative research methods, defining a research problem, sampling, data collection, analysis and Reporting, use of ethics in research. (Y3S1)

REST 302 Religion, Work and Leisure (Elective 45/0 CF 3.0 Y2 S1)

Introduction to the concept of work and leisure in relation to religion, theories of work, and leisure, the relationship between religion, work and leisure in society as well as benefits and challenges inherent in

this relationship. Discuss aspects of voluntarism, religious tourism and leisure activities linked to religion.

REST 303: Islamic Culture and Civilization (45/0 CF 3.0 Y3 S2)

Survey of the history of Islamic civilization, social, economic, cultural aspects, Islamic worlds from 7th Century up to the present. Thematic issues: Contribution of pre-Islamic Arabian cultures, Socio-political legacies of Prophet Muhammad and the early caliphates and dynasties. The rise and maturity of various scientific disciplines in Islamic empires in medieval periods, and cultural diversities. Contributions to architectures, food, music, education, commerce, jurisprudence, language in areas beyond Arabia. Gradual decline of Islamic civilization in the pre-colonial, Colonial and post-colonial periods, Reforms and revivalism in modern Islam and Reflections on Islamic civilization and cultures today. **(Requirement: Field Trip)**

REST 307: Religion and Politics in Africa (45/0: CF3.0)

Nature of a Theocentric State, The Missionaries and the Foundation of States in Africa; the relationship between Church and State, Concepts of African Political Systems, the role of Religious Movements in pre and Post- Independent African States: Church and Political Liberation; Human rights and African Government

REST 306: Church History II (45/0 CF 3.0 Y3 S2)

16th Century Reformation: - Background; causes, course and effects. – reformation in Switzerland, Scotland, Britain. Counter-reformation. Internal Reform: Papacy, Christian orders, work of Ignatius Loyola, Luther, Calvin, Zwingli: Rise of Missionary societies and spread of Christianity to Africa. **(PREREQUISITE OF REST 300)(Y3S2)**

REST 307: Religion and Politics in Africa (45/0: CF3.0)

Nature of a Theocentric State, The Missionaries and the Foundation of States in Africa; the relationship between Church and State, Concepts of African Political Systems, the role of Religious Movements in pre and Post- Independent African States: Church and Political Liberation; Human rights and African

Government.

REST 309: Religion and Science (45/0 CF 3.0 Y3 S2)

Various definitions of Science and religion. The limitations and scope of the two disciplines, the sources of conflict between science and religion and mitigation. Thematic areas: miracles, cloning, surrogate motherhood, organ transplant and industry, abortion – theology and cosmology, evolution and Religion, continuity and discontinuity between Religion and Science.

REST 310: Quran and Hadith (45/0 CF 3.0 Y3 S2)

Introduction to the two principal textual sources of the Islamic tradition: The Qur'an and the Hadith, interplay between these sources, structure, content and style, textual compilation histories, contestations over interpretation, exegesis and commentaries from the early period to present day, status relation to relative function and social life. Early Qur'anic scholarship, codes and preservation of Holy Texts, development of Hadith literature, Quran and Hadith today.

REST 311: Religion and Environment (45/0 CF 3.0 Y3 S2)

Importance of environment, environmental ethics, African traditional Religion, and Environment, Christianity and environment, Islam and environment, other religions and environment, causes of environmental degradation in Kenya, Africa and the World, impact of environmental degradation on communities, issues in environmental degradation, the Kenyan constitution and the environment.

REST 312: Ecumenism in Africa (45/0 CF 3.0 Y3S2)

Definition of ecumenism, the concept of interreligious dialogue, contemporary ecumenical religious movements, rationale and history behind ecumenism, the relationship between Christian Churches and ecumenical movements, movements towards unity rather than unification, Eschatological and Christological formulae on Christian Unity. Issues affecting Christian unity: doctrinal, traditional and spiritual, history of ecumenism in Africa, dogmatism and authoritarianism – challenges to Ecumenism. **(Course Requirement; field trip).**

REST 313: Islamic Theology and Philosophy (45/0 CF 3.0 Y3 S2)

Philosophers and theologians in classical Islam, primary sources and their English translation, Islamic intellectuals and movements between ninth and twelfth centuries, examination of the nature of God, the immortality of the human soul, causality and miracles, and the creation of the world. Thematic issues: Fundamental Muslim belief, the Unity of Allah, Prophet-hood, the Day of Judgment, the Angels, the Revealed Books, emergence of Muslim Thought, rise of factions: The *Khawarij*, the *Shi'a*, the *Murji'a*, the *Qadariyya*, the *Jabriyya*, the *Ahl-al-Hadith* and the Sufis, Hellenistic challenge, The *Mu'tazila*, the *Hanabila* and the *Ash'ariyya*, The Philosophers and the Sufis, Developments in Sufism and the growth of the Sufi orders, The era of imitation. Islamic theology and philosophy in contemporary times.

REST 314: Indigenous beliefs in Kenya (45/0 CF 3.0 Y3 S1)

Sources for study and limitations, traditional problems associated with universals and particulars, reality and experience, causality space and time, myths of origin, concepts of God, witchcraft, magic and function, spirits, evils, rites of passage, concept of man, religious beliefs and environmental conservation, theological concepts of belief systems, symbolism, rituals and their interpretations. **(Requirement: field trip)**

REST 315: Research Project (45/0 CF 3.0 Y3 S1)

With the guidance of academic member of staff a student will select a research topic, from a given area, conduct a research and submit a written report between 7,000 and 10,000 words.

REST 323: Religion and Contemporary Ethical Issues (45/0 CF 3.0 Y3 S2)

Theories of ethics: teleological /deontological, examination of religious and ethical implications of drug abuse, alcoholism, child abuse, delinquency, sexuality, abortion, ethnicity/tribalism/racism and social conflicts, environmental ethics, idea of just /unjust war, death penalty. Thematic issues: Cloning, Bio Ethics, Same Sex Relations, Social Media and pornography, corruption (Prerequisite: REST 100)

REST 400: New Religious Movements in Africa. (45/0 CF 3.0 Y4 S1)

Definitions, examples of NRM drawn from across Africa e.g. *diniya Musambwa, Mungiki, Mumboism*, House of Yahweh, *Mary Akatsa, Kimbanguism in Central Africa, Shona movements in south Africa, Harrist Churches of Ivory Coast*, new Pentecostal and indigenous groups, backgrounds of founders, underlying causes, characteristics, doctrines and impact on followers and society at large. Thematic issues: Causes of NRM, recruitment, growth and missionary tactics, the relationships between NRM and mainstream religious groups, Discussions on emerging NRM. Media portrayal of NRM. Future of NRM, classification and typologies of NRM. (PREREQUISITE: REST 102) (Y4S1)

REST 401: History of Christianity in East Africa (45/0 CF 3.0 Y4 S1)

Portuguese Christianity, Missionary societies from Europe and America , African responses, the emergence of African Independent churches, rise and decline of early Christian missions in the coastal regions of East Africa, nineteenth century European Missionary activities in East Africa, twentieth century growth of Christian Church, problems and issues of Pentecostalism, ecumenism, evangelical fundamentalism, Christianity and colonialism, Church during colonial period, Church after colonial post colonial period, Church and state relationships, future of Christianity in East Africa. **Course Requirement: Field Trip** (PREREQUISITE OF REST 300, 305 AND 400) (Y4S1)

REST 404: Analysis of Selected Religious Texts (45/0 CF 3.0 Y4 S1)

Analysis of selected religious texts. Principles of hermeneutics, Texts will be selected from the Old Testament. Law, Historical writings. Prophetic, Poetical and Moral Books. New Testament and other religious scriptures like the Quran and Hadith, and scriptures from Asiatic religions. References made from Islamic, Christian, Bahai and other existing religious texts. (Prerequisite REST 200).

REST 405: Feminist Interpretation of Religious Texts (45/0 CF 3.0 Y4 S1)

Definition of feminism. Language used in interpreting certain religious passages from major scriptures. How women are viewed in religious communities. Contributions of women in theology, feminism. Feminist scholars such as Elizabeth Fiorenza, Rosemary Ruether, Ann Nasimiyu as case studies. Thematic issues: Feminism, history and growth of feminism, the place of women in major religious Texts, feminist interpretations of religious texts, Contribution of women in major Religious Tradition, The future of feminist interpretation of religious texts.

REST 406: Christian Theology in Africa (45/0 CF 3.0 Y4 S1)

History of Christian Theology in Africa, African Independent Churches, Missionary Theology/Colonial Theology. Indigenization and contextualization of Christianity, Moratorium debate, Church and politics. African Christianity and Theology of Reconstruction, The Ecumenical Movement, African Liberation Theologies and Christian theology. **Thematic issues:** The contributions of leading African Theologians; J.S. Mbiti, J. Mugambi, J. Walligo, L. Magessa, B. Idowu, D. Tutu, M. Butelezi among others.

REST 407: Religion and Development in Africa (45/0 CF 3.0 Y4 S2)

Definition and theories of Development, the role of religion in National Development, Government interventions and the role of Religion, North-South Relationships, Religion Social change in Africa, Christianity and Islam Informal and formal religious approaches, Religion and Education, agriculture, environment, medicine, economics, politics and civil law, Religion and social theories, Religion and Development in pre-colonial periods, The relationship between church and state. A critique of Religion and development. Development options i.e Socialism, Capitalism. Religion and Globalization. Thematic Issues: Development theories and their relevance to Development, Modernization Theory, Linear growth theory, Structuralism, Dependency theory – North-South Theories, New liberalism theory, Post-development Theory, Sustainable Development theory, Human Development theories, Basic needs approaches,

Ecological modernization theory, World systems theories. Course requires relevant resource person, and field trip (Y4S2) (PREREQUISITE: REST 202).

REST 409: Liberation Theology (45/0 CF 3.0 Y4 S2)

Define concept of liberation theology, History of Liberation theology (Latin America, USA, South Africa and the rest of Africa) Justification for liberation theology, Methodological implications, Liberation theology and theology of reconstruction, contributions of scholars such as Gustavo Gutierrez, Leonard Boff, James S Cone, Desmond Tutu, Henry Okullu, D. Buthlezi, Rosemary Ruether, John Waliggo, B. Bujo and others in the development of liberation Theology. Branches of liberation theology: Latin America, Feminist theology. Thematic Issues: Liberation theology, Maxism. (PREREQUISITE OF REST 306) (Y4S2).

REST 410: Contemporary Religious Thought (45/0 CF 3.0 Y4 S1)

Secularization, past and present; positive and negative responses, death of God theology, Ecumenism - dialogues among different religious movements. Contemporary schools of religious thought, Christian, Islam, near and far eastern religious philosophies. Thematic Issues: Secularization in Africa and its various indicators, responses to secularization: fundamentalism, Terrorism, NRM, Revivalism, Radicalization, Sectarianism. (Prerequisite REST 102, 312)

REST 412: Psychology of Religion (45/0 CF 3.0 Y4 S2)

Introduction to Psychological studies of Religion. Major theorists: Erick Erickson, S. Freud, C. Jung as well as discussions on religious experiences, Religion and human psychology, Mysticism, faith religious conversion, growth and commitment, Neurosis, nature of psychology of religion, Scope and theological interpretation; logo-therapy and psychotherapy, Personality theories and human development, Meaning of Belief in Religion, Cognitive aspect of Religion, Experience of Religion through Psychological origins, modern trends in psychology of Religion

REST 413: Theology of the New Testament (45/0 CF 3.0 Y4 S2)

The person and mission of Jesus Christ, the theology of the Gospel, St. Paul and Pauline writings. the

Christological controversy and the theology of other New Testament writings. Authorship, Pentecostal approach and Biblical Hermeneutics.

REST 415: Themes in Islamic Law (45/0 CF 3.0 Y4 S2)

Islamic law (*Shariah*) as a defining feature of Islamic faith in the world. The quran as basis of Islamic law, origins of Islamic law, its initial growth in the formative age of Islam, Islamic law and Islamic civilization, various schools of jurisprudence and related scholars, its place in colonial and modern states in world as well some of the pertinent issues related to application of Islamic law in the world today. **(Course requirement: field trip)**

REST 418: Modern Trends in Islam (45/0 CF 3.0 Y4 S2)

Current political and social conditions of the Muslim world, rise of pan-regional militant groups such as Boko Haram, Al-Shabaab to the Islamic State in Iraq, Contemporary Islamic religious movements e.g Sunni and Shi'i Islam and their social, political and historical contexts.

REST 419: Islamic Finance and Banking (45/0 CF 3.0 Y4 S2)

Islamic banking and finance and its history. Introduction to Islamic Banking and Finance in Africa and Kenyan in particular. Thematic issues: The origins and the most important concepts of Islamic Finance; The rationale behind the development of the Islamic finance industry, The nature and scope of the Islamic finance industry in relation to its conventional counterpart; the main principles of Islamic banking and finance, Key Islamic financial contracts, as used by the industry, that is, *Murabaha* and *Musharaka* contracts, *Ijara* and *Istisna'a* financing methods, *Salam* and *Takaful* insurance, The Islamic financial infrastructure, Kenyan and international financial institutions and *Shariah* regulatory bodies. (Course requires relevant resource person).

REST 423: Religion, Culture and Communication(45/0 CF 3.0 Y4 S2)

Define Culture, communication, Religion; establish links. Changing society and environment, cultural rites,

myths, liturgy. Religious participation: role of specialists; generation economic and cultural gaps. Impact of modern media. Indigenous methods of communication. Religion and mass media, communication. Establish the role of Religion in cultural environments, role and place of symbolism and modern communication forms on religion. Thematic Issues: Media authority, Textual interpretation, Legitimacy of leaders, Appearance

REST 424: Phenomenology of Religion (45/0 CF 3.0 Y4 S2)

How religion manifest itself in society. Study works of phenomenologists: Edmund Husserl and Van der Leeuw dimensions of religion; a critical study of religious theories and phenomenological methods; theories of religious development. Study of religious development from animism: totemism to polytheism, monotheism. Militant factors against religion. Karl Marx, Hegel and Nietzsche's views on secularism and secularization. Thematic issue: Essence of Religion.

RELIGIOUS STUDIES PROGRAMME LEARNING OUTCOMES MATRIX

RELIGIOUS STUDIES PROGRAMME LEARNING OUTCOMES MATRIX								
	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Y3	CF	Y4	CF
i) To give students a broad based and multidisciplinary academic foundation;	Introduction to the Study of Religion Religious Beliefs	3.0 3.0	Philosophy of Religion	3.0	Research Methods in Religion Religion and Contemporary Ethical Issues Phenomenology of Religion	3.0 3.0 3.0	New Religious Movements in Africa History of Christianity in East Africa Analysis of Selected Religious Texts	3.0 3.0 3.0
ii) To provide students with broad and relevant knowledge in Arts, Humanities and Social Sciences that is sufficient to expose them to numerous job opportunities.	Sociology of Religion	3.0	Comparative Religion	3.0	Religion, work and leisure Islamic Civilization and Culture Religion and Politics in Africa Religion and Science	3.0 3.0 3.0 3.0	Contemporary Religious Thought Theology of the Old Testaments Religion and Development in Africa	3.0 3.0 3.0
iii) To equip students with analytical skills to enable them to participate in social, economic and political development.	African Religion	3.0	Introduction to Biblical Studies	3.0	Themes in Quran and Hadith Religion and Environment Ecumenism in Africa Islamic Theology and Philosophy	3.0 3.0 3.0	Liberation Theology Electives Christian Theology in Africa Theology of the New Testament	3.0 3.0 3.0
iv) To train graduates who are able to teach, conduct research and handle societal responsibilities in private and public enterprises	Religion and Ethics in Society	3.0	Character Building	3.0	Research Project	3.0	Islamic Law Modern Trends in Islam	3.0 3.0

SOCIOLOGY

YEAR 1 SEMESTER 1

CODE	TITLE	L	T	P	C.F.
SOCI 101	Introduction to Sociology	45	0	0	3.0
SOCI 102	Introduction to Anthropology	45	0	0	3.0
COMS 111	Communication Skills	45	0	0	3.0
TOTAL		135	0	0	9.0

YEAR 1 SEMSTER 2

SOCI 103	Rural Sociology	45	0	0	3.0
SOCI 104	Introduction to Social Work	45	0	0	3.0
PHIL 104	Philosophy and Society	45	0	0	3.0
HUR1 100	Introduction to Human Rights	45	0	0	3.0
TOTAL		180	0	0	12.0

YEAR 2 SEMESTER 1

SOCI 201	Methods of Social Research I	45	0	0	3.0
SOCI 202	Community Development and Social Welfare	45	0	0	3.0
SIHL 100	Society and International Humanitarian Law	45	0	0	3.0
TOTAL		135	0	0	9.0

YEAR 2 SEMESTER 2

SOCI 203	Social Structures of East African Societies	45	0	0	3.0
SOCI 204	Social Institutions	45	0	0	3.0
ENSC 100	Environmental Education	30	0	0	3.0
TOTAL		120	30	0	9.0

YEAR 3 SEMESTER 1- Core Courses (3.3.1.1)

SOCI 301	Foundations of Sociological Theory	45	0	0	3.0
SOCI 302	Social Statistics 1	45	0	0	3.0
SOCI 303	Criminology	45	0	0	3.0
SOCI 304	Social Psychology	45	0	0	3.0
	ELECTIVE	45	0	0	3.0
TOTAL		270	0	0	15.0

YEAR 3 SEMESTER 2 (3.3.1.1)

SOCI 305	Methods of Social Research II	45	0	0	3.0
SOCI 306	Social Policy and Administration	45	0	0	3.0
SOCI 307	Social Demography (3.3.1.1)	45	0	0	3.0
SOCI 308	Research Project I (3.3.1.1)	60	0	0	2.0
COMP 101	Introduction to computer Application	45	0	0	3.0
	Elective	45	0	0	3.0
TOTAL		225	0	0	17.0

SEMESTER 1(3.3.2.2.)

CODE	TITLE	L	T	P	C.F
SOCI 301	Foundation of Sociological Theory	45	0	0	3.0
SOCI 304	Social Psychology	45	0	0	3.0
SIHL 100	Society and IHL	45	0	0	3.0
TOTAL		135	0	0	9.0

YEAR 3 SEMESTER 2 - Core Courses

SOCI 303	Criminology	45	0	0	3.0
SOCI 306	Social Policy and Administration	45	0	0	3.0
ENSC 100	Introduction to Environmental Science	30	30	0	3.0
TOTAL		120	30	0	9.0

Electives

SOCI 311	Urban Sociology	45	0	0	3.0
SOCI 312	Sociology of Work and Occupation	45	0	0	3.0
SOCI 313	Sociology of Family Planning and Population Policies	45	0	0	3.0
SOCI 314	Gender Issues & Development	45	0	0	3.0
SOCI 315	Formal Organizations	45	0	0	3.0
SOCI 316	Race, Ethnicity and Stratification	45	0	0	3.0
TOTAL		270	0	0	18.0

YEAR 4 SEMESTER 1 - Core Courses (3.3.1.1)

SOCI 401	Contemporary Sociological Theory	45	0	0	3.0
SOCI 402	Environmental	45	0	0	3.0

	Sociology				
SOCI 403	Social Statistics II	45	0	0	3.0
SOCI 404	Research Project II	0	60	0	2.0
	ELECTIVES	45	0	0	3.0
TOTAL		225	60	0	17.0

YEAR 4 SEMSTER 2 - Core Courses

SOCI 405	Social Gerontology	45	0	0	3.0
SOCI 406	Social change and Development	45	0	0	3.0
SOCI 409	Disaster Management	45	0	0	3.0
SOCI 407	Seminars (Presentations & Discussions Research Work)	15	30	0	2.0
	ELECTIVES	45	0	0	3.0
TOTAL		150	30	0	11.0

Core Courses (3.3.2.2)

SOCI 401	Contemporary Sociological Theory	45	0	0	3.0
SOCI 402	Environmental Sociology	45	0	0	3.0
	ELECTIVES	45	0	0	3.0
TOTAL		135	0	0	9.0

SEMESTER 2Core Courses (3.3.2.2)

SOCI 409	Disaster Management	45	0	0	3.0
SOCI 406	Social Change and Development	45	0	0	3.0
	ELECTIVE	45	0	0	3.0
TOTAL		135	0	0	9.0

Electives

SOCI 411	Sociology of Mass Communication	45	0	0	3.0
SOCI 415	Conflict Resolution and Management	45	0	0	3.0
SOCI 416	Medical Sociology	45	0	0	3.0
CODE	TITLE	L	T	P	C.F
SOCI 412	Sociology of Deviant Behaviour	45	0	0	3.0
SOCI 413	Political Sociology	45	0	0	3.0
SOCI 414	Human Ecology	45	0	0	3.0
TOTAL		270	0	0	18.0

(c) COURSE DESCRIPTION

SIHL 100: Society and International Humanitarian Law (45/0: CF 3.0) Y2S1

Introduction to International Humanitarian Law. The four Geneva Conventions and Additional Protocols. Theoretical approaches to an historical development of armed conflicts and the law of war. Rules and Principles in armed conflict. Protection of the wounded, the sick and the shipwrecked and combatant's status. Protection of prisoners of war, protection of the civilian population in the hands of the enemy. Role of the medical personnel and of humanitarian actors. The socio-economic, social and psychological implications of armed conflicts and their management. Armed conflicts of a non-international character. Human Rights and International Humanitarian Law. Refugees and armed conflicts. African traditional forms of Law and Justice with regard to armed conflicts and victims of the same. Practical aspects of conflicts preparedness.

SOCI 101: Introduction to Sociology (45/0: CF 3.0) Y1S1

A general introduction to the origins of Sociology; basic concepts, principles and processes, including socialization, primary groups, race relations, the family, religion, culture, deviance, stratification, and elementary forms of social organization.

SOCI 102: Introduction to Anthropology (45/0: CF 3.0) Y1S1

The nature and scope of anthropology. Definition of Anthropology, Growth and Development of the Discipline, Relationship between the discipline and other social sciences. The significance of our evolutionary past for an understanding of the contemporary conditions of mankind. Definition and understanding of cultural concepts; ethnocentrism, culture relativism, acculturations and socialization, culture and development.

SOCI 103: Rural Sociology (45/0: CF 3.0) Y1S2

Application of Sociological concepts to the rural environment. The effects of rural life upon personality in developing countries in general and in East

Africa specifically. Rural issues such as land tenure, land use and settlement patterns, social change and development.

SOCI 104: Introduction to Social Work (45/0: CF 3.0) Y1S2

Definition of basic terms and concepts. Social work as a welfare science and art. Social work policy and administration. Individual appreciation of life tasks, complexity and diversity. Models and theories of social work. Social work values and interests. Professional skills and facilitation of communication in social groups, communities and the larger society. Emerging issues in contemporary social work practice (i.e drug abuse, HIV&AIDS, Crime etc)

SOCI 201: Methods of Social Research 1 (45/0: CF 3.0) Y2S1

Basic tools used in conducting social research, such as observation; experimentation and survey techniques. Students will be taught to write research proposals, data collection and analysis, etc.

SOCI 202: Community Development and Social Welfare (45/0: CF3.0) Y2S1

Processes and techniques of community development. Effective methods for improving the general well-being of community residents through community development. Problems of community development and social welfare. The role of local authorities and voluntary agencies.

SOCI 203: Social Structure of East African Societies (45/0: CF 3.0) Y2S2

The sociological issues and theories used in the study of East African Societies. Traditional, social, political and economic organizations, colonialism, decolonisation and political change in the region.

SOCI 204: Social Institutions (45/0: CF 3.0) Y2S2

The structure and functions of social institutions, such as family, education, religion, economic, political, health and medicare. Institutional change, challenges and social and social organization

SOCI 301: Foundation of Sociological Theory (45/0: CF 3.0) Y3S1

The main types of sociological theory. The contribution of Auguste Comte, Karl Marx, Emile Durkheim, Max Weber and others who have contributed to the development of the discipline of sociology.

SOCI 302: Social Statistics I (45/0: CF 3.0) Y3S1

Introduce the basic concepts of statistics e.g levels of measurement, graphical representation of data, measures of central tendency and dispersion. The probability theory and probability distribution e.g. binomial, normal and standard normal distributions. Sampling theory and sampling distributions.

SOCI 303: Criminology (45/0: CF 3.0) Y3S2

The nature of crime, criminal law, theories of causes of crime, professional or organized crime, prevention, the traditional and modern methods of treatment of offenders, types of punishment, the rationale of justification for punishment, efficacy or non-efficacy of type of punishment, social reaction to crime, alternatives to imprisonment and crime control in societies.

SOCI 304: Social Psychology (45/0: CF 3.0) Y3S1

Definition of social psychology. The historical development. Interrelationships between social Psychology and Sociology. Applications of social psychology to social life and life experiences. Theories in Social psychology. Personality development, social perception, Social influence, attitude formation and change. social motivation issues.. Sociological and Psychological explanations of conformity and deviation. Symbolic interaction in Sociology and psychology.

SOCI 305: Methods of Social Research II (45/0: CF 3.0) Y3S2

Scientific methods of social research; including research design; sources of data and data collection, qualitative and quantitative techniques for measurement analysis and inference of social data.

(Prerequisite SOCI 201)

SOCI 306: Social Policy and Administration (45/0: CF 3.0) Y3S2

Critical analysis of social policy and administration in selected programme areas. The process of social policy analysis, current issues in funding and monitoring of social services and strategies for dealing effectively with social problems.

SOCI 307: Social Demography (45/0: CF 3.0) Y3S1

The behavior basis for trends in fertility, mortality and migration, and consequences of population trends for social structure in East Africa and the developing world as a whole. Demographic theories and possible explanations or conditions for their change in relation to socio-economic conditions.

SOCI 308: Research Project I (60/0: CF 3.0) Y3S1

This project is open only to students enrolled in 3:3:1:1 programme. It involves data collection on a specific research topic. The activity takes place during the vacation at the end of third year of study

SOCI 311: Urban Sociology (45/0: CF 3.0) Y3S2

Concepts e.g. urban community, development and welfare. The history, nature and norms of urban communities. Theoretical foundations, ecological and demographic characteristics. The causes of urbanizations and sources of urban community development services. Rural-urban migration. Urban health, housing, water, education and transport services. Self-help organizations in urban areas. Research issues in urban community development and social welfare. Socio-economic and political issues in urban communities in Kenya.

SOCI 312: Sociology of Work and Occupations (45/0: CF 3.0) Y3S2

The meaning of work and leisure in modern society, work commitment, prestige of occupations, occupational groups and organizations, impact of occupational segregations by sex and race, and occupational structures; unemployment and politics; job and career mobility; and improvement of work

life and leisure.

SOCI 313: Sociology of Family Planning and Population Policies (45/0: CF 3.0) Y3S2

Definition of concepts. Historical and current trends in family planning in developing and developed countries. Population growth projections and family planning. The socio-cultural, political, economic and gender issues in family planning. Family planning policies, programmes and contraceptive methods as differentials in population and family planning.

SOCI 314: Gender Issues (45/0: CF 3.0) Y3S2

An overview of the recent history of approaches to women and development. The economic, political, educational, cultural and religious factors contributing to socially ascribed roles attributed to masculinity and femininity. The structure and dynamic of gender relations to the analysis of social organization and social progress; and the forces that affect men and women's ability to direct and benefit dominance at the household, community, national and international levels and their ramifying effects on major societal institutions such as the family, the school, the church, the economy and the polity.

SOCI 315: Formal Organizations (45/0: CF 3.0) Y3S2

Major approaches to the study of organizations, theories of bureaucratic structures, relationship of personality to formal and informal structures. Positions, roles, norms and authority structures in organizations.

SOCI 316: Race, Ethnicity and Stratification (45/0: CF 3.0) Y3S2

The general nature of race/tribe and ethnic relation in society including such aspects as cultural and structural assimilation, cultural pluralism, and social class. How race and ethnic inequalities are institutionalized, legitimized and established as stratification systems; slavery, caste and estates..

SOCI 401: Contemporary Sociological Theory (45/0: CF 3.0) Y4S1

Modern theoretical approaches in Sociology, such

as symbolic interactionism, structural- functionalism and other approaches. **(Prerequisite SOCI 301)**

SOCI 402: Environmental Sociology (45/0:3.0 CF) Y4S1

Planned and replanned environment. Concepts e.g. environment vs ecology, conservation, degradation, rehabilitation, pollutions. Global, African and Kenyan environmental policies, protection law and extension services. Environment and population growth. Socio-economic activities and politics in environmental change, effects and influence on social life. Forms of environmental pollution e.g. global, continental, regional, industrial and domestic. Micro-vs macro conflict in environmental pollution and policy. Research issues in environment and pollution in Africa and Kenya. Sustainable development and intergenerational equity.

SOCI 403: Social Statistics II (45/0: CF 3.0) Y4S1

Concepts in statistical inference, especially on theory and estimation. Hypothesis testing and advanced statistical measures e.g. Chi-square, correlation and regression analyses. Measures on Schuporout. The theory of causality, reliability and validity of measurement. The usefulness and application of statistics in sociology and social sciences generally. **(Prerequisite SOCI 302)**

SOCI 404: Research Project II (45/0: CF 3.0) Y4S1

An independent research project on a specific topic under the supervision of an individual faculty member. Open only to students enrolled in 3.3.1.1 programme. **(Prerequisite SOCI 308)**

SOCI 405: Social Gerontology (45/0: CF 3.0) Y4S2

The social aspects and implication of ageing at micro-levels. Social services for the elderly and national planning. The socio-economic, political and religious roles of the elderly. The influence of society on ageing and its definition. Ageing as a gender issue in traditional and modern societies. The socio-psychological aspects of ageing, retirement and expectations of death.

SOCI 406: Sociology of Mass Communication (45/0: CF 3.0) Y4S4

Nature and scope of communications, models of the communication process; qualities of mass communication. Functions of communication in organizations and its general functions in society, communication in organizations and the various communication networks used. Types of media e.g. press, television, radio, cinema etc and their functions. The impact of media in society.

SOCI 406: Social Change and Development (45/0: CF 3.0) Y4S2

Classical and recent theories of social change and development. Different kinds of social change and the factors that facilitate them or the means by which they are brought about. Techniques of development planning, project implementation and evaluation with references to Eastern Africa.

SOCI 407: Seminars (45/0: CF 3.0) Y4S2

Presentation and discussion of students research work.

SOCI 409: Disaster Management (45/0: CF 3.0) Y4S2

Definition of basic concepts and terms. Different types of disasters i.e natural and man – made. Causes and types of disasters, disaster prevention, preparedness and relief. Early warning systems and various disaster policies at regional and national levels. Disaster management cycles. Disaster management and public awareness. The role of Technology in disaster management. The physical, health, psychological and emotional and socio- economical impact of disasters. The vulnerable groups in disasters and policy measures.

SOCI 412: Sociology of Deviant Behaviour (45/0: CF 3.0) Y4S2

Processes by which some actions of society become deviant. Particular forms of deviance such as mental illness, suicide, riots, prostitution's, use of drugs, vice and white collar crime. A general theory of the causes of deviance. Control and management of deviance.

SOCI 413: Political Sociology (45/0: CF 3.0) Y4S2

The contribution of sociology to the study of politics, including the political aspects of social

systems, the social context action, and the social basis of power. The relationship of political and economic elites with the social groups in East African societies.

SOCI 414: Human Ecology (45/0: CF 3.0) Y4S2

Concepts and definition of human ecology and environment. Human ecology systems, organisation and changing patterns and structures. Planned and unplanned human ecology e.g. integrated and/or special settlement areas. The social-cultural economic and political

consideration eg. environmental refugees due to drought, wars, industrial accidents. Implications of human settlement on planning, programmes and policies in Kenya and Africa in general.

SOCI 415: Conflict Resolution and Management (45/0: CF 3.0) Y4S2

Definition, types and levels of conflict. Causes of conflicts in society. Social conflicts as a theory of social change. Social harmony versus class conflict. Social inequality and conflict. Social conflict and violence. Social function of conflict and violence. Psychological, socio- economic, cultural and political implications of conflicts. Methods and theories of conflict prevention and management. The role of national and international organizations and Institutions in conflict management.

SOCI 416: Medical Sociology (45/0: CF 3.0) Y4S2

The sociology of health and illness behaviour and the social structure of systems which deliver health services, including social constraints on illness, medical organizations and profession and the application of the illness model to deviant forms of behaviour. Social and cultural factors in the cause of and treatment of illness, sociological analysis of the structure and function of health agencies and occupations.

SOCIOLOGY LEARNING MATRIX

Programme Learning Outcomes (PLO)	Year 1		Year 2		Year 3			Year 4	
	Courses	CF	Courses	CF	Y3	CF	Y4	CF	
To give students a broad based and multidisciplinary academic foundation; .	Introduction to Sociology Introduction to Anthropology Rural Sociology Introduction to Social Work	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0	
		3.0	Community Development and Social Welfare	3.0	Social Psychology	3.0	Environmental Sociology	3.0	
		3.0							
		3.0	Society and International Humanitarian Law	3.0	Urban Sociology	3.0	Sociology of Mass Communication	3.0	
			Collective Behavior and Social Movement	3.0	Race, Ethnicity and Stratification	3.0	Sociology of Deviant Behaviour	3.0	
			Sociology of the Family	3.0	Methods of Social Research II		Conflict Resolution and Management	3.0	
			Social Structures of East African Societies	3.0	Social Policy and Administration	3.0		3.0	
			Social Institutions	3.0	Sociology of Work and Occupation	3.0	Social Change and Development	3.0	
							Disaster Management	3.0	
			Social Roles	3.0	Sociology of Family Planning and Population Policies	3.0	Political Sociology	3.0	
				3.0	Gender and Development	3.0	Human Ecology	3.0	
							Medical Sociology		
		ii) To provide students with broad and relevant knowledge in Arts, Humanities and Social Sciences that is sufficient to expose them to numerous job opportunities.	Introduction to Sociology Introduction to Anthropology	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories
3.0	Community Development and Social Welfare			3.0	Urban Sociology	3.0	Sociology of Deviant Behaviour	3.0	
	Social Structures of East African Societies			3.0	Race, Ethnicity and Stratification	3.0	Conflict Resolution and Management	3.0	
	Social Institutions			3.0	Methods of Social Research II	3.0	Social Change and Development	3.0	
	Social Roles			3.0	Social Policy and Administration	3.0	Disaster Management	3.0	
							Sociology of Work and Occupation	3.0	Human Ecology
					Gender and Development	3.0			
iii) To equip students with analytical skills to enable them to participate in social, economic and political development.			Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0	
			Community Development and Social Welfare	3.0	Methods of Social Research II	3.0	Environmental Sociology	3.0	
			Collective Behavior and Social Movement	3.0	Social Policy and Administration	3.0	Sociology of Mass Communication	3.0	

			Social Structures of East African Societies	3.0	Gender and Development	3.0	Medical Sociology	3.0
			Social Institutions					
iv) To train graduates who are able to teach, conduct research and handle societal responsibilities in private and public enterprises	Rural Sociology Introduction to Social Work	3.0	Methods of Social Research I	3.0	Foundations of Sociological Theories	3.0	Contemporary Sociological Theories	3.0
		3.0	Community Development and Social Welfare	3.0	Social Psychology	3.0	Environmental Sociology	3.0
			Collective Behavior and Social Movement	3.0	Urban Sociology	3.0	Sociology of Mass Communication	3.0
			Sociology of the Family	3.0	Race, Ethnicity and Stratification	3.0	Sociology of Deviant Behaviour	3.0
			Social Structures of East African Societies	3.0	Methods of Social Research II	3.0	Conflict Resolution and Management	3.0
			Social Roles	3.0	Social Policy and Administration	3.0	Social Change and Development	3.0
					Sociology of Work and Occupation	3.0	Disaster Management	3.0
					Sociology of Family Planning and Population Policies	3.0	Political Sociology	
					Gender and Development		Human Ecology	
							Medical Sociology	

FACULTY OF COMMERCE



DIPLOMA IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

1. Philosophy of the programme

The diploma in procurement and supply chain management is based on the belief that only graduates with knowledge and skills in procurement can critically analyse issues related to business and supply chain management.

2. Rationale

The Diploma in Procurement and Supply Chain Management endeavours to produce graduates with the skills and knowledge required for efficient acquisition and disposal of organization resources. The development of the programme is premised on:

- i) The fact that Kenya and the rest of East Africa region have dire shortage of qualified procurement staff.
- ii) The need to support the ongoing professionalization of the procurement process.
- iii) This process is driven by increasing public awareness of the need to guard against waste and corrupt use of public resources.
- iv) The need to provide manpower that will drive Kenya's vision 2030. The vision envisages the channelling of considerable resources to certain identified key sectors. This will strengthen existing procurement capacity. There is therefore need to expand training opportunities so as to ensure realization of your vision.
- v) The need to come up with an innovative training programme that is cognizant of the changing environment in which procurement is conducted.

3. Goal of the programme

The programme will aim to equip students with skills that are relevant to industry to the dynamic industry needs and uphold the key principle in the various discipline areas.

4. Programme learning outcomes

By the end of training, this programme is expected to:

- i). Enable the graduates to acquire skills and knowledge for proper management of Organizations' resources.
- ii). Enable the graduates to effectively and efficiently handle acquisition and disposal of Organizations'
- iii). Enable graduates to carry out research with a view to finding solutions to procurement problems affecting the organization.
- iv). Equip students with skills for career in procurement and Supply Chain Management in the public and private sector
- v). Prepare students for further studies.

5. Mode of Delivery

The programme will be delivered in full time and part time

6. Academic Regulation for the Programme

6.1 Admission Requirements

The common University admission criterion is applicable. In addition

- i) The candidate must have obtained at least a mean grade of C- (minus) at Kenya Certificate of Secondary Education (K.C.S.E) Level or Division III at Kenya Certificate of Education (KCE) or equivalent qualification.
- ii) The candidate must have also obtained at least a C- (Minus) in mathematics and at least a C- (Minus) in English or Kiswahili.
- iii) Candidates with mean grades of C- (minus) but have less than C- (Minus) in Mathematics and English or Kiswahili can be admitted after bridging in the respective subjects.
- iv) Candidates with a credit in certificate in business from Institution recognized by the Academic Board, and having a mean grade of D+ or equivalent in their K.C.S.E, are also eligible for admission.
- v) Holders of Accounting Technicians Certificate (ATC) Final Level are also eligible for admission.

6.2 Regulation on credit transfer in the programme

Credit transfer shall be done in adherence to Egerton University Statute of 2013 article 36(3) for undergraduate programmes.

6.3 Course requirement

The requirements are as per the ISO procedures EU/AA/OP/06 rev 3.

6.4 Students Assessment Policy/Criteria

All examination shall be conducted in accordance with Egerton University Statute no. 36 of 2013.

6.5 Grading System

The grading system will be in accordance with Egerton University Statute no. 36 of 2013.

6.6 Examination regulation

All Examination of the university shall be conducted in accordance With Egerton University Statute no. 36 of 2013 (The examination administration will be guided by the ISO document on work instruction on work instruction for examination administration (DOC NO.EU/AA/W1/11).

6.7 Moderation of Examinations

ISO procedure (EU/AA/OP/07) regulation requirement on moderation of examination shall apply.

6.8 Graduation requirement.

To graduate with a Diploma in Procurement and Supply Chain Management, a student shall be required to take and pass all scheduled courses within the stipulated time.

6.9 Diploma classification

Diploma classification shall be in accordance with Egerton University Statute No. 36 of 2013.

7. Course evaluation

Diploma classification shall be in accordance with Egerton university statute No. 36 of 2013.

8. Management and Administration of the programme

8.1 Host department and programme Academic leader

The programme shall be hosted by Department of Accounting, Finance and Management science in the Faculty of Commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

All programs shall undergo an internal programme self-evaluation at the end of each programme academic cycle. Each programme shall be benchmarked with at least one such program in highly ranked university. Refer to ISO procedure EU/VC/OP/05

8.3 Course Coding and Duration

- The course coding prefix is the four letters BPSM where 'B' denotes Business and PSM denotes Procurement Supply Chain Management.
- The courses borrowed from other programmes have codes that reflect those programmes.
- The abbreviation is followed by a set of four digits as follows.
 - The first digit is zero (0) indicating a Diploma programme
 - The second digit is either 1 or 2 denoting the year the course is offered.
 - The third digit is discipline specific, e.g. **3 denote HRM.**
 - The last digit indicates the sequencing of the course i.e. 0, 1, 2, 3...

9. Schedule of Courses

YEAR I SEMESTER 1

CODE	TITLE	L	T	C.F.
BACT 0110	Principles of Accounting	45	0	3.0
BMGT 0100	Introduction to Business	45	0	3.0
BMGT 0101	Business Communication	45	0	3.0
BOPM 0140	Management Mathematics	45	0	3.0

BPSM 0160	Principles of Procurement	45	0	3.0
BECO 0101	Principle of microeconomics	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	T	C.F.
BPSM 0161	Stores and Inventory Management	45	0	3.0
BPSM 0162	Public procurement	45	0	3.0
BPSM 0163	Retail and Merchandise Management	45	0	3.0
BFIN 0130	Principles of Financial Management	45	0	3.0
BMGT 0102	Principles of Management	45	0	3.0
BBIS 0150	Fundamentals of computer Applications	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1

BECO 0202	Principle of microeconomics	45	0	3.0
BPSM 0264	Procurement and Supply Chain Management	45	0	3.0
BPSM 0265	International Procurement	45	0	3.0
BOPM 0241	Business Statistics	45	0	3.0
BPSM 0266	Logistics Management	45	0	3.0
BPSM 0267	Procurement policy and Strategy	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	T	C.F.
BENT 0220	Principles of Entrepreneurship	45	0	3.0
BPSM 0268	Project and contract management	45	0	3.0
BPSM	Negotiation in	45	0	3.0

0269	procurement and supply			
BACT 0211	Introduction to Management accounting	45	0	3.0
BOPM 0242	Research Methods	45	0	3.0
BMGT 0203	Business law	45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 1

BPSM 0361	Supplies and Materials Management	45	0	3.0
BPSM 0362	Clearing and Forwarding	45	0	3.0
BACT 0312	Taxation	45	0	3.0
BPSM 0363	Ethics and legal aspect in procurement and supply	45	0	3.0
BMKT 0351	Principles of marketing	45	0	3.0
BOPM 0343	Research project	45	0	3.0
TOTAL		270	0	18.0

(c) Course Descriptions

BPSM 0160: Principals of Procurement (45/0 C.F 3.0) Y1 S1

Definition scope and objectives of purchasing. Relationship with other functional departments, organizational structure. Procurement procedures. Specifications .Purchasing methods and decisions. Inventory control techniques. Information technology in purchasing. Ethics in procurement. Nature of objectives, planning and policies of procurement. Supply organization and structure. Strategic planning and choice, Strategic resource allocation and control, strategic supply chain management. Supply organization and structure

BPSM 0161: Stores and Inventory Management (45/0 C.F 3.0) Y2 S1

Determining stock holding policy, inventory control techniques: EOQ, ABC, 2 Bins system, MRPL, MRPII, DRP, JIT. Control of inventory techniques: Information system in inventory management. Storage facilities, stores layout and location. Security, safety and prevention of theft. Disposal of redundant obsolete and scrap items. Management aspects: Health and safety at work, operational issues, relationship with other team functions. Relevant techniques in inventory management: queuing theory, network analysis and simulation techniques.

BPSM 0162: Public Procurement (45/0 C.F 3.0) Y1 S2

Nature and scope of public procurement: meaning, role, legal framework and public procurement environment. Organization structure in public procurement. Procurement functions: procurement methods, source of supply, quality control, international trade, clearing and forwarding, disposal of stores and equipment. Financing public procurement: budgeting systems in public sector, methods of funding. Procurement: sourcing from abroad challenges of sourcing from abroad, Documentations in international procurement, Bills of exchange, letters of credit, shipping documents, customer documentation, procedures in international sourcing international logistics.

BPSM 0163: Retail and Merchandise Management (45/0 C.F 3.0) Y1 S2

Retail environment, retail strategy, marketing strategy, marketing research, merchandise management assessment and selection of suppliers, merchandise and location. Retail marketing mix. Information system in retail business

BPSM 0264: Procurement and Supply Chain Management (45/0 C.F 3.0) Y2 S1

Concepts of Procurement management and Supply Chain management: definition of purchasing, supply/store management, material management and supply chain management. Development of logistics. Relationship with other prime functions .Developing

purchasing liaison. Procurement operating. Managing suppliers. Cost management in supply chain. Negotiations, warehousing, material handling, packaging and transport.

BPSM 0265: International Procurement (45/0 C.F 3.0) Y2 S1

Definition of international procurement, sourcing from abroad: challenges of sourcing from abroad, documentation of customers. International procurement: Bills of exchange, letters of credit, shipping documentation. Terms of contract: Foreign trade, zones and bonded warehouse. Procedures in international sourcing. International Logistics

BPSM 0266: Logistics Management (45/0 C.F 3.0) Y2 S1

Definition and concepts of logistics. Operating environment: External and internal environment. Warehousing, materials handling, packaging. Inventory control, vehicle routing and scheduling. Control of transport. Procurement of transport service. Physical distribution concepts, planning deliveries, customer communication, network planning techniques

BPSM 0263: Procurement Policy and Strategy (30/30 C.F 3.0) Y2 S1

Concept of Strategy; Strategic Planning, Formulation Procurement and Supply Chain Management Organization Structures; Supply market Analysis; Strategy Formulation in Supply Chain Management; Kraljic Model, BGG Portfolio Matrix; Value Addition in Strategic Supply Chain Management- Porters Value Chain; Hine's Value Chain Model; Strategic Sourcing and Supplier Selection; Supplier Relationship Management Understanding Procurement and supplies policy and strategy, Procurement and supplies policy, Procurement and supplies strategy and its importance to the organization, aligning Procurement and supplies objectives to corporate strategy, common techniques in Procurement and supplies strategies, development of product specific Procurement and supplies objectives, types of supplier relationships in relation to policy and strategy for supplies of individual products and services, common techniques in Procurement and supplies

strategies; supplier relationships; strategies for supplies of individual products and services.

BPSM 0268: Project and Contract Management (45/0 C.F 3.0) Y2 S2

Project management methodology Varying nature of project work in business, setting objectives in procurement projects; planning, organizing, coordinating and controlling projects using appropriate tools; teamwork, leadership and motivational aspects of project management, use of IT software for improved project contract management.. Project appraisal and assessment. Project appraisal, including methods of investment appraisal and assessment of risks; pre - contract considerations with regard to the use of consultants, deployment of people, initiation of joint ventures and appointments of sub –contractors; use of tendering procedures .Contractual issues: Competitive, negotiated, turnkey, multiple management, design, build and operate contract strategies; aspects of the contract, the specification, the performance measures and the contractual terms, contractual clauses, operation of alternative pricing methods; forms of dispute resolution, legal considerations, project funding methodology. Contract management: Contractual control using network analysis techniques; measurement and reporting of progress, cost control with regard to certification and payment, management and negotiation of variations and claims; monitoring and negotiating improvement to supplier performance, contract closure and liability for defects, post implantation appraisal.

BPSM 0269: Negotiation in Procurement and Supply (45/0 C.F 3.0) Y2 S2

Planning negotiation: definitions, market analysis, building a cost model; conducting a SWOT analysis; generating variables, understanding supplier organization, people involved, position and interest, determining balance of power. Negotiation of objectives and strategy Approaches to negotiation: adversarial, partnership negotiations, evaluation of adversarial and partnership negotiations, transforming adversarial attitudes, team and individual approaches...

Content of negotiations terms and conditions of contract, partnership sourcing, preferred supplies status, supplier involvement in design and development and value analysis, sharing technologies.

Preparation of negotiation and negotiation process: venue, gathering intelligence, determining objectives, stages, persuasion techniques, negotiation tactics and strategy, characteristics of successful negotiators, body language, negotiating with people from other countries, negotiating by telephone.

Negotiation relationships situation and institutional approaches, changing from a situation to an institutional approach, Negotiation ethics: positional negotiation, principled negotiation, criticism of principled negotiation. Follow up to negotiations: Implementing the agreement, evaluating the agreement.

BPSM 0361: Supplies and Materials Management (30/30 C.F 3.0) Y3S1

Planning and control of materials; stores organization and management; stores auditing and inspection. Supplies Management in different environments; Resource needs for MRO, capital goods etc; concept of materials management in all sectors; standardization and variety reduction; independent and dependent demand; Organization of Supply Chain Management; need for co-ordination and relationships with internal and external customers; organization ethics; Logistics in the supplies chain; Transport Systems, location of stores facilities; internal movement; outsourcing; transport; stock location and layout materials management; ; identification of materials and coding systems the concepts of materials management, supplies chain management and logistics; methods of valuing stock, stocking to order and stocking to forecast.

BPSM 0362: Clearing and Forwarding (30/30 C.F 3.0) Y3S1

Introduction to Freight Forwarding services, Documents and documentation of import and export, the legal context /implication of various documents used in import-export and their sources key legal rights, duties and responsibilities of a forwarder, Internal and external organisational environment, Forwarder relations to other parties. Warehousing, packaging and packing,

handling of dangerous goods, Cargo clearance procedures at the front office. Documentation and carriage of goods under the various transport modes, Conversion units and formulas in the computation of freight rates. The constituents of freight rates under different transport modes. Consolidations and plan intermodal journeys for containerised and conventional cargo.

BPSM 0363: Ethics and legal aspect in Procurement and Supply (45/0 C.F 3.0) Y3S1

Meaning of ethics, development of business ethics, ethical concepts, the role and application of ethics in Logistics and Procurement Management., ethics and social responsibility, ethical dilemmas in modern business environment, developing and ethical culture in purchasing and environment, retail roles, functions, retail corporate plan, and importance to merchandize; retail strategic frameworks and assessing retail strategic alternatives; retail unit location and site analysis; relationship between merchandize and retail functions; setting merchandize budget, control techniques; applications of information technology in merchandize management.

Introduction to Law and Legal Business Environment: nature and functions of law; reasons for the study and need for law in business environment; sources and classification of law; substantive; criminal law; civil and equity law, public and private law; statutory law; law of contract, tort law and business law.

Contract and sale of Goods: Contract formation, exclusion clauses, standard and special clauses, misrepresentation and mistake; agency; performance; remedies, termination. Sale of goods: breaches of the conditions and warranties; transfer of property, risks and title; delivery, supply of goods and services; liability in negligence, settlement of disputes; arbitration versus litigation..

Other legal aspects: competition, intellectual property, employment and safety, insurance and international trading.

BPSM 0343: Research Project (45/0 C.F 3.0) Y3S1

The management research project is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research report should not be more than 10,000 words.

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3	
	Programme Learning Outcomes	Course	CF	Course	CF		
	PLO 1: Enable the graduates to acquire skills and knowledge for proper management of Organizations' resources	Communication Skills	3.0	Stores and Inventory Management	3.0	Ethics and legal aspect in procurement and supply	3.0
		Management Mathematics	3.0	Risk and insurance			
		Introduction to Business	3.0	Principles of Entrepreneurship			
		Principles of Accounting	3.0	Ethics and legal Aspect in procurement and supply			
		Introduction to Computing	3.0				
	PLO 2: Enable the graduates to effectively and efficiently handle acquisition and disposal of Organizations'	Principle of microeconomics	3.0	Introduction to Management accounting	3.0	Principles of marketing	3.0
		Human resource management	3.0		3.0		
				Logistics Management	3.0		
				Project and contract management	3.0		
				Negotiation in procurement and supply	3.0		

	PLO 3: Enable graduates to carry out research with a view to finding solutions to procurement problems affecting the organization		3.0	Business Statistics	3.0		
		Principles of Management	3.0	Research Methods	3.0		
			3.0	International Procurement	3.0		
		Principles of Financial Management			3.0	Research project	3.0
	PLO 4: Equip students with skills for career in procurement and Supply Chain Management in the public and private sector					Taxation	3.0
		Principles of Procurement		Principles of Marketing	3.0	Supplies and Materials Management	3.0
		Retail and Merchandise Management		Procurement and Supply Chain Management	3.0	Clearing and Forwarding	3.0
				Public Procurement			

DIPLOMA IN HUMAN RESOURCE MANAGEMENT

1. Philosophy of the programme

The Diploma in Human Resource Management is based on the conviction and belief that it is only graduates with knowledge and skills in Human Resource Management that can critically analyze issues related to human resource in organizations.

2. Rationale

Diploma in Human Resource Management enables students to gain a clear understanding of various business disciplines, namely, Accounting, Finance, Marketing, Insurance, entrepreneurship, Human Resource Management and Management Science. This enables them to relate to various functional areas in the organization and to appreciate the need for Human Resource department activities of the various departments. The diploma is a bridge to the Degree programme in business. It is a market driven-course which equips students with human resource management knowledge and skills that will enable them to respond to the changing demand patterns in the market. A graduate who attains a credit or a distinction in this programme is eligible for credit transfer of up to a maximum of 40% of total Credit Factors (C.Fs) in Bachelor of Commerce degree.

3. Goal of the programme

The programme sets the foundations of the Human Resource Management function in the organization and provides knowledge, skills and attitudes necessary for setting up a Human Resource function in an organization, professionalism in Human Resource Management and further studies in the Human Resource Management field.

4. Programme Learning Outcomes

By the end of the training, the graduate is expected to:

- i. Apply knowledge and skills gained to explain the nature and purpose of Human Resource Management.
- ii. Demonstrate Concepts, Theories and Processes in Human Resource Management.

- iii. Appreciate the environments in which Human Resource Management is practiced
- iv. Develop methods and techniques for the proper management of the Human Resource in organizations.

5. Mode of Delivery

The programme will be delivered in full time and part time

6. Academic Regulation for the programme

6.1 Admission requirements

The common University admission criterion is applicable. In addition:

- i) The candidate must have obtained at least a mean grade of C- (minus) at Kenya Certificate of Secondary Education (K.C.S.E) Level or Division III at Kenya Certificate of Education (KCE) or equivalent qualification.
- ii) The candidate must have also obtained at least a C- (Minus) in mathematics and at least a C- (Minus) in English or Kiswahili.
- iii) Candidates with mean grades of C- (minus) but have less than C- (Minus) in Mathematics and English or Kiswahili can be admitted after bridging in the respective subjects.
- iv) Candidates with a credit in certificate in business from Institution recognized by the Academic Board, and having a mean grade of D+ or equivalent in their K.C.S.E, are also eligible for admission.
- v) Holders of Accounting Technicians Certificate (ATC) Final Level are also eligible for admission.

6.2 Regulation on credit transfer in the programme

Credit transfer shall be done in adherence to Egerton University Statutes of 2013 article 36(3) for undergraduate programmes.

6.3 Course requirement

The requirements are as per the ISO procedures EU/AA/OP/06 rev 3.

6.4 Students Assessment

All examination shall be conducted in accordance with Egerton University Statute no. 36 of 2013.

6.5 Grading System

The grading system will be in accordance with Egerton University Statute no. 36 of 2013.

6.6 Examination regulation

All Examination of the university shall be conducted in accordance With Egerton University Statute no. 36 of 2013 (The examination administration will be guided by the ISO document on work instruction on work instruction for examination administration (DOC NO.EU/AA/W1/11))

6.7 Moderation of Exam

ISO procedure (EU/AA/OP/07) regulation requirement on moderation of examination shall apply.

6.8 Graduation requirement.

To graduate with a Diploma in Human Resource Management, a student shall be required to take and pass all scheduled courses within stipulated time.

6.9 Diploma classification

Diploma classification shall be in accordance with Egerton University Statute No. 36 of 2013.

7. Course evaluation

Diploma classification shall be in accordance with Egerton University statute No. 36 of 2013.

8. Management and Administration of the Programme

8.1 Host Department and programme Academic leader

The programme shall be hosted by Department of Business Administration in the Faculty of Commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme self-evaluation at the end of each academic cycle (ISO procedure EU/VC/OP/05). It shall be benchmarked with at least one such programme in a highly ranked university.

8.3 Course Coding and Duration

- The course coding is four letters BHRM where 'B' Denotes Business and HRM denote Human Resource Management.
- The common courses offered by other programmes have codes that reflect those programmes.

The abbreviation is followed by a set of four digits as follows.

- The first digit is zero (0) indicating a Diploma programme.
- The second digit is either 1 or 2 denoting the year the course is offered.
- The third digit is discipline specific, e.g. **3 denote HRM.**
- The last digit indicates the sequencing of the course i.e. 0, 1, 2, 3.....

9. Schedule of Courses

1 YEAR 1 SEMESTER

CODE	TITLE	L	T	C.F
BMGT 0100	Introduction to Business	45	0	3.0
BECO 0101	Principles of Micro-economics	45	0	3.0
BACT 0110	Principles of Accounting I	45	0	3.0
COMS 0101	Communications Skills	45	0	3.0
BMGT 0101	Principles of Management	45	0	3.0
ZOOL 0143	HIV/AIDS and Life Skills	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	T	C.F
BBIS 0150	Introduction to Computer Applications	45	0	3.0

BHRM 0130	Introduction to Human Resource Management	45	0	3.0
BOPM 0140	Management mathematics	45	0	3.0
BACT 0111	Principles of Accounting II	45	0	3.0
BECO 0102	Principles of Macro-economics	45	0	3.0
BMGT 0102	Organization Theory	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	T	C.F
BMGT 0203	Introduction to Business law	45	0	3.0
BHRM 0231	Employee Relations	45	0	3.0
BMGT 0204	Organizational Behaviour	45	0	3.0
BINS 0240	Risk and Insurance	45	0	3.0
BFIN 0230	Introduction to Financial Management	45	0	3.0
BHRM 0232	Management of Change	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

Code	Title	L	T	C.F
BHRM 0233	Counselling in Human Resource Management	45	0	3.0
BHRM 0234	Reward Management	45	0	3.0
BHRM 0235	Introduction to Human Resource Planning	45	0	3.0
BACT 0212	Introduction to Management Accounting	45	0	3.0
BOPM 0241	Research Methods	45	0	3.0
BOPM 0242	Total Quality Management	45	0	3.0

TOTAL		270	0	18.0

YEAR 3 SEMESTER 1

Code	Title	L	T	C.F
BENT 0320	Introduction to Entrepreneurship	45	0	3.0
BHRM 0336	Strategic Human Resource Management	45	0	3.0
BOPM 0343	Research Project	45	0	3.0
BHRM 0337	Labour Laws	45	0	3.0
BMGT 0306	Business Communication	45	0	3.0
BMGT 0305	Governance and Ethics	45	0	3.0
TOTAL		270	0	18.0

(c) **Course Descriptions**

BHRM 0130: Introduction to Human Resource Management (45/0 C.F 3.0) Y1 S2 Nature and purpose of human resource management, Historical development of human resource management concepts, Strategic role of HRM, Human resource functions: recruitment, selection, placement, training and development, motivation appraisal of personnel, supervision compensation and separation, Industrial relations and labour laws: Contemporary issues in human resource management. Management of workforce diversity, affirmative action, Human resource information system (HRIS)

BHRM 0231: Employee Relations (45/0 C.F 3.0) Y2 S1

Nature and importance of employee relations, employee relation framework in Kenya, collective bargaining systems, employee grievances and disputes, legal framework of employee relations, employee participations, communication and employee relations and the ILO conventions.

BHRM 0232: Management of Change (45/0 C.F 3.0) Y2 S1

Introduction to change management, the need for change management, types of changes, changes in HRM, Causes of change, resistant to change, ways of overcoming resistance to change, management of change in an organization, the role of HRM in organizational change management.

BHRM 0233: Counselling in Human Resource Management (45/0 C.F 3.0) Y2 S2

Definition of counselling: As a process, relationship, and as a use of specific skills; personal development, skills in counselling, theories of counselling, ethics in counselling, application of counselling at work place, i.e., HIV/AIDS counselling, counselling of the sick and bereaved at the workplace, stress and stress management.

BHRM 0234: Reward Management (45/0 C.F 3.0) Y2S2

Nature of reward and compensation systems, role of HRM in compensation, job evaluation, job design, analysis and evaluation of the working environment, concepts, theories and legislation related to employee compensation, design of pay structure, market rate analysis, trends in the development of reward systems and strategies, pay structures, contingent pay, employee benefits – both financial and non-financial, administration of salaries and wages, managing reward systems; linking rewards with performance; performance-related pay; emerging issues in the labour market.

BHRM 0235: Introduction to Human Resource Planning (45/0 C.F 3.0) Y2 S2

Nature of human resource planning (HRP); evolution and models of HRP; Organisational strategic planning and demand of HR; need for planning; resources demand forecasting; internal and/or external labour supply; factors influencing demand both long range and short range. Resource supply forecasting; meaning, factors in projecting human resources, availability. staff/labour turnover analysis; Application of the results of human resources planning in hiring, training, career management. Redundancies and productivity programmes. Human resource accounting and auditing; globalisation of operations, mergers and acquisitions; Contemporary issues in human resources planning.

BHRM 0336: Strategic Human Resource Management (45/0 C.F 3.0) Y3S1

Concepts of HRM, concepts of strategy and strategic HRM, formulating and implementing HRM strategy, strategic HRM and organization success, organization strategies, culture management strategies, change management strategies, employee resourcing strategies, performance management strategies, reward strategies, employee relation strategies, human resource development strategies.

BHRM 0337: Labour Laws (45/0 C.F 3.0) Y3S1

Introduction to Labour laws, employment contract, labour supply, trade disputes, labour productivity, labour markets, wages determination, trade unions and collective bargaining, employment and unemployment, human capital formation, working compensation, factors acts (Cap 514), other relevant laws, i.e. employment acts, industrial training and international labour organizations (ILO).

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

	Y1		Y2		Y3	
Programme Learning Outcomes	Course	CF	Course	CF	Course	CF
PLO 1: Apply knowledge and skills gained to explain the nature and purpose of Human Resource Management.	Introduction to Human Resource Management	3.0	Introduction to Business Law	3.0	Introduction to Entrepreneurship	3.0
	Principles of Management	3.0	Employee Relations	3.0	Business Communication	3.0
	Communication Skills	3.0	Introduction to HRP	3.0		
PLO 2: Demonstrate Concepts, Theories and Processes in Human Resource Management.	Organizational Theory	3.0	Organizational Behaviour	3.0		
	Principles of Accounting 1	3.0	Management of Change	3.0	Strategic Human Resource Management	3.0
	HIV/AIDS and Life Skills	3.0	Risk and insurance management	3.0		
PLO 3: Appreciate the environments in which Human Resource Management is practiced	Principles of Micro-economics	3.0	Counselling in HRM	3.0	Governance and Ethics	3.0
	Introduction to Business	3.0	Introduction to Financial management	3.0		
	Principles of Accounting 11	3.0	Total Quality Management	3.0	Labour Law	3.0
PLO 4: Develop methods and techniques for the proper management of the Human Resource in organizations.	Introduction to Computer Applications	3.0	Introduction to Management accounting	3.0		
	Introduction to Management Mathematics	3.0	Research Methods	3.0	Business Research Project	3.0
	Principles of Macro-Economics	3.0	Reward and Compensation Management	3.0		

DIPLOMA IN BUSINESS MANAGEMENT

1. Philosophy of the programme

The Diploma in Business Administration Programme is based on the conviction and belief that it is only graduates with knowledge and skills in business that can critically analyze issues related to the life in the field of commerce.

2. Rationale

Diploma in Business Management enables students to gain a clear understanding of various business disciplines (Accounting, Finance, Marketing, Insurance, Human Resource Management and Management Science). This enables them to relate various functional areas in the organizations and appreciate the need for harmonizing the activities for various departments. The diploma is a bridge to the degree programme for many Kenyans who could not secure direct chance to a degree programme in Business. It is a market driven-course which equip students with managerial knowledge and skills that enable them to respond to the changing demand patterns in the market. A graduate who attains a credit or a distinction in the programme is eligible for credit transfer up to a maximum of 40% of total Credit Factors (CFs) in Business of Commerce degree programme.

3. Goals of the Programme

The programme goal is to; Equip graduate with proper managerial skills for effective management of various organizations, Enable graduates to effectively management resources at their disposal according to contemporary economic business management and technological trends, Enable graduates to carry out

research with a view to finding solutions to contemporary problems affecting business management and Equip students with skills for careers in the public and private sector and prepare the students for further studies in business related field of studies.

4. Programme learning outcomes

At the end of the training, the graduates will be expected to:

- i). Manage resources at their disposal according to contemporary economic, business management and technological trends;
- ii). Carry out research with a view to finding solutions to contemporary problems affecting business development at various scales;
- iii). Appreciate the complex relationship between the national economy and global economic trends; and

5. Mode of Delivery

The programme will be delivered in full time and part time.

6. Academic Regulation for the Programme

6.1 Admission Requirements

- i). The common University Admission criteria are applicable. In addition:
- ii). The candidate must have obtained at least a mean grade of C (plain) at Kenya Certificate of Secondary Education (KCSE) level or Division III at Kenya Certificate of Educate (KCE) or equivalent qualification.
- iii). The candidate must have also obtained at least C- (Minus) in mathematics and at least a (C-) (Minus) in English or Kiswahili.
- iv). Candidates with mean grade of C (Plain) but have less than C- (Minus) in mathematics and

English of Kiswahili can be admitted after bridging in the respective subjects.

- v). Candidates with a credit certificate in Business from institution recognized by the Academic Board and having a mean grade of D+ or equivalent in their (KCSE) are also eligible for admission.
- vi). Holders of Accounting Technical Certificate (ATC) final level are also eligible for admission.

6.2 Credit transfer in the programme

Credit transfer shall be done in adherence to Egerton University statute of 2013 article 36(3) for undergraduate programmes.

6.3 Course requirement

The requirements are as per the ISO procedures EU/AA/OP/06 rev 3

6.4 Students Assessment Policy/Criteria

All examination shall be conducted in accordance with Egerton University Statute no. 36 of 2013

6.5 Grading System

The grading system will be in accordance with Egerton University Statute no. 36 of 2013

6.6 Examination regulation

All Examination of the university shall be conducted in accordance With Egerton University Statute no. 36 of 2013 (The examination administration will be guided by the ISO document on work instruction on work instruction for examination administration (DOC NO.EU/AA/W1/11)

6.7 Moderation of Exam

ISO procedure (EU/AA/OP/07) regulation requirement on moderation of examination shall apply.

6.8 Graduation requirement.

To graduate with a Diploma in Business management, a student shall be required to take and pass all scheduled courses within stipulated time.

6.9 Diploma classification

Diploma classification shall be in accordance with Egerton University Statute No. 36 of 2013.

7. Course evaluation

Diploma classification shall be in accordance with Egerton university statute No. 36 of 2013.

8. Management and Administration of the programme

8.1 Host department and programme academic leader

The programme will be hosted by Department of Business Administration in the Faculty of Commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme self-evaluation at the end of each academic cycle (ISO procedure EU/VC/OP/05). The programme shall be benchmarked with at least one such programme in highly ranked university.

8.3 Course Coding and Duration

- The course coding is four capital letter BMGT where 'B' Denotes Business and MGT denotes 'Management'.
- The courses borrowed from other programmes have codes that reflect those programmes.
- The abbreviation is followed by a set of four digits as follows.

- The first digit is zero (0) indicating a Diploma programme.
- The second digit is either 1 or 2 denoting the year the course is offered.
- The third digit is discipline specific, e.g. 5 denote MKT.
- The last digit indicates the sequencing of the course i.e. 0, 1, 2, 3.....

YEAR 1 SEMESTER 1

CODE	TITLE	L	T	C.F
BMGT 0100	Introduction to Business	45	0	3.0
BECO 0101	Principles of Micro-economics	45	0	3.0
BACT 0110	Principles of Accounting I	45	0	3.0
COMS 0103	Communications Skills	45	0	3.0
BMGT 0101	Principles of Management	45	0	3.0
ZOOL 0143	HIV/AIDS and Life Skills	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	T	C.F
BACT 0112	Principles of Accounting II	45	0	3.0
BHRM 0130	Introduction to Human Resource Management	45	0	3.0
BBIS 0150	Introduction to Computer Applications	45	0	3.0
BOPM 0140	Management mathematics	45	0	3.0
BECO 0102	Principles of Macro-economics	45	0	3.0

BMGT 0102	Organization Theory	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	T	C.F
BMGT 0203	Business law	45	0	3.0
BMGT 0204	Organizational Behaviour	45	0	3.0
BMKT 0250	Principles of Marketing	45	0	3.0
BINS 0240	Risk and Insurance	45	0	3.0
BFIN 0230	Introduction to Financial Management	45	0	3.0
BHRM 0232	Management of Change	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

Code	Title	L	T	C.F
BPSM 0260	Introduction to Supply Chain Management	45	0	3.0
BOPM 0240	Introduction to Business Statistics	45	0	3.0
BMGT 0205	Strategic Planning	45	0	3.0
BACT 0212	Introduction to Management Accounting	45	0	3.0
BOPM 0241	Research Methods	45	0	3.0
BOPM 0242	Total Quality Management	45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 1

Code	Title	L	T	C.F
BENT 0320	Introduction to Entrepreneurship	45	0	3.0
BOPM 0344	Operation management	45	0	3.0
BOPM 0343	Research Project	45	0	3.0
BMGT 0306	Business Communication	45	0	3.0
BMGT 0307	Governance and Ethics	45	0	3.0
BBIS 0351	Fundamentals of Information Systems	45	0	3.0
TOTAL		270	0	18.0

(c) Course Descriptions**BMGT 0100: Introduction to Business (45/0 C.F 3.0) Y1 S1**

Meaning and concept of Business. Human activities, objectives of business, classification of business, classifications of commerce, forms of business organizations, sole trade, partnership, joint stock companies, statutory corporations, government companies, departments undertakings, joint sectors, cooperative movements. Business environment and its influence on business, management functions, financial systems, functional areas of management. Business and society.

BMGT 0101: Principles of Management (45/0 C.F 3.0) Y1 S1

Background to modern management, Nature, scope and importance of management, growth and need for principles of management, managerial roles, history and development of management thought: classical, human

relations, neo-human relations and contemporary theories, Management environment, Management functions: Planning, organizing, staffing, leading and controlling, Moral and social responsibility in management, Management in the contemporary world.

BMGT 0103: Communication Skills (45/0 C.F 3.0) Y1 S1

Definition of communication, effective communication routes, Upward and downward communication. Barriers to effective communications. Communication tool: memos, catalogues, inquiry, quotation, business letters, orders and executing orders. Business report writing. Presentation and interpretation of reports. Types of reports: Market reports, company reports, minutes, meetings. Communication as a management tool, External aspects of communication, communication technology.

BMGT 0102: Organization Theory (45/0 C.F 3.0) Y1 S2

Nature of organization theories, Organization theories, Organization structure and design groups and individuals in the organization, Organization change and development, Organization effectiveness, Power and politics in organization.

BMGT 0203: Business Law (45/0 C.F 3.0) Y2 S1

Nature and purpose of Law, Sources of law in Kenya, Classification of Law, The legal system in Kenya, Principles and concepts – rule of law, separation of powers and fundamentals rights, The law of contract, law of persons, Law of tort, agency law, Sale of goods act, negotiable instruments, Consumer protection, related procurement legislation: competition law and intellectual property.

BMGT 0306: Business Communication (45/0 C.F 3.0) Y3 S1

Definition of communication, effective communication routes. Upward and downward communication. Barriers to effective communication. Communication tools: memos, catalogues, inquiry, quotation, business letters, orders and executing orders. Business report writing. Presentation and interpretation of reports. Types of reports: Market reports, company reports, minutes, meetings. Communication as a management tool. External aspects of communication. Communication technology.

BMGT 0204: Organizational Behaviour (45/0 C.F 3.0) Y2 S1

Nature of organizational behaviour; individual behaviour, values and personality; perception; workplace emotions and attitudes; motivation theories, job design practices; group and team dynamics; models of decision making; leadership; organizational culture; organizational stress

BMGT 0307: Governance and Ethics (45/0 C.F 3.0) Y3 S1

The origin of Ethics, Ethics in the various business Disciplines. Ethics in Business, Theories of Ethics; Virtue theories, Duty Theories and Consequential Theories. Professional practices. decline of professionalism. Nature and theoretical underpinnings of business ethics, Whistle Blowing, managing Ethics in the work Place. Developing code of ethics, corporate social responsibility, Corporate governance ethics, nature and importance of corporate governance. Morality of both Individuals and groups; Principles of doubt and relationships and obligations of Employees and employers, producers and Distributors and Charity. Management of the firm and Society and also Business community disclosure. Protection of Environment,

Social responsibility, Social Obligations and Social Response.

BMKT 0250: Principles of Marketing (45/0 C.F 3.0) Y2 S1

Marketing overview, marketing strategies, marketing environment, key marketing policy decisions. Consumer behaviour, marketing mix: Product, promotion, price and place. Market segmentation. Marketing research and information, its acquisition and analysis as the basis for marketing strategies and decision making. Tools for marketing decisions: marketing audits, sales forecast, analysis of competition. Managing the marketing function-planning, organizing and controlling. Application of marketing concepts.

BMGT 0205: Strategic Planning (45/0 C.F 3.0) Y2 S2
Concepts and nature of strategic planning, Historical development of strategic planning, Business environment, analysis of Business Environment, strategic directions, strategic planning process, preparing a strategic business plans framework

BACHELOR OF COMMERCE

1. Philosophy of the programme

The Bachelor of commerce is based on the conviction and belief that it is only graduates with knowledge and skills in business that can critically analyse issues related to the life commerce.

2. Rationale

The Commerce degree programme provides students with a wide range of skills, knowledge, and attitudes to respond to the need for effective management of public and private business enterprises.

3. Goal of the Programme

The programme will aim at equipping students with skills that are relevant to the dynamic industry needs and that uphold the key principles in the various discipline areas.

4. Programme Learning Outcomes

At the end of the training, the graduates will be expected to:

- iv). Effectively manage resources at their disposal according to contemporary economic, business management and technological trends;
- v). Carry out research with a view to finding solutions to contemporary problems affecting business development at various scales;
- vi). Appreciate the complex relationship between the national economy and global economic trends; and
- vii). Have acquired knowledge, skills and attitudes for pursuing further studies in Commerce.

5. Mode of delivery

The programme will be delivered in full time and part-time modes

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i). All candidates admitted to the degree programme of Bachelor of Commerce (B.Com) must satisfy the minimum common entrance requirements of Egerton University which currently is a C+.
- ii). In addition, candidates must obtain at least the minimum cut-off points for the year as determined from any one of the following four cluster subjects from revised K.C.S.E. structure.
 - English or Kiswahili
 - At least any one from the following:
 - History and Government
 - Geography,
 - Christian Religious Education
 - Social Education & Ethics,
 - Hindu Religious Education or
 - Islamic Religious Education
 - Mathematics
 - **Either,**
 - Biology or Biological Sciences; or
 - Chemistry or Physics or
 - Physical Sciences
 - **Or**
 - Any one of the following:
 - Accounts
 - Commerce
 - Economics
- iii) A Candidate must obtain at least a grade C in Maths and English or Kiswahili in KCSE. Those with less than a C grade must take and pass a bridging course.
- iv) Those holding qualifications equivalent to the above from institutions recognised by Egerton University Senate may also be admitted.
- v) Holders of CPA II or diploma holders in Co-operative Management, Banking, Finance, Accounting, Human Resource, Business,

Marketing, Insurance and Risk Management and Management Science disciplines passed with a credit or higher or their equivalent are also eligible for admission.

- vi) Based on Senate approved guidelines, candidates may be allowed to transfer credits from a diploma course or its equivalent from an institution recognised by the University Senate up to a maximum of 40% of the required programme.

6.2 Regulation on credit transfer

Credit transfer shall be done in adherence to Egerton University Statutes of 2013 article 36(3).

6.3 Course requirement

The requirements are as per the ISO procedures EU/AA/OP/06 rev 3

6.4 Student assessment policy/criteria

All the examination of the university shall be conducted in accordance with Egerton University Statutes No. 36 of 2013.

6.5 Grading system

The grading system will be conducted in accordance with Egerton University Statutes No 36 of 2013.

6.6 Examination Regulations

All the examination of the university shall be conducted in accordance with Egerton University Statutes No 36 of 2013 (The examination administration will be guided by the ISO document on Work Instruction for Examination Administration (DOC NO. EU/AA/WI/11).

6.7 Moderation of examination

ISO procedure (EU/AA/OP/07) regulation requirement on moderation of examination shall apply.

6.8 Graduation Requirements.

To graduate with a Bachelor of Commerce degree, a student shall be required to take and pass in all scheduled courses within stipulated time.

6.9 Classification of degree

The Bachelor of Commerce degree classification shall be in accordance with Egerton University Statutes No 36 of 2013.

7. Course Evaluation

All courses shall be evaluated in accordance with Egerton University course evaluation tool as shall be provided by the University:

8. Management and Administration of the programme

8.1 Host department and programme academic leader

The programme shall be hosted by department of Accounting, Finance and Management science in the faculty of commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal self-evaluation at the end of each academic cycle ISO procedure EU/VC/OP/05. The programme shall be benchmarked with at least one such programme in highly ranked university.

8.3 Course coding

The course code is four capital letters starting with the letter "B" which stands for Business and the last three letters are discipline specific, e.g. FIN stands for finance course. This is followed by three digits.

- 1st digit, Indicates year or level the course is offered, i.e. (1, 2, 3, 4).

- 2nd digit, Indicates the nature of sub-discipline of the course within the discipline, as follows:

0 -General courses

Accounting, Finance and Management Science

1 - Accounting courses

2 - Project management

3 - Finance courses

4 - Operations Management

5 - Business Information System

6 - Procurement and Supply Chain Management

- 3rd digit, indicates the sequencing of the course

Business Administration

0 - Co-operative Management Option

1 - Entrepreneurship Option

2 - Human Resource Management Option

3 - Insurance and Risk Management Option

- Marketing Option

9. Course offered in the programme

9.1 Schedule of courses

YEAR ONE SEMESTER ONE

CODE	TITLE	L	P	C.F.
BACT 110	Principles of Accounting I	45	0	3.0
BECO 101	Principles of Microeconomics for Business	45	0	3.0
BMGT 100	<i>Introduction to Business</i>	45	0	3.0
BOPM 140	Management Mathematics I	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ZOOL	HIV/AIDS and Society	45	0	3.0

143				
TOTAL		225		18.0

YEAR ONE SEMESTERTWO

BACT 111	Principles of Accounting II	45	0	3.0
BBIS 150	Fundamentals of Information Systems	45	0	3.0
BECO 102	Principles of Macroeconomics for Business	45	0	3.0
BMGT 101	Principles of Management	45	0	3.0
BOPM 141	Management Mathematics II	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0
TOTAL		225		18.0

YEAR TWO SEMESTER ONE

BACT 210	Introduction to Managerial Accounting	45	0	3.0
BACT 211	Accounting for Assets	45	0	3.0
BECO 201	Intermediate Microeconomics for Business	45	0	3.0
BINS 240	Risk and Insurance	45	0	3.0
BMKT 250	Principle of Marketing	45	0	3.0
BOPM 240	Business Statistics for Decision Making.	45	0	3.0
TOTAL		210		18.0

YEAR TWO SEMESTER TWO

BACT 212	Accounting for Equities and Liabilities	30	30	3.0

BBIS 250	Systems Analysis and Design	30	30	3.0
BECO 202	Intermediate Macroeconomics for Business	30	30	3.0
BFIN 230	Financial Management I	30	30	3.0
BHRM 230	Human Resource Management	45	0	3.0
BPSM 260	Fundamentals of Supply Chain Management	30	30	3.0
TOTAL		195	150	18.0

YEAR THREE SEMESTER ONE CORE COURSES

BENT 320	Entrepreneurship and Small Business Management	45	0	3.0
BMGT 300	Organisational Theory	45	0	3.0
BMGT 301	Business Law	45	0	3.0
	Three Optional Courses	135	0	9.0
TOTAL		270	0	18.0

OPTIONAL COURSES

Accounting Option

BACT 310	Advanced Financial Accounting 1	30	30	3.0
BACT 311	Principle of Auditing	30	30	3.0
BFIN 332	Financial Management II	30	30	3.0

Finance Option

BFIN 330	Financial Institutions and Markets	30	30	3.0

BFIN 331	Monetary Theory and Practice	30	30	3.0
BFIN 332	Financial Management II	30	30	3.0

Business Information System Option

BBIS 350	Object Oriented Programming I	30	30	3.0
BBIS 351	Data Communication	30	30	3.0
BBIS 352	Computer Operating System.	30	30	3.0

Operations Management Option

BOPM 340	Operations Research for Management I	30	30	3.0
BOPM 341	Managerial Statistics	30	30	3.0
BOPM 342	Operations Systems Design	30	30	3.0

Procurement and Supply Chain Management Option

BPSM 360	Inventory Management	30	30	3.0
BPSM 361	Procurement Management	30	30	3.0
BPSM 362	Logistics and Transport Management	30	30	3.0

Co-operative and Micro-Finance Management Option

BCMF 310	Philosophy of Co-operatives and Micro-Finance	30	30	3.0
BCMF 311	Credit Management in Cooperatives and Micro-Finance	30	30	3.0
BMGT 303	Global Business Management	30	30	3.0

Entrepreneurship Option

BENT 321	Business Start Up Process	30	30	3.0
BENT 322	Enterprise Environment	30	30	3.0
BMGT303	Global Business Management	30	30	3.0

Human Resource Management Option

BHRM330	Human Resource Planning	30	30	3.0
BHRM331	Strategic Human Resource Management	30	30	3.0
BMGT303	Global Business Management	30	30	3.0

Insurance and Risk Management Option

BINS 340	Property Insurance	30	30	3.0
BINS 341	Life Assurance	30	30	3.0
BINS 342	Medical Insurance	30	30	3.0

Marketing Option

BMGT 303	Global Business Management	30	30	3.0
BMKT.350	Sales Management	30	30	3.0
BMKT.351	Marketing Management	30	30	3.0

**YEAR THREE SEMESTER TWO
CORE COURSES**

BFIN 333	Public Finance	30	30	3.0
BMGT 304	Organisational Behaviour	45	0	3.0
BMGT 305	Company Law	45	0	3.0
	Two Optional Courses	90	0	6.0
	One Elective	45	0	3.0

TOTAL		270	0	18.0

Accounting Option

BACT 312	Advanced Financial Accounting II	30	30	3.0
BACT 313	Advanced Managerial Accounting	30	30	3.0
	One Elective	30	30	3.0

Finance Option

BFIN 334	Banking, Law and Practice	30	30	3.0
BFIN 335	Corporate Finance	30	30	3.0
	One Elective	30	30	3.0

Business Information System Option

BBIS 353	Object Oriented Programming II	30	30	3.0
BBIS 354	Software Engineering	30	30	3.0
	One Elective	30	30	3.0

Operations Management Option

BOPM 343	Operations Research for Management II	30	30	3.0
BOPM 344	Quality Management	30	30	3.0
	One Elective	30	30	3.0

Procurement and Supply Chain Management

BPSM 365	Public Procurement	30	30	3.0
BPSM 366	International Procurement	30	30	3.0
	One Elective	30	30	3.0

Co-operative and Micro-Finance Management Option

BCMF 312	Co-operatives and Micro-Finance Accounting	30	30	3.0
BCMF 313	Co-operatives and Micro-Finance Law	30	30	3.0
	One Elective	30	30	3.0

Entrepreneurship Option

BENT 323	Marketing for Small Business	30	30	3.0
BENT 324	Business Planning	30	30	3.0
	Elective	30	30	3.0

Human Resource Management Option

BHRM 332	Labour Relations	30	30	3.0
BHRM 333	Human Resource Development	30	30	3.0
	Elective	30	30	3.0

Insurance and Risk Management Option

BINS 343	Motor Insurance	30	30	3.0
BINS 344	Retirement Benefit Schemes Management	30	30	3.0
	One Elective	30	30	3.0

Marketing Option

BMKT 352	Marketing communication	45	0	3.0
BMKT 353	Consumer Behaviour	45	0	3.0
	One Elective	45	0	3.0

**YEAR FOUR SEMESTER ONE
CORE COURSES**

CODE	TITLE	L	T	C.F.
BMGT 400	Strategic Management	30	30	3.0
BMGT 401	Business communication	30	30	3.0
BOPM 440	Research Methods	30	30	3.0
	Two Optional Courses	60	60	6.0
	One Elective	30	30	3.0
TOTAL		180	180	21.0

OPTIONAL COURSES

Accounting Option

BACT 410	International Accounting	30	30	3.0
BACT 411	Tax Laws and Practice	30	30	3.0
	One Elective	30	30	3.0

Finance Option

BFIN 430	Management of Financial Institutions	30	30	3.0
BFIN 431	Real Estate Finance	30	30	3.0
	Elective	30	30	3.0

Business Information Systems Option

BBIS 450	Database Management Systems	30	30	3.0
BBIS 451	Business Analytics and Decision Support	30	30	3.0
	Elective	30	30	3.0

Operations Management Option

BOPM 441	Project Management	30	30	3.0

BOPM 442	Operations Management	30	30	3.0
	Elective	30	30	3.0

Procurement and Supply Chain Management

BPSM 460	Project and Contract Management	30	30	3.0
BPSM 463	Procurement Policy and Strategy	30	30	3.0
	Elective	30	30	3.0

Co-operative and Micro-Finance Management Option

BCMF 410	Risk Management in Co-operatives and Micro-Finance institutions	30	30	3.0
BCMF 411	Micro-Enterprise Project Management	30	30	3.0
	Elective	30	30	3.0

Entrepreneurship Option

BENT 420	Business Consultancy	30	30	3.0
BENT 421	Innovation and Enterprise Development	30	30	3.0
	Elective	30	30	3.0

Human Resource Management Option

BHRM 430	Labour Law	30	30	3.0
BHRM 431	Managing Human Resource Performance	30	30	3.0
	Elective	30	30	3.0

Insurance and Risk Management Option

BINS 440	Marine Insurance	30	30	3.0

BINS 441	Insurance Law	30	30	3.0
	Elective	30	30	3.0

Marketing Option

BMKT 450	Marketing Research	30	30	3.0
BMKT 451	Global Marketing	30	30	3.0
	Elective	30	30	3.0

**YEAR FOUR SEMESTER TWO
CORE COURSES**

BMGT 402	Business Ethics and Corporate Governance	30	30	3.0
BMIS 452	Management Information Systems	30	30	3.0
	Four Optional Courses	90	90	9.0
TOTAL		180	180	18.0

OPTIONAL COURSES

Accounting Option

BACT 412	Financial Auditing and Investigation	30	30	3.0
BACT 413	Specialised Financial Accounting Techniques	30	30	3.0
BACT 414	Financial Statement Analysis	30	30	3.0
BACT 418	Management Research project		90	3.0

Finance Option

BFIN 432	International Finance	30	30	3.0
BFIN 433	Investment and Portfolio Management	30	30	3.0
BFIN 434	Financial Statement Analysis	30	30	3.0

BFIN 438	Management Research project		90	3.0

Operations Management Option

BOPM 443	Advanced Business Statistics	30	30	3.0
BOPM 444	Service Operations Management	30	30	3.0
BOPM 445	Business Forecasting	30	30	3.0
BOPM 449	Management Research project		90	3.0

Procurement and Supply Chain Management Option

BPSM 464	Global Supply Chain Management	30	30	3.0
BPSM 465	Supply Chain Information Systems.	30	30	3.0
BPSM 466	Systems Production Management	30	30	3.0
BPSM 467	Management Research project		90	3.0

Business Information System Option

BBIS 453	Distributed Information Systems	30	30	3.0
BBIS 454	Human Computer Interaction	30	30	3.0
BBIS 455	Information System Security and Audit	30	30	3.0
BOPM 449	Management Research project		90	3.0

Co-operative and Micro-Finance Management Option

BCMF	Co-operative Policy and	30	30	3.0

412	Management			
BCMF 413	Co-operative and Micro-Finance Product Development	30	30	3.0
BCMF 414	Resource Mobilization	30	30	3.0
BCMF 417	Management Research project		90	3.0

Entrepreneurship Option

BENT 422	Social Entrepreneurship	30	30	3.0
BENT 423	International Dimensions of Entrepreneurship	30	30	3.0
BENT 424	Entrepreneurial Behaviour and Ethics	30	30	3.0
BENT 428	Management Research project		90	3.0

Human Resource Management Option

BHRM 432	Management of Diversity	30	30	3.0
BHRM 433	Reward and Compensation Management	30	30	3.0
BHRM 434	Occupational Safety and Health Management	30	30	3.0
BHRM 438	Management Research project		90	3.0

Insurance and Risk Management Option

BINS 442	Introduction to Actuarial Science	30	30	3.0
BINS 443	Reinsurance	30	30	3.0
BINS 444	Risk Management	30	30	3.0

BINS 447	Management Research project		90	3.0

Marketing Option

BMKT 452	Strategic Marketing	30	30	3.0
BMKT 453	Marketing of Services	30	30	3.0
BMKT 454	Customer Relationship Management	30	30	3.0
BMKT 459	Management Research project		90	3.0

ELECTIVES OFFERED IN THIRD YEAR

BACT 314	Accounting Information Systems	30	30	3.0
BACT 315	Public Sector Accounting	30	30	3.0
BBIS 355	Advanced Programming in Java	30	30	3.0
BBIS 356	Application Programming for the Internet	30	30	3.0
BBIS 357	E-Commerce	30	30	3.0
BCMF 314	Consumer Cooperative Management	30	30	3.0
BCMF 315	Housing Cooperatives Management	30	30	3.0
BENT 325	International Marketing for Small Business	30	30	3.0
BENT 326	Legal and Tax Issues for Small Business	30	30	3.0
BFIN 336	Asset Management	30	30	3.0
BFIN 337	Financial Information Systems	30	30	3.0
BFIN 338	Economic Development	30	30	3.0
BHRM 334	Global Human Resource Management	30	30	3.0

BHRM 335	Contemporary Issues in Human Resource Management	30	30	3.0
BINS 345	Agricultural Insurance	30	30	3.0
BMKT 354	Brand Management	30	30	3.0
BMKT 355	E-Marketing	30	30	3.0
BMKT 356	Business Sector Marketing	30	30	3.0
BOPM 345	Materials Management	30	30	3.0
BOPM 346	Manufacturing Operations Management	30	30	3.0

ELECTIVES OFFERED IN FOURTH YEAR

BACT 415	Advanced Taxation and Planning	30	30	3.0
BACT 416	Contemporary Issues in Managerial Accounting	30	30	3.0
BACT 417	Trust and Executorships Accounting	30	30	3.0
BBIS 456	Advanced Database Systems	30	30	3.0
BBIS 457	Multimedia Systems And Applications	30	30	3.0
BBIS 458	Information Systems Project Management	30	30	3.0
BBIS 459	Knowledge Management and Innovation	30	30	3.0
BCMF 415	Banking Practice	30	30	3.0
BCMF 416	Contemporary Issues in Co-operative Movements	30	30	3.0
BENT 425	Entrepreneurial Venture Promotion	30	30	3.0
BENT 426	Public Relations and Customer Care	30	30	3.0

BENT 427	Small Business Financing	30	30	3.0
BFIN 435	Development finance	30	30	3.0
BFIN 436	Security Analysis and Securitization	30	30	3.0
BFIN 437	Financial Derivatives	30	30	3.0
BHRM 435	Retirement Benefits Management	30	30	3.0
BHRM 436	Management of Change	30	30	3.0
BHRM 437	Leadership and Team Management	30	30	3.0
BINS 445	Social Insurance	30	30	3.0
BINS 446	Micro-Insurance	30	30	3.0
BMKT 455	Social Marketing	30	30	3.0
BMKT 456	Public Relations Management	30	30	3.0
BMKT 457	Distribution and Logistics Management	30	30	3.0
BMKT 458	Marketing for Non-profit Organizations	30	30	3.0
BOPM 446	Statistical Quality Control	30	30	3.0
BOPM 447	Heuristics and Simulation	30	30	3.0
BPSM 461	Legal Aspects of Procurement and Supply Chain Management	30	30	3.0
BPSM 462	Ethics in Procurement and Supply Chain Management	30	30	3.0

(c) Course Descriptions

BMGT 100: Introduction to Business (45/0 C.F 3.0) Y1 S1

This course provides a fundamental working knowledge of the various aspects of business and prepares students for future studies in the more specialized topics within the subject area of business. The course will increase the students awareness of the overall environment and functions of business as well as observe its contributions to society. History and evolution of business; traditional and modern methods of doing and organising business, management of business, business environments and influence. The course also covers communication technology, globalization, business social responsibility and ethics.

BMGT 101: Principles of Management (45/0 C.F 3.0) Y1 S1

Background to modern management, Nature, scope and importance of management, Growth and need for principles of management; the evolution of management - background to modern management. The concept of managers and management; Theories of management: classical, Neo-classical, Human relations; Approaches to management. Moral and social dimensions of management; functions of management - Planning; Organizing; Staffing; Directing; Controlling; dynamics of management; Functional Management disciplines Accounting/Finance; Marketing; Human Resources; and Production; Moral and social responsibility in management, Management in the contemporary world.

BMGT 300: Organization Theory (45/0 C.F 3.0) Y3S1

Overview of organizations and organization theory; Classical theory of organizations, Neoclassical theory, Systems and theories, Contingency theory, the theory of economic organization, Institutional theory, Network

theory; organizational structure, organizational goals, the external environment, organization size, growth and life cycle, organization design processes, organizational structure, organizational control, culture and ethical values, managing dynamic processes, strategy and structure for the future; power and politics in the organization, organizational decision-making, organizational change and adaptation.

BMGT 301: Business Law (45/0 C.F 3.0) Y3S1

Definition, Nature and Classification of Law; Sources of law; Structure and jurisdiction of Kenyan courts; Alternative Dispute Resolution mechanisms; Law of Contract; Law of Tort; Sale of goods; Law of Agency; Partnerships; Hire Purchase law; Negotiable Instruments; Commercial Securities; Insurance law; Law of Property; Intellectual Property .

BMGT 303: Global Business Management (45/0 C.F 3.0) Y3S2

Global business; theories of international trade, globalization; global business environment; global market selection; modes of entry into foreign markets; multinational corporations, forms of international competition; global competitive strategy; organization and control of global operations; global human resource management; global marketing management; global accounting issues; global financial management; global production and logistics management

BMGT 304: Organizational Behaviour (45/0 C.F 3.0) Y3S2

This course improves the students' abilities to apply OB theory to effectively diagnose and solve individual, team and organization-wide problems for improved organizational effectiveness. Overview of organization behaviour: models, challenges, opportunities and its multi-disciplinary approach; individual behaviour and

learning in organizations; values, emotions and moods; work-related attitudes: job satisfaction, organizational commitment, job involvement, psychological contracts; personality; perceptions; motivation; group and team dynamics; decision making; leadership; organizational communications; organizational culture and stress management.

BMGT 305: Company Law (45/0 C.F 3.0)Y3S2

Historical background, meaning and nature of a company; comparison of the basic features of a partnership, sole proprietorship, NGOs and Companies; incorporation procedures; consequences of incorporation; promoters and pre-incorporation contracts; company secretaries; lifting the veil of incorporation and corporate personality; types of companies; memorandum of association; articles of association; doctrine of ultra vires, rights and duties of the directors; shareholders; borrowing powers; protection of minority shareholders; powers of majority shareholders and other company officers; audits; prospectus; shares; stocks; charges; debentures; dividends; mergers; corporate governance; takeovers; receiverships; and winding up.

BMGT 400: Strategic Management (45/0 C.F 3.0) Y4S1

The nature and scope of strategy, evolution of strategic management, levels strategy, value of strategy, environmental analysis, establishing organizational direction, strategy formulation, strategy implementation, strategic control, strategy in different contexts: public sector and small business.

BMGT 401: Business Communication (45/0 C.F 3.0) Y4 S1

Introduction to business communication. A systematic approach to effective communication; oral and written

communication. Business and professional speech communication Report writing. Instructions, documentation and policy procedure statements. Career strategies; responding to a job advertisement, writing a cover letter, preparing a curriculum vitae, handling a job interview, frequently asked questions in job interviews. Contemporary issues in business communication.

BMGT 402: Business Ethics and corporate Governance (45/0 C.F 3.0)Y4 S2

The origin of Ethics, Ethics in the various business Disciplines. Ethics in Business, Theories of Ethics; Virtue theories, Duty Theories and Consequential Theories. Professional practices. decline of professionalism. Nature and theoretical underpinnings of business ethics, Whistle Blowing, managing Ethics in the work Place. Developing code of ethics, corporate social responsibility, Corporate governance ethics, nature and importance of corporate governance. Morality of both Individuals and groups; Principles of doubt and relationships and obligations of Employees and employers, producers and Distributors and Charity. Management of the firm and Society and also Business community disclosure. Protection of Environment, Social responsibility, Social Obligations and Social Response.

BMGT 403: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior

work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

BECO 101: Principles of Microeconomics for Business (3.0C.F.45/0)Y1S1

Scope and methods of economic analysis. Economics of the household and the business firm. Markets and price determination. Consumer behaviour and demand for commodities. Production, costs, and supply commodities. Market structure: perfect competition, monopoly, monopsony and imperfect competition. Efficiency of resource allocation. Income distribution. Market imperfections and government interventions. Market and non-market economic systems.

BECO 102: Principles of Macroeconomics for Business (3.0C.F.45/0) Y1S2

Basic concepts and scope of macroeconomic analysis. National income accounting. National income as a measure of social welfare. The Keynesian model of income determination. Theories of consumption and investment. Role of money in the economy. Money creation, government spending and taxation. Goods and money markets. Recession, inflation and employment. International trade and balance of payments. Economic policies for full employment and price stabilisation.

BECO 201: Intermediate Microeconomics for Business (3.0C.F.45/0)Y2S2

Demand and Supply theories; Nature of the Firm and its environment; Theory of the Firm; Production Functions, Cost Functions, Profit Maximization; Market structures and Behaviour of the Firm; Pricing Decisions; Introduction to Welfare Economics; Partial and General Equilibrium; Pareto Optimality and Competitive

Equilibrium; the future of the Firm. Cases and Application.

BECO 202: Intermediate Macroeconomics for Business (3.0C.F.45/0)Y2S2

Macroeconomics issues and concepts; Origin of Macroeconomics; Introduction to Classical and Keynesian Theories; Role of Government in the Macroeconomy; Macroeconomic Analysis; Keynesian Microeconomics; Consumption, Savings, and Demand; The Microeconomic Aggregates and the sector Models; IS-LM curve; The Multiplier; Monetary Policy, Fiscal Policy; Unemployment; International Trade; Developing Economies and the future issues.

ACCOUNTING OPTION

BACT 110: Principles of Accounting I (45/0 C.F 3.0)Y1S1

Historical development, definition and fields/branches of accounting. Conceptual framework of accounting - an introduction. Objectives of financial reporting and fundamental concepts of accounting. Recording of transactions and events. The nature of accounting equation and role of double entry system. Accounting cycle. Journalising, posting, trial balance and accounting errors, adjustments, closing and reversing entries. Preparation of financial statements; Income statements, the balance sheet, funds flow and cash flow statements. Interpretation of financial statements. Control accounts. Accounting for merchandising concerns. Uses of managerial accounting and financial accounting.

BACT 111: Principles of Accounting II (45/0 C.F 3.0) Y1S1

Cash and cash analysis; petty cash, bank reconciliation. Statement of changes in financial position; preparation of funds flow and cash flow statements. Financial statement analysis. Accounting for manufacturing

concerns. Incomplete records. Introduction to partnership accounts; creation of partnership accounts, fixed versus fluctuating capital accounts, interest on capital and drawings, partners' loans to the firm, profit and loss and appropriation account. Accounting for non-trading/not for profit organisations. **(Prerequisite: BACT 110).**

BACT 210: Managerial Accounting (45/0 C.F 3.0) Y2S1

Nature of management accounting and its use in decision-making. Cost concepts and classifications. Cost data/elements; materials store procedures, economic order quantities (EOQ), valuation of store issues; labour times, wage routine and remuneration methods; overhead abstraction, analysis and absorption/application, and Approaches to cost relationship. Cost behaviour and estimation. Product costing methods; Variable costing, Absorption costing and Activity Based Costing (ABC); costing systems; job order and process costing, operations costing. Budgetary management and control. Basic cost volume profit (CVP) analysis under environment of certainty; single and multi-products Analysis. Basic Standard costing and variance analysis. **(Prerequisite: BACT 111)**

BACT 211: Accounting for Assets (45/0 C.F 3.0) Y2S1

Institutional setting and development of Financial Reporting Standards. Conceptual framework of accounting. Accounting for Cash and cash equivalents (IAS 7, IAS 13). Accounting for Receivables (IAS 13 & 37), measurement and reporting of marketable securities: investment in other companies, financial instruments disclosure and presentation(IAS 13, 25, 32 39), Inventories and cost of goods sold (IAS 2, 13), Accounting for property, plant and Equipments (IAS 4,16 and 36), Intangible assets, research and

development (IAS 9, 38), leased assets (IAS 17), and Depletion of natural resources. **(Prerequisite: BACT 111)**

ACT 212: Accounting for Equities and Liabilities 45/0 C.F 3.0) Y2S2

Measurement and Reporting of Current Liabilities (IAS 13, 37) and Contingencies. Accounting for Long-Term Liabilities; Bonds and Leases. Shareholders' equity: Contributed Capital, Retained Earnings, and Treasury shares. Dividends. Earnings per Share. Accounting for income taxes (IAS 12). Changes in Accounting Principles and Estimates (IAS 8). **(Prerequisite: BACT 111)**

BACT 310: Advanced Financial Accounting (45/0 C.F 3.0)Y3S1

Insolvency accounts; preparation of statement of affairs, preparation of deficiency account. Accounting for capital reconstruction and reorganization, Accounting for long-term contracts: Investment accounts; long term investments in shares and bonds, cum-interest price and ex-interest price. Advanced partnership accounts: Partnership changes-admission of new member, retirement of a member, change in profit sharing ratio; Dissolution-valuation of goodwill, revaluation of assets and liabilities, settlement of accounts, piecemeal distribution of cash. Change of partnership to Limited Liability Company. Pension and employee benefits. Published accounting and interim reporting. Joint venture accounts. **(Prerequisite: BACT 211 & BACT 212)**

BACT 311; Principles Of Auditing And Assurance (45/0 C.F 3.0)Y3S1

+Introduction to audit and other assurance services; An introduction to assurance and financial statements auditing; Client acceptance; Risk assessment and materiality; Audit evidence and audit documentation;

Audit planning: Impact of information technology on the audit process ; Overall audit plans and audit programs; Statistical sampling for testing control procedures; Statistical sampling for substantive testing and account balance; Auditing the revenue cycle (auditing revenue and related accounts); Auditing the expenditure cycle (auditing acquisition cycle and inventory); Auditing the financing and investing cycle: Auditing cash and other liquid assets, Auditing fixed assets and related expenses accounts; Auditing the human resources management cycle: Audit of acquisition, related entities transactions, long-term liabilities and equity; Auditing the conversion (manufacturing cycle); Quality control; Review for discovery of subsequent events; Review financial statements and other report matter; Going concern issues; Matters for attention of partners (MAPS); Report to the board of directors; Audit reports; Other assurance services; The attestation services; Internal auditing services; Operational and compliance auditing.

BACT 312: Advanced Financial Accounting II (45/0 C.F 3.0) Y3S2

The role of accounting standards in regulating accounting practice.; consolidation at the date of acquisition; consolidation after date of acquisition; inter-company transactions and profits; indirect and mutual holdings, consolidated cash flow statements (IAS 3,22,27); Accounting foreign currency translation (IAS 21). Accounting for Associate companies (IAS 28), Accounting for incorporated joint ventures, Accounting for mergers; Accounting for divestiture and discontinued operations. Segmental reporting Re-organization and arrangements, accounting for price level changes (IAS 15, 29) **(Prerequisite: BACT 310)**

BACT 313: Advanced Managerial Accounting (45/0 C.F 3.0) Y3S2

Decision making criteria under the environments of certainty, fundamental uncertainty, risk & competition; Valuation of Information in decision making; perfect and imperfect information. Relevant costing and non routine decisions. Simulation, time series models and Statistical cost estimation; learning curves and its application. Advanced Cost Volume Profit analysis under uncertainty; Process costing in multiprocess situations; Treatment of spoilage, wastes and defective units in production; Joint and by-product cost allocation. Budgetary controls, human aspects in budgeting, emerging trends in budgeting;. Flexible budgets and advanced variance analysis. Decentralisation and transfer pricing; Responsibility accounting, Performance evaluation and reward systems. Emerging trends in managerial accounting- strategic management accounting, target costing and activity based management. Inventory planning and control models **(Prerequisite: BACT 210)**

BACT 314: Accounting Information Systems (45/0 C.F 3.0) Y3S2

An overview of accounting information system; An overview of business processes; Systems development and documentation techniques; Relational databases; Computer fraud and abuse; Control and accounting information systems; Information systems controls for systems reliability: information security; Information systems controls for systems reliability: confidentiality, privacy, processing integrity and availability; Auditing computer-based information systems; The revenue cycle: sales and cash collections; The expenditure cycle: purchasing and cash disbursements; The production cycle; The human resource management and payroll cycle; General ledger and reporting system; Database design using the REA data model; Implementing REA

model in a relational database; AIS development strategies; System design, implementation and operation.

BACT 315: Public Sector Accounting (45/0 C.F 3.0)Y3S2

Introduction to accounting and financial reporting for not-for-profit entities; Nature and purpose of not-for-profit organizations; Fund accounting; Issues of budgeting and control; Recognizing revenues and expenses; Issues of reporting: disclosure and analysis; Using cost information to manage and control; Managing for results; Auditing not-for-profit organizations; Analysis of not-for-profit financial performance; International public sector accounting standards (IPSAS).

BACT 410: International Accounting (45/0 C.F 3.0)Y4S1

Introduction to International Business, Management Accounting Systems in a global corporation, Accounting for foreign currency transactions and translation of foreign financial statements. Comparative international analysis of financial statement. International budgeting & performance evaluation. International transfer pricing and decentralization. Cost Allocation in Multinational companies. Pricing Decisions by Multinationals.

BACT 411: Tax Law and Practice (3.0 C.F. 45/0)Y4S1

Types of taxes and the jurisdictions that use them; tax policy issues, standards of a goods tax system; introduction to the Kenya's tax system; introduction to income tax; personal allowances; payments and gifts eligible for tax relief; income from property; income from savings and investments; income from self-employment (PAYE); income from self-employment – computation of income; income from self-employment –

basic period; income from self – employment – capital allowances; income from self-employment – trading losses; income from self-employment – partnership; pension contributions; payment of income tax, surcharges, interest and penalties; national pension contributions (NSSF); introduction to corporation tax; corporate chargeable gains; computation and payment of corporate tax liability; income tax and advanced corporate tax; corporate tax losses; close companies and reconstructions; VAT – Principles and Applications; VAT – Accounting and Administration; Overseas aspects of taxation

BACT 412: Financial Auditing and Assurance (45/0 C.F 3.0) Y4S2

The course presents auditing as a complex judgments and decision making process affected by real-world behavioural and environmental factors rather than a mechanical standard-driven process; Professional ethics and corporate governance; The audit committee, internal and external auditing; International auditing and assurance; Audit risk, materiality and business risk management; Evidence and decision making in auditing; Internal control of financial reporting and IT environment; Audit reporting; Information technology and auditing; Quality control and oversight systems in auditing; International issues; Auditor liability in the changing environment; The independent audit, stock markets and lending decisions; Corporate fraud, corporate scandals and external auditing; Auditing: looking ahead; Operational and compliance auditing; Other assurance and attestation services. **(Prerequisite: BACT 311)**

BACT413: Specialised Financial Accounting Techniques (45/0 C.F 3.0) Y4S2

Accounting for and reporting by companies Liquidations; Accounting for and reporting by Not-For-Profit Entities; Accounting for companies selling on

Instalment Sales And Consignment; Accounting for Banks and Savings Institutions (IAS 30); Accounting for Mining and exploration Companies; Accounting for Securities and Commodity Brokers (e.g. Investment Bank, Mutual Funds); Accounting for Real – Estate Companies; Accounting for and reporting by Employees' Benefits Plans; Accounting for and reporting by Electricity and Telephone Companies; Accounting for and reporting by Health Care (Hospitals); Accounting for and reporting by High-technology companies; Accounting for and reporting by Insurance Companies; Accounting for Corporate joint ventures; Accounting for Long-Term construction contract companies; Accounting for universities and colleges; Accounting for agricultural companies.

BACT 414: Financial Statement Analysis (45/0 C.F 3.0)Y4S2

An Overview of financial statements and how to read an annual report; An overview of business activities (financing, investing and operating); Overview of financial statement analysis; Analyzing financing activities; Analyzing investing activities; Analyzing operating activities; Cash flow analysis; Return on invested capital and profitability analysis; Prospective analysis; Credit analysis – Liquidity; Credit analysis - Capital structure and Solvency; Equity analysis and Valuation; How to detect fraud in financial statements.

BACT 415: Advanced Taxation and Planning (3.0 C.F 45/0) Y4S1

Introduction to tax planning and strategies ; Tax research ; Organizational strategies for new businesses; Employees' compensation strategies; Income measurement and reporting; Business incentive provisions; Distributions to business owners; Multiple-entity business structure; International business expansion; Disposition of equity interest in business entities; Taxes and business strategy; Corporate

acquisitions, mergers and divisions; Business liquidation and terminations; The transfer of tax systems; Income taxation of trusts and estates; Wealth transfer planning.

BACT 416: Contemporary Issues in Managerial Accounting (3.0 C. F 45/0) Y4S1

General: Management accounting: information that creates value; A framework for management accounting and control systems; Ethics in management accounting. Planning and budgeting: Using budgets to achieve organization objectives; Capital budgeting; Control and performance evaluation; Responsibility centres and financial control; Motivating behaviour in management accounting and control systems; Management accounting and control systems: assessing performance over the entire value chain; The balanced scorecard. Cost accounting systems; Activity based cost management system; Traditional cost management system; Decision making; Cost information for pricing and product planning; Management accounting information for activity and process decision (prerequisite BACT 210)

BACT 417: Trust and Executorships Accounting 3.0 CF. 45/0) Y4S1

Introduction to trust and executorships'. The provision of laws relating to the succession act. The provision of the laws relating to trust. Duties and responsibilities of trustees. Estate plan administration of estate. Duties of personal representative. Preparing an inventory of estate property. Settlement of claims against the estate. Distribution of estate assets after settlement of claims. Reporting of estate activities. Accounting for estate. Distinguishing between estate principal and income. Account titles. Entries to record transactions of the estate. Reports filed by the executor. Closing entries. Accounting for trust arrangement.

BACT 418: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

FINANCE OPTION

BFIN: 230 Financial Management I (45/0 C.F 3.0) Y2S2

The scope and function of finance, objectives of firms. Agency theory and corporate governance. Sources of finance, Time value of Money, Valuation of shares and bonds. Cost of Capital. Capital Budgeting decisions. Introduction to Risk and return analysis.

BFIN 330: Financial Institutions and Markets (45/0 C.F 3.0) Y3S1

The financial system and components, financial intermediation and financial intermediaries, nature and operations of financial markets, nature and operations of financial institutions and their role in an economy, types of financial instruments, capital markets and money markets, other types of markets, international financial markets and institutions, role and nature of securities

exchange in the Kenyan economy, developments in local and international markets, regulatory environment and regulatory bodies; contemporary issues, financial innovations and E-finance: (**Pre-requisite: BFIN 230**)

BFIN 331: Monetary Theory & Practice (45/0 C.F 3.0) Y3S1

Introduction of money and Banking. History of Money and Banking. Types of money and Monetary standards. Monetary theories: classical theory, rational expectation theory; Money Supply; Equilibriums – IS and LM curves. Role of monetary authorities, role of banking and Non – Banking institutions; monetary policies and transmission mechanism: Keynesian version; monetarist version; lags in monetary policies, current development in monetary policy economic zones and currency unions. (**Pre-requisite: BECO 201**)

BFIN: 332 Financial Management II (45/0 C.F 3.0) Y3S1

Advanced capital budgeting Capital techniques, Advanced risk and return; three or more assets, systematic and unsystematic risk, APT, CAPM, Fama-French three factor model, working capital management, valuation of financial derivatives; option pricing theory, information on capital market efficiency, Financial planning, capital structure decisions, Operating and Financial leverage. (**Pre-requisite: BFIN 230**)

BFIN 333: Public Finance (45/0 C.F 3.0) Y3S2

Nature of public finance; Function of public finance, Sources of public finance, Resources allocation, Efficient output of public goods/ optimum level of production of public goods, public goods/ public utility, Market failure, Externalities/external effects, Equity and income distribution, principles and types of taxes, Behavioural Responses to taxation, Tax incidence, Budgeting process and types of government budgets,

Budget deficit financing and ways of budget financing, public expenditure programmes, public financial management, devolution and the roles of county government, effects of government expenditure programmes in economic development evaluation of public expenditure programmes, Public debt management. **(Pre-requisite: BECO 202)**

BFIN 334: Banking Law and Practise (45/0 C.F 3.0) Y3S2

Definition of banking, Origin of World bank, Development of banking institutions and the banking system, definition of bank customer, terms of contractual relationship between banker and customer, rights and duties of banker and customer; Opening and conducting of various customers' accounts; sole, minor, partnership, company, executor, joint account, society, advocates; Negotiable instruments; bills of exchange, Cheques, endorsements; Rights and duties of paying and collecting banker; protection afforded by the Cheques Act 1957; Procedure for taking of various securities for bank advances; guarantees, land, life policies, assignment of book debts, discounting of bills of exchange, agricultural charges; Banking Act Cap 487 Laws of Kenya. Trouble banks and deposit protection funds. Cross border banking. Banks and capital markets. Technology in banking.

BFIN 335 Corporate Finance (45/0 C.F 3.0) Y3S2

Essentials of corporate finance; Distress restructuring and Reorganisation; Signs of financial distress, predicting organization failure, multiple discriminated analysis, liquidation, Company reorganization and reconstruction., Mergers and Acquisitions Management buy-out, Leveraged buy outs, Defences of mergers and Acquisitions, capital reconstruction schemes. Dividend policy, **(Prerequisite BFIN 332)**

BFIN 336: Asset Management 5/0 C.F 3.0) Y3S2 Role and purpose of asset management, asset management as a profession; emergence of asset management and magnitude world of asset funds and asset liability management. Passive and aggressive investment strategies. Collective investment Schemes: Mutual funds, pension funds, managing pension and retirement benefit schemes, measuring mutual and pension fund performance.. Investment funds, investment trusts, Investment companies, Unit Trusts. Roles and duties of fund managers and Custodian Trustees, Measuring Fund Managers performance, superior asset selection and allocation, aspects of trustee law, Liquidity in fund management, analysis of mortgage-backed securities, brokerage and commissions, Emerging issues in asset management-ethical issues. Legal and regulatory framework of property interests. Asset selection and funds allocation criteria, Top- down and bottom –Up, Contrarian style, complete market index replication, proxy index.

BFIN 337: Financial Information Systems (45/0 C.F 3.0) Y3S2

Introduction to financial information systems, E-Finance, financial E-Commerce, e-money and financial networks, electronic trading networks, Financial reporting & IT, Impact of IT on banking industry, technologies that facilitate secure B2C electronic finance, automation of capital markets and effect on brokerage firms, intermediaries and cyber-me diaries, E-finance reshaping financial landscape around the world, impact of IT on insurance and real estate investments, computer crime and ethics, building blocks of financial forecasting, judgmental approach and computer based financial planning models,

BFIN 430 Management of Financial Institutions (45/0 C.F 3.0) Y4S1

Overview of financial institutions, management aspects of financial institutions – the board of directors of financial institutions, liquidity management, theories of liquidity management, the balance sheet of financial institutions, principles of financial institutions assets and liability management, management of liquidity, assets, liabilities and capital adequacy. Credit risk and interest risk management, duration and gap analysis and other risks measurement techniques. Off-balance activities and risk management techniques, Value at risk (VAR), stress testing and other techniques, Basel's capital requirements for trading. Financial crisis, lessons and solutions, financial innovation/reengineering, factors driving financial innovation and the resultant products/services. Contemporary issues in management of financial institutions. **(Prerequisite BFIN 322)**

BFIN 431: Real Estate Finance (45/0 C.F 3.0) Y4S1

Definition and nature of real estate, fundamental concepts, principles and practices in real estate, property rights and types of interest, valuation procedures and techniques, Real Estate Market analysis; investment analysis and strategies in real estate, Investment performance evaluation. Sources and instruments of financing real estate, Debt financing, Equity financing. Refinancing decisions. Real estate markets, Secondary markets and Primary Markets. Mortgages, Loan yields and mortgage valuation, Loan repayment and balance computations. Real Estate Investment Trusts. Legal aspects and tax rules, real estate developments in Kenya. **(Pre-requisite: FIN 221)**

BFIN432: International Finance (45/0 C.F 3.0) Y4S2

Overview of international financial management, Theories of international business, fiscal regimes and cross border risks and management, international financial system, flow of funds, International financial

instruments, International Financial markets and institutions, exchange rates, exchange risk determination, exchange rate risk exposures, international parity relationships, international payments system, risk management, international banking, multinational capital budgeting, multinational working capital management, offshore investments and financing, developments in international business and markets.

BFIN 433: Investment and Portfolio Management C.F 3.0) Y4S2

Introduction to investment theory: Investment options, Modern portfolio theory; Portfolio construction and planning;- Investment portfolios, Asset classes, Portfolio analysis and build up, Advanced Portfolio selection and allocation, Portfolio management strategies, Portfolio management for financial assets and real assets or combination- Bond and equity portfolio management strategies; subordinated debt; commodity and financial futures. International Investments. Investment Schemes Portfolio Performance evaluation- performance measures, problem diagnostic techniques. Contemporary issues in portfolio management.

BFIN 434: Financial Statement Analysis (45/0 C.F 3.0) Y4S2

An Overview of financial statements and how to read an annual report; An overview of business activities (financing, investing and operating); Overview of financial statement analysis; cross sectional and time series analysis, Analyzing financing activities; Analyzing investing activities; Analyzing operating activities; Cash flow analysis; Return on invested capital and profitability analysis; Prospective analysis; Credit analysis – Liquidity; Credit analysis - Capital structure and Solvency; How to detect fraud in financial statements

BFIN 435: Development Finance (45/0 C.F 3.0)Y4S1

Concept of Development Finance, Role and structure of development banks at national, regional and international levels. Economic and financial evaluation of development projects Financial institutions dealing with development finance such as community development corporations (CDCs), co-operate societies , social enterprises; Development Finance to the other directly relevant institutions in the public and private sectors-such as banks, government agencies, foundations; Strategies, tools, and techniques for Development Finance in both the public and private sector. Millennium development goals; Management and control of development projects, including post-implementation audits Essential practices of a successful Community Development Finance institution. Financial crisis and international capital flow, financial globalization, Economic and financial evaluation of development projects. The management and control of development projects, including post-implementation audits.

BFIN 436: Security Analysis and Securitization (45/0 C.F 3.0) Y4S1

Overview of equity and debt markets, industry analysis, fundamental analysis and technical analysis in equity valuation, equity valuation process, discounted dividend valuation, free cash flow valuation, market based valuation: price multiples, residual income valuation, valuation of private companies, fundamentals of fixed income valuation, fixed income risk and return, term structure and interest rate dynamics, credit analysis models, emerging issues and trends

BFIN 437: Financial Derivatives (3.0 C.F. 45/0) Y4S1

The valuation of futures contracts on; Stock indices. On commodities and pressing instruments. The valuation of

options. Empirical evidence. Strategies with respect to these assets. Dynamic asset allocation strategies of which portfolio insurance is an example. Scraps. The use (and misuse) of derivatives in the content of corporate applications. Futures markets. Future prices. Interest rate futures. Stock index futures. Foreign currency futures. The options markets. Option pricing. European options pricing. American option-pricing. Options on stocks. Indexes, foreign currency and futures. Interest rate options. The swaps markets. Economic analysis and swap pricing. Option like securities: corporate warrants and convertible bonds

BFIN 438: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

BUSINESS INFORMATION SYSTEMS

BBIS 150: Fundamentals of Information Systems (45/0 C.F 3.0) YIS2

Introduction to systems and Information Systems in organizations; Computer systems functions; evolution

and types of computers; computer hardware; computer software; organizing data and information; coding and data processing cycle; Telecommunications, Internet, intranets and extranets; Specialized business Information Systems; systems development; programming and program development, Security, privacy and ethical issues in Information Systems; Enterprise Computing.

BBIS 250: Systems Analysis and Design (45/0 C.F 3.0) Y2S2

This course introduces the fundamentals of information systems analysis and design by covering systems development life cycle: project stages and project control - strategic study, business study, feasibility study, requirements analysis and specification, logical systems specification, logical and physical design, coding, testing, implementation, maintenance, phase out. The waterfall life cycle model, 'v'- model, spiral life cycle model. Software analysis and design: analysis and design methods, modelling techniques, traditional methods, object technology and program specification.

BBIS 350: Object Oriented Programming I (45/0 C.F 3.0) Y3S1

An introduction to basic programming using Java. Standard Java classes and methods. Competency in using Java control structures; encapsulation; inheritance and polymorphism. Designing object-oriented solutions for simple problems and implement them in Java; Solving simple problems using arrays; Implementation of some standard data structures such as stacks in an object-oriented programming context.

BBIS 351: Data Communication (45/0 C.F 3.0) Y3S1

This course focuses on the principles and topics of importance concerning the technology and architecture of data and computer communications. Topics to be covered include data communications: data

transmission, transmission media, signal encoding techniques, data link control protocols and multiplexing; standards and protocols: The Transmission Control Protocol/Internet Protocol (TCP/IP) architecture, the Open Systems Interconnection (OSI) model, internetwork and transport protocols; types of network: Local Area Networks (LANs): High speed LANs and Wireless LANs, Metropolitan Area Networks (MANs), Wide Area Networks (WANs): circuit switching and packet switching, Asynchronous Transfer Mode (ATM); Internet applications: network security, electronic mail and network management, Internet Directory Service (DNS) and multimedia.

BBIS 352: Computer Operating Systems (45/0 C.F 3.0)Y3S1

Fundamental issues in design: process and memory management, process co-ordination and synchronization, inter-processor communication, real-time clock management, i/o device drivers-file systems, CPU architecture and frame-stage network communication. Assignments involving the use, modification, and extension of a multitasking operating system. Principles of distributed operating systems including networking protocols, distributed file systems, remote IPC mechanisms, graphical user interfaces, load balancing, and process migration. Case studies include current standards as well as novel systems under development

BBIS 353: Object-Oriented Programming II (45/0 C.F 3.0) Y3S2

Software development practices using Visual BASIC.NET programming language. Topics to be covered include introduction to the .NET Framework 4.0, event-driven programming, classes and objects, data types, variables and constants, control structures, input validation and user interface and collections. Intrinsic controls: picture box, label, list box, combo box, image, line and shape, timer, drive, directory, file list box, scroll

bar, option button, check box and data control. Database development: data access objects, working with data files, retrieving remote data, multiple user issues, performance issues and using Structured Query Language (SQL) server databases. Create a database and Web Application; use and update Language Integrated Query (LINQ) to SQL, introduce Web services and Windows Presentation Foundation (WPF); create reports, Multiple Document Interface (MDI), Interfaces, and Polymorphism.

BBIS 354: Software Engineering (45/0 C.F 3.0) Y3S2
Requirements definition. Data and functional specifications. Modularity, design, testing techniques, verification and validation. Maintenance, documentation, project management, quality assurance and CASE tools.

BBIS 355: Advanced Programming in Java (45/0 C.F 3.0) Y3S2

Advanced concepts of program design; Implementation and testing of programs of object-oriented (OO) programming using the Java programming language. Use of the Java programming language in the development of small to medium sized application programs; Producing professionally acceptable coding and performance standards; Basic principles of the object-oriented development process. Application of OO process; Knowledge of basic algorithms and data structures. Understanding of event-driven programming and graphical user interfaces.

BBIS 356: Application Programming for the Internet (45/0 C.F 3.0) Y3S2

Fundamentals of the Web: services and protocols. Web authoring tools. Client side programming: Hyper Text Markup Language (HTML), Dynamic HTML, extended Markup Language (XML), Scripting: examples in languages like Jscript, Vbscript. Multimedia: graphics,

audio, animation. Server side programming: JavaScript, Common Gateway Interface (CGI) scripting, Active Server Pages, Sockets. Current trends in applications development.

BBIS 357: E-Commerce (45/0 C.F 3.0) Y3S2

Business to business commerce. Business to consumer commerce. Building blocks of electronic commerce. E-commerce evolution, its benefits and shortcomings. Applications. Internet and networking technologies, internet languages, Internet and network protocols. Electronic payment systems. Security of transactions, Review of cryptographic tools, secure financial transactions, payment protocols and standards, Smart card, e-cash technologies, Authentication, signatures, observes, Anonymity, privacy, traceability. Key certification, management and escrow, technologies for building e-commerce applications, distributed objects, object quest brokers, and object-oriented application frameworks. Some applications: supply chain management, internet auctions and remote banking.

BBIS 450: Database Management Systems (45/0 C.F 3.0) Y4S1

Data management background, Conceptual, logical, and physical data models, and modelling tools; structured and object design approaches; models for databases: relational and object oriented; design tools; data dictionaries, repositories, warehousing, and data mining; database implementation including user interface and reports; multi-tier planning and implementation; data conversion and post implementation review.

BBIS 451: Business Analytics and Decision Support (45/0 C.F 3.0) Y4S1

Business Analytics and Data Mining; Data Mining Process; Designing the Data Mining Project; Data Characterization; Feature Creation and Selection;

Creating Data Samples; Model Scoring and Deployment; Overview and Comparison of Data Mining Algorithms; Supervised and unsupervised Learning Algorithms; Model Ensembles and Deployment; Data Visualization; Data Mining Software Tools. Augmentative technologies: Decision Support Systems, Geographical Information Systems

BBIS 452: Management Information Systems (45/0 C.F 3.0) Y4S1

This course provides an overview of information systems in the business world. Topics covered include basic concepts of information systems resources: hardware, software, telecommunications, database. Application of MIS in business organization; Strategic advantage of information technology; Transaction processing and management reporting; Information systems and decision making; Decision support and executive support systems (DSS, ESS); IT and business decisions: operations, marketing, pricing. Internet and electronic commerce; Internet security & ethical challenges.

BBIS 453: Distributed Information Systems (45/0 C.F 3.0) Y4S2

Basic distributed systems overview (client-server, peer-to-peer, clusters); Inter-process communication; Distributed synchronization (including distributed transactions); Distributed concurrency management; Resource discovery, naming, and directory services; Scalable service design; Pervasive/ubiquitous systems; Fault tolerance and security

BBIS 454: Human Computer Interaction (45/0 C.F 3.0) Y4S2

This course is designed to introduce the student to various aspects of the human computer interface. Topics covered include foundations of interface, interaction and

human-computer interaction, basic science of psychological and social interaction, theories & principles related to human activity & system design, interactive systems and work productivity; HCI aspects of collaboration and communication and computer-supported cooperative work; interactive systems development; user-centred design; human-centred design and evaluation; graphical user-interface design and programming; interaction styles; industry-accepted interface guidelines and standards; information retrieval; information visualization and interaction with data and information

BBIS 455: Information Systems Security and Audit (45/0 C.F 3.0) Y4S2

Security Management Practices; Security Architecture and Models; Access Control Systems and Methodology; Application Development Security; Operations Security; Physical Security; Cryptography; Telecommunications, Network and Internet Security; Database Security; information and data integrity; Information systems auditing and forensics; standards and legislation; audit personnel and certification; Business Continuity Planning; emerging issues.

BBIS 456: Advanced Database Systems (45/0 C.F 3.0) Y4S1

File systems and Databases. Overview of SQL, Expressions, conditions and operators, Functions, Clauses in SQL, Joining tables, Sub queries. Manipulating data. Creating and managing databases. Tables. Views and indexes. Data integrity. Stored procedures. Transactions and locks. Optimizing query performance. Triggers. Database security. Transaction management and concurrency control. Distributed database management, Client/Server architecture. Object-Oriented databases.

BBIS 457: Multimedia Systems and Applications (45/0 C.F 3.0) Y4S1

Introduction to multimedia systems; Elements of multimedia audio, video, images, graphics, texts, 3Ds, signals and symbols; Basic signal processing; Hybrid environment containing signals and symbols; Transmission, compression and decompression of different media elements; Different standards; System issue; Digital right management synchronization; Multimedia system; Storage system; Multimedia databases; Multimedia indexing issues in database application; Application system and digital libraries

BBIS 458: Information Systems Project Management (45/0 C.F 3.0) Y4S1

Managing the system life cycle: requirements determination, design, implementation; system and database integration issues; network management; project tracking, metrics, and system performance evaluation; managing expectations of managers, clients, team members, and others; determining skill requirements and staffing; cost-effectiveness analysis; reporting and presentation techniques; management of behavioural and technical aspects of the project; change management. Software tools for project tracking and monitoring; team collaboration techniques and tools.

BBIS 459: Knowledge Management and Innovation (45/0 C.F 3.0) Y4S1

Knowledge and knowledge types; approaches and characteristics of knowledge management; organizational learning; the knowledge management cycle; technology use in knowledge management; role of knowledge management in organizational activities; roles and activities of technology, people and management in knowledge management; evaluating intellectual capital; benefits and drawbacks of knowledge management initiatives; creativity and

innovation, incremental innovation, managing innovation and entrepreneurship

BOPM 449: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

OPERATIONS MANAGEMENT OPTION**BOPM 140: Management Mathematics I (45/0 C.F 3.0) Y1S1**

Overview of probability, conditional probability, joint probability, probability trees and decision trees, Baye's theorem, Decision theorem; Decision making under uncertainty. Calculus: Introduction; limits and continuity; differential calculus, multivariate function integration; classical optimization techniques and application of Calculus. Inventory Control: - Introduction, types of costs; types of control systems; economic order quantity and fixed order quantity calculation, lead time and inventory control models. Time series analysis; variation in time series; trend analysis; cyclical variation; seasonal analysis and irregular variation

BOPM 141: Management Mathematics II (45/0 C.F 3.0) Y1S2

Linear Programming II: overview of LP: simplex method for maximizing; simplex method for minimizing; sensitivity analysis and application of linear programming; transportation models:- Introduction general structure of transportation problem, solving a transportation problem; dummy variables, degeneracy test; maximization and minimization cases in transportation problem; optimality test, assignment model;-general structure of the model; assignment model for minimization and maximization, equal sources and destinations. Correlation and regression; bivariate frequency distribution; scatter diagram; correlation analysis; regression analysis; autocorrelation; non-linear regression and linearization; multi-regression analysis. Simulation; introduction; model construction; assessing a model's suitability; Monte Carlo simulation; variables in a simulation model and application of simulation; queuing theory- introduction; queuing structures; analysis of single and multi-channel queuing with exponential arrival and service process; queuing models.

BOPM 241: Business Statistics for Decision Making (45/0 C.F 3.0)Y2S1

Introduction; Probability; Random variables; Normal distribution; Sampling and sampling distribution; Confidence intervals; Hypothesis testing; Analysis of variance; Simple linear regression and correlation; Multiple regression; Time series, forecasting and index numbers; Quality control improvements; Nonparametric methods and chi-square tests; Bayesian statistics and decision analysis; Sampling methods.

BOPM 340: Operations Research for Management I (45/0 C.F 3.0)Y3S1

History of Operations Research, Procedures and applications, models and decision making. Importance of

studying Management Science. Linear Programming: Linear programming formulation, Graphical Solution of linear programming problems. Simplex Algorithm, Shadow prices and duality, Sensitivity Analysis. Inventory Control. Network Analysis: The importance of time in planning the PERT network, critical path analysis, Resource scheduling, cost scheduling. Waiting lines (queues). Transportation and Assignment models.

BOPM 341: Managerial Statistics (45/0 C.F 3.0) Y3S1

Probability Theory and Sampling Distributions; Statistical Inference; Estimation; Hypothesis testing; Experimental Design; Analysis of Variance; Revision of Simple Linear Regression and Correlation; Time series analysis; Multiple Regression; Nonparametric Statistics.

BOPM 342: Operations Systems Design (45/0 C.F 3.0) Y3S1

Introduction; Production design, layout, group technology, work cells and cellular manufacturing, automation and robotics, and job design. Applications of total quality management, the just-in-time philosophy, and Information Systems to design are explored. Both manual and computer models are applied; Computer Aided Manufacturing / Computer Aided Design.

BOPM 343: Operations Research for Management II (45/0 C.F 3.0) Y3S2

Transportation problems; Analyses; Integer programming; Binary LP models; Dynamic programming, Goal programming; Queuing Models; Simulation; Replacement models.

BOPM 344: Quality Management (45/0 C.F 3.0) Y3S2

Introduction; key thinkers in the quality movement; defining quality; cost of quality; recognizing and rewarding quality; application of total quality control for improvement of products and services, including both statistical techniques and managerial approaches; control charts; quality costs; responsibility for quality; quality at the source; ethical issues in quality, ISO 9000; International differences in philosophy of quality; culture and customer service; organization-wide quality initiatives such as six-sigma and business process reengineering.

BOPM 345: Materials Management (45/0 C.F 3.0) Y3S2

Introduction; origin; concepts, importance; scope and objectives, material cycle, organizing for materials management. Purchasing; essentials and importance, organization for procurement, purchasing procedure, specifications, international purchasing, legal aspects of purchasing. Stock control; determining stock levels, re-order procedures, etc. Stores organization; siting and building of warehouses, storage and handling of equipment, automated warehousing, security and safety measures in warehouses. Physical distribution; functions of transport, physical components of transport.

BOPM 346: Manufacturing Operations Management (45/0 C.F 3.0) Y3S2

Manufacturing strategy; Manufacturing systems design: Location, single site and distributed locations; Layout: Capacity management; Make or buy decisions; Creativity and Innovation; World class manufacturing; supply chain management; maintenance management, e-operations; Review of operations; Standards and Quality in manufacturing.

BOPM 440: Research Methods (45/0 C.F 3.0) Y4S1

Research in business; Thinking like a researcher; The research process: an overview; Business research requests and proposals; Ethics in business research; Secondary data searches; Qualitative research; Observation studies; Surveys; Experiments and test markets; Measurement; Measurement scales; Questionnaires and instruments; Sampling; Data preparation and description; Exploring, displaying and examining data; Hypothesis testing; Measures of association; Multivariate analysis: an overview; Presenting insights and findings: written and oral reports.

BOPM 441: Project Management (45/0 C.F 3.0) Y4S1

Introduction and overview; Introduction to the operations management of small, intermediate, and large projects; Project planning; Project selection; project organization, staffing, planning and Scheduling (PERT/CPM), control, budgeting, and quality; the project environment, international issues, project implementation; project completion; project management software packages.

BOPM 442: Operations Management (45/0 C.F 3.0) Y4S1

Facility Layout Design; Defining facility layout; Layout in Manufacturing; Methods for facility layout; Supply Chain and Inventory Management; Capacity Requirement Planning; Aggregate planning and Capacity; Master production scheduling; Material Requirement Planning I (MRP I); Manufacturing resource planning II (MRP II), Supply Chain Operations Scheduling and Control; Order sequencing; Scheduling and controlling projects.

BOPM 443: Advanced Business Statistics for Decision Making (45/0 C.F 3.0)Y4S2

Sampling, systematic sampling, arbitrary sampling, non probabilistic sampling procedures. Statistical decision theory; introduction to decision theory, the pay-off tables, criteria for decision making, decision trees, decision making with sample information. Multiple regression and correlation; multiple regression model, tests for the regression coefficient, multiple correlation model. Non-linear regression, Non-linearity in the variables, non-linearity in the parameters, transformations for linearity, elasticity as an illustration of non-linear regression. Forecasting; importance of forecasting, forecasting and management, smoothing techniques, adaptive filtering, classical decomposition method of time series forecasting, other quantitative methods of forecasting. Statistical quality control; the concept of quality control charts for variables and attributes, sampling plans for variables and attributes reliability.

BOPM 444: Service Operations Management (45/0 C.F 3.0) Y4S2

The nature of services and service encounters; Introduction to service management; Service site location, service facilities design, location; Layout; Managing demand and supply in services; resource scheduling, the queuing phenomenon; technology and service operations; Service strategy and competitiveness; Globalization of services; Technology and its impact on services; Standards and Quality in services; Inventory management in services. Management of public and private non-profit service organization.

BOPM 445: Business Forecasting (45/0 C.F 3.0)Y4S2

Review of statistical analysis in business and management; Concept of forecasting; forecasting process; Forecasting techniques and their selection:

Qualitative forecasting techniques: historical analogy; field surveys and opinion polls; Quantitative forecasting techniques: time series, simple linear regression analysis; multiple linear regression analysis; econometric methods; discriminant analysis, Matrix Algebra based forecasting techniques - Markov analysis; input-output analysis.

BOPM 446: Statistical Quality Control. (45/0 C.F 3.0)Y4S1

Introduction; purpose of quality control, evolution of quality control as a discipline. Reliability and quality control; management's responsibility for reliability, reliability control and problems. Quality control cycle; pre-production quality engineering, vendor quality, incoming material inspection, process quality control, assembly quality control, quality verification and audit. Quality control and other departments; Finance and cost control, production control, line manufacturing control, marketing and field service control, personal and training control. Statistical quality control; sampling theory – types of samples, sampling plans, sampling schemes; control charts – properties of control charts, control charts for qualitative data, other types of control charts. Cumulative sum charts: decision rules, decision interval scheme. New developments and the future of quality control.

BOPM 447: Heuristics and Simulation (45/0 C.F 3.0) Y4S1

The course aims at equipping students with skills and tools for handling complex and dynamic business environments. The course also aims at equipping students with skills to solve semi-structured problems. Course Content: Modelling in Operations Research; Introduction to simulation; Simulation techniques; Applications of simulation; simulation with theoretical probability distributions; Use of simulation software; Heuristics in problem solving, Quantitative versus Qualitative approaches; Role of heuristics in solution of

semi-structured problems; Applications of Heuristics; Use of heuristics software.

BOPM 448: E-Business (45/0 C.F 3.0) Y4S1

Organization as a system: components, roles and relationships, Management Decisions and information systems support. Levels and categories of Business Information Systems: functional, enterprise, inter-organizational, global; Applications development cycle: Business and organizational logic, flowcharting, control structures, programming concepts. Electronic Data Interchange (EDI); Electronic commerce: technology architectures, business models, value chain analysis, electronic marketing and branding; payment systems, consumer behaviour in electronic environments, Solution planning, implementation and rollout; legal and ethical issues in E-Business; Practical exercises with spread sheet and database end-user computing environments, macros, web based and internet resources.

BOPM 449: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

BPSM 260: Fundamentals of Supply Chain Management (45/0 C.F 3.0) Y2S1

Supply chain design; Supply chain strategies; supply chain contracts; E-Business and supply chain; factors impacting supply chain operation; successful supply chain management; supply chain performance measurements; Enterprise Resource Planning and supply chain management.

BPSM 360: Inventory Management (45/0 C.F 3.0)Y3S1

Inventory planning and control; inventory management models; materials handling equipment; material handling systems: critical analysis and measuring the efficiency of existing systems, the unit load concept, economic analysis of Systems; Warehouse types, location, layout and operation; Enterprise Resource Planning and inventory management.

BPSM 361: Procurement Management (45/0 C.F 3.0)Y3S1

Role of organisational procurement in a business system: Role, tasks and objectives of procurement in different business sectors in an economy; Analysis of procurement in the context of supply chain management and business strategies of a firm. Procurement mix decisions in a supply chain context: Purchasing process for the specification and acquisition of quality goods and services; Total purchasing time and cost reduction methods. Supplier relationship management and strategy: Sourcing strategies and policies; Public sector procurement management; Outsourcing and contract administration; E-procurement; purchasing ethics

BPSM 362: Logistics & Transport Management (45/0 C.F 3.0)Y3S1

Logistics management defined; Logistics and marketing function; Total cost concept; integrated logistics system; Distribution channels: structure and design; Customer service logistics. Time and place utility; Reverse logistics; Transportation/Marketing/Logistics interface; Transportation service characteristics; Transportation systems/modes: interaction between transportation companies, airlines and shippers in the marketplace; traffic, fleet and transportation management; Transportation productivity; technology in transport management, legal issues in transportation; transportation-warehousing interface.

BPSM 363: Operations Management Practice (45/0 C.F 3.0) Y3S1

Facility Layout Design; Defining facility layout; Layout in Manufacturing; Methods for facility layout; Supply Chain and Inventory Management; Capacity Requirement Planning; Aggregate planning and Capacity; Master production scheduling; Material Requirement Planning (MRP I); Manufacturing resource planning (MRP II), Supply Chain Operations Scheduling and Control; Order sequencing; Scheduling and controlling projects.

BPSM 365: Public Procurement (45/0 C.F 3.0) Y3S2

History of Public Procurement; Scope of Public Procurement: International Organization of Procuring Entities, Procurement Cycle, Objectives of Public Procurement; Regulatory Framework in Public Procurement, PPDA 2015, PPADA 2015; Procurement Planning; Procurement Methods for Good Services and Works, Threshold for Procurement Methods; Procurement Plan; Management of Procurement Contracts; Inspection, Receiving and Acceptance of goods Services and Works; Storage and Issuance of

Inventory; Planning for Disposal of Stores, Equipment and Assets; Management of Procurement Methods

BPSM 366: International Procurement (45/0 C.F 3.0) Y3S2

Overview of International Procurement ; Preparation and Specification in International Procurement; Sourcing Strategies in International Procurement ; Commodity Markets; Procedures and Documentation in International procurement; Import and Export Preparation; Customs Service, Regulations and Instructions; International Transportation Incoterms; Financing in International Procurement; International Trade, Institutions and Frameworks; Challenges/Risks faced in International Procurement; Emerging Issues and Trends in International Procurement

BPSM 461: Legal aspects of Procurement & Supply chain Management (45/0 C.F 3.0) Y4S1

Registration of companies, intellectual property rights, copyrights, antitrust laws: Sherman Antitrust Act, Clayton Act,- FTC Act, and Robinson-Patman Act, purchasing role of supplies, corruption and its impact on purchasing and supplies, developing value systems, ethical codes in purchasing and supplies, rules and laws governing professional purchasing and supplies; ethics in Kenyan society; role of code of work ethics in organizations

BPSM 462: Ethics in Purchasing & Supplies Management (45/0 C.F 3.0)Y4S1

Meaning of ethics, development of business ethics, ethical concepts, the role and application of ethics in Logistics and Procurement Management., ethics and social responsibility, ethical dilemmas in modern business environment, developing and ethical culture in purchasing and environment, retail roles, functions, retail corporate plan, and importance to merchandize;

retail strategic frameworks and assessing retail strategic alternatives; retail unit location and site analysis; relationship between merchandize and retail functions; setting merchandize budget, control techniques; applications of information technology in merchandize management.

BPSM 463: Purchasing Policy and Strategy (45/0 C.F 3.0) Y4S1

Understanding purchasing and supplies policy and strategy, purchasing and supplies policy, purchasing and supplies strategy and its importance to the organization, aligning purchasing and supplies objectives to corporate strategy, common techniques in purchasing and supplies strategies, development of product specific purchasing and supplies objectives, types of supplier relationships in relation to policy and strategy for supplies of individual products and services, common techniques in purchasing and supplies strategies; supplier relationships; strategies for supplies of individual products and services

BPSM 464: Global Supply chain (45/0 C.F 3.0) Y4 S2

Conceptual framework: planning, design metrics, pricing; strategies for specialized procurements; international supply agreements; sourcing decisions in the supply chain; international humanitarian and emergency procurements; Strategic outsourcing and alliances; Supply chain relationships; network design and analysis; demand and supply planning, managing uncertainty, optimising product availability; pricing and revenue management in the supply chain, effective coordination; global supply chains, measurement, audit and benchmarking; Information System and the supply chain.

BPSM 465: Supply Chain Information Systems (45/0 C.F 3.0)Y4 S1

Purchasing system database for purchase order, requisition, vendor and commodity code information,

requisition tracking information, E-forms Approval of requisitions, E-reports purchasing, purchasing card, vendor information, request for quotation, order processing, invoice processing

BPSM 466: System Production Management (45/0 C.F 3.0) Y4S2

Role of the Production Function: Design of Facilities and Job: Materials and Inventory Management: Operations Planning and Scheduling: Inspection and Quality Control: Manufacturing and Service Strategy; Product and service design process: process selection and capacity planning; Facilities layout, location and design of work systems, materials requirement planning (MRPII) systems.

BPSM 467: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

COOPERATIVE AND MICRO-FINANCE MANAGEMENT OPTION

BCMF 310: Philosophy of Co-operatives and Micro-Finance (45/0 C.F 3.0) Y3 S1

Nature of, and history of co-operatives and microfinance; stakeholders in co-operatives and microfinance; role of co-operatives and microfinance in economic empowerment of members and national development; cooperative principles: User-Benefits, User-Owner, User-Control, Patronage Refund System, limited Return on Equity Capital, cooperation among cooperatives; types of co-operatives and microfinance institutions in Kenya: financial, consumer service, business and agricultural; structure of cooperatives in Kenya; Sources of equity: Direct Investment, Retained Margins, Per-Unit Capital Retains, Non-member/Non-patronage Earnings; government's role in supporting co-operatives and microfinance.

BCMF 311: Credit Management in Co-operatives and Micro-finance(45/0 C.F 3.0) Y3 S1

Nature of credit management, principles of lending; different types of borrowers; short-term and long-term lending; credit approval process, planning and supervising of the provision of credit, repayment; rates of interest; collateral and sources of funds; recovery procedures; credit risks; challenges in providing credit of cooperatives and microfinance in Kenya.

BCMF 312: Co-operative and Micro-finance Accounting (45/0 C.F 3.0) Y3 S2

Nature of co-operative and micro-finance accounting; documentation of loan transactions; classifying loan transactions; book keeping: daily journal, general ledger, member accounts; preparation of income and expenditure accounts; balance sheet and cash flow statements; internal control systems.

BCMF 313: Co-operative and Micro-Finance Law (45/0 C.F 3.0) Y3 S2

Nature of co-operative and micro-finance; importance of legislating co-operative and micro-finance businesses; legal requirements for registration of co-operative and micro-finance; company law, Cooperative Act and relevant legislations; Evolution of co-operatives Act.

BCMF 314: Consumer Cooperative Management (45/0 C.F 3.0) Y3 S2

Analysis of business operations of consumer cooperatives. Structure organization of consumer cooperative movement. Office management, buying, pricing, selling, working capital management, inventory management and capital structure. Problems and obstacles in the administration of consumer cooperatives in Kenya.

BCMF 315: Housing Cooperatives Management(45/0 C.F 3.0) Y3 S2

Analysis of business operations of housing cooperatives; Structure organization of housing cooperative movement; Investment analysis, capital structure, roles and operations, problems and obstacles of housing cooperatives in Kenya

BCMF 410: Risk Management in Co-operatives and Micro-finance (45/0 C.F 3.0) Y4 S1

Concept of risk; nature and functions of risk management; types of risks in co-operative and micro-finance business; risk identification; analysis and control; risk monitoring and controlling systems.

BCMF 411: Micro-enterprise Project Management (45/0 C.F 3.0) Y4 S1

Nature and importance of project management; characteristics of micro-enterprise projects; selection, planning and implementation of micro-enterprise

projects; monitoring and evaluation of projects; approaches and tools for project management.

BCMF 412: Co-operative Policy and Management (45/0 C.F 3.0) Y4 S2

Principles of co-operatives; formation of co-operatives, co-operative structure in Kenya; types of co-operatives, Kenya National Federation of Co-operatives; general meetings; role of general meetings; constitution of co-operatives; co-operative finance; co-operative education.

BCMF 413: Co-operative and Micro-Finance Product Development (45/0 C.F 3.0) Y4 S2

Broad definition of a product; classification of co-operative and micro-finance products; characteristics of co-operative and micro-finance products; external and internal environmental analysis; marketing research; product concept and design; costing and pricing; pilot testing and rollout; differentiating and positioning products.

BCMF 414: Resource Mobilization (45/0 C.F 3.0) Y4 S2

Overview of resource mobilization; philanthropy and donor psychology; principles and practices of fundraising; evolving methods and approaches of mobilizing resources; optimal use of technology for fundraising; fund raising competition; developing an integrated fundraising programme; member recruitment; writing fundraising proposals.

BCMF 415: Banking Practice (45/0 C.F 3.0) Y4 S1

Nature of banking practice; history and evolution of banking; role of banking in economic development of society; structure of banking industry in Kenya; banker-customer relationship; duties and rights of banker and customer; banking operations; opening and maintaining different types of accounts; negotiable instruments;

interbank transactions; Foreign Exchange transactions; international financial institutions.

BCMF 416: Contemporary Issues in Co-operative Movement (45/0 C.F 3.0) Y4 S1

Key issues in co-operatives function. Future trends in co-operatives ideas and practices. The role of co-operatives in the success of business. Co-operatives; the international dimension, International co-operatives and change.

BCMF 417: Management Research Paper (45/0 C.F 3.0) Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

ENTREPRENEURSHIP OPTION

BENT 320: Entrepreneurship and Small Business Management (45/0 C.F 3.0) Y3 S1

Concept of entrepreneurship and Small Business. Theories of Entrepreneurship. Entrepreneurial Behaviour. Achievement, Motivation and Entrepreneurs. Government Policies on Micro and Small Enterprises in Kenya(MSEs). Role of Entrepreneurs and Small

Businesses to National Development. Challenges to Entrepreneurship Development and Small Businesses in Kenya. Creativity, Innovation and Small Business Creation and Management. Entrepreneurial Opportunities: Identification and Evaluation of business opportunity and idea. Small Business Start up Strategies: buying an on-going business, start-up, franchising and family business. Legal Forms of Business Ownership: sole proprietorship, companies and partnership. Business Growth: life cycle, Development Support Programmes, Human Resource and Financing. Emerging Trends in Entrepreneurship.

BENT 321: Business Start-Up Process (45/0 C.F 3.0) Y3 S1

Introduction: Definition of terms and nature of small business environment; Rationale for promotion of small businesses; Role of small business in socio-economic and political development; Conceptual framework for promotion of small businesses in Kenya. Basis of Business Start-ups: Innovation, creativity and development of business ideas and opportunity seeking. Business formation and paths to Small Business. Management of Business Start-up: Issues, Challenges and Solutions.

BENT 322: Enterprise Environment (45/0 C.F 3.0) Y3 S1

Small enterprise culture, entrepreneurship and support mechanisms and programs for small enterprises in Kenya, institutions supporting entrepreneurship development in Kenya. Enabling environmental factors such as economic, social, technological, political, cultural, historical and legal influencing small enterprise development. Credit and finance, non-financial promotional programmes, micro-financing. Problems and prospects of small enterprises and the future of small enterprises in Africa.

BENT 323: Marketing for Small Business (45/0 C.F 3.0) Y3 S2

Introduction: Entrepreneurial Marketing Concept and Orientation; An Entrepreneurial Manager; The Small Business Marketing Environment. Nature of Marketing in Small Business. Marketing Strategy and Development in Small Business. Marketing Planning and Management in Small Business. Marketing Mix for Small Business. Marketing Research for Small Business. Personal Contact Networks.

BENT 324: Business Planning (45/0 C.F 3.0) Y3 S2

Definition of Business Plans; Parts of a Business Plan; Preparation of a Business Plan; turning business and non-profit dreams into concrete viable business plans.; creation of a plan for a viable business or non-profit organization.

BENT 325: International Marketing for the Small Business (45/0 C.F 3.0) Y3 S2

Marketing of products and services outside the local market. Entry strategic; Tariff and non-tariff barriers and their effect on small business activities; Regional market agreements and their effects on the small business; Environmental factors affecting international marketing for small business; International marketing factors affecting international marketing for small business; International marketing problems for the small business; Distribution: accessing foreign manufactures representatives and brokers; shipping and insurance issues; Pricing; currency effects on pricing; how to get paid.

BENT 326: Legal and Tax Issues for Small Business (45/0 C.F 3.0) Y3 S2

Forms of business organization; sole proprietorship; partnership; limited liability; company and cooperative societies; Franchises; Sales and Value Added Tax requirements; payroll and income taxes; licenses; etc.

required for operating a small business; export duties and other taxes. Acts governing business operations.

BENT 420: Business Consultancy (45/0 C.F 3.0) Y4 S1

Introduction to business consulting; problems facing small and micro enterprises into days competitive business environment; Role and importance of business consulting; characteristics of a good business consultant; the consulting process including entry; diagnosis; action planning implementation and termination; Management of change; Role of effective communication in developing and maintaining effective client consultant relationship; The process; Requirement of starting and managing a small business consulting firm.

BENT 421: Innovation and Enterprise Development (45/0 C.F 3.0) Y4 S1

Introduction: Definitions: Micro enterprise innovation; Role of innovation in Enterprise Development: Role of an entrepreneur in enterprise innovation. Nature of innovation for Micro and Small Enterprises; Product innovation, Process (Technology), Market, Organization and Resources. The innovation process. Successful Management of innovations in Micro Enterprises: The Japanese Case. Innovation Protection for Micro and Small Enterprises in Kenya; Policy issues, successes and challenges, Current Issues and future challenges facing innovations and Micro and Small Enterprise Development in Kenya.

BENT 422: Social Entrepreneurship (45/0 C.F 3.0) Y4S1

Introduction to non –profit social enterprises; Basics of non-profit entrepreneurship; integration of entrepreneurial though into non-profit enterprises; feasibility study for non-profit enterprises; interaction with guest lecturers and coaches from relevant entrepreneurs

BENT 423: International Dimension of Entrepreneurship (45/0 C.F 3.0) Y4S2

Forms and types of international ventures; major issues affecting international trade; methods of starting and managing entrepreneurial ventures in the domestic market with international Marketing capabilities; strategies for developing strategic alliances and collaborations to facilitate start-up and growth of international entrepreneurial ventures. Regulations, documentation and payment methods for import/export entrepreneurial ventures.

BENT 424: Entrepreneurial Behaviour and Ethics (45/0 C.F 3.0)Y4S2

Ethics in the practice of entrepreneurship. Entrepreneurial behaviour theories and approaches; psychological; sociological economic perspectives; key dimensions of entrepreneurial behaviour- entrepreneurial characteristics and motivation; entrepreneurial process and environment. Ethical behaviour and code of ethics and social responsibility for entrepreneurship practice.

BENT 425: Entrepreneurial Venture Promotion (45/0 C.F 3.0)Y4S1

Promotional strategies; steps in developing effective communication; promotional mix (advertising; personal selling; direct marketing). Sales promotion; Public Relations (PR) packaging and labelling international promotion.

BENT 426: Public Relations and Customer Care (45/0 C.F 3.0)Y4S1

Essential elements of customer service; development of customer oriented culture in Entrepreneurship; customer sourcing and identification of their needs; identifying products/services offered by customers; effective point and means of serving customers; after sales service to customers; ethics and customer service; effective

communication and customer satisfaction; handling of difficult and hostile customers, visit to an organization for learners to familiarize themselves with the operations of the public relations and customer care department.

BENT 427: Small Business Financing (45/0 C.F 3.0) Y4 S1

Sources of capital for small-scale enterprises. Personal funds; family; trade credit; mortgage loans; commercial bank loans; Non-Government Organizations (NGOs) micro-enterprises loans; government micro-enterprises; partners capital; venture capital; Economic development issues including barriers to micro enterprises development.

BENT 428: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

HUMAN RESOURCE MANAGEMENT OPTION**BHRM 230: Human Resource Management (45/0 C.F 3.0) Y2 S2**

Nature and scope of HRM; role and functions of HRM, models of HRM, evolution of HRM; Strategic role of HRM; Human Resource activities: job analysis, HR planning, recruitment, selection, placement, performance management, training and development, management development, career planning, compensation and reward management; labour relations, collective bargaining, disciplinary and grievance procedures, occupational safety and health, issues in HRM Professional Act, 2012; contemporary issues in human resource management.

BHRM 330: Human Resource Planning (45/0 C.F 3.0) Y3 S1

Nature of human resource planning (HRP); evolution and models of HRP; Organisational strategic planning and demand for HR; need for planning; resources demand forecasting; internal and/or external labour supply; factors influencing demand both long range and short range. Resource supply forecasting; meaning, factors in projecting human resources, availability. staff/labour turnover analysis; Application of the results of human resources planning in hiring, training, career management. Redundancies and productivity programmes. Human resource accounting and auditing; globalisation of operations, mergers and acquisitions; Contemporary issues in human resources planning.

BHRM 331: Strategic Human resource management (45/0 C.F 3.0) Y3 S1

The changing business environment, the changing social contract, corporate and business strategy, Contribution of HRM to business strategy, HR Planning, career

development, career stages and choices, career planning, quality of work life and social responsibility, group organizations, organization structure and HRM function, HRM Models and roles, HR development, HR management strategy, Dimension of HRM, Relation between mission, goals, strategy, value system and behaviour patterns of an organization, Integration of HRM with overall strategy of the organization.

BHRM 332: Labour Relations (45/0 C.F 3.0) Y3 S2

History of labour movement, impact of contemporary trade unionism on business decision making. Nature and objectives of management. Employee relations and practices: employee communication, counselling and discipline. Unions and HRM. Union structure and functions. Labour Laws. Collective bargaining. Return to work formula. Alternative Dispute Resolutions Mechanisms. Building co-operations. Challenges of HRM. Contract administration. Rights and obligations. Employment protection. Dismissals. Redundancy. Retirement. Terminations.

BHRM 333: Human Resource Development 45/0 C.F 3.0) Y3 S2

Human Resource Development: nature, benefits and types, distinction between training and development, design and evaluation of training and development programs, learning theories and objectives, analyzing training needs, E-learning and the use of technology in training, personal development, Management development: importance and approaches, career development and management; Career planning, succession planning, future trends in HRD.

BHRM 334: Global Human Resource Management (45/0 C.F 3.0) Y3 S2

Nature of human resource planning; factors affecting human resource planning; requisites for human resource planning; Future trends in human resource management

ideas and practices Human Resource Management; the international dimension, international human resources management and change; seven C's of international human resources management; cosmopolitan, culture, compensation, communication, consultancy, competence and co-ordination.

BHRM 335: Contemporary Issues in Human Resource Management (45/0 C.F 3.0) Y3 S2

Overview of contemporary issues; strategic role of HRM; HRs and competitive advantage; the role of HR in talent management; managing flexible patterns of work for competitive advantage; managing intellectual capital within organizations; HRM and technology; ethical issues and challenges; health issues: HIV/AIDs, drug and alcohol abuse; work/life balance; Corporate Social Responsibility; workplace violence, safety and security; occupational stress; organizational justice; trust in the workplace; employee well-being; change management: outsourcing; diversity management: aging workforce, gender, ethnicity and nepotism; surveillance and control at work

BHRM 430: Labour Law (45/0 C.F 3.0) Y4 S1

Nature and definition of the concept of labour law; Historical development of labour law and relations; colonialism and labour laws; sources of employment law; the Industrial Relation Charter; individual employment laws; the contract of employment; rights of employees; benefits of employees; duties under statute and common law; termination of employment; summary dismissal; redundancy; discrimination; sexual harassment; protection of wages; labour administration; collective bargaining and the law; freedom of association; trade unions; industrial conflicts management; Industrial Court; dispute resolution mechanisms; health and safety of employees; compensation; labour welfare and social security; International Labour Organisation and conventions;

BHRM 431: Managing Human Resource Performance (45/0 C.F 3.0) Y4 S1

Meaning and importance of performance appraisal and performance management; performance management theories: goal-setting theory, control theory, social cognitive theory, expectancy theory; motivation and performance; performance management cycle; performance management process; performance management goals; performance appraisal methods; balanced score card; motivation and performance; linking rewards to performance, pay-for-performance plans; issues of accuracy and bias in performance evaluation; performance counselling: process and skills required in counselling; emerging trends in performance management.

BHRM 432: Management of Diversity (45/0 C.F 3.0) Y4 S2

Nature of diversity in the workplace; evolution of diversity; diversity, equal opportunities and affirmative action; legislation; theories of diversity management: occupational segregation, assimilation, amalgamation and accommodation; types of discrimination; diversity management issues in the workplace: age, gender, religion, sexual orientation, disability, ethnicity; culture and value systems; effects of diversity in organizations; HRM and diversity management; emerging trends in workforce diversity in the 21st century.

BHRM 433: Reward and Compensation Management (45/0 C.F 3.0) Y4 S2

Nature of reward and compensation systems, role of HRM in compensation, job evaluation, job design, analysis and evaluation of the working environment, concepts, theories and legislation related to employee compensation, design of pay structure, market rate analysis, trends in the development of reward systems and strategies, pay structures, contingent pay, employee benefits – both financial and non-financial,

administration of salaries and wages, managing reward systems; linking rewards with performance; performance-related pay; emerging issues in the labour market.

BHRM 434: Occupational Safety and Health (45/0 C.F 3.0) Y4 S2

Definition of occupational health and safety; working environment; identification and analysis of hazards; organizational health and safety policies; health and safety programmes; group welfare; legislation governing health and safety; Factories Act; Public Health Act; Work Injury Benefits Act 2007.

BHRM 435: Retirement Benefits Management 45/0 C.F 3.0) Y4 S1

Development of employee benefit schemes; provident funds, pension schemes, individual retirement schemes, NSSF, Trustees, Trust Deed and Rules, methods of funding, retirement benefits schemes; valuation reports, scheme accounting; Pension scheme administration strategies; general principles of establishment, appointment, role and removal of trustees. Pension scheme benefits; death, withdrawal from service, normal retirement, early retirement, widows and orphans pensions, computation of benefits. Pension investment (types, pension investment plans, personal investment schemes, Evaluation, management and evaluation, challenges of pension investment and tax benefits). Government supervision (need for government control, forms of control), Retirement benefits Authority RBA, Payment of pension benefits; lump sum benefits, early and late retirement, death in service; despondence, augmented and escalating benefits, Amendments and reconstruction of schemes including the effects of mergers and takeovers; preservation and transferability of pension rights.

BHRM 436: Management of Change (45/0 C.F 3.0) Y4 S1

Concept of an organization and need for change. Meaning of Management of Change. Organisation as a system. Functions of an organization. Organization and the internal and external environment. Major schools of thought or models of managing change. Strategies of managing change: change and organizational redesign and development, creating support systems; managing transition. Types of organisational change. Resistance to change: causes of resistance and managing resistance to change through individuals, groups and the organization. A strategic approach to managing change. Role of effective leadership, management and Human resource department in change management.

BHRM 437: Leadership and Team management (45/0 C.F 3.0) Y4 S1

Nature of leadership: role and skills; leadership and management; power and influence; leadership theories; leadership and decision making; leading change in organizations; characteristics of groups and teams; goals, roles and processes of teams; team building techniques; team resources and facilitation; influencing skills; developing trust; mapping stakeholders; effective communication in teams, managing conflicts in teams, leadership and team building.

BHRM 438: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection;

Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

INSURANCE AND RISK MANAGEMENT

BINS 240: Risk and Insurance (45/0 C.F 3.0) Y2 S1

Concept of risk, uncertainty, perils, hazards. Classification of risk. Risk management, risk identification, analysis and control. Insurance, requisites of insurability, functions and benefits of insurance. Term assurances, whole life, endowment assurances, pensions and unit-linked assurances. Liability insurances, property insurances and transport insurance. Insurable interest, utmost good faith, proximate cause, indemnity, subrogation and contribution. Underwriting, proposal forms, policy document, premium, claims, reinsurance. Buyers of insurance, intermediaries and sellers of insurance. Insurance regulation, associations and professional bodies.

BINS 340: Property Insurance (45/0 C.F 3.0) Y3 S1

Insurance companies, Lloyds syndicates, Protection and indemnity clubs, Insurance brokers, Reinsurance companies, Proposal forms, Cover notes, Certificates of insurance, Endorsements, Policy document, Blanket policies, First loss insurance, Collective policies, Short term policies, Reinstatement memorandum, Pro-rata condition of average, Two conditions of average, More specific policy, Special condition of average, Contribution, Fire insurance, Fire clauses, Special perils, Business interruption insurance, Contractors all risks,

Theft insurance, Money insurance, Domestic package, All risks insurance

BINS 341: Life Assurance (45/0 C.F 3.0) Y3 S1

Early life assurance, Later developments, Early mortality tables, Early underwriting, Level term assurance, Renewable term assurance, Convertible term assurance, Decreasing term assurance, Increasing term assurance, Family income benefits, With-profits policies, Unit-linked policies, Non-profits policies, With-profits policies, Single premium policies, Regular premium policies, Flexidownments, Unit-linked policies, Pure endowments, Critical illness cover, Industrial life assurance, Group life assurance, Key person insurance, Proposal form, Medical factors, Occupational factors, Under-average lives, Premium, Need for reassurance, Types of reassurance

BINS 342: Medical Insurance (45/0 C.F 3.0) Y3 S1

Individual market, voluntary group market, corporate market, types of policies, fully insured, risk sharing, cost plus, self-funding, co-funding, health care trusts, premium rating, costs containment, underwriting, moratoria, claims, regulation, reinsurance

BINS 343: Motor Insurance (45/0 C.F 3.0) Y3 S2

Background to motor insurance, Types of intermediaries, Motor insurers' bureau, Motor insurance repair research centre, Policyholders' protection fund, Kenyan scene, Main provisions of RTA, Exemptions to mandatory insurance, Minimum cover requirements, Effective time and certificates, Restriction on breach of condition or exclusion, Restricting agreements with the driver, Third party compensation, Bankruptcy and winding up, Uninsured drivers' agreement, Untraced drivers' agreement, The Yellow Card, Third party only, Third party fire and theft, Comprehensive policy, Motor policy sections, General principles of underwriting, Private vehicles, Commercial vehicles, Fleet risks,

Motor trade, Vehicles of special construction, Passenger carrying vehicles, Proposal forms, Certificates of insurance, Cover notes, Policy document, No claims discount, Renewal retention, Renewal system, General principles of claims handling, Claims notification, Claims agreements, Other services

BINS 344: Retirement Benefits Schemes Management (45/0 C.F 3.0) Y3 S2

Background to retirement benefits, Need for retirement benefits, Definition of key terms, Funded or unfunded designs, Structure of the NSSF, Operations of the NSSF, Benefits provided by NSSF, Claims procedure for NSSF, General principles of establishment, Definitive trust deed, The Scheme rules, Other deeds, Appointment, role and removal of trustees, Information to members, Contributory and non-contributory schemes, Insured and non-insured (Deposit administration) schemes, Final salary (Defined benefit) and money purchase (Defined contribution), State, occupational and personal pension plans, Pension on retirement, Lump sum on retirement, Lump sum on death before retirement, Widows and widowers pension, Withdrawal benefits, Early retirement pension, Late retirement pension, Annuity certain, Term and rate, Annuity due, Deferred annuity, Perpetuities, Computation and taxation of benefits, Reasons for establishment of RBA, RBA regulations, Recent developments

BINS 342: Agricultural Insurance (45/0 C.F 3.0) Y3 S2

Need for Agricultural insurance, crop insurance, livestock insurance, aquaculture insurance, indemnity based insurance, index based insurance, underwriting agricultural insurance, claims computation, reinsurance, legislation, transfer of risks, proposal and policy forms, assessment, rating, underwriting and claims considerations, contemporary issues

BINS 440: Marine Insurance (45/0 C.F 3.0) Y4 S1

Origin of Marine Insurance, types of Marine Insurance, Inland Marine Insurance, Cargo Insurance, floaters, Marine Insurance Policy and Clauses, Marine Insurance Policy in Kenya, claims and payment. Contract and package policies affecting Marine Insurance, aviation policies, law applicable to Marine Insurance.

BINS 441: Insurance Law (45/0 C.F 3.0) Y3 S1

Classification of law, Characteristics of English law, Development of English law, Sources of English law, Civil courts, Criminal courts, Nature of precedent, Operation of binding precedent, Natural persons, Juristic persons or, corporations, Minors, Persons of unsound mind, Bankrupts, Married persons, Corporations sole, Corporations aggregate, Types of registered companies, Partnerships, Trade unions, Nature of tort, Classification of torts, Trespass, Negligence, Nuisance, Insurable interest, Utmost good faith, Proximate cause, Indemnity, Subrogation, Contribution

BINS 442: Introduction to Actuarial Science (45/0 C.F 3.0) Y4 S2

Basic concepts. Probability theory. Interest mathematics for life insurance, principles of life assurance, equation of value, annuities, principles of life contingencies. Net single and level annual premiums for life annuities and life assurance, cash values and net level premium reserves, expenses factors and gross premiums. The mortality table. Expectation; pure endowment; endowment ordinary, whole life annuity due, deferred life annuity, temporary life annuity and whole life insurance.

BINS 443: Reinsurance (45/0 C.F 3.0) Y4 S2

Definition of reinsurance. Limits for reinsurance. Development and functions of reinsurance. Types of reinsurance. Proportional, non-proportional Rating and premium determination for various lines of insurance. Financial implications of reinsurance. Reinsurance

practices, formation of reinsurance, legal aspects of reinsurance. Retrocession, reinsurer and reinsured relationship.

BINS 444: Risk Management (45/0 C.F 3.0) Y4 S2

Risk, risk identification, risk analysis, risk control, reduction, retention, transfer, organisational charts, checklists, physical inspection, flowcharts, hazard indices, hazard and operating studies, risk financing, loss management, captives, reasons for captive formation, alternative risk transfer

BINS 445: Social Insurance (45/0 C.F 3.0) Y4 S1

Thought and practice of social insurance, distinction between social insurance and other insurance and public assistance. Reasons for social insurance, types of social insurance, social insurance systems in Kenya. Old age, survivors and disability insurance, eligibility requirements, benefits and future changes. Issues arising; taxes, funding, hospital insurance, NHIF, NSSF, unemployment insurance and role of the government.

BINS 446: Micro-Insurance (45/0 C.F 3.0) Y4 S1

Micro-insurance products, crop insurance, health insurance, life assurance, disability insurance, partner agent model, full service model, provider driven model, community based model, assessment, premium rating, claims, regulation, reinsurance

BINS 447: Management Research Paper (45/0 C.F 3.0)Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge

acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

MARKETING

BMKT 250: Principles of Marketing (45/0 C.F 3.0) Y2 S1

Marketing as the key business function of meeting customer needs and competitive threats. Key marketing policy decisions: products, pricing, promotion, and the distribution of goods and services in domestic and international markets, Marketing research and information, it's acquisition and analysis as the basis for marketing strategies and decision making; Managing the marketing function – planning, organizing and control. Application of marketing concepts.

BMKT 350: Sales Management (45/0 C.F 3.0) Y3 S1

Personal selling and salesmanship, personal selling objectives and strategies; organising sales force management, recruitment and selection; training; motivating sales personnel; compensating sales personnel, supervising sales personal; controlling the sales effort – the sales budget, quotas, sales territories, sales control and cost analysis.

BMKT 351: Marketing Management (45/0 C.F 3.0) Y3 S1

Introduction to marketing management. Role and importance of strategic planning. Strategic marketing planning, implementation and control. Customer

analysis. Competitor analysis. Marketing in special fields; marketing of services, marketing for non-profit organizations, agricultural marketing, sports marketing, political marketing, business to business marketing, travel and tourism marketing. Global marketing management. Social responsibility and marketing ethics.

BMKT 352: Marketing Communication (45/0 C.F 3.0) Y3 S2

The role marketing communication; the communication process; Integrated Marketing Communication (IMC); meaning of IMC, implementation of IMC, benefits and challenges of IMC; the marketing communication strategies: push communication strategies; profile communication strategies – Image positioning of the company; Marketing communication budget: methods of setting the marketing communication budgets; evaluation of marketing communication campaigns; methods of evaluating marketing communication campaigns; international marketing communication; factors facilitating cross boarder communication; communication standardization vs. Adaptation; emerging issues in marketing communication; legal restrictions; ethical, social and moral issues; global considerations

BMKT 353: Consumer Behaviour (45/0 C.F 3.0) Y3 S2

Basic concepts and definitions. Consumer needs and motivation. Personality and consumer behaviour. Consumer preferences. Attitudes formation and change. Communication and consumer behaviour. Group dynamics and consumer reference groups. The family and consumer behaviour. Culture and consumer behaviour. Decision-making models applied to consumer purchase.

BMKT 354: Brand Management (45/0 C.F 3.0) Y3 S2

Branding perspectives; challenges and opportunities, brand equity concept, brand management process. Brand

positioning and values. Steps of brand building. Brand building implications. Planning and implementing brand marketing programs, designing marketing programs. Integrating marketing communications. Leveraging, measuring and interpreting brand performance, the brand value chain, designing brand tracking studies, Growing and sustaining brand equity. Designing and implementing branding strategies. Brand extensions. Managing brands. Managing brands over geographical boundaries.

BMKT 355: E-Marketing (45/0 C.F 3.0) Y3 S2

The course is designed to introduce students to the cutting-edge technologies that are necessary to perform effectively as marketing professionals. The primary focus of this course is marketing uses of the worldwide network of computers known as the Internet including Web site design and maintenance, marketing research, e-mail, and advertising. The course will also provide limited coverage of other electronic technologies including fax-on-demand, CD-ROM, and database marketing.

BMKT 356: Business Sector Marketing (45/0 C.F 3.0) Y3 S2

General overview of the key elements in marketing strategy; product planning and promotion. Examination of the unique aspects of industrial, services and non-product marketing. Role of marketing manager and the product/sales terms responsibility to develop and implement market plans as part of the company's strategic and operational plan.

BMKT 450: Marketing Research (45/0 C.F 3.0) Y4 S1

Marketing research process, types of market research designs. Sources of research data, sampling and data analysis. Application of various research methods to marketing. Planning, design, execution, and interpretation

of applied marketing research. Ethical issues in marketing research.

BMKT 451: Global Marketing (45/0 C.F 3.0) Y4 S1

Nature of international marketing; International Trade; theories of international trade; International Marketing environment; International Market selection; International Market entry strategies; International marketing decisions; developing, implementing and evaluating international marketing strategy at the local, regional and global levels.

BMKT 452: Strategic Marketing (45/0 C.F 3.0) Y4 S2

Definition and meaning of strategic marketing. Implementation, and control functions. Preparation and organisation of marketing plans, and elements of marketing mix. Development of strategies to meet the ever changing consumer, trade, farm costs, and legal environment.

BMKT 453: Marketing of Services (45/0 C.F 3.0) Y4 S2

Definition of services; growth and importance of services in the Kenyan economy; unique aspects of service marketing; classification of services; marketing mix strategies for services; elements of the service environment, consumer decision processes in services; managing physical evidence; service failures and recovery strategies; customer retention strategies; defining and measuring customer satisfaction; defining and measuring service quality.

BMKT 454: Customer Relationship Management (45/0 C.F 3.0) Y4 S2

Nature of relationship marketing, need for Customer Relationship Management (CRM), CRM process, Customer acquisition and segmentation, Customer life time value computation, Crafting the right value propositions, setting relationship boundaries, creating

relationship value, motivating employees to practice CRM, Role of information technology (IT) in CRM, Implementing CRM.

BMKT 455: Social Marketing (45/0 C.F 3.0) Y4 S1

Nature of social marketing, marketing concepts, frameworks and techniques, social marketing problems. Social marketing planning, situational and stakeholder analysis, segmentation and targeting, research, marketing mix, relationship marketing and evaluation.

BMKT 456: Public Relations Management (45/0 C.F 3.0) Y4 S1

Introduction to public relations. The development of public relations. The need for public relations in marketing. The ethics of public relations. Public relations and research. Planning a public relations programme. Public relations and the media. The techniques of public relations. Corporate image and corporate identity. Corporate social investments. Public relations and managing a crisis. Public relations in a multicultural environment. A practical guide to public relations in practice; protocol, business etiquette, special events, checklists.

BMKT 457: Distribution and Logistics Management (45/0 C.F 3.0) Y4 S1

Distribution management; marketing channels, structure, functions and relationships, retailing and wholesaling, logistics and physical distribution. Channel management; policies, information systems. Assessing performance of marketing channels. Logistics management; key logistics activities, developing a logistics strategy, logistics information system, organizing for effective logistics, implementing logistics strategy. Managing channel member behaviour and managing the international channels of distribution. Logistics design for distribution channels, logistics outsourcing, e-commerce logistics, reverse logistics,

global logistics, strategic logistics, performance measurements and controls.

BMKT 458: Marketing for Non-profit Organisations (45/0 C.F 3.0) Y4 S1

Definition, types and characteristics of non-profit organizations; goals of non-profit organizations; developing a marketing strategy, challenges facing the marketing of service products

BMKT 459: Management Research Paper (45/0 C.F 3.0) Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in the area of specialization. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3		Y4	
	Programme Learning Outcomes	Course	CF	Course	CF	Course	CF	Course	C F
PLO -1	Effectively manage resources at their disposal according to contemporary economic, business management and technological trends	Communication Skills	3.0	Principle of Marketing	3.0	Entrepreneurship and Small Business Management	3.5	Organisational Behaviour	3.0
		The Biology of HIV/AIDS and Society	3.0	Systems Analysis and Design	30	Organisational Theory	3.0	Company Law	3.0
		Philosophy and Society	3.0	Intermediate Macroeconomics for Business	30	Business Law	3.0		
			3.0			Object Oriented Programming I	3.0		
			3.0			Data Communication	3.0		
			3.0			Computer Operating System.	30		
PLO -2	Carry out research with a view to finding solutions to contemporary problems affecting business development at various scales	Principles of Microeconomics for Business	3.0	Intermediate Microeconomics for Business	3.0	Financial Institutions and Markets	3.0	Public Finance	3.0
		Introduction to Business	3.0	Risk and Insurance	3.0	Monetary Theory and Practice	3.0	Banking, Law and Practice	3.0
		Principles of Accounting II	3.0	Financial Management I	3.0	Financial Management II	3.0	Corporate Finance	3.0
		Fundamentals of Information Systems	3.0	Human Resource Management	3.0	Inventory Management	3.0	Public Procurement	3.0
					3.0	Procurement Management	2.0	International Procurement	3.0
PLO -3	Appreciate the complex relationship between the national economy and global economic trends	Principles of Accounting I	3.0	Introduction to Managerial Accounting	3.0	Logistics and Transport Management	3.0	Advanced Financial Accounting II	3.0
		Principles of Macroeconomics for Business	3.0	Accounting for Assets	3.0	Principle of Auditing	3.0	Advanced Managerial Accounting	3.0

			3.0	Accounting for Equities and Liabilities	3.0	Financial Management II	3.0	Quality Management	3.0
PLO-4	Have acquired knowledge, skills and attitudes for pursuing further studies in Commerce	Management Mathematics I	3.0	Business Statistics for Decision Making	3.0	Operations Research for Management I	3.0	Object Oriented Programming II	3.0
		Principles of Management	3.0	Fundamentals of Supply Chain Management	3.0	Managerial Statistics		Software Engineering	3.0
		Management Mathematics II	3.0			Operations Systems Design	3.0	Operations Research for Management II	3.0

BACHELOR OF PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

1. Philosophy of the programme

The Bachelor of Procurement and supply chain management (BPSM) is based on the conviction and belief that it is only graduates with knowledge and skills in business that can critically analyse issues related to the life commerce

2. Rationale

The BPSM degree programme provides students with a wide range of skills, knowledge, and attitudes to respond to their need for effective management of public and private business enterprises. For a long time, Procurement has been a finance function. However due to the dynamic nature of many organizations today, there is need to separate this function from ordinary finance operations. Owing to the demand for personnel to work in Procurement and Supply Chain department has increased over time. It is against this background that Faculty of Commerce has developed this Programme to address the need for adequately trained manpower to manage the area of procurement in various sectors of the economy. Opportunities for graduates of this program exist in government, public and private sector.

3. Goal of the Programme

The programme aims at equipping students with skills that are relevant to the dynamic industry needs and that uphold the key principles in the various discipline areas. It will provide students with necessary skills that can enable them to respond to their need for effective management of public and private enterprises.

4. Programme learning outcomes

At the end of the training, the graduates will be expected to:

- i) Effectively manage resources at their disposal according to contemporary economic, business management and technological trends;
- ii) Carry out research with a view to finding solutions to contemporary problems affecting business development at various scales;
- iii) Appreciate the complex relationship between the national economy and global economic trends; and
- iv) Have acquired knowledge, skills and attitudes for pursuing further studies in Procurement and supply chain management.

5. Mode of delivery

The programme will be delivered in full time and part-time modes

6. Academic Regulations for the Programme

6.1 Admission Requirements

- i) All candidates admitted to the degree programme of Bachelor of Procurement and Supply Chain Management (BPSM) must satisfy the minimum common entrance requirements of Egerton University which currently is a C+.
- ii) In addition, candidates must obtain at least the minimum cut-off points for the year as determined from any one of the following four cluster subjects from revised K.C.S.E. structure.
 - English or Kiswahili
 - History and Government
 - Geography,
 - Christian Religious Education
 - Social Education & Ethics,
 - Hindu Religious Education or

And at least any one from the following:

 - Islamic Religious Education
 - Mathematics

- Islamic Religious Education
- Mathematics

Either,

- Biology or Biological Sciences; or
- Chemistry or Physics or
- Physical Sciences

Or

- Any one of the following:
- Accounts
- Commerce
- Economics

- iii) Those holding qualifications equivalent to the above from institutions recognised by Egerton University Senate may also be admitted.
- iv) Holders of Certified Procurement and Supply Professional of Kenya (CPSP) II OR diploma holders in Procurement and Logistics or their equivalent are also eligible for admission.

6.2 Regulation on credit transfer in a programme

Credit transfer shall be done in adhere to Egerton University Statute article 36(3) of 2013.

6.3 Course requirement.

The requirements are as for the ISO procedures EU/AA/OP/06 rev 3.

6.4 Student assessment criteria

All the examination of the university shall be conducted in accordance with Egerton University Statutes No. 36 of 2013.

6.5 Grading system

The grading system will be conducted in accordance with Egerton University Statutes No 36 of 2013.

6.6 Examination Regulations

All the examination of the university shall be conducted in accordance with Egerton University Statutes No 36 of 2013 (The examination administration will be guided by the ISO document on Work Instruction for Examination Administration (DOC NO. EU/AA/WI/11).

6.7 Moderation of examination

ISO procedure (EU/AA/OP/07) regulation requirement on moderation of examination shall apply. Each lecturer shall set final examination paper of the course (s) they teach. The examination shall be moderated within the department and the external examiner.

6.8 Graduation Requirements.

The candidates are required to take and pass at least 144 credit factors of course approved by senate

6.9 Classification of degree

The Bachelor of Procurement and Supply Chain Management degree classification shall be in accordance with Egerton University Statutes No 36 of 2013.

7. Course Evaluation

All courses shall be evaluated in accordance with Egerton University course evaluation tool as shall be provided by the University.

8. Management and Administration of the programme

8.1 Host department and programme Academic leader

The programme shall be hosted by department of Accounting, Finance and Management Science in the Faculty of Commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal self-evaluation at the end of each academic cycle (ISO procedure EU/VC/OP/05). The programme shall be benchmarked with at least one such programme in highly ranked university.

8.3 Course coding

The course code is four capital letters starting with the letter “B” which stands for Business and the last three letters are discipline specific, e.g. PSM stands for Procurement and Supply Management course. This is followed by three digits.

- 1st digit, Indicates year or level the course is offered, i.e. (1, 2, 3, 4).
- 2nd digit, Indicates the nature of sub-discipline of the course within the discipline, as follows:
- The first digit indicates the year of study i.e. 1, 2, 3, 4;
- Second digit is ‘6’ which denotes the subject area of Procurement and Supply Chain.
- The third digit indicates sequence of the course.
- All courses offered in other degrees will bear the codes of the degrees where they are offered.

9. Schedule of courses

YEAR ONE SEMESTER ONE

BACT 110	Principles of Accounting I	45	0	3.0
BECO 101	Principles of Microeconomics for Business	45	0	3.0
BMGT 100	Introduction to Business	45	0	3.0
BOPM 140	Management Mathematics I	45	0	3.0

COMS 100	Communication Skills	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		270	0	18.0

YEAR ONE SEMESTER TWO

BACT 111	Principles of Accounting II	45	0	3.0
BECO 102	Principles of Microeconomics for Business	45	0	3.0
BBIS 150	Fundamentals of Information Systems	45	0	3.0
BOPM 141	Management Mathematics II	45	0	3.0
BMGT 101	Principles of Management	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0
TOTAL		270	0	18.0

YEAR TWO SEMESTER ONE

BACT 210	Introduction to Managerial Accounting	45	0	3.0
BOPM 240	Statistics for Business Decision Making	45	0	3.0
BMKT 250	Principles of Marketing	45	0	3.0
BPSM 260	Fundamentals of Supply Chain Management	45	0	3.0
BPSM 261	Supplies and Materials Management	45	0	3.0
BPSM 262	Clearing and Forwarding	45	0	3.0
TOTAL		270	0	18.0

YEAR TWO SEMESTER TWO

BBIS 250	Systems Analysis and Design	45	0	3.0
BFIN 230	Financial Management I	45	0	3.0
BPSM 263	Leadership in Procurement and Supply Chain Management	45	0	3.0
BPSM 264	Retail and Merchandise Management	45	0	3.0
BPSM 265	Distribution and Warehousing	45	0	3.0
BHRM 230	Human resource Management	45	0	3.0
TOTAL		270	0	18.0

YEAR THREE SEMESTER ONE

BPSM 360	Negotiation in Procurement and Supply Chain	45	0	3.0
BMGT 301	Business Law	45	0	3.0
BPSM 361	Inventory Management	45	0	3.0
BPSM 362	Procurement Management	45	0	3.0
BPSM 363	Logistics and transport Management	45	0	3.0
BPSM 364	Operations Management Practice	45	0	3.0
TOTAL		270	0	18.0

YEAR THREE SEMESTER TWO

BBIS 357	E-Commerce	45	0	3.0
BFIN 333	Public Finance	45	0	3.0

BMGT 304	Organisational Behaviour	45	0	3.0
BPSM 365	Managing Risk In Supply Chain	45	0	3.0
BPSM 366	Public Procurement	45	0	3.0
BPSM 367	International Procurement	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER ONE

BMGT 400	Strategic management	45	0	3.0
BMGT 401	Business communication	45	0	3.0
BOPM 440	Research Methods	45	0	3.0
BPSM 460	Project and Contract Management	45	0	3.0
BPSM 461	Legal aspects of Procurement & Supply Chain Management	45	0	3.0
BPSM 462	Procurement Policy and Strategy	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER TWO

BMGT 402	Business Ethics and Corporate Governance	45	0	3.0
BPSM 463	Global Supply Chain Management	45	0	3.0
BPSM 464	Supply Chain Information Systems	45	0	3.0
BPSM 465	System Production Management	45	0	3.0
BPSM 466	Ethics in Procurement and	45	0	3.0

	Supply Management			
BPSM 467	Procurement and Supply Chain Management Research Paper	45	0	3.0
TOTAL		270	0	18.0

BPSM 260: Fundamentals of Supply Chain Management (45/0 C.F 3.0) Y2S1

Concept of Supply Chain Management (SCM); Relationship of SCM, Procurement Management; Material Management, Distribution and Logistics Management; Supply Chain Integration; Principles of Procurement; Supply chain design; Supply chain strategies; supply chain contracts; E-Business and supply chain; factors impacting supply chain operation; successful supply chain management; supply chain performance measurements.

BPSM 261: Supplies and Materials Management (45/0 C.F 3.0) Y2S1

Planning and control of materials; stores organization and management; stores auditing and inspection. Supplies Management in different environments; Resource needs for MRO, capital goods etc; concept of materials management in all sectors; standardization and variety reduction; independent and dependent demand; Organization of Supply Chain Management; need for co-ordination and relationships with internal and external customers; organization ethics; Logistics in the supplies chain; Transport Systems, location of stores facilities; internal movement; outsourcing; transport; stock location and layout materials management; ; identification of materials and coding systems the concepts of materials management, supplies chain management and logistics; methods of valuing stock, stocking to order and stocking to forecast.

BPSM 262: Clearing and Forwarding (45/0 C.F 3.0) Y2S1

Introduction to Freight Forwarding services, Documents and documentation of import and export, the legal context /implication of various documents used in import-export and their sources key legal rights, duties and responsibilities of a forwarder, Internal and external organisational environment, Forwarder relations to other parties. Warehousing, packaging and packing, handling of dangerous goods, Cargo clearance procedures at the front office. Documentation and carriage of goods under the various transport modes, Conversion units and formulas in the computation of freight rates. The constituents of freight rates under different transport modes. Consolidations and plan intermodal journeys for containerised and conventional cargo.

BMKT 250:Principles of Marketing (45/0 C.F 3.0) Y2 S1

Marketing as the key business function of meeting customer needs and competitive threats. Key marketing policy decisions: products, pricing, promotion, and the distribution of goods and services in domestic and international markets, Marketing research and information, it's acquisition and analysis as the basis for marketing strategies and decision making; Managing the marketing function – planning, organizing and control. Application of marketing concepts.

BPSM 263: Leadership in procurement & supply Chain Management (45/0 C.F 3.0)Y2S2

Leadership skills and behaviours that is appropriate for improving procurement and supply chain management: differences between leadership and management, approaches to leadership for improving procurement and supply chain management skills and behaviours that contribute to effective leadership for improving procurement and supply chain management. Communication plan to influence personnel involved in a

supply chain. Leadership techniques that can be used to influence personnel involved in a supply chain. Understanding how to overcome common challenges faced by procurement and supply chain managers. The sources of power and how they can be used to overcome common challenges faced by procurement and supply chain managers. Tactics that can be used to influence stakeholders within supply chains. Equality and diversity issues relating to the supply chain. Methods to lead change in the supply chain: the main methods of change management that can be used to develop the supply chain. Methods for resolving conflict with internal and external Stakeholders to support change in the supply chain. The importance of effective delegation to implement change successfully.

BPSM 264: Retail Merchandize Management (45/0 C.F 3.0) Y2S2

Merchandize planning; budgeting, control; assessment and selection of suppliers' goods and locations; handling goods and information; sales promotion; retail environment: retail evolution and development; retail organizations and trends; micro and macro factors to retail environmental compliance. Retail marketing Strategy, Retail Marketing Research; Retail Marketing Mix

BPSM 265: Distribution and Warehousing (45/0 C.F 3.0) Y2S2

Definition and elements of distribution; importance of distribution and its structure; modes of transport; total distribution concept and planning for distribution; warehousing principles and planning; warehouse operations (order picking) warehouse operations (receipts and dispatch); warehousing productivity measurement and improvement; warehousing security and control; role of computing in warehousing management;

BPSM 360: Negotiation in Procurement & Supply (45/0 C.F 3.0) Y2 S2

Introduction to the principles of negotiations; Negotiations objectives; Negotiation strategies; the negotiation process; buyer's role in negotiations; a successful negotiator; dynamics in negotiations; the concept of problem solving; critical oral negotiation behaviour; tricks of the trade and negotiating effectively; methods of counteracting negotiating behaviour; collaborative negotiation; collective bargaining; price analysis negotiation; cost analysis negotiation; negotiation in purchases, contracts and contract performance; projects, services, monopolies, international trading; documentation; negotiating across cultures and across geographical locations. Contract Negotiation (BATNA); Approaches and Techniques in Contract Theories, Game Theory and Prisoner Dilemma

BPSM 361: Inventory Management (45/0 C.F 3.0) Y3S1

Introduction to Inventory Management; Inventory Control Systems: Fixed Quantity System, Fixed time System, Hybrid System; Deterministic Inventory Control Models; Stochastic Inventory control Models; Simulation of Inventory control Models; Selective Inventory Control Techniques; Dependent Demand Model; Warehouse and Material Handling; Inventory planning and control; inventory management models; materials handling equipment; material handling systems: critical analysis and measuring the efficiency of existing systems, the unit load concept, economic analysis of Systems; Warehouse types, location, layout and operation; Enterprise Resource Planning and inventory management.

BPSM 362: Procurement Management (45/0 C.F 3.0) Y3S1

Introduction to Procurement Management; Principles of Procurement; Procurement Cycle. Role of organisational procurement in a business system: Role, tasks and objectives of procurement in different business sectors in an economy; Analysis of procurement in context of supply chain management and business strategies of a firm. Procurement mix decisions in a supply chain context; Procurement process for the specification and acquisition of quality goods and services; Total Procurement time and cost reduction methods. Supplier relationship management and strategy; Sourcing strategies and policies; Outsourcing and contract administration; E-procurement; Procurement ethics.

BPSM 363: Logistics & Transport Management (45/0 C.F 3.0) Y3S1

Logistics management defined; Logistics and marketing function; Total cost concept; integrated logistics system; Distribution channels: structure and design; Customer service logistics. Time and place utility; Reverse logistics; Transportation/Marketing/Supply Chain interface; Transportation service characteristics; Transportation systems/modes: interaction between transportation companies, airlines and shippers in the marketplace; traffic, fleet and transportation management; Transportation productivity; technology in transport management, legal issues in transportation; transportation-warehousing interface. Overview of modes of transport; modes of transport and economic development; factors determining demand and Supplies in transport; elasticity of demand and Supplies for transport service; costing structure for transport organization; pricing policies in transport management under different market structures; investment in transport: Opportunities; appraisal; sources of capital; terms and conditions for investible funds; marketing of transport services: Need for promoting transport service; elements of promotion

mix to a transport industry; economic factors influencing operations of a transport firm.

BPSM 364: Operations Management Practice (45/0 C.F 3.0) Y3S1

Facility Layout Design; Defining facility layout; Layout in Manufacturing; Methods for facility layout; Supply Chain and Inventory Management; Capacity Requirement Planning; Aggregate planning and Capacity; Master production scheduling; Material Requirement Planning I (MRP I); Manufacturing resource planning II (MRP II), Supply Chain Operations Scheduling and Control; Order sequencing; Scheduling and controlling projects.

BPSM 365: Managing Risk in Supply Chain (45/0 C.F 3.0)Y3S2

The nature of risk affecting supply chains: The main methods for eliminating corruption and fraud in supply chains: the nature of fraud in organizations and supply chains, the nature of bribery and corruption in organizations, and supply chains, legislation affecting bribery and corruption, the use of ethical codes, corporate governance including corporate accountability to stakeholders, the main operational risks in supply chains: contract failure, financial risks such as currency, supplier cash flow and insolvency, Effective project management and risks mitigation in supply chains, the main risks in supply chain projects that are addressed by effective project management, compare project life cycle models that can mitigate risks in supply chains, the contribution that project planning can make to managing risks in supply chains. the use of contractual remedies for managing risks in supply chains: indemnities and liabilities, ownership of IPR (intellectual property rights), the use of outsourced third parties in risk management in supply chains, the use of insurances for protection against risks in supply chains, use of contingency plans to overcome risks in supply chains. Risk management strategies to mitigate risks in supply

chains: the use of probability and impact assessments to manage risks in supply chains, risk assessment and a risk register to mitigate risks in a supply chain, the development of a risk management culture and strategy to improve supply. Chain risk mitigation strategy to mitigate risks in supply chains.

BPSM 366: Public Procurement (45/0 C.F 3.0)Y3S2

History of Public Procurement; Scope of Public Procurement: International Organization of Procuring Entities, Procurement Cycle, Objectives of Public Procurement; Regulatory Framework in Public Procurement, PPDA 2015, PPADA 2015; Procurement Planning; Procurement Methods for Good Services and Works, Threshold for Procurement Methods; Procurement Plan; Management of Procurement Contracts; Inspection, Receiving and Acceptance of goods Services and Works; Storage and Issuance of Inventory; Planning for Disposal of Stores, Equipment and Assets; Management of Procurement Methods

BPSM 367: International Procurement (45/0 C.F 3.0) Y3S2

Overview of International Procurement ; Preparation and Specification in International Procurement; Sourcing Strategies in International Procurement ; Commodity Markets; Procedures and Documentation in International procurement; Import and Export Preparation; Customs Service, Regulations and Instructions; International Transportation Incoterms; Financing in International Procurement; International Trade, Institutions and Frameworks; Challenges/Risks faced in International Procurement; Emerging Issues and Trends in International Procurement

BPSM 460: Project and contract Management (45/0 C.F 3.0) Y4S1

Overview of Project Management; Project Life Cycle; Project Planning and Scheduling; Project Appraisal and

Assessment; Project Monitoring and Evaluation; Project Termination; Contractual Issues in Procurement Project Management; Contract Management; Emerging Issues in Project Management and SCM

BPSM 461: Legal aspects of Procurement & Supply Chain Management (45/0 C.F 3.0) Y4S1

Registration of companies, intellectual property rights, copyrights, antitrust laws: Sherman Antitrust Act, Clayton Act,- FTC Act, and Robinson-Patman Act, Law of Contract; Sale of Goods Act; Agency; Intellectual Property Acts

BPSM 462: Procurement Policy and Strategy (45/0 C.F 3.0) Y4S1

Concept of Strategy; Strategic Planning, Formulation Procurement and Supply Chain Management Organization Structures; Supply market Analysis; Strategy Formulation in Supply Chain Management; Kraljic Model, BGG Portfolio Matrix; Value Addition in Strategic Supply Chain Management- Porters Value Chain; Hine's Value Chain Model; Strategic Sourcing and Supplier Selection; Supplier Relationship Management Understanding Procurement and supplies policy and strategy, Procurement and supplies policy, Procurement and supplies strategy and its importance to the organization, aligning Procurement and supplies objectives to corporate strategy, common techniques in Procurement and supplies strategies, development of product specific Procurement and supplies objectives, types of supplier relationships in relation to policy and strategy for supplies of individual products and services, common techniques in Procurement and supplies strategies; supplier relationships; strategies for supplies of individual products and services

BPSM 463: Global Supply Chain Management (45/0 C.F 3.0) Y4S2

The Overview of Supply chain Concept; Commodity Market; Dynamics of Complex Supply Chain System; Globalization and Regional Trading Block and Associated Challenges in Managing the Supply Chains; Entry Strategies to International Markets; Global Logistics and its Role in Global Supply Chain; Conceptual framework: planning, design metrics, pricing; strategies for specialized procurements; international supply agreements; sourcing decisions in the supply chain; international humanitarian and emergency procurements; Strategic outsourcing and alliances; Supply chain relationships; network design and analysis; demand and supply planning, managing uncertainty, optimising product availability; pricing and revenue management in the supply chain, effective coordination; global supply chains, measurement, audit and benchmarking; Information System and the supply chain.

BPSM 464: Supply Chain Information Systems (45/0 C.F 3.0)Y4S2

Introduction to Information Systems, Introduction to Database; Categories and classification of Information Systems; Use of Information Systems in Business, Operation, SCM, Introduction to Transaction Processing; Procurement system database for purchase order, requisition, vendor and commodity code information, requisition tracking information, E-forms Approval of requisitions, E-reports Procurement, Procurement card, vendor information, request for quotation, order processing, invoice processing

BPSM 465: System Production Management (45/0 C.F 3.0) Y4S2

Role of the Production Function: Design of Facilities and Job: Materials and Inventory Management: Operations Planning and Scheduling; Inspection and Quality Control:

Manufacturing and Service Strategy; Product and service design process: process selection and capacity planning; Facilities layout, location and design of work systems, materials requirement planning (MRPII) systems.

BPSM 466: Ethics in Procurement and Supplies Management (45/0 C.F 3.0) Y4S1

Meaning of ethics, development of business ethics, ethical concepts, the role and application of ethics in Supply Chain and Procurement Management., ethics and social responsibility, ethical dilemmas in modern business environment, developing and ethical culture in Procurement and environment, Ethical and Legal Issues in Contract Negotiation; Sustainable Procurement

BPMS 467: Procurement and Supply Chain Management Research Paper (45/0 C.F 3.0) Y4S2

The management research paper is conducted as a student project and it gives students the opportunity to obtain, develop and demonstrate research skills in Procurement and Supply Chain Management. A typical project will be required to demonstrate competence in research skills such as: Formulating a detailed statement of the problem and objectives; To develop a proposal using knowledge acquired from research methods; Data Collection; Bibliographic searches to obtain information about prior work; Analysing research literature to obtain relevant information and identify trends; Appreciation of appropriate citation and attribution in research; Use of appropriate tools for data capture and analysis; Evaluation of work done; Technical writing and presentation of results. The research should not be more than 10,000 words.

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3		Y4	
Programme Learning Outcomes		Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	Effectively manage resources at their disposal according to contemporary economic, business management and technological trends	Principles of Accounting I	3.0	Introduction to Managerial Accounting	3.0	Organisational Theory	3.0	Project and Contract Management	
		Communication Skills	3.0	Systems Analysis and Design	3.0	Business Law	3.0	Legal aspects of Procurement & Supply Chain Management	
		Biology of HIV/AIDS and Society	3.0	Financial Management I		Organisational Behaviour	3.0	Business communication	
PLO -2	Carry out research with a view to finding solutions to contemporary problems affecting business development at various scales	Principles of Microeconomics for Business	3.0	Principles of Marketing	3.0	Inventory Management	3.0	Operations	3.0
		Principles of Accounting II	3.0	Leadership in Procurement and Supply Chain Management	3.0	Procurement Management	3.0	Ethics in Procurement and Supply Management	3.0
		Principles of Management		Retail and Merchandise Management	3.0	Public Finance	2.0	Procurement Policy and Strategy	3.0
		Philosophy and Society			3.0		3.0		3.0
PLO -3	Appreciate the complex relationship between the national economy and global economic trends;	Introduction to Business	3.0	Statistics for Business Decision Making	3.0	Logistics and transport Management	3.0	Business Ethics and Corporate Governance	3.0
			3.0	Clearing and Forwarding	3.0	Operations Management Practice	3.0	Management Research Paper	3.0
		Principles of Microeconomics for Business	3.0	Distribution and Warehousing	3.0	E-Commerce	3.0	Global Supply Chain Management	3.0
		Management Mathematics II	3.0	Negotiation in Procurement and Supply Chain	3.0		3.0	Research Methods	3.0

PLO-4	Have acquired knowledge, skills and attitudes for pursuing further studies in Procurement and supply chain management	Management Mathematics I	3.0	Fundamentals of Supply Chain Management	3.0	Managing Risk In Supply Chain	3.0	Supply Chain Information Systems	3.0
		Fundamentals of Information Systems	3.0	Supplies and Materials Management	3.0	Public Procurement	3.0	System Production Management	3.0
			3.0			International Procurement	3.0	Supply Chain Management Research Paper	

BACHELOR OF ENTREPRENEURSHIP AND SMALL BUSINESS MANAGEMENT

1. Philosophy of the programme

The Bachelor of Entrepreneurship and Small Business Management is based on the conviction and belief that it is only graduates with knowledge and skills in business that can critically analyze issues related entrepreneurship.

2. Rationale

Entrepreneurship spirit and Innovation is the backbone of the biggest economies in the world. In this regard, big economies such as the USA have an education system that emphasizes entrepreneurship and innovation. Small businesses are critical to such big economies and have been invaluable in creation of employment and realization of great economical and social change in form of a strong and vibrant middle class. We believe that introduction of a bachelor of entrepreneurship and small business management course (BENT) at Egerton University will create a specific and highly trained manpower that will drive entrepreneurship and provide skilled management in this important sector. In this course (BENT), we seek to provide the student with requisite skills to be entrepreneurs and/or innovators and capable of providing consultation services to already existing businesses. This course fits perfectly well with the ambitious vision 2030 of the Kenyan government, which promises to make Kenya a middle income country by 2030. Based on experiences from other countries that have witnessed great economic development, it would be impossible for Kenya to achieve such feat, without successful small businesses and a strong entrepreneurial spirit. Therefore this course (BENT), addresses an important national issue i.e. strong and vibrant economy, responsible for its own citizens.

3. Goals of the Programme

The aim of the Bachelor of Entrepreneurship and Small Business Management (BENT) degree is to provide students with necessary skills that can enable them to respond to their need for effective management of public and private enterprises.

4. Programme Learning Outcomes

At the end of the programme, the graduates should be able to:

- i. Identify viable business opportunities.
- ii. Start and professionally operate their own businesses.
- iii. Develop and use of computer systems for solving business problems and marketing managerial decisions.
- iv. Appreciate the legal framework within which small enterprises operate.
- v. Enhance their ability to compete in the global business world.

5. Mode of delivery

The programme will be delivered in full time and part-time modes

6. Academic Regulations for the Programme

6.1 Admission Requirements

All candidates admitted to the degree programme of Bachelor of Entrepreneurship and Small Business Management (BENT) must satisfy the minimum common entrance requirements of Egerton University. In addition,

- i. A candidate must obtain at least a C grade in Mathematics.
- ii. Those holding qualifications equivalent to the above from institutions recognized by Egerton University Senate may also be admitted.
- iii. Admission may be offered to outstanding diploma holders in Co-operative Management, Banking, Finance, Agri-Business, Marketing, Insurance and

Risk Management and Management Science disciplines passed with a credit or higher or their equivalent. Such cases will be treated on individual merit.

- iv. Admission may also be offered to those holding CPA II and/or its equivalent through mature age entrance scheme as specified by the faculty.

6.3 Course Requirement

The course requirements shall be conducted in accordance with Egerton University Statutes No 36 of 2013 and as per ISO procedures EU/AA/OP/06 rev 3.

6.4 Student Assessment Criteria

All student assessment shall be conducted in accordance with Egerton University Statutes No 36 of 2013.

6.5 Grading system

The grading system will be conducted in accordance with Egerton University statutes No. 36 of 2013.

6.6 Examination Regulations.

All examinations shall be conducted in accordance with Egerton University Statutes No 36 of 2013.

6.7 Moderation of examination

Moderation of examination shall be in accordance with Egerton University Statutes No 36 of 2013 and ISO procedure (EU/AA/OP/07) .

6.8 Graduation Requirements.

To graduate, the student shall be required to take and pass all scheduled courses within the stipulated time.

6.9 Classification

The Bachelor of Entrepreneurship and Small Business Management degree shall be classified as stipulated in the Egerton University Statutes No 36 of 2013.

7. Course Evaluation

All courses shall be evaluated in accordance with Egerton University course evaluation tool as shall be provided by the University.

8. Management and Administration of the programme

8.1 Host department and programme Academic leader

The programme shall be hosted by department of Accounting, Finance and Management Science in the Faculty of Commerce. The Programme Academic Leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal self-evaluation at the end of each academic cycle (ISO procedure EU/VC/OP/05). The programme shall be benchmarked with at least one such programme in highly ranked university.

8.3 Course coding

The course code is four capitals letters BENT standing for Bachelor of Entrepreneurship and Small Business Management followed by three digits as follows:

- First digit indicates the years of study i.e. 1, 2, 3, 4;
- The second digit is discipline specific, e.g. 2 denotes Entrepreneurship.
- The last digit indicates the sequencing of the course i.e. 0, 1, 2, 3.....

9.0 Schedule of courses

YEAR ONE SEMESTER ONE

CODE	TITLE	L	P	C.F
BACT 110	Principles of Accounting I	45	0	3.0

BECO 101	Principles of Microeconomics for Business	45	0	3.0
BOPM 140	Management Mathematics I	45	0	3.0
BMGT 100	Introduction to Business	45	0	3.0
COMS101	Communication skills	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		270	0	18.0

YEAR ONE SEMESTER TWO

BACT111	Principles of Accounting II	45	0	3.0
BECO 102	Principles of Macroeconomics for Business	45	0	3.0
BOPM 141	Management Mathematics II	45	0	3.0
BMGT 101	Principles of Management	45	0	3.0
BBIS 150	Fundamentals of Information Systems	45	0	3.0
PHIL 104	Philosophy and society	45	0	3.0
TOTAL		270	0	18.0

YEAR TWO SEMESTER ONE

BACT 210	Introduction to Managerial Accounting	45	0	3.0
BACT 211	Accounting for Assets	45	0	3.0
BENT 220	Introduction to Entrepreneurship	30	30	3.0
BECO 201	Intermediate Microeconomics for	45	0	3.0

	Business			
BINS 240	Risk and Insurance	45	0	3.0
BMKT 250	Principles of Marketing	45	0	3.0
TOTAL		225	30	18.0

YEAR TWO SEMESTER TWO

BACT 212	Accounting for Equities and Liabilities.	45	0	3.0
BECO 202	Intermediate Macroeconomics for Business	45	0	3.0
BHRM 230	Human Resource Management	45	0	3.0
BFIN 230	Financial Management I	45	0	3.0
BPSM 260	Fundamentals of Supply Chain Management	45	0	3.0
BBIS 250	Systems Analysis and Design	45	0	3.0
TOTAL		270	0	18.0

YEAR THREE SEMESTER ONE

BENT 320	Business Start-up Process	45	0	3.0
BENT 321	International Marketing for Small Business	45	0	3.0
BENT 323	Small Business Promotion	45	0	3.0
BENT 322	Social Entrepreneurship	45	0	3.0
BMGT 300	Organizational Behaviour	45	0	3.0
BMGT	Business Law	45	0	3.0

301				
TOTAL		270	0	18.0

YEAR THREE SEMESTER TWO

BBIS 357	E- Commerce	45	0	3.0
BENT 324	Legal and Tax Issues for Small Business	45	0	3.0
BENT 325	Project Design, Development, Implementation and Evaluation	45	0	3.0
BENT 326	Innovation and Entrepreneurship Development	45	0	3.0
BMGT 304	Organization Theory	45	0	3.0
BMGT 305	Company Law	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER ONE

BENT 420	Business Planning	45	0	3.0
BMGT 400	Strategic Management	45	0	3.0
BMGT 401	Business Communication	45	0	3.0
BENT 421	Public Relations and Customer Care	45	0	3.0
BHRM 436	Management of Change	45	0	3.0
BOPM 440	Research Methods	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER TWO

BMGT	Business Ethics and	45	0	3.0

402	Corporate Governance			
BENT 423	International Dimension of Entrepreneurship	45	0	3.0
BMIS 452	Management Information Systems	45	0	3.0
BENT 424	Small Business Financing	45	0	3.0
BENT 424	Business Consultancy	45	0	3.0
BMGT 403	Management Research Project	45	0	3.0
TOTAL		270	0	18.0

(c) Course Outlines

BENT 320: Introduction to Entrepreneurship (45/0 C.F 3.0) Y2 S1

Introduction to Entrepreneurship; Concepts of Entrepreneurship; Decision Making process; Skills for Entrepreneur; SWOT analysis of Business Environment; Economic; Social; Market; Financial; Technological; Cultural; Introduction to business functions and language; development of entrepreneurial mind set. Recognition of business opportunities. Risk assessment; Development and implementation of action to exploit opportunities; conduct SWOT Analysis of entrepreneurial and small businesses; interaction with practicing entrepreneurs; pre-feasibility and feasibility studies for business project.

BENT 320: Business Start-up Process (45/0 C.F 3.0) Y3 S1

Small enterprise culture, entrepreneurship and support mechanisms and programs for small enterprises in Kenya, institutions supporting entrepreneurship development in Kenya. Enabling environmental factors such as economic, social, technological, political, cultural, historical and legal influencing small enterprise development. Credit and finance, non-financial

promotional programmes and micro-financing. Problems and prospects of Small Enterprises and the future of small enterprises in Africa

BENT 420: Business Planning (45/0 C.F 3.0) Y4 S1

Definition of Business Plans; Parts of a Business Plan; Preparation of a Business Plan; turning business and non-profit dreams into concrete viable business plans.; creation of a plan for a viable business or non-profit organization.

BENT 321: International Marketing for Small Business (45/0 C.F 3.0) Y3 S1

Marketing of products and services outside the local market. Entry strategic; Tariff and non-tariff barriers and their effect on small business activities; Regional market agreements and their effects on the small business; Environmental factors affecting international marketing for small business; International marketing factors affecting international marketing for small business; International marketing problems for the small business; Distribution: accessing foreign manufactures representatives and brokers; shipping and insurance issues; Pricing; currency effects on pricing; how to get paid.

BENT 324: Legal and Tax Issues for Small Business (45/0 C.F 3.0) Y3 S2

Forms of business organization; sole proprietorship; partnership; limited liability; company and cooperative societies; Franchises; Sales and Value Added Tax requirements; payroll and income taxes; licenses; etc. required for operating a small business; export duties and other taxes. Acts governing business operations.

BENT 323: Small Business Promotion (45/0 C.F 3.0) Y3 S1

Promotional strategies; steps in developing effective communication; promotional mix (advertising; personal

selling; direct marketing); Sales promotion; Public Relations (PR) packaging and labelling, international promotion.

BENT 325: Project Design, Development, Implementation and Evaluation (45/0 C.F 3.0) Y3 S2

Planning, developing and implementation of development projects; Monitoring and evaluating project implementation. Purpose, role, approaches, methodologies, and tools for evaluation. The Logical Framework Analysis. Performance Indicators; Success Factors and Evaluation Criteria; Reporting of evaluation information.

BENT 424: Business Consultancy (45/0 C.F 3.0) Y4 S2

Introduction to business consulting; problems facing small and micro enterprises into days competitive business environment; Role and importunity of business consulting; characteristics of a good business consultant; the consulting process including entry; diagnosis; action planning implementation and termination; Management of change; Role of effective communication in developing and maintaining effective client consultant relationship; The process; Requirement of starting and managing a small business consulting firm.

BENT 326: Innovation and Enterprise Development (45/0 C.F 3.0) Y3 S2

Introduction: Definitions: Micro enterprise innovation; Role of innovation in Enterprise Development: Role of an entrepreneur in enterprise innovation. Nature of innovation for Micro and Small Enterprises; Product innovation, Process (Technology), Market, Organization and Resources. The innovation process. Successful Management of innovations in Micro Enterprises: The Japanese Case. Innovation Protection for Micro and Small Enterprises in Kenya; Policy issues, successes and

challenges, Current Issues and future challenges facing innovations and Micro and Small Enterprise Development in Kenya.

BENT 322: Social Entrepreneurship (45/0 C.F 3.0) Y3 S1

Introduction to non –profit social enterprises; Basics of non-profit entrepreneurship; integration of entrepreneurial thought into non-profit enterprises; feasibility study for non-profit enterprises; interaction with guest lecturers and coaches from relevant entrepreneurs.

BENT 423: International Dimension of Entrepreneurship (45/0 C.F 3.0) Y4 S2

Forms and types of international ventures; major issues affecting international trade; methods of starting and managing entrepreneurial ventures in the domestic market with international Marketing capabilities; strategies for developing strategic alliances and collaborations to facilitate start-up and growth of international entrepreneurial ventures. Regulations, documentation and payment methods for import/export entrepreneurial ventures.

BMGT 401: Business Communication (45/0 C.F 3.0) Y4 S1

Introduction to business communication. A systematic approach to effective communication; oral and written communication. Business and professional speech communication Report writing. Business correspondences, Meetings, Instructions, documentation and policy procedure statements. Career strategies; responding to a job advertisement, writing a cover letter, preparing a curriculum vitae, handling a job interview, frequently asked questions in job interviews. Contemporary issues in business communication.

BENT 421: Public Relations and Customer Care (45/0 C.F 3.0) Y4 S1

Essential elements of customer service; development of customer oriented culture in Entrepreneurship; customer sourcing and identification of their needs; identifying products/services offered by customers; effective point and means of serving customers; after sales service to customers; ethics and customer service; effective communication and customer satisfaction; handling of difficult and hostile customers, visit to an organization for learners to familiarize themselves with the operations of the public relations and customer care department.

BENT 424: Small Business Financing (45/0 C.F 3.0) Y4 S2

Sources of capital for small-scale enterprises; Personal funds; family; trade credit; mortgage loans; commercial bank loans; Non-Government Organizations (NGOs) micro-enterprises loans; government micro-enterprises; partners capital; venture capital; Economic development issues including barriers to micro enterprises development.

BMGT 403: Business Research Project (45/0 C.F 3.0) Y4 S2

Independent study under the guidance of faculty supervisor, the projects may include library or empirical research or analysis and written report on the entrepreneurship aspects of an appropriate business organization (private firm; not-for-profit organization; or government agency).

9.2 Matrix Aligning Courses/Units to Programme Learning Outcomes

		Y1		Y2		Y3		Y4	
	Programme Learning Outcomes	Course	CF	Course	CF	Course	CF	Course	CF
PLO -1	To enable the learners to identify viable business opportunities	Introduction to Entrepreneurship	3.0			Innovation, Technology and Creativity	3.0	Small Business Financing	3.0
		Business Start-up process	3.0					Management Research Project	3.0
		Social Entrepreneurship	3.0						
		Introduction to Business	2.0						
		Communication Skills	3.0						
		Philosophy and Society	3.0						
		HIV Aids and Society	3.0						
PLO -2	To equip the learners with skills which will help them to start and professionally operate their own businesses.	Principles of Accounting I & II	3.0	Introduction to Managerial Accounting	3.0	Human Resource Management	3.0	Business Communication	3.0
		Principles of Microeconomics for Business	3.0	Management Mathematics	3.0	Innovation and Enterprise Development	3.0		
		Principles of Macroeconomics for Business	3.0	Risk and Insurance	3.0				
		Principles of Management	3.0	Accounting for Assets	3.0				
		Management Mathematics	3.0						
PLO -3	To provide students with experience in the development and use of computer systems for solving business problems and making management decisions			Operations Research	3.0	E -Commerce	3.0		3.0
				Fundamentals of Information Systems	3.0				
PLO-4	To enable the students to appreciate the legal framework within which small enterprises operate				3.0	Business Law	3.0	Business Ethics and Corporate Governance	3.0

								Legal and Tax Issues for Small Business	3.0
PLO -5	To equip students with skills which will enhance their ability to compete in the global business world.	Principles of Management	3.0	Marketing for Small Business	3.0	Organizational Behaviour	3.0	Business Planning	3.0
				Intermediate Microeconomics for Business	3.0	Small Business Promotion	3.0	Business Consultancy	3.0
				Organizational Theory	3.0	International marketing for Small Business	3.0	Entrepreneurial Behaviour and Ethics	3.0
						Risk Management	3.0	Research Methods	3.0
						Business Consultancy	3.0	Strategic Management	3.0

FACULTY OF EDUCATION AND COMMUNITY STUDIES

DEPARTMENT OF APPLIED COMMUNITY DEVELOPMENT STUDIES

BACHELOR OF SCIENCE IN AGRICULTURE AND HUMAN ECOLOGY EXTENSION

1. Philosophy of the Programme

The programme contributes to human resource with knowledge and skills in agriculture, family and community resource management, extension education and community outreach needed for development in Kenya and beyond.

2. Rationale

The B.Sc. in Agriculture and Human Ecology Extension is a double major in Agriculture and Human Ecology. The programme aims at developing professionals who will adequately advise on the techniques of improving agricultural enterprises, better management and utilization of farm produce, family and community resources. The graduates will also have skills and knowledge in areas such as project planning and management, entrepreneurship, community consultancy, gender and development, appropriate technology among others that address community development issues.

The B.Sc. Programme in Agriculture and Human Ecology Extension at Egerton University is unique integrating two areas of study crucial for any country's growth and development. The programme meets key employment needs in NGOs and the government sector in Kenya and globally and is in line with the university's mission of "To offer exemplary education to society and generate knowledge for national and global development"

3. Goal of the Programme

The goal of the programme is to equip learners with knowledge, professional competencies, skills and

attitudes in general agriculture, extension education, family and community development.

4. Program Learning Outcomes

The graduates will be able to use acquired knowledge, skills and attitudes to:-

- i) Demonstrate an in-depth understanding of a wide range of agricultural extension and development issues affecting individuals, families and communities.
- ii) Facilitate the improvement of the wellbeing and quality of life of individuals, families and communities.
- iii) Identify and mobilize resources for the realization of sustainable livelihoods
- iv) Carry out analytical research with a focus on innovations for sustainable development
- v) Be adaptable to a wide range of working environments and advanced higher learning opportunities in the field of agricultural extension and community development

5. Mode of Delivery

The degree programme shall be undertaken either as fulltime or as part time mode.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy entry requirements for admission into the University. In addition the applicants must have passed KCSE with the minimum grades in the subjects indicated below.

Biology B- or Biological Sciences B

Chemistry B- or Physical Sciences B

Mathematics C+

Applicants with a Diploma with Credit or Pass with at least two years of relevant experience at Diploma level

in Agriculture related fields from Institutions recognized by Egerton University Senate will be considered.

6.2 Regulation on Credit Transfer

Credit transfer shall adhere to Egerton University Statutes article 36(3) of 2013.

6.3 Course Requirements

The programme content shall be as stipulated in the ISO procedure for teaching EU/AA/OP/06/rev 3.

6.4 Student Assessment Policy/Criteria

Student assessment shall be in accordance with Egerton University Statutes article 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6).

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (6).

6.7 Moderation of Examination

Internal and external moderation of examinations in the programme will be guided by Statute articles 36(5) and ISO procedure number EU/AA/OP/07 (6.3).

6.8 Graduation Requirements

To graduate a student shall be required to take and pass 167 Credit Factors covering ALL scheduled courses within the stipulated period by the University of Four Academic Years. This will include attachment/practicum to be undertaken for a minimum period of 8 weeks.

6.9 Classification of Degree

Degree Classification shall be in accordance with Egerton University Statute 36 (17) of 2013

7. Course Evaluation

All courses in the programme will be evaluated using course evaluation tools as shall be provided by the university.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted in the department of Applied Community Development Studies, Faculty of Education and Community Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall undergo an internal program evaluation (self-assessment) at the end of every academic cycle of 4 years and will be benchmarked with relevant educational institutions.

8.3 Course Coding

AGHE denotes: AG – Agriculture; HE – Human Ecology Extension

Three digits are used for coding as follows:

- i. First digit is for year of study
- ii. Second digit is for the sub-discipline as follows:
 1. Extension
 2. Entrepreneurship and Consumer Studies
 3. Community Projects and Development
 4. Human Development
 5. Research and Seminars
 6. Field Attachment
- iii. Third digit indicates the level of the course.

9. Courses Offered for the Programme

9.1 Schedule of Courses

a) University common core courses:

CODE	TITLE	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
ENSC 100	Environmental Education	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
TOTAL		135	0	9.0

b) Schedule of Courses Offered

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGHE 111	Intro to Agriculture, Human Ecology and Extension	45	0	3.0
AGRO 102	Introduction to Crop production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
CDEV 130	Family Development	45	0	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
ENSC 100	Environmental Education	30	30	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
TOTAL		270	105	21.5

YEAR 1 SEMESTER 2

AGHE 112	Human Aspects in and Extension Development	45	0	3.0
BOTA 131	General Microbiology	30	30	3.0
CDEV 120	Social Psychology of Families and Community	30	0	2.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0

COMS 111	Communication Skills	45	0	3.0
HORT 111	Principles and Practices of Horticulture	30	30	3.0
PHIL 106	Law and Society	45	0	3.0
SOIL 100	Introduction to soil science	30	30	3.0
TOTAL		285	120	23.0

YEAR 2 SEMESTER 1

AGHE 221	Consumer Education	45	0	3.0
AGHE 241	Human Health and Sanitation	45	0	3.0
AGRO 291	Statistics for Agriculture	45	0	3.0
CDEV 231	Violence in the Family and Community	45	0	3.0
CDEV 232	Family and Community Resource Management	30	30	3.0
TOTAL		210	30	15.0

YEAR 2 SEMESTER 2

AGBM 216	Accounting and costing for Projects	45	0	3.0
AGHE 222	Entrepreneurship in Human Ecology	30	30	3.0
AGHE 242	Human Development	30	30	3.0
BIOC 204	Basic Biochemistry	30	30	3.0
CDEV 242	Group and Community Dynamics	30	30	3.0
NARE 221	Natural Resource Utilization and Conflicts	30	30	3.0
TOTAL		195	150	18.0

YEAR 3 SEMESTER 1

AGHE 313	Extension Methods in Human Ecology	30	30	3.0
AGHE 331	Appropriate Technology I	30	30	3.0

AGEC 316	Agricultural Economics I	45	0	3.0
AGED 331	Rural Sociology	30	0	2.0
AGRO 351	General Annual Crops	30	30	3.0
ANSC 359	Principles of Livestock Production	45	15	3.5
HORT 331	General Vegetable Production	45	30	4.0
TOTAL		255	135	21.5

YEAR 3 SEMESTER 2

AGHE 332	Appropriate Technology II	15	60	3.0
AGHE 333	Project Planning and Management	30	30	3.0
AGHE 351	Research Methods	45	0	3.0
AGRO 361	General Perennial Crops	30	30	3.0
AGRO 383	Principles of Organic Farming	30	30	3.0
FOND 325	Community Nutrition and Health	30	60	4.0
HORT 341	General Fruit Production	45	30	4.0
TOTAL		225	240	23.0
AGHE 361	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

AGEC 416	Agricultural Economics II	45	0	3.0
AGHE 414	Outreach Programme	15	60	3.0
AGHE 434	Project Implementation and Evaluation	15	90	4.0
AGHE 452	Research Projects	0	60	2.0

ANHE 427	Animal Health, Food Borne and Zoonotic Diseases	30	30	3.0
BOTA 453	Plant Pathology	30	30	3.0
CDEV 451	Management of micro and small businesses	30	30	3.0
NARE 450	Agro-forestry	30	30	3.0
TOTAL		195	330	24.0

YEAR 4 SEMESTER 2

AGEC 451	Agricultural Policy	45	0	3.0
AGHE 418	Gender and Community Development	45	0	3.0
AGHE 435	Housing Improvement	30	30	3.0
AGHE 453	Seminars	15	30	2.0
CDEV 417	World Food Issues and Climate Change	45	0	3.0
CDEV 429	Community Consultancy	45	0	3.0
TOTAL		225	60	17.0

c) Course Descriptions

AGHE 111: Introduction to Agriculture, Human Ecology, and Extension (45/0: C.F 3.0) Y1S1

Role of agriculture in the livelihoods of families and communities. Trends in agricultural development: traditional agriculture, green revolution, rainbow evolution, conservation agriculture and biotechnology among others. Human ecology: the individual interaction with the environment- family, the community and physical environment. Meaning of extension and principles of extension. Evolution of extension science, approaches and models of extension. Extension role in: agriculture, human Ecology and development. Agricultural policy, Environmental

policy, agricultural extension policy. Human rights and development.

AGHE 112: Human Aspects in Extension and Development (45/0: C.F 3.0) Y1S2

Concepts of extension and development. Nature, objectives and goals of extension and development. The change agent in development. Development Goals and indicators. Common models for extension and development. Ethics in extension and development work. Approaches to extension and development activities. Leadership in extension and development.(Y1S2). (*Pre-requisite AGHE 111*)

AGHE 221: Consumer Education (45/0: C.F 3.0) Y2S1

The role, rights and responsibilities of a consumer. Problems facing consumer and their solution. Consumer protection, legal redress and consumer organizations Consumer behavior. Communication through advertising. Packaging and labeling. Budgeting and record keeping in relation to family resources. Uses of credit, banking and insurance facilities in Kenya.Nature of markets and its influence on consumer rights and responsibilities. World Trade influences on local marketing and the consumer.Y2S1

AGHE 222: Entrepreneurship in Human Ecology (45/0: C.F 3.0) Y2S2

Entrepreneurship as a concept. Theories of entrepreneurship in social economic development. Social entrepreneurship versus economic entrepreneurship. Development of entrepreneurial competencies among individuals and communities. Principles of social entrepreneurship. The practice of social entrepreneurship in developing countries. Markets, marketing strategies and agricultural value chain in developing countries. Challenges in the development of entrepreneurship. (*Prerequisite: AGHE*

221)

AGHE 241: Human Health and Sanitation (30/30: C.F 3.0) Y2S1

Concepts of primary health care. Overview of human body systems and their functioning. Causes of infection. Fundamentals of disease prevention and broad principles of the management of bacterial, viral and parasitic diseases and allergies. Lifestyle and degenerative diseases. Addictive behaviour. Self-care: first aid, home nursing and personal hygiene. Water and sanitation. Health consumerism, including conventional and alternative health care services providers. (*Pre-requisite CDEV 130*) Y2S1

AGHE 242: Human Development (30/30: C.F 3.0) Y2S2

Aspects of human growth from conception to adulthood. Continuity and change. Development trends in each domain from infancy to adulthood. Interrelation between nature and nurture, interpersonal relationships and cultural historical factors. Y2S2

AGHE 313: Extension Methods in Human Ecology (30/30: C.F 3.0) Y3S1

The extension concept. Extension education in family and community development. Approaches to extension work. Planning, implementation and evaluations of extension projects. Extension teaching methods in human ecology and community development. Needs assessment, planning and application of extension methods for community learning. (*Pre-requisite: AGHE 111, AGHE 112*) Y3S1

AGHE 331: Appropriate Technology I (30/30: C.F 3.0) Y3S1

The concept of appropriate technology. Analysis of technologies in food production, processing and storage; clothing and textiles; health and sanitation, energy utilization and the electronic media. Application and effect of technologies on families and communities.

Students will be exposed to various technologies important is solving common community problems.

AGHE 332: Appropriate Technology II (30/30: C.F 3.0) Y3S2

Students to design, implement and evaluate an appropriate technology project aimed at solving identified problems in the community in relation to available resources. Students to incorporate skills and knowledge learnt in Appropriate Technology I. (*Pre-Requisite: AGHE 331*)

AGHE 333: Project Planning and Management (30/30: C.F 3.0) Y3S2

The concepts of project planning and management in community projects and programmes. Project identification, preparation and design, and appraisal. Organizing human resources, systems and procedures for implementation; Project management: direction, coordination and control of human, financial, activity and time schedules. Students to identify a community project and develop a project proposal. Y3S2

AGHE 351: Research Methods (30/30: C.F 3.0) Y3S1

Foundations of research in human ecology and community development. Research types; different types of variables; research designs; study population, samples and sampling procedures. Methods of data collection. Data analysis: Descriptive and inferential statistic. Research proposal writing. (*Pre-requisite: AGR0 291*).

AGHE 361: Field Attachment

Practical training in extension service. Students are expected to learn the routine of extension services such as program planning, home and farm visits as well as government procedures (*Pre-Requisite: AGHE 213, AGHE 351*)

AGHE 414: Outreach Programme(30/30: C.F 3.0) Y4S1

Identification of community felt needs. Identification and problem solving interventions in the communities. Identification and mobilization of community resource: Human and non-human for meeting community needs. Designing, discussion and presentations of educational program for adults and youths. Application of human ecology extension teaching methods in community presentation and demonstrations (*Prerequisite AGHE 213*)

AGHE 418: Gender and Community Development(45/0: C.F 3.0) Y4S2

Theories of gender roles and development. Factors influencing gender in decision making concerning family and community resource management, life processes, and in the adoption of innovations to the changes in the society. Integration of gender in agricultural development, agricultural policy, extension program planning and implementation. Political, social and economic influences on gender in agricultural development. (*Pre-Requisite: AGHE 111, AGHE 112, CDEV 232*)

AGHE 434: Projects Implementation and Evaluation (15/90: C.F 4.0) Y4S1

Review of projects proposals developed in AGHE 333. Implementation, monitoring and evaluation of community projects. Formal evaluation and reporting for projects (*Prerequisite: AGHE 333*) Y4S1

AGHE 435: Housing Improvement (30/30: C.F 3.0) Y4S1

Housing needs in developing countries and in rural and urban set-ups. Decision making in renting, building and buying a house and appropriateness of material used. House plans with respect to use of space for comfort, security and interpersonal communication. Identification of appropriate housing improvement projects

incorporating principles of art and design. Housing and building policies in developing countries.(Prerequisite: CDEV 130, CDEV 232)

AGHE 452: Research Project (0/60: C.F 2.0) Y4S1

Review of research proposals developed in AGHE 351. Data collection instruments, validation and reliability testing. Supervised data collection, analysis and interpretation of research results. Reporting of research results. (Prerequisite: AGHE 351)

AGHE 453: Seminars (0/60: C.F 2.0) Y4S2

Close examination of problems and issues in the study of human ecology and related disciplines. Individual reports on selected topics or projects representative of current problems, trends and developments in the field of human ecology.(Prerequisite: AGHE 111)

9.2 SERVICE COURSE OFFERED TO OTHER DEPARTMENTS

AGHE 140: Human Health (45/0: C.F 3.0) Y1S1, Y2S1

Concepts of family health and wellbeing. Overview of human body systems and their functioning; causes of infection. Fundamentals of disease prevention and broad principles of the management of bacterial, viral and parasitic diseases, with special emphasis on childhood diseases, geriatrics and allergies. Reproductive health; sexually transmitted diseases and their management; emotional and mental health. Emerging issues in family health; Drugs and drug abuse; family violence.

AGHE 141: Family and Community Education (45/0:3.0) L1BI

The concepts of the family and community. Forms of marriage and family systems; Family theories; Courtship and Marriage, Parents and Children: communication and discipline. The child in the School, Childhood diseases and prevention, Gender roles and

conflict in the Family and community, Reproduction and Family health; The Family and resource management. Ageing and retirement.

AGHE 113: Human Ecology and Education (45/0: 3.0) L1BII

Concepts of Human Ecology, food security and its impacts on education and families. The family systems, Adolescents and youth reproductive health, drugs, Gender issues in development and education. Fields contributing to human ecology and its effect to the education system, Impact of HIV/AIDS in the field of education.

AGHE 0141: Family Life Education (45/0: 3.0) L1BI

Definition of the family, Types of families, Forms of marriage. The family life cycle, Family systems, Courtship and Marriage, Marriage, Parents and Children, The child in the School, Childhood diseases and prevention, Gender Roles in the Family.

AGHE 0113: Introduction to Human Ecology (45/0: CF3.0) L1BII

Definition of Human Ecology. Human ecosystem: family, community and physical. Importance of human ecology and education process. Areas contributing to Human ecology: nutrition, agriculture, technology, health, psychology. The family systems, Food security and health in the family; Adolescents and youths, Reproductive health, Gender roles in the family and school.

9.3 Matrix aligning course to programme learning outcomes

Programme Learning Outcomes(PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Prepare students with competencies needed for employment in agricultural extension, rural and urban development, micro and small enterprises.	Human Aspects in Extension and Development Introduction to Crop Production Principles and Practices of Horticulture Introduction to Agric. Human Ecology and Extension Introduction to Soil Science Introduction to academic Communication Skills	3.0 3.5 3.0 3.0 3.0 3.5	Entrepreneurship in Human Ecology Group and Community Dynamics Natural Resource Utilization and Conflicts Accounting and Costing of Projects Introduction to Computer Applications	3.0 3.0 3.0 3.0 3.5	Extension Methods in Human Ecology Project Planning and Management Agricultural Economics I Rural Sociology General Annual Crops Principles of Livestock Production Agricultural Policy General Vegetable Production General Perennial Crops Principles of Organic Farming General Fruit Production Field Attachment	3.0 3.0 3.0 2.0 3.5 3.5 3.0 4.0 3.0 2.5 4.0 4.0	Outreach Program Project Implementation and Evaluation Management of Micro and Small Businesses Animal Health, Food Borne and Zoonotic Diseases Plant Pathology Agro Forestry Agricultural Economics II Gender and Development World Food Issues and Climate Change	3.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0
PLO 2. Equip students with skills necessary for improving the physical, psychological and socio-economic development and well-being of individuals, families and the community	Social Psychology of Families and Community Family Development Principles of Human Nutrition	2.0 3.0 3.0	Human Health and Sanitation Human Development Consumer Education Violence in the Family and Community Family and Community Resource Management Group and Community Dynamics Natural Resource Utilization and Conflicts	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Appropriate Technology I Appropriate Technology II Community Nutrition and Health Agriculture Economics I Rural Sociology General Annual Crops Principles of Livestock Production General Vegetable Production General Perennial Crops Principles of Organic Farming General Fruit Production	3.0 3.0 4.0 3.0 2.0 3.5 3.5 4.0 3.0 2.5 4.0	Gender and Development Housing Improvement Project Implementation and Evaluation Management of Micro and Small Businesses Agro Forestry Plant Pathology World Food Issues and Climate Change Community Consultancy Outreach Program	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0

PLO 3. Impart students with research skills to effectively address issues affecting the quality of life of individuals, families and communities.		3.5	Statistics for Agriculture Consumer Education Human Health and Sanitation Violence in the Family and Community Family and Community Resource Management Human Development	3.0 3.0 3.0 3.0 3.0 3.0	Extension Methods in Human Ecology Appropriate Technology I Project Planning and Management Research Methods Community Nutrition and Health	3.0 3.0 3.0 3.0 4.0	Research Project Seminars Management of Micro and Small Businesses Agro Forestry Gender and Development Housing Improvement World Food Issues and Climate Change Community Consultancy Outreach Program	3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0
PLO 4. Equip students with knowledge and skills to facilitate development among individuals, families and communities in the areas of agriculture and resource mobilization and utilization	Introduction to Agric. Human Ecology and Extension Human Aspects in Extension and Development Social Psychology of Families and Community Introduction to academic Communication Skills Soil Science Principles and Practices of Horticulture Law and Society General Botany Environmental Education General Inorganic and Physical Chemistry Introduction to Organic Chemistry	3.0 3.0 2.0 3.0 3.5 3.0 3.0 3.0 3.0 3.0 3.0	Consumer Education Violence in the Family and Community Family and Community Resource Management Human Health and Sanitation Basic Biochemistry Natural Resource Utilization and Conflicts Group and Community Dynamics Human Development Entrepreneurship in Human Ecology Accounting and Costing of Projects	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Extension Methods in Human Ecology Agriculture Economics I Appropriate Technology I Appropriate Technology II Project Planning and Management Research Methods General Perennial Crops Principles of Organic Farming General Fruit Production	3.0 3.0 3.0 3.0 3.0 3.0 2.5 4.0	Gender and Development World Food Issues and Climate Change Community Consultancy Agricultural Economics II Project Implementation and Evaluation Research Project Seminars Housing Improvement Outreach Program Animal Health, Food Borne and Zoonotic Diseases Plant Pathology Management of Micro and Small Businesses Agro Forestry	3.0 3.0 3.0 3.0 4.0 2.0 2.0 3.0 3.0 3.0 3.0 3.0

BACHELOR OF SCIENCE IN CLOTHING, TEXTILE AND INTERIOR DESIGN

1. Philosophy of the programme

Producing creative, innovative hands-on graduates, with a basis on scientific principles and practices for advancement of humanity.

2. Rationale of the Programme

Despite considerable technological progress, a noticeable degree of poor housing, interior design, health and sanitation prevails in both rural and urban areas. The programme aims at producing a cadre of trained professionals, who will advise and demonstrate approaches and techniques of positively altering the living environment, in order to enhance the quality of life of individuals. Moreover, there is growing demand for competent personnel in the areas of Clothing, Textiles and Interior Design with increased opportunities created by East African Federation, COMESA, and the international markets.

3. Goal of the programme

The goal of the program is to train competent graduates in the areas of Clothing, Textiles and Interior Design;

4. Programme learning outcomes

Upon the completion of the programme, the graduates are expected to:

PLO 1: Solve design problems related to the living environment.

PLO 2: Solve problems related to clothing needs of individuals.

PLO 3: Create employment both for themselves and others.

PLO 4: Undertake research in the areas of Clothing, Textiles and Interior Design.

PLO 5: Pursue further education in the areas of Clothing, Textiles and Interior Design.

2.5.2 Specialization

The programme does not have any specialization.

5. Mode of delivery of the programme

The programme has two modes of delivery, namely full-time and part time.

6. Academic regulations for the programme

6.1 Admission Requirements

Candidates must satisfy entry requirements for Egerton University as outlined in the Egerton University statutes of 2013 articles 36 (2). In addition, the programme requires that:

- Candidates must have passed the Kenya Certificate of Secondary Education at the minimum grades as indicated below:
 - Biology C+ or Biological Sciences B-
 - Chemistry C+ or Physical Sciences B-
 - Mathematics C+
 - English/Kiswahili C+
- Candidates with a diploma of at least a credit from an institution recognised by Egerton University Senate may also be considered.

6.2 Regulations on credit transfer in the programme

Credit transfer shall adhere to Egerton University statutes of 2013 article 36 (3) for undergraduate.

6.3 Course requirements

Course requirements shall adhere to Egerton University ISO procedure on teaching document number EU/AA/OP/06 rev 3.

6.4 Student Assessment policy/criteria

Student assessment shall adhere to Egerton University statutes of 2013 articles 36 (6).

6.5 Grading system

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (5) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations stipulated in the Egerton University Statute 36 (5) of 2013; and work instruction number EU/AA/OP/07

6.7 Moderation of examination

Internal and external moderation of examinations in the programme will be guided by statute articles 36(5) of 2013 and ISO procedure number EU/AA/OP/07 (6.3).

6.8 Graduation Requirements

A student shall be required to cover a minimum of 169.5 credit hours. This will include an attachment/practicum period of not less than eight weeks.

6.9 Classification of degrees

Degree classification shall be in accordance with Egerton University Statute 36 (17) of 2013.

7. Course evaluation

All courses in the programme will be evaluated using course evaluation tools as shall be provided by the university. Internal and external moderation for all exams will also be done.

8. Management and administration of the programme

8.1 Host department and programme academic leader

The programme is housed in the department of Applied Community Development Studies (ACDS) in the Faculty of Education and Community Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal program evaluation at the end of every academic cycle of 4 years and will be benchmarked with relevant educational institutions

8.3 Course Coding

Coding for the programme will be prefixed by **CTID**, standing for Clothing, Textile and Interior Design. This will be followed by a three digit figure. Starting from the left,

- i. The first digit represents the year in which the course is offered.
- ii. The second digit represents the area of study as follows:
 1. Interior Design studies
 2. Textile studies
 3. Clothing or Apparel Design studies
 4. Professional studies in Textiles, Apparel and Interior Design
- iii. The third digit denotes the serial number in the academic year, within the area of study. This starts from one.

9.0 Courses offered by the programme

9.1 Schedule of Courses

a) University Common Core Courses for the programme:

CODE	TITLE	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
COMP 101	Introduction to Computer Application	45	30	3.5
ENSC 100	Environmental Education	30	30	3.0
PHIL 106	Law and Society	45	0	3.0
	TOTAL	165	60	12.5

b) Schedule of courses Offered

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
CTID 111	Introduction to Fundamentals of Design	15	30	2.0
CTID 121	Introduction to Fibres and Fabrics	30	30	3.0
CTID 131	Introduction to Clothing Construction	15	60	3.0
CTID 133	Factory Equipment Management	15	30	2.0
CTID 141	Economics for Design	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
	TOTAL	120	150	13.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F
CTID 112	Fundamentals of Freehand Drawing	15	45	2.5
CTID 113	Advanced Fundamentals of Design	15	45	2.5
CTID 114	Introduction to Interior Design	30	30	3.0
CTID 122	Textile Science	45	0	3.0
CTID 132	Principles of Clothing Construction	15	60	3.0
COMP 101	Introduction to Computer Application	45	30	3.5
PHIL 106	Law and Society	45	0	3.0
	TOTAL	210	210	25.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
CTID 211	Materials for Interior Design	30	30	3.0
CTID 212	History of Interior Design	45	0	3.0
CTID	Technical Drawing for	15	60	3.0

213	Designers			
CTID 221	Textile Care and Maintenance	15	60	3.0
CTID 222	Surface Decoration Techniques	15	60	3.0
CTID 231	Introduction to Clothing Pattern Designing	15	60	3.0
CTID 241	Principles of Fashion Marketing	45	0	3.0
	TOTAL	180	270	21.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
CTID 214	Construction of Interiors	30	30	3.0
CTID 215	Ergonomics	15	60	3.0
CTID 223	History of Textiles I	45	0	3.0
CTID 224	Fabric Construction Techniques	15	60	3.0
CTID 232	Clothing Pattern Designing for Ladies wear	15	60	3.0
CTID 242	Principles of Fashion Merchandising	45	0	3.0
CTID 243	Environmental Psychology	45	0	3.0
	TOTAL	210	210	21.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
CTID 311	Computer Aided Drawing & Design	15	60	3.0
CTID 312	Textiles for Interiors	45	0	3.0
CTID 321	History of Textiles II	45	0	3.0
CTID 322	Printing Techniques	15	60	3.0
CTID 331	History and Design of Costume	15	60	3.0

CTID 332	Fashion Illustration	15	60	3.0
CTID 341	Statistical Methods in Design	45	0	3.0
	TOTAL	195	240	21.0

YEAR 3 SEMESTER2

CODE	TITLE	L	P	C.F
CTID 313	Introduction to African Art & Design	30	0	2.0
CTID 314	Soft Furnishings for Interiors	15	60	3.0
CTID 315	Furniture and Fittings	15	60	3.0
CTID 323	Textile Testing	15	60	3.0
CTID 333	Multi-Media Crafts	15	60	3.0
CTID 334	Production Organization & Quality Management	45	0	3.0
CTID 342	Research Methods in Design	45	0	3.0
	TOTAL	180	240	20.0

END OF YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
CTID 316	Project in African Art and Design	0	60	2.0
CTID 343	Industrial Attachment	0	120	4.0
	TOTAL	0	180	6.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F
CTID 411	Exhibition & Display Design	15	60	3.0
CTID 412	Practical Home Planning	15	45	2.5
CTID 413	Interior Design Studio	30	30	3.0
CTID 414	Interior Design Project	15	60	3.0
CTID	Clothing Pattern	15	60	3.0

431	Designing for men'swear			
CTID 432	African Dress	15	60	3.0
HORT 362	Interior Scaping and Ornamental Architecture	30	30	3.0
	TOTAL	135	375	21.5

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F
CTID 433	Haute' Couture Techniques	15	60	3.0
CTID 434	Apparel Construction & Renovation	15	60	3.0
CTID 435	Pattern Grading & Computer Aided Design	15	60	3.0
CTID 441	Seminars in Textiles, Fashion and Interior Design	15	45	2.5
CTID 442	Research Project in Design	15	60	3.0
CTID 443	Entrepreneurship in Design	45	0	3.0
CTID 444	Human Resource Management in Fashion & Interior Design	30	0	2.0
	TOTAL	150	285	19.5

(c) COURSE DESCRIPTIONS

CTID 111: Introduction to Fundamentals of Design (2.0: 15/30) YI S1

Definition of design and art. History of design through the African and Western worlds. Form and function in design. Design for human need. Elements and principles of design. Design process. The significance and importance of design in human life.

CTID 112: Fundamentals of Freehand Drawing (2.5: 15/45) YI S2

The brain and thought /thinking processes; creativity Process; thinking and human communication; imagination and images. Communicative content in

symbols, images, signs, and pictures. Visual communicational levels. Manipulative techniques of elements and principles of art and design to create and synthesize images in space. Still life, close-ups, etc. Reduction and enlargement of images. Portraiture; rendering techniques in shades and colour. Aesthetics in images and pictures.

CTID 113: Advanced Fundamentals of Design (2.5:15/45) Y2 S1

Introduction to spatial relationships (organization of two and three-dimensional spaces) of natural form (observation of surface patterns and textures). Construction and proportion of forms and shapes. The golden section and geometrical dimensional principles in layout design; optical illusion using line geometrical forms and shapes; illuminated space studies. The nature of colour- primaries including additive, subtractive and medial; secondary and tertiary colours. The natural order of colour- discordant colours and their applications in clothing, textiles and interiors; use of watercolour, gouache, felt-pens and using brushes and other drawing and painting equipment; colour notation. The Munshell colour system; pastel tints and shades; colour mixing to graded scales of grey; hues and tones; the use of pencil crayon to modify gouache; colour harmony; psychology of colour; colour rendering; textures and applications; colour and safety in industry. Planning basic colour schemes for clothing, textiles and interiors. (*Prerequisite: CTID 111*)

CTID 114: Introduction to Interior Design (3.0:30/30) YI S2

Concepts of Interior Design and the creation of desirable interior environments. Examination of structural elements, period styles, furnishings, fittings, and related materials and techniques. Application of the elements and principles of art and design in Interior Design. Functional, social and aesthetic considerations in

creating interior spaces for human comfortability and livability.

CTID 121: Introduction to Fibres and Fabrics (3.0:30/30) Y1 SI

Introduction to textile fibres, their origin, production & properties. Analysis of the relationship between the fibre structure, composition, properties and performance. Principles of yarn construction, basic fabric construction, basic fabric finishes.

CTID 122: Textile Science (3.0:45/0) Y1 S2

Introduction, classification and definition of fibres; molecular, macro and micro structure of fibres; morphological properties of fibres; moisture absorption properties of textiles; mechanical properties of fibres; thermal, optical and electrical properties of fibres; structures, properties and identification of commodity textile fibres; introduction to high performance textile fibres; classification and structure of textile yarns; mechanical properties of textile yarns; classification of textile fabrics; performance and properties of fabrics for apparel; introduction to textile testing quality evaluation. (*Prerequisite: CTID 121*)

CTID 131: Introduction to Clothing Construction (3.0:15/60) Y1 SI

Introduction to basic sewing tools and equipment, their use and maintenance i.e measuring tools, marking tools, pressing/ironing tools, sewing tools and their accessories. Introduction to the sewing machine, use and care. Fundamentals of clothing assembling techniques: stitches, seams, control of fullness, facings, openings, fastenings, edge finishes; use of support fabrics.

CTID 132: Principles of Clothing Construction (3.0:15/60) Y1 S2

Collars, sleeves, pockets, cuffs and waist bands. Use of support fabrics. Taking of body measurements.

Garment construction using commercial patterns. Selection of pattern, fabric and notions. Pattern and fabric preparation, pattern layout, cutting and transfer of markings. Preparation and assembling of a complete garment. Finishing and presentation of the finished garment. (*Prerequisite: CTID 131*).

CTID 133: Factory Equipment Management (3.0: 30/30) Y1 S1

Types of sewing machines and tools in the clothing factory, cutting and pressing equipment, Lubricating systems, Needles and threads, Stitch formation and types of machine stitches.. Sensor and micro processor controls, semi automatic and fully automated units, machine attachments. Fixed cycle and multi needle machine, Safety and health in the workshop; Basic care and maintenance of garment production equipment.

CTID 141: Economics for Design (3.0:45/0) Y1 S2

Basic concepts in economics: Elements of demand and supply; Determinants of market prices; economies of scale; elasticity; market structures and market analysis, competition. Methods of allocating resources, the theory of production, the money market and inflation, determinants of national income distribution. Theory of exchange rates, employment and poverty. The role of the textile, apparel and design. Industry in the national economy. Fashion trends and national economy.

CTID 211: Materials for Interior Design (3.0: 30/30) Y2S1

Man's relationship to his physical environment–sensory perception; anthropometrics; performance, movement, function growth; functioning of human body in relation to tools, machines, and the work/living environment. Shelter and comfort requirements, thermal acoustics and lighting considerations. The importance of the human being in his environment. Analysis of the anthropometrics (physiological and psychological); use of CAD in ergonomics

CTID 212: History of Interior Design (3.0: 45/0) Y2S2

History of Interior Design from the earliest to the present. Relationship of architecture to Interior Design. Examination of Interior Design trends in various historical periods. Consideration of landscape in relation to the development of Interior Design.

CTID 213: Technical Drawing for Designers (3.0: 15/60) Y2S1

Drawing equipment, setting out, use of scale, dimensions, lettering, construction of geometric shapes (circles, triangles, ellipse) Lines and their bisection, Angles and their bisections. Polygons. Pictorial Drawings.

CTID 214: Construction of Interiors (3.0: 15/60) Y2S2

Basic principles of construction; measuring buildings; structural materials; foundations and external walls, windows and external doors; roofs; floors and ceilings; partitions; stairs; and surfaces; Environmental services. (*Prerequisite: CTID 211*)

CTID 215: Ergonomics (3.0: 15/60) Y2 S2

Man's relationship to his physical environment–sensory perception; anthropometrics; performance, movement, function growth; functioning of human body in relation to tools, machines, and the work/living environment. Shelter and comfort requirements, thermal acoustics and lighting considerations. The importance of the human being in his environment. Analysis of the anthropometrics (physiological and psychological); use of CAD in ergonomics (*Prerequisites: CTID 112, CTID 113*)

CTID 221: Textile Care And Maintenance (3.0 15/60) Y2 SI

Principles involved in selection, care and use of textiles as relates to their original fibre and textile properties.

Identification, choice, use, care and maintenance of cleaning materials, equipment and appliances used in laundry work. Analysis of different types of soiling matter on textiles. Laundry processes to include sorting, repair, stain removal, washing procedures, finishing and storage of different textile products. Care labelling and special care given to special textile articles including dry-cleaning, wet cleaning, sponging vacuum cleaning e.t.c (*Prerequisite CTID 121*).

CTID 222: Surface Decoration Techniques (3.0:15/60) Y2 SI

Types of surfaces subject to transformation using the various surface decoration techniques i.e. textile fabrics, walls, floors, wall hangings tableware, tiles, wood, paper etc. Surface decoration using various dyes and dyeing methods, painting, tie-dye, batik, printing, spraying, tapestry, needle point, quilting, patchwork, motifs, beadwork, sequins, embroidery, applique and related techniques. Finishing processes of end product and presentation of such fabrics. (*Prerequisite CTID 121, CTID 122*).

CTID 222: Textile Testing (3.0:15/60) Y2 SI

Fibre morphology & the chemical structure in relation to fibres, yarns and fabric properties. Planning, carrying out and reporting of textile tests. Equipment and tools used in carrying out various tests. Fibre identification procedures. Importance of textile testing to the textile industry and the consumer. Formulation of standards and working with specifications. (*Prerequisite CTID 121, CTID 122*).

CTID 223: History of African and Asian Textiles (3.0: 45/0) Y2 S2

Historical development of tools and equipment for textile production in Africa and Asia. Historical development of Africa and Asia textiles to include textiles for costumes and enrichment of architectural interiors. Factors influencing design and production of

textiles in Africa and Asia. Contemporary influences and uses of textiles from Africa and Asia.

CTID 224: Fabric Construction Techniques (3.0:15/60) Y1 S2

Comparison of industrial and hand processes in the production of fabrics. Types of equipment, tools, fibres, yarns, and structural design in fabrics. Techniques of fabric construction such as weaving, knitting, felting, bonding, laminating, matting etc. Analysis and design of various techniques of fabric construction. (*Prerequisite CTID 121*).

CTID 231: Introduction to Clothing Pattern Designing (3.0:15/60) Y2 S1

Introduction to pattern designing, tools and equipment; Taking body measurements and reading the size charts; Methods of pattern designing; Stages of pattern development; Pattern instructions and pattern marks; Construction of basic blocks (bodices, skirts, one piece dress and sleeves) for girls and ladies using standard and individual body measurements. i.e. Bodices, skirts, dresses, sleeves, trousers; Identification of body changes and their effect on children's blocks; analysis of garment fit, basic pattern alteration; definition of terms, making a sample Childs' garment using Toile and developing it into a final garment. (*Prerequisites: CTID 121, CTID 131, CTID 132*).

CTID 232: Clothing Pattern Designing for Women's Wear (3.0:15/60) Y2 S2

Types of basic blocks; Positioning of darts and dart principles, their manipulation to create bodice designs; Using darts to create intricate designs; Use of adult figure body measurement to create basic blocks for bodices, skirts, dresses, sleeves, trousers; Developing various garment styles patterns using basic blocks; Free hand cutting method; Developing garment details such as: necklines, opening and facings, collars, sleeves, pockets cuffs and waistbands; Developing final patterns for a specific design; Application of computers in

pattern development. (*Prerequisites: CTID 121, CTID 131, CTID 132, CTID 231*).

CTID 241: Principles of Fashion Marketing (3.0: 45.0) Y2S1

The fashion marketing and environment; Fashion product development and production; The relationship between company and both domestic and international markets; The fashion marketing mix, Pricing policies and distribution; channels; loyalty and fashion brand equity; Fashion consumer behaviour; Strategic and operative planning; Selection of target markets, definition and segmentation; The fashion marketing planning process; and the different approaches to planning, Impact of internal and external environment on the decision-making process; The Fashion marketing plan, periodic monitoring of plan, coordination of real activities. The importance of the various sectors of the fashion industry.

CTID 242: Principles of Fashion Merchandising(3.0: 45.0) Y2 S2

Principles of merchandising as applied in business organisations. Study of planning, development and presentation primarily, of textile and apparel product lines. Detailed investigation and analysis of fundamentals of fashion, and trends of merchandising in clothing and textiles for interiors, with emphasis on problem solving. Orientation to field experiences, and careers in merchandising.

CTID 243: Environmental Psychology (3.0:45/0) Y2 S2

The science of environmental psychology (EP); effects of physical and social environment on humans; effects of urban congestion, industrial/ residential zoning, suburb development and pollution on behaviour; long-term effects and immediate responses to environmental stimuli; psychological and emotional responses to environmental stimuli, space, colour sound, materials

and surface qualities. Effects of environments on emotions such as dominance, pleasure or arousal and the consequences of such primary emotional responses for behaviour—approach or avoidance; consideration of tension, tiredness and stress arising from task situations within the home and working place. Provision of furniture and equipment for relaxation. The application of this to design of interiors for recreation, living, entertainment, working place, etc.
(*Prerequisite: CTID 113*).

CTID 311: Computer Aided Drawing and Design (3.0: 15/60) Y3 S1

Computer Aided Designing of floor plans, elevations, perspectives, rendering, shadowing, lighting, and colour applications using computer software. Development of interior design portfolio.

CTID 312: Textiles for Interiors (3.0: 45/0) Y3 S1

Development and Fashion trends in textiles for interiors with reference to types of fibres and yarns, fabric construction and finishing and surface decoration. Selection and maintenance of suitable textiles for furniture, floors, walls, windows, and fittings in residential, Institutional, commercial and leisure premises. Product labelling procedures and market analysis of textiles for interiors. (*Prerequisites: CTID 121, CTID 221, CTID 222, CTID224*)

CTID 313: Introduction to African Art and Design (2.0:30/0) Y3 S2

Survey of African Art and Design from the earliest times to the present. Historical and Geographical factors. Socio-cultural, economic, and political aspects of African material culture. Emphasis on art forms and design, patronage systems, iconography, materials, and techniques. Impact of colonization on African art and design. Impact of African art and design on 20th Century European artists. Focus on the art and design of Kenyan communities. Contemporary use in all aspects

of creative material culture and art, including clothing, textiles and interior design.

CTID 314: Soft Furnishings For Interiors (3.0: 15/60) Y3 S2

Identification of various soft furnishings and their use in interior spaces such as windows, furniture (upholstery), floors, walls and other interior fittings and accessories. Procedures, processes and material involved in designing and production of various soft furnishings. Hands on skills/techniques in/and production of selected soft furnishings for use in interiors. Preparation and production of sample items. (*Prerequisites: CTID 121, CTID 221, CTID 222, CTID224, CTID 312*)

CTID 315: Furniture & Fittings (3.0:15/60) Y3S2

Design fundamentals as they apply to furniture and fittings. Basic furniture styles. Evolution of basic furniture styles. Exploration of different characters created in a room by use of different furniture styles. Exploration of fittings and fixtures used in the design of interiors. Appliances, bathroom wear, taps and faucets, light switches, light fittings, mirrors, door handles and locks. Selection of furniture and fittings.

CTID 316: Project in African Art and Design II (2.0:0/60) (End of year 3)

A field trip to any part of Kenya to view the production, application, and function of African art and design in historic and contemporary clothing, textiles and interior design. Visits to craft centres, shopping malls leisure resorts and restaurants, parks, museums, etc. to gather data on the use of African art and design, and to gather ideas and motifs for use in individually—selected projects in any area of specialisation in clothing, textiles and interior design. The project can take any form so long as it relates to any one area of Clothing, Textiles or Interior Design (*Prerequisite CTID 313*).

CTID 321: History Of Textiles II (3.0:45/0) Y3S1

Historical development of tools and equipment for textile production in Europe and America. Historical development of European and America textiles including textiles for costume and enrichment of architectural interiors. Factors influencing the design and production of textiles Europe and America.

CTID 322: Printing Techniques (3.0:15/60) Y3 S1

Introduction to basic printing methods and development of the printing industry. The scope of these subject objective is defines in the form of competence from which the enabling knowledge, skills and attitude have been developed. There are five strong areas of study of screen printing that can help you understand the subject better. These are; Image planning designing and making (designing motifs and patterns suitable for screen printing for different articles) Image-carrier making process (preparing stencils and screen – frames) Image – printing (executive screen printing) and print finishing processes (print fixing) Quality control and adding value to sellable screen prints (finishing skills including packaging and addition of embellishment.
(*Prerequisite: CTID 121*)

CTID 323: Textile Testing (3.0 15/60) Y3 S2

Fibre composition and morphology in relation to fibres, yarns and fabric properties. Determination of physical and chemical properties of fibres, yarns and fabrics. Planning, carrying out and reporting of textile tests. Equipment and tools used in carrying out various tests. Fibre identification procedures. Importance of textile testing to the textile industry and the consumer. Formulation of standards and working with specifications. Quality control for textiles and apparel fabrics. (*Prerequisites: CTID 121, CTID 122, CTID224*)

CTID 331: History and Design of Costumes (3.0:15/60) Y3 SI

The history of world fashion, its evolution and significance from ancient times to the present. Factors associated with the development of costumes and their styles. Types of specific costumes e.g. academic gowns, religious regalia, theatrical and political garments. *(Prerequisite CTID 223)*

CTID 332: Fashion Illustration (3.0: 15/60) Y3 S1

Principles and techniques of illustrating different figure postures and garment details. Development of techniques in different media, stressing elements and principles of design. Preparation and presentation drawings and boards for fashion design. *(Prerequisites: CTID 111, 112, CTID 113, CTID 131).*

CTD 333: Multi-Media Crafts (3.0 15/60) Y3 S2

The concept of crafts and characteristics; Content and origin; Role of crafts in the society; Categories of crafts; Tools, equipment and materials; Factors impacting the production of crafts; Organizations involved in promoting commercial crafts, Developing a design brief; Designing patterning and making various craft items; Sources of inspiration; Application of elements and principles of design; Role of colour in crafts; Health and safety issues in a craft workshop; Combining skills and materials to make specific craft items; Application of crafts in event and interior décor; Branding and packaging of craft items; Use of waste and recycled materials to make crafts; Undertaking projects that are multi-functional and aesthetically appealing; Use of natural and recycled materials to make craft items. *(Prerequisites: CTID 111, CTID 131, CTID 232, CTID 222, CTID 312).*

CTID 334: Production Organization and Quality Management (3.0: 45/0) Y3 S2

The concept of production management; Garment manufacturing systems; Organizational charts and work

schedules; Management Service; Production organization planning; Control systems; Fabric acquisition; Cutting room practice; Sewing room practice; Finishing room; Quality standards and Quality assurance; Quality Maintenance; Quality documentation; Customer satisfaction; Environmental factors on quality standards.

CTID 341: Statistical Methods in Design (3.0:45/0) Y3 S1

Descriptive and inferential statistics, eliminatory probability, estimation, estimation, hypothesis testing, linear regression, analysis of variance. Statistical methods used in textiles, apparel and design.

CTID 342: Research Methods in Design (3.0:45/0) Y3 S2

Meaning; purpose and principles of conducting research. Types of research design and methods, data collection procedures and organisation techniques. Use of statistical methods in data analysis and interpretation. Report writing, dissemination and utilisation of research results. Writing a research proposal.

CTID 343: Industrial Attachment (4.0:0/120) END OF YEAR 3

Briefing. Selecting attachment places. Submitting student' list BUGs. HELB loans application. Processing insurance. Application for field attachment to the organization, follow-up, reposting, Final briefing. Collecting materials to be used during the attachment. Reporting for attachment. Monitoring and Assessment. Filling in the log book, preparing a portfolio and report writing.

CTID 411: Exhibition and Display Design (3.0: 15/60) Y4 S1

Introduction to basic concepts of exhibition and display design. Exhibition Structures and materials; display lettering. Audience/spectator control factors. The effect

of lighting, colour and assembling on exhibitions. Cost of exhibits and exhibition systems. Ergonomic considerations: lighting, colour, security, acoustics. Application of this information in various small and large exhibition projects and design problems. Types of exhibits. Production and studio techniques. Specifications and dimensions of exhibits. Display and layout techniques of merchandise in exhibition. Aesthetics in exhibition design. Advanced lighting techniques, colour and special effects in exhibition such as mobiles. Use of audio-visual operatives and computer applications in exhibition and display design. Organizing and managing types of exhibitions. Large scale exhibitions and displays, e.g., international trade fair, industrial and commercial displays, educational and expositions, museum and art gallery exhibitions and displays. Students to visit various exhibition and display shows e.g. ASK Shows.

CTID 412: Practical Home Planning (2.5: 15/45) Y4 S1

Environment for living; Selecting the community, selecting the lot. Unitary house and landscape design. Contemporary exterior design; judging exterior design. Landscape:- planning the landscape; foreground, private area, service area, formal landscaping, informal landscaping, materials of landscape design. House planning: cost, expressiveness, function, beauty, orientation, circulation, floor plan room by room, interior wall elevation. Basic types of house plans: square, rectangular, L- shaped, T- shaped, U & H – shaped cruciform and cluster, diagonal and curved, court and patio. Exterior house design: - Cape cod, Dutch colonial, Georgian, Regency French house, non – period, modern, Jamaican. Effect of materials and construction techniques on house design. Beauty and Individuality.

CTID 413: Interior Design Studio (3.0:30/30) Y4 S1

The design and development of an interior design studio. Studio organisation and management. Planning for the studio layout; students actually plan, design and set up a model studio including, the development of a product line or service line. Design coordination, costing, sample making, specifications, and resource selection. Supervisory duties in a design studio. Types of design studios and their similarities and differences. Simplification of work in an interior design studio. *(Prerequisite: CTID 411).*

CTID 414: Interior Design Project (3:15/60) Y4 S1

Problem identification for the project. Project design concept development-individually conceived, designed and executed. Exploration of form and content, function, aesthetics, techniques, materials, tools and their application in solving the interior design problem. Development of specific production skills as applied in the execution of the design project. Cost implications of the project. *(Prerequisites: CTID 312, CTID 314).*

CTID 431: Clothing Pattern Designing for Men's Wear (3.0:15/60) Y4 S1

Introduction to men's wear design, taking body measurements, developing patterns from the size chart and individual body measurements. Designing the basic patterns for shirt, trouser and jacket. Selecting fabrics for men's boys wear, designing men's outer wear for sports, career and industrial garments. Bespoke tailoring for men and boys. *(Prerequisites: CTID 131, CTID 132, CTID 231, CTID 232).*

CTID 432: African Dress (3.0: 15/60) Y4 S1

Introduction and definition of terms; Dress, Clothing; African body covers; hides, bark cloths, and banana fibres; Dress from various regions of Africa; South, West, Central, Eastern; Dress of various Kenyan communities and their religious, economic, political and

social significance; Fabric decoration techniques; dyeing, weaving, and printing; Fabric Production techniques; weaving, felting; Interrelationships between African costumes and costumes from other parts of the world. *(Prerequisites: CTID 223, CTID 321, CTID 331).*

CTID 433: Haute Couture Techniques (3.0:15/60) Y4 S2

Tailoring customized designers' outfits, pricing of branded apparel as applied in children's, women's and men's wear. Fundamental principles of tailoring as found in custom-made to measure and factory produced garments. *(Prerequisites: CTID 131, CTID 132, CTID 231, CTID 23, CTID 431).*

CTID 434: Apparel Construction & Renovation (3.0: 15/60) Y4 S2

Apparel construction techniques as applied to advanced fabrications and special fabrics. Remodelling existing designs to create new effects by use of different accessories, appliqué, topstitching, ribbons, pleats etc. Repairing garments by various methods. *(Prerequisites: CTID 131, CTID 132, CTID 231, CTID 232, CTID 431).*

CTID 435: Pattern Grading and Computer Aided Design (3.0:15/60) Y4 S2

Computer aided design in fashion/textiles and pattern cutting. Block chopping, piece cutting, marking fabrics, binding and ticketing. Grading pattern, Grade rule libraries, digitizing patterns, different methods of grading, conceptual understanding of grading techniques and development of skills necessary for increasing and decreasing a standard size pattern to a range of sizes. *(Prerequisites: CTID133, CTID 311 & COMP 101).*

CTID 441: Seminars in Textiles, Fashion And Interior Design (2.5:15/45) Y4S2

Close examination of problems, issues and methods of the study of Clothing, Textiles and Interior Design. Individual reports and selected topics or projects representative of current problems, trends and developments in Fashion and Interior Design.

CTID 442: Research Project in Design (3.0:15/60) Y4 S2

Individual student will choose his/her research design project. Choice of topic area will be done by the student with the assistance of the staff and approved by the department. The aim of the research project is to develop research capabilities and the capacity of the student to investigate a design problem in detail and in depth and present a complete study of the problem and its solution as the final year design research project. The research project will be based on any of the major areas of study as outlined in the second semester of third year or first semester of fourth year in either Clothing, or Textiles or Interior design *(Prerequisites: CTID 341, CTID 341)*

CTID 443: Entrepreneurship in Design (3.0/45/0) Y4 S2

Development of informal sectors enterprises. Marketing and market development strategy. Sources of capital. Risk theory; creating and starting a small business. Proposal preparation for raising business capital. Methods of selling. Competition. Means-place-time concept in business management. Growing with the business. Total quality management. Use of computers in business management. Types of business to start in Clothing, Textiles and Interior design. Relations with your lawyer, Bank manager and accountant or/and income tax expert.

CTID 444 Human Resource Management in Design (3.0:45/0) Y4 S2

Introduction to human resource management; Functions and principles of human resource management; Role of human resource practitioner, professionalism in human resource management; Organizational structure; Improving Organizational effectiveness; Job design; Human resource planning; Motivation; Compensation; Training and development; Evaluating human resource functions; Methods of evaluation and evaluation criteria; Labour laws and industrial relations; Management of change; Conflict management.

9.2 SERVICE COURSE OFFERED TO OTHER DEPARTMENTS**PCTI 311: Creative Arts and Craft (3.0: 30/30)**

Elements and principles of art, drawing and design. Drawing techniques: Line of symmetry, optical center line, grid and diagonal ruler drawing, tracing and drawing from imagination and observation methods. Colour work: theory and practice, using different media. Multi-media techniques for craft production. Printmaking techniques: layout, illustration and typography, designing simple posters, cards, handbills etc. printing processes. Introduction to computer graphics: designing layout, letters cards and posters using a PC and a computer printer.

CTID 431: Practical Thinking Skills (3.0/45/0)

Introduction to practical thinking: Definitions, Scope, stages of Child development and related theories. Human brain: functions and characteristics of right and left hemisphere. Brain development steps: Memory, Attention, Speed, Flexibility, Problem Solving. Learning styles: Visual, Audio, Kinaesthetic learning (VAK); Pragmatists, Theorist, Activists, Reflectors. Techniques of enhancing practical thinking: Role play, questions and answers, brainstorming, mind mapping, games and stories. Assessment of practical thinking

skills

9.3 Matrix Aligning courses/units to programme learning outcomes

Programme Learning outcome	Year 1		Year 2		Year 3		Year 4	
	Course title	CF	Course title	CF	Course title	CF	Course title	CF
PLO 1 Solve problems related to the living environment	Fundamentals of Freehand Drawing	2.5	History of Interior Design	3.0	Soft Furnishings For Interiors	3.0	Exhibition & Display Design	3.0
	Introduction to Fundamentals of Design	3.0	Technical Drawing for Designers		Ergonomics		Practical home planning	2.5
	Advanced Fundamentals of Design		Construction of Interiors	3.0	Textiles for Interiors	3.0	Interior design Project	
	Introduction to interior Design	2.5	Ergonomics		History of African Art I		Interior Design Studio	3.0
		3.0	Surface Decoration Techniques		History of African Art I	3.0	Interior scaping and Ornamental architecture	
			Environmental Psychology	3.0	Computer Aided Design	3.0		3.0
PLO 2 Solve problems related to the clothing needs	Textile Science	3.0	Principles of Fashion Merchandizing	3.0	History of African and Asian Textiles	3.0	Clothing Pattern Designing Ifor Men's wear	3.0
	Principles of Clothing Construction I		Surface Decoration Techniques		History and Design of Costume		African Dress	
	Introduction to Fibres and Fabrics	3.0	History of Textiles	3.0		3.0	Haute Couture Techniques	3.0
	CTID 131 Principles of Clothing Construction I	3.0	Fabric Construction Techniques	3.0	Fashion Illustration		Pattern Grading and Computer Aided Design	3.0
			Textile Care and Maintenance		Textile testing	3.0		
		3.0	Introduction to Clothing Pattern Designing	3.0		3.0		3.0
		3.0	Clothing Pattern Designing for women's wear	3.0				
			Principles of Fashion Marketing	3.0				
PLO 3 Be competent for	Factory Equipment Management	2.0	Principles of Fashion Marketing	3.0	Production Organization &	3.0	Exhibition & Display Design	3.0
		3.0						2.5

both formal and self-employment.	Economics for Design		Principles of Fashion Merchandizing	3.0	- Quality Management - Multimedia crafts	3.0	- Interior Design Studio - Interior design Project - Entrepreneurship in Design - Human Resource management in Fashion and Interior Design	3.0 3.0 2.0 3.0
PLO 4 Undertake research in the areas of Clothing, Textiles and Interior Design				3	- Statistical Methods in - Research methods in Design	3.0 3.0	- Seminars in textiles, Fashion and Interior Design - Research Project in Design	2.5 3.0

BACHELOR OF SCIENCE IN COMMUNITY DEVELOPMENT

1. Philosophy of the Programme

Impart knowledge and skills aimed at developing strategies focused on the well-being of humans, as individuals in families, at community and national levels through quality training, learning and mentorship of our graduates capable of competently contributing to the diverse human resource in family and community resource management, sustainable development and positive livelihood development

2. Rationale

The programme aims at developing well trained and competent professionals who will adequately advise and implement strategies focused on improving community livelihoods and socio-economic development through better management and utilization of family and community resources. The graduates will also gain a wide range of skills and knowledge in areas such as project planning and management, entrepreneurship, family development, community mobilization, group and community dynamics, community consultancy, gender and development, appropriate technology etc.; these among others focus on addressing community and rural development issues.

The B.Sc. Programme in Community Development at Egerton University is unique in its own right integrating both theoretical and practical approaches to learning, critical in adequately preparing graduates for their future professional career engagements. The programme meets key employment needs in NGOs and the government sector in Kenya and globally and is in line with the university's mission of "To offer exemplary education to society and generate knowledge for national and global development"

3. Goal of the Programme

To equip learners with knowledge, skills and attitudes necessary for improving the physical, psychological and socio-economic development and well-being of individuals, families and the community

4. Programme Learning Outcomes

The Graduate will be able to use acquired knowledge, skills and attitudes to:-

- i. Demonstrate an in-depth understanding of a wide range of issues affecting individuals, families and communities.
- ii. Identify and mobilize resources for sustainable livelihood development
- iii. Demonstrate strong leadership competencies in the management of community development
- iv. Carry out analytical research with a focus on innovations for sustainable development
- v. Be adaptable to a wide range of working environment and advanced higher learning opportunities in the field of community development.

5. Mode of Delivery

The programme is offered on a full-time, School Based and E-Learning modes at Njoro Campus.

6. Academic Regulations for the Programme

6.1 Admission Requirements

All candidates who meet the University minimum admission requirements in general and more specifically the programme criterion may be admitted into the programme.

In addition, the candidates must have attained minimum grades in the following subjects:

- Biology C+ or B- in Biological Sciences
- Chemistry C+ or B- in Physical Sciences
- B- in any of the Humanity subjects

6.2 Regulation on Credit Transfer

Credit transfer shall adhere to Egerton University statutes of 2013 article 36 (3).

6.3 Course Requirements

The course requirement in the programme shall be in accordance with the ISO procedures for teaching in EU/AA/OP/06.

6.4 Student Assessment Policy /Criteria

Student assessment will be carried out in accordance with article 36(6) of Egerton University 2013 statutes for undergraduate studies.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (6) of 2013.

6.7 Moderation of Examination

Internal and external moderation of examinations in the programme will be guided by statute articles 36(5) of 2013 and ISO procedure number EU/AA/OP/O7 (6.3).

6.8 Graduation Requirements

To graduate a student shall be required to take and pass a minimum of 169 Credit Factors. This will include attachment/practicum to be undertaken for a minimum period of 8 weeks.

6.9 Classification of Degree

Degree Classification shall be in accordance with Egerton University Statute 36 (17) of 2013

7. Course Evaluation

All courses in the programme will be evaluated using course evaluation tools as shall be provided by the university.

8. Management and Administration of the Programme

8.1 Host department and Program Academic Leader

The programme is hosted by the Department of Applied Community Development Studies in the Faculty of Education and Community Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Program evaluation

The programme shall undergo an internal program evaluation at the end of every academic cycle of 4 years and will be benchmarked with relevant educational institutions

8.3 Course coding

This shall be systematic and consistent with other programmes and shall be based on the senate approved course coding policy. The letters in the code shall be reflective of the main discipline

CDEV – Denotes: C – Community; DEV – Development

Three digits are used for coding as follows:-

- i. First digit is for year of study.
- ii. Second digit is for the sub-discipline as follows:-
 1. Development studies
 2. Community studies
 3. Family studies
 4. Human development
 5. Entrepreneurship development
 6. Seminars and Field attachment.
- iii. The third digit indicates the level of the course within a sub-discipline.

9. Courses Offered for the Programme

9.1 Schedule of Courses

a) Common core courses for the programme:

CODE	TITLE	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
ENSC 100	Environmental Education	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
TOTAL		135	0	9.0

b) Schedule of courses Offered

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
CDEV 110	Introduction to Community Development	45	0	3.0
CDEV 111	Introduction to Development Studies	45	0	3.0
CDEV 130	Family Development	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
SOCI 102	Introduction to Anthropology	45	0	3.0
TOTAL		155	30	18.0

YEAR 1 SEMESTER 2

AGBM 131	Principles of Management	45	0	3.0
AGHE 112	Human Aspects in Extension and Development	45	0	3.0
CDEV 120	Social Psychology of Families and Community	30	0	2.0
CDEV 140	Early Childhood Development	30	30	3.0
CDEV 233	African Families	15	30	2.0
COMS 111	Communication Skills	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
TOTAL		255	60	19.0

YEAR 2 SEMESTER 1

AGEC 231	Principles of Marketing	45	0	3.0
AGHE 221	Consumer Education	45	0	3.0

AGHE 241	Human Health and Sanitation	45	0	3.0
CDEV 212	Community Mobilization in Development	30	30	3.0
CDEV 231	Violence in Family and Community	45	0	3.0
CDEV 232	Family and Community Resource Management	30	30	3.0
CDEV 250	Social Entrepreneurship	30	30	3.0
TOTAL		270	90	21.0

YEAR 2 SEMESTER 2

AGBM 216	Accounting and costing for Projects	45	0	3.0
CDEV 222	Community Organizations	30	30	3.0
CDEV 241	Youth and Adolescent Development	30	30	3.0
CDEV 242	Group and Community Dynamics	30	30	3.0
CDEV213	Communication Technology in Human Ecology	15	30	2.0
SOCI 204	Social Institutions	45	0	3.0
TOTAL		195	120	17.0

YEAR 3 SEMESTER 1

AGED 331	Rural Sociology	30	0	2.0
AGHE 331	Appropriate Technology 1	30	30	3.0
CDEV 314	Leadership in Development	45	0	3.0
CDEV 315	Technology and Community Development	45	0	3.0
CDEV 323	Project Planning and Implementation	45	30	4.0
CDEV 324	Management of Community Health and Sanitation	30	30	3.0
CDEV 343	Gerontology	45	0	3.0
SOCI 302	Social Statistics I	45	0	3.0
TOTAL		315	90	24.0

YEAR 3 SEMESTER 2

AGHE 313	Extension Methods in Human Ecology	30	30	3.0
AGHE 332	Appropriate Technology II	15	60	3.0
AGHE 351	Research Methods	45	0	3.0
CDEV 326	Conflict Management in the Community	30	0	2.0
CDEV 334	Family Therapy and Counselling I	30	30	3.0
CDEV 342	Maternal and Child Health	30	30	3.0
FOND 325	Community Nutrition and Health	45	30	4.0
TOTAL		225	180	21.0
CDEV 360	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

AGHE 414	Outreach Programme	15	60	3.0
AGHE 452	Research Project	0	60	2.0
CDEV 427	Projects Proposal Development	0	60	2.0
CDEV 435	Family Therapy and Counselling II	0	60	2.0
CDEV 436	Family Laws and Policy	45	0	3.0
CDEV 451	Management of Micro and Small Business	30	30	3.0
CDEV 461	Contemporary Issues in Community Development	30	0	2.0
SOCI 403	Social Statistics II	45	0	3.0
TOTAL		165	270	20.0

YEAR 4 SEMESTER 2

AGHE 418	Gender and Community Development	45	0	3.0
AGHE 435	Housing Improvement	30	30	3.0
AGHE 453	Seminars	0	60	2.0
CDEV 416	Human Displacement and Management	30	30	3.0
CDEV 417	World Food Issues and Climate Change	45	0	3.0

CDEV 428	Project Implementation, Monitoring and Evaluation	0	60	2.0
CDEV 429	Community Consultancy	45	0	3.0
EDFO 311	Adult Education	30	0	2.0
TOTAL		225	180	21.0

(c) COURSE DESCRIPTIONS**CDEV 110: Introduction to Community Development (45/0: CF 3.0) Y1S1**

Interdisciplinary approach in the study of community development. The family tree. The family structure. Community formation. Community development theories. Multiculturalism and Ethnicity.

CDEV 111: Introduction to Development Studies (45/0: CF 3.0) Y1S1

Meaning of development. Principles and concepts. Theories of development. Development problems, policies, growth and poverty. Development planning, human resource development. Characteristics of local development, context in which welfare and community development are planned and implemented. Review of existing planning and development practices. Factors increasing voluntary participation in development.

CDEV 120: Social Psychology of Families and Communities (30/0: CF 2.0) Y1S2

Theories of social psychology in relation to family and community development. Social structure and communication within the family and community, social psychological traits, social desirability and impression management in relation to family and community development. Effects of self-schema and social behaviour on the family and community. Family and community interaction. Introduction and management of change in a family and in a community organization. Sex roles and gender identity.

CDEV 130: Family Development (45/0: CF 3.0) Y1S1

Theories of family development. Developmental characteristics, behaviour and interpersonal relations among family members in various stages of family life cycle. Parent-child interrelations. Family crisis including adolescence, menopause, retirement e.t.c. Interrelationship between various stages of family life cycle and/or with community development.

CDEV 140: Early Childhood Development (45/0: CF 3.0) Y1S2

Examination of growth and development from conception through middle childhood in the family. Child health in relation to the type of family, sex, environmental conditions e.g., street children. The role of peers and schools in the community. The role of family and community ethics on the development of the child. Observations at selected community institutions e.g. orphanages, boarding primary schools

CDEV 212: Community Mobilization in Development (30/30: CF 3.0) Y2S1

Social action models. Needs for Community mobilization. Mobilization and allocation of family and community resources for sustainable development. Effective methods for improving family and community participation in projects/programmes. Problems in community mobilization. Outcomes of community mobilization. Approaches/models for community participation and development. Role of community leaders and human resource for sustainable development. Communication and adaptive research for effective community participation (Y2 S1)

CDEV 213: Communication Technology in Human Ecology (15/30: CF 2.0) Y2S2

Human aspects of communication. Role of media in human ecology extension, selection and use of appropriate instructional materials; situational assessment of family and community's communication

needs. Students to carry out practicals on design and production of the various teaching aids.

CDEV 222: Community Organizations (30/30: CF 3.0) Y2S2

Meaning, types and characteristics of community organizations; Theories of organizational behaviour; Role of community organizations in development; the material and human resource inputs, planning, organizing, power and authority controls; why and how organizations change; Evaluating organizations' ability for development in the community. Case studies of various community organizations e.g. women groups, religious groups, co-ops, youth groups, business organizations.

CDEV 231: Violence in the Family and Community (45/0: CF 3.0) Y2S1

The concept of violence in family and community. Trends of violence in family and community, predisposing factors to violence; Psychological, social and economic costs of violence in family and community. Case studies of violence in family and community: spousal abuse, child abuse, elder abuse, FGM. Advocacy for victims of abuse in family and community. Legal aspects of family violence. Management of victims and situations. Visits to crisis centres. (Pre-requisite CDEV 130) (Y2 S1)

CDEV 232: Family and Community Resource Management (30/30: CF 3.0) Y2S1

Types of family and community resources. Physical, social, cultural, economic and psychological factors influencing family and community resource management. Sustainability of community resources. Management of resources at various stages in the family life cycle. Use of community resources to improve the family levels and standards of living. Interviews with families at various stages of the life cycle. Policies

governing utilization of community resources.(Prerequisite AGBM 102, CDEV 130)

CDEV 233: African Families (15/30: CF 2.0) Y2S1

Traditions, culture, norms laws and their effects on community resource management. Cross cultural Studies of family relationship among different races, tribes in Africa. Impact of nomadic, agricultural, urban and refugee communities on development of families in Africa. Visits to various communities.(Prerequisite CDEV 120)

CDEV 241: Youth and Adolescent Development (45/0: CF 3.0) Y2S2

The concept of violence in family and community. Trends of violence in family and community, predisposing factors to violence; Psychological, social and economic costs of violence in family and community. Case studies of violence in family and community: spousal abuse, child abuse, elder abuse, FGM. Advocacy for victims of abuse in family and community. Legal aspects of family violence. Management of victims and situations. Visits to crisis centres. (Pre-requisite CDEV 130) (Y2 S1)

CDEV 242: Group and Community Dynamics (30/30: CF 3.0) Y2S2

Concepts and perspectives of group dynamics. Theories of Group Dynamics, Types of groups' Preliminary group process: formation, development and growth of structure. Interpersonal processes: Decision making power, conformity, influence and performance. Environmental group processes: Territoriality, spatial behaviour and stress. Group behaviour: crowds and collective behaviour, inter and intra-group conflict; role of groups in social change. Case studies of selected community groups (Y2S2)

CDEV 250: Social Entrepreneurship (45/0: CF 3.0) Y2S2

Introduction to the concept of social entrepreneurship and social business ventures. Role of social entrepreneurship in socio-economic development of families and communities. Characteristics and competencies associated with entrepreneurial persons. The practice of social entrepreneurship in communities; operating models, resources and resource mobilization, and challenges to social entrepreneurship development. (Pre-requisite CDEV 120) (Y2 S1)

CDEV 314: Leadership in Development (45/0: CF 3.0) Y3S1

Concepts and theories of leadership; types of community leaders and their roles in community development; Leadership emergence, legitimization and effectiveness; Leadership development of individuals in the family and community, motivation and training. Visits and assessment of leadership styles in community organizations.

CDEV 315: Technology and Community Development (45/0: CF 3.0) Y3S2

The concept of technology and its relationship to community development. The effects of new inventions on family and community. The concept of time value as it relates to technology and community development. Technology adoption process. Constraints to technology adoption. Awareness of information technology in community development. Accessibility and impact of information technology on families and communities.(Prerequisite CDEV 111, CDEV 212, CDEV 213)

CDEV 323: Project Planning and Implementation (45/30: CF 4.0) Y3S1

The project concept: Approaches and levels of planning, Types and sources of community projects:. Project life cycle: project identification and participatory models.

Gender considerations in project identification Action planning. Family and community systems integration in project planning and design. Participatory project appraisal. Approaches to implementation of family and community projects Resource inventory and mobilization, community education and mobilization. Project implementation and management of financial, human and time schedules. Human factors in implementation and Management of projects. Roles and responsibilities of a project manager. Networking in project management. Computer based management including information systems. Project progress monitoring and reporting. Risks and uncertainties in projects. Evaluation and decision-making in projects. (Pre-requisite CDEV 222, CDEV 250, CDEV 232) (Y3S1)

CDEV 324: Management of Community Health and Sanitation (30/30: CF 3.0) Y3S2

Concepts of community health Management of reproductive health, sexually transmitted diseases, HIV-AIDS, mental health and drug abuse. Management of home and environment. Community responsibility in the management of public and private utilities:- hygiene, sanitation, pollution, garbage and sewerage disposal, public markets, toilets, water supply, funeral homes and burial sites. Health regulatory systems in developing countries. (Prerequisite is AGHE 342) (Y3S2)

CDEV 326: Conflict Management in the Community (30/0: CF 2.0) Y3S1

Concept of conflict in communities. Types and causes of conflict. The impact of conflicts on the family and community. War crimes, gender based abuse during conflicts. The culture of peace vs. the culture of violence in communities. Role of Government, NGOs, CBOS and International organizations in conflict intervention, management and resolution. Conflict management at individual, household, community and national levels.

CDEV 334: Family Therapy and Counselling I (30/30: CF 3.0) Y3S2

Family as a special unit in a community. Understanding family therapy and counselling. Management of family conflicts and emerging issues. Principles, goals and functions of counselling. Stresses in the family and community: suicide. Management of stress within a family and community .Visits to rehabilitation centres. (Prerequisite CDEV 130, CDEV 231)

CDEV 342: Maternal and Child Health (30/30: CF 3.0) Y3S2

Concepts of maternal and child health. Focus on maternal health in family development. Factors contributing to the health of the mother and child in the community, with special emphasis on selected maternal and child health needs. Maternal and child health maintenance and promotion in the community. Visits to maternal child health clinics for observations and reporting.(Prerequisite CDEV 130, CDEV 140)

CDEV 343: Gerontology (30/30: CF 3.0) Y3S1

An interdisciplinary approach on aging; theories of aging; the social, psychological and biological changes that accompany aging and implications of these changes for individual as well as community; key diseases associated with aging; impact of an aging population on key social institutions such as the family, the economy, and the health system; Social policies and systems which affect aging in Africa.

CDEV 360: Field Attachment (0/120: CF 4.0)

Practical training in areas Community Development. Students to be attached to government and Non-governmental organizations dealing with issues affecting families and communities. Students to write a project report.\

CDEV 416: Human Displacement and Management (30/30: CF 3.0) Y4S2

Concept of human displacement. Manmade shocks: including violence and forced displacement, insecurity and social breakdowns including breakdown of marriage, family, and social support system. Natural shocks; including famine, fire, floods, unexpected death, regional conflicts, humanitarianism, effects of conflict on civilians, peace building Management of refugee populations and contribution of displaced persons to areas displaced to, Refugee laws and rights according to UNHCR, Relief Vs development, cross-cultural understanding of refugee experiences, plight of refugee children, gender issues for refugees. Disaster management

CDEV 417: World Food Issues and Climate Change (45/0: CF 3.0) Y4S2

Status of world food supplies especially in Least developed countries. Issues affecting food security: global food policies, local agricultural policies, technology and climate change. Concept of climate and climate change. The global climate change agenda; causes, indicators and trends in global and regional climate change, impact on world food security. Climate induced food insecurity Concept and consequences of food insecurity:. Solutions to world food problems and strategies to mitigate climate induced food insecurity..Role of international and Regional treaties conventions in reducing climate change, technological and economic induced food insecurity.

CDEV 427: Projects Proposal Development (0/60: CF 2.0) Y4S1

Community needs assessment; Problem analysis, alternatives, stakeholder and participation analysis. project identification and proposal development. Development of monitoring and evaluation plan for a community project.(Prerequisite CDEV 323.

CDEV 428: Project Implementation, Monitoring and Evaluation (0/60: CF 2.0) Y4S2

Implementation of projects planned for in COST 427. Community and resource mobilization for project implementation. Monitoring, Evaluation, Reporting and decision-making in projects.. (Y4S2)

CDEV 429: Community Consultancy (45/0: CF 3.0) Y4S2

The concept of consultation and its application community development. Skills, competencies and professional development of consultants. The roles of consultants in family and community-based projects professional ethics. Steps in the consulting process. Policies governing consultancies. Starting consultancy firm

CDEV 435: Family Therapy and Counselling II (0/60: CF 2.0) Y4S1

Contemporary issues and concerns in family therapy and counselling. Visits medical schools, psychiatric clinics and centres, organizations like FIDA, MCH, family therapy and counselling organizations .Attachment at a counselling centre.(Prerequisite CDEV 334)

CDEV 436: Family Laws and Policies (45/0: CF 3.0) Y4S1

Laws of inheritance; Marriage laws, property ownership rights, types of family laws; Divorce and separation, Children's act; child custody and adoption; child abuse and child labour. Wife inheritance. Identification of existing family laws and policies, process of developing and formulating family policies.

CDEV 451: Management of Micro and Small Businesses (30/30: CF 3.0) Y4S1

Identification and screening of business opportunities in the Family and community. Planning for micro and small businesses (MSES) for family and community

development. Sourcing, organising, coordinating and controlling various resources within micro and small businesses. Identification of markets within and outside immediate community. Developing marketing strategies for micro and small businesses. Use of co-operatives and other community based organisations in the marketing of goods. Decision making and time management within the context of MSES. Interaction with practicing entrepreneurs. Business plan writing.(Prerequisite CDEV 250, AGBM 210)

CDEV 461: Contemporary Issues in Community Development (15/30: CF 2.0) Y4S2

Analysis and discussion of contemporary issues in family and community development. Individual term papers on selected topics on current problems, trends and developments in the field of family and community development

9.2 Service Course offered to other Departments

The programme does not offer any course to other departments.

9.3 Matrix of aligning programme Learning Outcomes

Programme Learning Outcomes(PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Demonstrate an in-depth understanding of a wide range of issues affecting individuals, families and communities.	Introduction to Community Development Introduction to Development Studies Environmental education Principles of human nutrition Introduction to anthropology Social Psychology of Families and Communities Family Development Early Childhood Development Human Aspects in Extension and Development	3.0 3.0 3.0 3.0 3.0 2.0 3.0 3.0 3.0	Violence in Family and Community Group and Community Dynamics African Families Youth and Adolescent Development Human Health and Sanitation Social Institutions Family and Community Resource Management	3.0 3.0 3.0 3.0 3.0 3.0 3.0	Extension Methods in Human Ecology Appropriate Technology 1 Rural Sociology Technology and Community Development Management of Community Health and Sanitation Conflict Management in the Community Family Therapy and Counseling I Maternal and Child Health Research Methods Appropriate Technology II Community Nutrition and Health	3.0 3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0	Projects Proposal Development Family Therapy and Counselling II Family Laws and Policies Contemporary Issues in Community Development Outreach methods Research Project Social statistics II Human Displacement and Management World food Issues Project Implementation, Monitoring and Evaluation Community Consultancy Gender and Community Development Seminars Housing improvement Adult education	2.0 3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.0 2.0 3.0 3.0 2.0
PLO 2. Identify and mobilize resources for sustainable livelihood development	Environmental education Human Aspects in Extension and Development	3.0 3.0	Community Mobilization in Development Family and Community Resource Management Social entrepreneurship Consumer Education Human Health and Sanitation Principles of Marketing Community Organizations Accounting and costing for Projects	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Project Planning and Implementation Extension Methods in Human Ecology Appropriate Technology 1 Rural Sociology Technology and Community Development Management of Community Health and Sanitation Appropriate Technology II	4.0 3.0 3.0 2.0 3.0 3.0 3.0	Projects Proposal Development Management of Micro and Small Businesses Outreach methods Outreach methods Human Displacement and Management World food Issues Project Implementation, Monitoring and Evaluation Community Consultancy Housing Improvement	2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0
PLO 3. Demonstrate strong leadership competencies in the management	Introduction to academic Communication Skills Principles of Management Law and Society	3.0 3.0 3.0	Community Mobilization in Development Family and Community Resource Management Communication Technology in	3.0 3.0 2.0	Leadership in Development Project Planning and Implementation Conflict Management in the Community	3.0 4.0 2.0	Projects Proposal Development Outreach methods Project Implementation, Monitoring and Evaluation	2.0 3.0 3.0 3.0

of community development			Human Ecology Group and Community Dynamics Accounting and costing for Projects	3.0 3.0			Community Consultancy	
PLO 4. Carry out analytical research with a focus on innovations for sustainable development	Human Aspects in Extension and Development	3.0			Extension Methods in Human Ecology Appropriate Technology 1 SOCI 302 Technology and Community Development Research Methods Appropriate Technology ICommunity Nutrition and Health	3.0 3.0 3.0 3.0 3.0 4.0	Management of Micro and Small Businesses Outreach methods Research Project Social statistics II Housing Improvement	3.0 3.0 2.0 3.0
PLO 5. Be adaptable to a wide range of working environments and advanced higher learning opportunities in the field of community development	Introduction to Community Development Introduction to Development Studies Principles of Management Law and Society	3.0 3.0 3.0 3.0	African families Social entrepreneurship Consumer Education Human Health and Sanitation Principles of Marketing Communication Technology in Human Ecology Accounting and costing for Projects	3.0 3.0 3.0 3.0 3.0 2.0 3.0	CDEV 323 Appropriate Technology 1 SOCI 302 Technology and Community Development Management of Community Health and Sanitation Family Therapy and Counseling I Maternal and Child Health Research Methods Appropriate Technology ICommunity Nutrition and Health	4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0	Projects Proposal Development Family Therapy and Counselling II Management of Micro and Small Businesses Outreach methods Contemporary Issues in Community Development Outreach methods Research Project Social statistics II Project Implementation, Monitoring and Evaluation Community Consultancy Adult education	2.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

DIPLOMA IN AGRICULTURAL EDUCATION AND EXTENSION

1. Philosophy of the Programme

The philosophical basis of training in agricultural Education and agricultural extension is to prepare a critical mass of producers, managers, extension officers and researchers who can participate in the modernization of agriculture.

2. Rationale

Agriculture contributes about 26% directly and 27% indirectly to Kenya's GDP and provides income to over 70% of Kenyans. Only individuals who have had extensive periods of preparation can effectively participate in the development of the nation's agriculture. The Diploma programme in Agricultural Education and Extension is intended to produce individuals who have undergone training in technical agriculture, extension Education, agricultural Education and communication skills to meet the demands of modern agriculture.

3. Goal of the Programme

The training programmes aims to produce competent teachers in Agricultural Education and Extension, Extension and rural development professionals who can get agriculture moving, Graduates who will be able to advance the knowledge of agriculture & extension and pursue further education in agricultural education and extension.

4. Programme Learning Outcomes

By the end of the training programme the graduate will be able to:

- i) Teach agriculture, biology and related subjects in schools, teacher training colleges and agricultural training institutions;
- ii) Develop, implement, monitor and evaluate agricultural projects and extension programmes;
- iii) Design, conduct and evaluate training programmes for farmers, community based organizations and NGOs

5. Mode of Delivery

The mode of delivery shall be full time.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Egerton University rules and regulations for admission into Diploma programme shall apply. Candidates must have passed K.C.S.E. with a Mean Grade C+ and above. In addition to one above applicants must meet the following minimum qualifications:

English/Kiswahili	C
Agriculture	C+
Biology/Biological Science	C+
Chemistry/Physical Science	C+
Mathematics or Physics or Geography	C

Holders of a certificate in agriculture or related fields from institutions recognized by Egerton University. The certificate must be at Credit level or above.

6.2 Regulations on Credit Transfer

The programme has no transferrable courses; as such there are no regulations on credit transfer.

6.3 Course Requirements

The lecturer shall have the obligation to offer quality course delivery and facilitation in accordance with the ISO procedures for teaching in EU/AA/OP/06 rev3.

6.4 Student Assessment Policy

Student assessment will be carried out in accordance with article 36(6) of Egerton University 2013 statutes for undergraduate studies.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (5) of 2013.

6.7 Moderation of examinations

Examinations will be moderated as per Egerton University ISO Procedure –EU/AA/OP/07.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated period of three years for the programme. This will include field attachment of 8 weeks and teaching practice 12 weeks. The total Credit Factors for diploma agricultural education and extension is 185.5

6.9 Classification of Diploma

Diploma classification shall be in accordance with Statutes 36 (17a) of Egerton University Statute(s) of 2013.

7. Course Evaluation

All courses will be evaluated using ISO procedure- Teaching Effectiveness Evaluation EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted in the Department of Agricultural Education and Extension within the Faculty of Education and Community Studies of Egerton University.

The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal program evaluation at the end of every academic cycle of 4 years and will be benchmarked with similar programmes at highly ranked Universities recognized by the Commission for University Education. ISO Procedure EU/VC/OP/05 for Quality Assessment shall apply.

8.3 Course Coding

Courses offered in the programme are coded as AGED followed by four digits. AGED denotes Agricultural Education. Use of the four digits is as follows:

- First digit (0) denotes a diploma programme.
- Second digit indicates the year of study.
- Third digit indicates the area of study
- Fourth digit indicates the sequence of the course in the area of study

The interpretation of the third digit is as follows:-

Number of Area of Study

- Communication and Technology
- Curriculum Development and Teaching Methods
- Rural Sociology and Extension Education
- Practicum and Seminars

9. Courses Offered for the Programme

9.1 Schedule of Courses

a) University Common Core Courses

CODE	TITLE	L	P	C.F
MATH 0121	Basic Mathematics	45	0	3.0
ENSC 0100	Introduction to Environmental Science	30	30	3.0
PHIL 0108	Ethics, Integrity and National Cohesion	45	15	3.5

b). Schedule of Courses per Semester

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGED 0111	Introduction to Agricultural Education and Extension	30	0	2.0
AGED 0112	Agricultural Communication Skills	30	0	2.0
AGEC 0111	Fundamentals of Agricultural Economics	45	0	3.0
AGEN 0171	Technical Drawing	15	30	2.0
BOTA 0101	Agricultural Botany	30	30	3.0
CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
EDFO 0121	History of Education	30	0	2.0
MATH 0121	Basic Mathematics	45	0	3.0
SOIL 0100	Introductory to Soil Science	30	30	3.0
AGRO 0101	Principles of Crop Production	45	15	3.5
ZOOL 0130	Basic Vertebrate Anatomy and Physiology	30	30	3.0
TOTAL		315	150	29.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F
AGBM 0103	Entrepreneurship	30	0	2.0
AGEN 0172	Workshop Practices	15	30	2.0
BOTA 0141	Plant Taxonomy	30	30	3.0
BOTA 0171	Plant Physiology	30	30	3.0
CHEM 0131	Basic Organic Chemistry	30	30	3.0
EPSC 0142	Development and Psychology Learning	45	0	3.0
ENSC 0100	Introduction to Environmental Science	30	30	3.0
ZOOL 0120	Entomology	30	30	3.0
EDFO 0223	Philosophy of Education	30	0	2.0
HORT 0112	Principles and Practices of Horticultural Crop Production	30	30	3.0
ANSC 0271	Animatics	0	60	2.0
TOTAL		285	195	29.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
AGED 0212	Principles & Practices of Technical Writing and Reporting	30	0	2.0
AGEC 0241	Production Economics	45	0	3.0
AGEC 0345	Farm Management I	45	0	3.0
AGEC 0332	Agricultural Marketing	45	0	3.0
AGEN 0272	Tractor Servicing, Maintenance and Operation	15	45	2.5

AGRO 0271	Pasture & Fodder Crops	30	30	3.0
ANSC 0313	Routine Livestock Practices	0	105	3.5
BOTA 0111	Genetics	30	30	3.0
SOIL 0220	Fertilizer use, Soil Nutrition & Plant	30	30	3.0
ZOOL 0240	Parasitology	30	30	3.0
TOTAL		300	240	29.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
AGED 0213	Educational Communication and Technology	30	15	3.0
AGED 0232	Agricultural Extension	45	0	3.0
AGEN 0274	Introduction to Farm Machinery	15	45	2.5
AGRO 0251	Annual Crops	45	15	3.5
ANSC 0230	Principles of Animal Nutrition & Livestock Feeding	45	0	3.0
ANSC 0241	Animal Genetics & Breeding	30	30	3.0
BOTA 0251	Plant Pathology	30	30	3.0
AGED 0243	Measurements and Evaluation	45	0	3.0
HORT 0231	Vegetable Production	45	30	4.0
TOTAL		345	235	28.0
AGED 0241	Field Attachment	0	120	4.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
AGED	Rural Sociology and	45	0	3.0

0231	Development			
BIOC 0204	Basic Biochemistry	30	30	3.0
PHIL 0108	Ethics, Integrity and National Cohesion	45	15	3.5
AGEN 0277	Soil and Water Management	45	45	4.0
AGRO 0361	Perennial Crops	45	15	3.5
ANHE 0326	Animal Diseases	45	30	4.0
ANSC 0250	Ruminant Husbandry	45	30	4.0
HORT 0241	Fruit Production	45	30	4.0
TOTAL		330	150	29.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
AGED 0321	Curriculum Development	45	0	3.0
AGED 0333	Principles of Adult Education	30	0	2.0
AGED 0323	Methods of Teaching Agriculture	30	15	3.0
AGED 0324	Group Dynamics and Agricultural Development	30	0	2.0
AGED 0342	Field Visit and Seminars	0	60	2.0
EDCI 0334	Methods of Teaching Biology	30	15	3.0
AGEN 0371	Farm Structures	30	30	3.0
ANSC 0360	Non-Ruminant Husbandry	45	30	4.0
EAPE 0342	School Organization and Management	30	0	2.0
HORT 0324	Green House Management	30	30	3.0
TOTAL		240	195	27.0

AGED 0343	Teaching Practice Projects	0	120	4.0
AGED 0344	Teaching Practice	0	183	6.0
TOTAL		0	300	10.0

SERVICE COURSES

CODE	TITLE	L	P	C.F
AGED 0112	Agricultural Communication Skills -Y1S2	30	0	2.0
AGED 0231	Rural Sociology and Development - Y2S1	45	0	3.0
AGED 0232	Agricultural Extension -Y2S2	45	0	3.0

(c) COURSE DESCRIPTIONS

AGED 0111: Introduction to Agricultural Education and Extension (30/0: CF 2.0) Y1 S1

Concepts in Agricultural Education and Agricultural Extension; development of Agricultural Education and Agricultural Extension; philosophical foundations of Agricultural Education and Agricultural Extension; Agricultural Extension and Rural Development; current issues and trends in Agricultural Education and Agricultural Extension.

AGED 0112: Agricultural Communication Skills (30/0: CF 2.0) Y1 S1

Meaning of communication; forms of communication; role and purposes of communication in agricultural extension; forms and types of speeches in extension; audience analysis; feedback; language and communication; writing; translation of texts; language in agricultural extension, principles of communication; barriers to communication; public speaking, code switching; introduction to communication in extension.

AGED 0212: Principles and Practices of Technical Writing and Reporting (30/0: CF 2.0) Y2 S1

Concepts of Technical, Reporting and Reports; Informal and Formal Reports, Parts of Formal Reports, Principles of Technical Writing, illustrations, Types, Guiding Principles in Use of Illustrations. Terminal Reports, Parts of Terminal Reports, Sources of Literature, Generation of the Reference Section, Project Cycle, Project Proposal, Progress Reports, Terminal Reports, Ex-post Reports; Periodic Reports, Quarterly Reports, Semi-Annual Reports and Annual Reports, Evaluation Reports, Parts of Evaluation Reports, Legal and Ethical Requirements in Technical Writing.

AGED 0213: Educational Communication and Technology (30/15/15: CF 3.0) Y2 S2

Sketching; lettering, lines, circles and ellipse construction; isometric, oblique and perspective drawing, architectural drafting; communication process; role of media in communication; types of media and teaching resources; films, video and television in teaching; visual literacy concept; audiovisual production; use of computers in instruction, internet and e-learning; planning, selection, production and use of media; Advances in communication technology. (*Field visit to an agricultural media production centre*)

AGED 0231: Rural Sociology and Development (30/0: CF 2.0) Y2 S1

Human society; culture; social groups; organization; institutions and change process in the rural settings; social structure and implication to change; power leadership and community decision making processes.

AGED 0232: Agricultural Extension (45/0: CF 3.0) Y2 S2

Meaning and purpose of extension Education; development of agricultural extension in Kenya; philosophical context of extension; challenges; role of

extension in development; principles of extension; extension approaches; communication and extension methods; extension programme planning; implementation; monitoring and evaluation; agricultural extension policy; participatory technology development.

AGED 0324: Group Dynamics in Agricultural Development (30/0: CF 2.0) Y3 S1

Introduction to group dynamics, the value of groups in agricultural development, group formation for agricultural development, group membership, types of groups in agricultural and rural development, types of leadership, power, influence and authority in groups, groups and innovations in agricultural development

AGED 0241: Field Attachment (0/120: CF 4.0) End of year Two

Placement of students in agricultural departments; livestock development departments; research stations and agribusinesses; office operations; planning agricultural extension programmes; implementing agricultural extension programmes; government documents; staff meetings; preparation of reports; communication in government.

AGED 0243: Measurements and Evaluation (45/0: CF 3.0) Y2 S1

Meaning of Measurement and evaluation, relationship between measurement, evaluation, testing and assessment. Examinations: characteristics of measures, test constitution, qualitative and quantitative methods, reliability and validity. Interpretation of educational measurements. Descriptive statistics in measurement.

AGED 0321: Curriculum Development (45/0: CF 3.0) Y3 S1

Meaning of curriculum; foundations of curriculum; principles of curriculum, design and planning; agriculture curriculum implementation; curriculum evaluation; development of curriculum in Kenya;

development of agricultural education curriculum in Kenya; curriculum innovations. (*Field visit to a curriculum development centre*)

AGED 0323: Methods of Teaching Agriculture (30/15/15: CF 3.0) Y3S2

Objectives of teaching of agriculture in Kenya's secondary schools and teacher training colleges; challenges of teaching agriculture; responsibilities of agriculture teacher; resources for teaching agriculture; management and use of school farm; schemes of work; lesson plans and agricultural projects; planning and teaching agriculture; methods and materials of teaching agriculture, classroom management; evaluation of agriculture school programmes; Young Farmers' Clubs and 4K Clubs.

AGED 0333: Principles of Adult Education (30/0: CF 2.0) Y3 S1

Meaning of adult Education; characteristics of adults learners; differences between andragogy and pedagogy; methods and techniques of teaching adult farmers; planning agricultural Education programmes for adults; principles of teaching adults; learning of adults; evaluation of adult Education programmes.

AGED 0342: Agricultural Education Seminars and Field Visits (0/60: CF 2.0) Y3S2

Visits to extension offices and programmes, agricultural research stations, agribusinesses, Educational institutions; preparation of reports; presentation of papers on issues in agriculture, agricultural Education, agricultural extension and Education.

AGED 0343: Teaching Practice Project (0/120: CF 4.0) Y3S2

Prepare proposals in agriculture and sciences; initiate and implement projects in agriculture and sciences; prepare a report; use of projects in teaching of

agriculture and biology. (*Prerequisites: AGED 0213, 0322 and 0323*)

AGED 0344: Teaching Practice (0/180: CF 6.0) Y3S2

Schemes of work; lesson plans; organize workshops, laboratory and classroom for teaching; select, prepare and use teaching resources; teach and assess students; assume designated responsibilities and duties in school management; participate in staff meetings and school duties. (*Prerequisites: AGED 0213, 0322 & 0323*)

9.2 SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

AGED 0112: Agricultural Communication Skills (30/0: CF 2.0) Y1 S1

Meaning of communication; forms of communication; role and purposes of communication in agricultural extension; forms and types of speeches in extension; audience analysis; feedback; language and communication; writing; translation of texts; language in agricultural extension. principles of communication; barriers to communication; public speaking, code switching; introduction to communication in extension (*DIP HORT, DIP AGRO, DIP FARM*)

AGED 0212: Principles and Practices of Technical Writing and Reporting (30/0: CF 2.0) Y2 S1

Concepts of Technical, Reporting and Reports; Informal and Formal Reports, Parts of Formal Reports, Principles of Technical Writing, illustrations, Types, Guiding Principles in Use of Illustrations. Terminal Reports, Parts of Terminal Reports, Sources of Literature, Generation of the Reference Section, Project Cycle, Project Proposal, Progress Reports, Terminal Reports, Ex-post Reports; Periodic Reports, Quarterly Reports, Semi-Annual

Reports and Annual Reports, Evaluation Reports, Parts of Evaluation Reports, Legal and Ethical Requirements in Technical Writing
(*DIP HORT, DIP AGRO, DIP FARM*)

AGED 0231: Rural Sociology (30/0: CF 2.0) Y2 S1

Human society; culture; social groups; organization; institutions and change process in the rural settings; social structure and implication to change; power leadership and community decision making processes.
(*DIP AGRO, DIP ANHM, DIP ANSC, DIP FAM, DIP HORT*)

AGED 0232: Agricultural Extension (45/0: CF 3.0) Y2 S2

Meaning and purpose of extension Education; development of agricultural extension in Kenya; philosophical context of extension; challenges; role of extension in development; principles of extension; extension approaches; communication and extension methods; extension programme planning; implementation; monitoring and evaluation; agricultural extension policy; participatory technology development.
(*DIP AGRO, DIP ANHM, DIP ANSC, DIP FAM, DIP HORT*)

9.3 Matrix aligning courses/units to programme learning outcomes

Year 1		Year 2		Year 3			
Program Learning Outcomes (PLO)							
PLO1: Teach agriculture, biology and related subjects in schools, teacher training colleges and agricultural training institutions	Courses	CF	Courses	CF	Courses	CF	
	Introduction to Agricultural Education and Extension	2.0	Production Economics	3.0	Curriculum Development	3.0	
	Agricultural Communication Skills	2.0	Tractor Servicing, Maintenance and Operation	2.5	Health and Physical Education	2.0	
	Fundamentals of Agricultural Economics	3.0	Pasture & Forage Management	2.5	Soil and Water Management	3.5	
	Technical Drawing	2.0	Animatics	2.0	Perennial Crops	3.5	
	Agricultural Botany	3.0	Basic Biochemistry	3.0	Animal Diseases	4.0	
	Physical and Inorganic Chemistry	3.0	Genetics	3.0	Ruminant Husbandry	4.0	
	History of Education	2.0	Principles and Practices of Technical Writing and Reporting	2.0	Fruit Production	3.0	
	Basic Mathematics	3.0	Soil Fertility & Plant Nutrition	3.0	Agricultural Marketing	3.0	
	Introduction to Soil Science	3.0	Parasitology	3.0	Methods of Teaching Agriculture	3.0	
	Basic Vertebrate Anatomy and Physiology	3.0	Farm Management and Accounting	3.0	Methods of Teaching Biology	3.0	
	Principles of Entrepreneurship	3.0	Educational Communication and Technology	3.0	Agricultural Education Seminars and Field Visit	2.0	
	Workshop Practices	1.5	Introduction to Farm Machinery	2.5	Farm Structures	3.5	
	Principles of Crop Production	3.0	Annual Crops	3.5	Non-Ruminant Husbandry	4.0	
	Plant Taxonomy	3.0	Principles of Animal Nutrition	3.0	School Organization and Management	2.0	
	Plant Physiology	3.0	Animal Breeding	3.0	Green House Management	3.0	
	Basic Organic Chemistry	3.0	Plant Pathology	3.0	Fruit Production	3.0	
	Development Psychology and Learning	3.0	Measurements and Evaluation	3.0			
		Ecology and Environmental Science	3.0	Vegetable Production	4.0		
		Entomology	3.0				
		Philosophy of Education	2.0				
PLO2: Develop, implement, monitor and evaluate agricultural projects and extension programmes	Agricultural Communication Skills	2.0	Production Economics	3.0	Soil and Water Management	3.5	
	Introduction to Agricultural Education and Extension	2.0	Principles and Practices of Technical Writing and Reporting	2.0	Perennial Crops	3.5	
	Fundamentals of Agricultural Economics	3.0	Animatics	2.0	Animal Diseases	4.0	
	Principles of Entrepreneurship	3.0	Vegetable Production	4.0	Ruminant Husbandry	4.0	
			Field Attachment	4.0	Fruit Production	3.0	
			Agricultural Extension	3.0	Farm Structures	3.5	
			Farm Management and Accounting	3.0	Non-Ruminant Husbandry	4.0	
			Educational Communication and	3.0	Teaching Practice Projects	4.0	

			Technology			
			Annual Crops	3.5	Teaching Practice	6.0
			Principles of Animal Nutrition	3.0		
			Animal Breeding	3.0		
			Measurements and Evaluation	3.0		
PLO3: Design, conduct and evaluate training programmes for farmers, community based organizations and NGOs	Principles of Entrepreneurship	3.0	Rural Sociology & Development	2.0	Principles of Adult Education	2.0
	Principles of Crop Production	3.0	Principles and Practices of Technical Writing and Reporting	2.0	Group Dynamics	2.0
	Agricultural Communication Skills	2.0	Agricultural Extension	3.0	Agricultural Education Seminars and Field Visit	2.0
			Measurements and Evaluation	3.0	Soil and Water Management	3.5
			Field Attachment	4.0	Agricultural Marketing	3.0
			Principles of Animal Nutrition	3.0	Methods of Teaching Agriculture	3.0
			Educational Communication and Technology	3.0	Green House Management	3.0
			Farm Management and Accounting	3.0	Teaching Practice	6.0
			Vegetable Production	4.0	Teaching Practice Projects	4.0
			Animatics	2.0		
			Production Economics	3.0		

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

1. Philosophy of the Programme

The philosophical basis of the Bachelor of Science degree in Agricultural Education and Extension is the need to produce a critical mass of producers and manpower needed for education, extension and management in agriculture.

2. Rationale

Agriculture contributes about 26 percent directly and 27 percent indirectly to Kenya's GDP and provides income to over 70 percent of Kenyans. Modern agriculture is complex and only individuals who have gone through an extended period of preparation in agriculture can effectively participate and contribute in it. This justifies investment in capacity building in agricultural education at school and tertiary level. The Bachelor of Science degree programme prepares the manpower essential for school agriculture, agricultural extension and rural development. The graduates are also sufficiently qualified to assume responsibilities in the private sector and set up their own businesses.

3. Goal of the Programme

The primary aim of this programme is to prepare graduates with appropriate technical and professional competencies in agriculture, biology and extension education.

4. Programme Learning Outcomes

By the end of the programme, the graduates should be able to:

- Plan and teach agriculture and biology in secondary schools, teacher training colleges, and agricultural institutions;
- Develop, implement and evaluate agricultural

- education programmes;
- Plan, implement and evaluate agricultural extension and rural development programmes;
 - Manage educational and agricultural organizations;
 - Design and conduct research in agricultural education and agricultural extension;
 - Develop and conduct training in agricultural extension; and
 - Pursue further education in agriculture, agricultural education or extension.

5. Mode of delivery

The programme is offered in two modes; full time-basis or part-time mode (School Based).

6. Academic Regulations for the Programme

6.1 Admission Requirements

- Candidates must have passed K.C.S.E. with a Mean Grade C+ and above in accordance with Egerton University rules and regulations Statute 36 (2b) for admission into undergraduate studies.
 - In addition a candidate must have passed KCSE or an equivalent examination in the following subjects at minimum grades as indicated:
 - English/Kiswahili C+
 - Agriculture C+
 - Biology C+ or Biological Sciences B
 - Chemistry C+ or Physical Sciences B
 - Mathematics or Physics or Geography C+
- OR

A holder of a diploma with credit or above in Agricultural Education or related field from a college or University recognized by Egerton University. A holder of a diploma with a Pass must have at least two years work experience in a relevant field to qualify for admission.

6.2 Regulations on Credit Transfer

Egerton University regulations for credit transfer, Statute 36 (3d) of 2013 shall apply.

6.3 Course Requirements

Course requirements are as per the ISO procedure for teaching EU/AA/OP/06 rev3

6.4 Student Assessment Policy/Criteria

The students will be assessed as per Egerton University Statutes 36 (6) of 2013.

6.5 Grading System

The grading system will be as per the guidelines in Egerton University Statutes 36 (6) of 2013.

6.6 Examination Regulations

Examination regulations stipulated in Egerton University Statutes 36 (5) of 2013 shall apply.

6.7 Moderation of examinations

Examinations will be moderated as per Egerton University ISO Procedure –EU/AA/OP/07.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass a minimum of 233 Credit Factors.

6.9 Classification of Degrees

Degree classification shall be in accordance to Egerton University Statutes 36 (17a) of 2013.

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: Course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments as per ISO procedure- Teaching Effectiveness Evaluation EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic leader

The programme will be hosted in the Department of Agricultural Education and Extension within the Faculty of Education and Community Studies of Egerton University.

The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal self-assessment at the end of its academic cycle. The programme will be bench marked with similar programmes at highly ranked universities recognized by the Commission for University Education. ISO Procedure EU/VC/OP/05 for Quality Assessment shall apply.

8.3 Course Coding

Courses offered by the Department of Agricultural Education and Extension are coded as **AGED** followed by three digits. AG denotes Agricultural while ED denotes Education.

Use of the three digits is as follows:

- First digit indicates the year of study.
- Second digit indicates the area of study.
- Third digit indicates the level of progression in the area of study.

The interpretation of the second digit on the area of study is as follows:

- Communication and Technology
- Curriculum Development and Teaching Methods
- Rural Sociology and Extension Education

9. Courses offered for the Programme

9.1 Schedule of Courses

a) Common Core Courses

CODE	TITLE	L	P	CF
ENSC 100	Environmental Education (Y1S2)	30	30	3.0
MATH 100	General Mathematics (Y1S1)	45	0	3.0
PHIL 108	Ethics, Integrity and National Values (Y2S1)	45	0	3.0

b) Schedule of Courses per Semester

YEAR I SEMESTER I

CODE	TITLE	L	P	CF
AGED 111	Fundamentals of Agricultural Education and Extension	30	0	2.0
AGEC 111	Introduction to Agricultural Economics	45	0	3.0
AGEN 171	Introductory Drawing	15	30	2.0
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
MATH 100	General Mathematics	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
ZOOL 104	General Zoology	30	30	3.0
TOTAL		345	150	26.0

YEAR I SEMESTER 2

AGED 112	Agricultural Communication skills	45	0	3.0
AGEN 172	Introductory Workshop Technology	15	30	2.0

AGEN 174	Basic Farm Power, Source and Utilization	15	30	2.0
AGRO 102	Principles Crop Production	45	15	3.5
BOTA 111	General Genetics	30	30	3.0
BOTA 121	Plant Anatomy and Morphology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
EPSC 122	Developmental Psychology	30	0	2.0
HORT 111	Principles and Practices of Horticulture	30	30	3.0
TOTAL		300	195	27.5

YEAR 2 SEMESTER 1

AGED 221	Principles of Teaching and Learning Agriculture	30	0	2.0
AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGEC 241	Agricultural Production Economics	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
BOTA 241	Taxonomy of Higher Plants	30	30	3.0
BOTA 271	Plant Physiology	30	30	3.0
EDFO 112	Philosophy of Education	30	0	2.0
SOIL 350	Soil Fertility and Plant Nutrition	30	30	3.0
ZOOL 231	Cell Biology	30	30	3.0
ZOOL 210	Ecology	30	30	3.0
TOTAL		330	165	28.0

YEAR 2 SEMESTER 2

AGED 211	Agricultural Communication and Technology	30	30	3.0
AGED 222	Measurement and Evaluation in Agricultural Education	30	0	2.0
ANSC 241	Quantitative Genetics and Animal Breeding	45	30	4.0
AGRO 222	Plant Breeding	30	15	2.5
BIOC 204	Basic Biochemistry	30	30	3.0
BOTA 251	Introduction to Plant Pathology	30	30	3.0
EDFO 213	Sociology of Education	30	0	2.0
HORT 331	General Vegetable Production	45	30	4.0
ZOOL 240	General Parasitology	30	30	3.0
ZOOL 230	Vertebrate Anatomy and Physiology	30	30	3.0
TOTAL		285	210	29.5

YEAR 3 SEMESTER 1

AGED 312	Technical Writing and Reporting	30	0	2.0
AGED 322	Curriculum Development in Agricultural Education	45	0	3.0
AGED 331	Rural Sociology and Development	45	0	3.0
AGBM 406	Financial and Human Resource Management	30	30	3.0
AGEC 343	Principles of Farm Management	45	0	3.0
AGEN 371	Introduction of Agricultural Field Machines	30	30	3.0
AGRO 351	Annual Crops	30	30	3.0

ZOOL 321	Fundamentals of Entomology	30	30	3.0
PHIL 108	Ethics, Integrity and National Cohesion	45	15	3.5
TOTAL		315	150	26.5

YEAR 3 SEMESTER 2

		45	0	3.0
AGED 323	Methods of Teaching Agriculture	30	45	3.5
AGED 332	Principles of Agricultural Extension	30	0	2.0
AGEN 373	Farm Structures	30	30	3.0
AGRO 361	Perennial Crops	30	30	3.0
ANSC 313	Routine Livestock Practices	0	105	3.5
ANSC 333	Animal Nutrition and Livestock Feeding	45	30	4.0
EAPC 417	School Organization and Management	30	0	2.0
EDCI 334	Methods of Teaching Biology	30	30	3.0
EPSC 426	Principles of Guidance and Counselling	30	0	2.0
HORT 341	General Fruit Production	45	30	4.0
TOTAL		285	270	29.0

Teaching practice (12 Weeks at the end of the Third Year)

AGED 344	Teaching Practice Project	0	120	4.0
AGED 345	Teaching Practice	0	183	6.0
TOTAL		0	300	10.0

YEAR 4 SEMESTER 1

AGED 413	Agricultural Information Management	30	30	3.0

AGED 424	Statistical and Research Methods in Agricultural Education	45	0	3.0
AGED 433	Extension Programme Planning and Implementation	45	0	3.0
AGBM 436	Agri-Business Management	45	0	3.0
AGRO 271	Pastures and Fodder Crops Management	30	15	2.5
ANSC 460	Non-Ruminant Production	45	30	4.0
HORT 425	Greenhouse Management	30	30	3.0
NARE 450	Agro forestry	45	15	3.5
TOTAL		330	135	25.0

YEAR 4 SEMESTER 2

AGED 434	Management of Agricultural Organizations	30	0	3.0
AGED 435	Agricultural Extension and Rural Development	30	0	3.0
AGED 443	Field Visits and Seminars	15	30	2.0
AGEC 331	Agricultural Marketing	30	30	3.0
AGEC 452	Agricultural and Environmental Law	45	0	3.0
AGEN 375	Soil and Water Management	30	45	3.5
ANHE 426	Animal Diseases	45	30	4.0
ANSC 450	Ruminant Production	45	30	4.0
EAPC 421	Economics and Planning of Education	30	0	2.0
TOTAL		315	183	27.5
AGED 444	Field Attachment	0	120	4.0

c) Course Descriptions

AGED 111: Fundamentals of Agricultural Education and Extension

(30/0: C.F. 2.0) Y1S1

Introduction to the BSc Agricultural Education and Extension Programme; Profile of BSc AGED graduate; meaning and key concepts in Agricultural Education and Agricultural Extension; Development of Agricultural Education and Agricultural Extension in Kenya; current issues and trends in Agricultural Education and Extension.

AGED 112: Agricultural Communication Skills (45/0: C.F. 3.0) Y1S2

Concepts and theories of communication; principles of communication; barriers to communication; public speaking, code-switching; communication in extension; sources of information agricultural journalism; soft skills for effective communication.

AGED 211: Agricultural Communication and Technology (30/30: C.F. 3.0) Y2S2

The role of media in instruction; resources used in teaching agriculture; real objects; graphics; projected and non-projected visuals; audio materials; radio in Education; film; video; television in Education; media production; operations of equipment; planning, selection and use of instructional media; setting up and management of learning resource; the role of media in extension communication; media and distance Education; innovations in extension communication and technology.

(A Field Visit to an information/media production organization)

AGED 221: Principles of Teaching and Learning Agriculture and Biology

(30/0: C.F. 2.0) Y2S1

Theories of learning and teaching; of learning, a short

and long psychological foundations term memory; learning process; principles of learning; principles of teaching; teaching for critical thinking; domains of objectives; learner centred teaching; experiential learning; problem-solving; project; classroom teaching of agriculture.

AGED 222: Measurement and Evaluation (30/0: C.F. 2.0) Y2S2

Meaning of measurement; development of measuring instruments; relationship between measurement, evaluation, testing and examination; Principles of evaluation; Scales of measurements; Characteristics of a good test; Types of tests and test formats; Test planning, construction and administration; Qualitative and quantitative methods applied in selection of test items; Test validation; Interpreting and reporting test results.

AGED 312: Technical Writing and Reporting (30/0: C.F. 2.0) Y3S1

Meaning of the terms of technical reporting; functions of reports; informal and formal reports; principles of technical writing; sources of information; literature review; documenting sources; illustrations; research proposals and types of reports; techniques of technical writing; publication articles; oral reports; phases in report writing; legal aspects in writing; editing technical reports and publications.

AGED 322: Curriculum Development in Agricultural Education (45/0: C.F. 3.0) Y3S1

The meaning of curriculum; theories of curriculum development; principles of curriculum construction, design and planning; curriculum planning in Kenya; agriculture curriculum planning, implementation and evaluation; strategies of implementing agriculture curriculum, curriculum development in secondary and tertiary Educational institutions; curriculum innovation in agricultural Education; issues in curriculum

development in agricultural Education.

(A field visit to a Curriculum Development Centre/institute)

AGED 323: Methods of Teaching Agriculture (30/45: C.F. 3.5) Y3S2

Objectives of teaching agriculture; challenges in teaching of agriculture; responsibilities of agriculture teachers; resources for teaching agriculture; establishment and management of projects for teaching agriculture; school farm; agriculture workshop; agriculture library; methods and techniques of teaching agriculture; lesson presentation skills; schemes of work; lesson plans; classroom instruction; assessment; classroom management; evaluation of school agriculture programmes; Young Farmers' clubs and 4K clubs; microteaching, open education resources production and use.

AGED 331: Rural Sociology and Development (45/0: C.F. 3.0) Y3S1

Concepts in rural sociology and development; rural communities and social systems; culture; social groups, organizations; institutions; social processes and development; social change in rural societies; diffusion/adaptation processes; gender as a social relation and the social construction of gender; culture and agricultural extension; implications for agricultural extension.

AGED 332: Principles of Agricultural Extension (30/0: C.F. 2.0) Y3S2

Meaning and purpose of extension education; development of agricultural extension; philosophical and social foundations; agricultural development and agricultural extension; context of extension; role of extension in rural and national development; principles of extension; approaches of extension; methods of agricultural extension; farmer involvement; participatory extension; agricultural extension policy;

issues in agricultural extension; public and private sector extension; gender; ICT and agricultural extension; issues in agricultural extension.
(Prerequisites: AGED 111, AGED 331)
(A field visit to an agricultural extension organization)

AGED 344: Teaching Practice Project (0/120 C.F. 4.0) After Y3S2

Students in consultation with the head of school will identify and prepare project proposals; initiate and manage agriculture or biology project; prepare reports about the project; use the project in teaching; plan for sustainability of the project; involve students in the projects.

(Prerequisites: AGED 312, AGED 323)

AGED 345: Teaching Practice (0/180 C.F. 6.0) After Y3S2

Planning for teaching Agriculture and Biology; identification of instructional resources for teaching agriculture; schemes of work; lesson plans; lesson presentation; mastery of subject; assessment; classroom management; personality; record keeping; involvement in school activities; professional ethics **(Prerequisites: AGED 222, AGED 322, AGED 323)**

AGED 413: Agricultural Information Management (30/0: C.F. 3.0) Y4S1

Concepts in agricultural information management; agricultural organizations as systems; information in research, extension, Education and training, and production; resources in agricultural information system; tools for agricultural information management; database management; geographical information system in agricultural development.

AGED 424: Statistical and Research Methods in Agricultural Education (45/0: C.F. 3.0) Y4S1

Concepts in research; purpose and principle of research; classification of research; research designs and methods

in Agricultural Education and Extension; research proposals; literature review; descriptive statistics; inferential statistics; instruments for data collection; quality of instruments; data collection; data analysis; research reports; articles for publication.

AGED 433: Extension Programme Planning and Implementation (30/0: C.F. 3.0) Y4S1

Concepts in agricultural extension programme planning, implementation, monitoring and evaluation; programme and project cycles; extension methods; resources in extension programmes; planning cycle; situation analysis; priorities, problems; criteria for programme selection; activities, resources; preparation of plan; logical framework matrix; work plans; monitoring; evaluation; preparation of reports. **(Prerequisite: AGED 332)**

AGED 434: Management of Agricultural Organizations (30/0: C.F. 3.0) Y4S2

Agricultural development; agricultural organizations as systems; modernization of agriculture; concepts in management; theories of management; management functions; quality management; quality circles; total quality management; planning; coordination; Gantt charts; critical path; logical framework matrix; leadership; monitoring and evaluation; conflict management; motivation; communication; budgeting; information management.

AGED 435: Agricultural Extension and Rural Development (30/0: C.F. 3.0) Y4S2

Concepts in agricultural extension and rural development; aspects of rural development; sustainable development; extension and food security; agribusiness; value chain; indicators of rural development; micro, small and medium scale enterprises; rural industrialization.

AGED 443: Field Visits and Seminars (15/30: C.F. 2.0) Y4S2

Visits to extension offices/ organizations, research station, agribusinesses and Educational institutions; students to present papers; resource persons to make presentations on topical issues, agricultural Education, agricultural extension and Educational programmes; resource persons present papers on topical issues.

AGED 444: Field Attachment (0/120: C.F. 4.0) After Y4S2

Attachment to agricultural extension offices; agricultural research stations; agricultural parastatal organizations; agribusinesses; on-farm attachment preparation of programmes and reports; planning, implementation, monitoring and evaluation of extension programmes; familiarization with government/ organizational documents and procedures; record keeping and preparing plans of work; adhering to professional code of conduct.

(Prerequisites: AGED 331, AGED 332, AGED 433, AGED 435)

AGED 313: Technical Writing and Reporting for Engineers (30/0: C.F. 2.0) Y3S1

Meaning of the terms of technical reporting; functions of reports; types of reports; informal and formal reports; principles of technical writing; documenting sources; illustrations in engineering; designing engineering projects; activities, logical framework matrix; Gantt charts, Critical Path Method, PERT; budgeting; development of research proposal and research reports; development and writing of projects proposals; progress reports and project reports; developing and writing periodic reports evaluation reports; manuals; techniques of technical writing; phases in report writing; writing research papers; oral reporting; legal aspects of writing and publishing; editing technical reports and publications.

AGED 334: Extension Education (45/0 C.F. 3.0)

Y3S2

Meaning and purpose of extension Education; development of extension education; philosophy and principles, extension approaches and models, extension service providers in Kenya; role of extension in agricultural and rural development; extension teaching methods; agricultural extension policy; extension programme planning, monitoring and evaluation; cross-cutting and emerging issues in extension education.

9.2 Matrix Aligning Courses/Units to Learning Outcomes

	Year 1		Year 2		Year 3		Year 4	
Program Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO1: Plan and teach agriculture and biology in secondary schools, teacher training colleges, and agricultural institutions;	Introduction to Agricultural Economics	3.0	Principles of Entrepreneurship	3.0	Technical Reporting and Writing	2.0	Agri-business Management	3.0
	Fundamentals of Agricultural Education and Extension	2.0	Agricultural Production Economics	3.0	Financial Accounting and Human Resource management	3.0	Agricultural Information Management	2.5
	Introduction to Technical Drawing	2.0	Principles of Teaching and Learning Agriculture	2.0	Curriculum Development in Agricultural Education	3.0	Statistical and Research Methods in Agricultural Education	3.0
	General Botany	3.0	Plant Breeding	2.5	Rural Sociology	2.0	Extension Programme Planning and Implementation	2.0
	Introduction to Physical Chemistry	4.0	General Microbiology	3.0	Introduction of Agricultural Field Machines	3.0	Pastures and Fodder crops	2.5
	History of Education	2.0	Taxonomy of Higher Plants	3.0	Annual Crops	2.5	Non-Ruminant Production	4.0
	Introduction to Psychology	2.0	Plant Physiology 1	3.0	Animal Nutrition and Livestock Feeding	4.0	Tropical and Sub Tropical Fruits	3.0
	General Mathematics	3.0	Philosophy of Education	2.0	Introduction to Computer Applications	3.5	Green House Management	3.0
	Introduction to Soil Science	3.0	Soil Fertility and Plant Nutrition	3.0	Fundamentals of Entomology	3.0	Agro forestry	3.5
	General Zoology	3.0	Cell Biology	3.0	Farm Management Applications	3.0	Agricultural Marketing	3.0
	Agricultural Communication skills	3.0	Agricultural Communication and Technology	3.0	Methods of Teaching Agriculture	3.5	Agricultural Law and Environmental Law	3.0
	Introduction Workshop Technology	2.0	Measurement and Evaluation in Agricultural Education	2.0	Principles of Agricultural Extension	2.0	Management of Agricultural Organizations	2.0
	Basic Farm Power, Source and Utilization	2.0	Quantitative Genetics and Animal Breeding	4.0	Farm Structures	3.0	Agricultural Extension and Rural Development	2.0
	Principles of Crop Production	3.5	Basic Biochemistry	3.0	Perennial Crops	2.5	Field Visits and Seminars	2.0
	General Genetics	3.0	Introduction to Plant Pathology	3.0	Routine Livestock Practices	3.5	Soil and Water Management	3.5
	Plant Anatomy and Morphology	3.0	Sociology of Education	2.0	Educational Management and Administration	2.0	Animal Diseases	3.5
	Introduction to Organic Chemistry	3.5	General Fruit Production	3.0	Methods of Teaching Biology	3.0	Ruminant Production	4.0
	Introduction to Environmental Science	3.0	General Parasitology	3.0	Principles of Guidance and Counseling	2.0	Economics of Education and Planning of Education	2.0
	Developmental Psychology	2.0	Ecology	3.0	General Vegetable Crops	4.0	Health and Physical Education	2.0
	Principles and Practices of Horticulture	3.0	Vertebrate Anatomy and Physiology	3.0	Agricultural Education Projects	4.0	Field Attachment	4.0
					Teaching Practice	6.0		

	Year 1		Year 2		Year 3		Year 4	
Program Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO2: Develop, implement and evaluate agricultural education programmes;	Introduction to Agricultural Economics	3.0	Principles of Entrepreneurship	3.0	Technical Reporting and Writing	2.0	Agri-business Management	3.0
	Fundamentals of Agricultural Education and Extension	2.0	Agricultural Production Economics	3.0	Financial Accounting and Human Resource management	3.0	Agricultural Information Management	2.5
	Introduction to Technical Drawing	2.0	Principles of Teaching and Learning Agriculture	2.0	Curriculum Development in Agricultural Education	3.0	Statistical and Research Methods in Agricultural Education	3.0
	General Botany	3.0	Plant Breeding	2.5	Rural Sociology	2.0	Extension Programme Planning and Implementation	2.0
	Introduction to Physical Chemistry	4.0	General Microbiology	3.0	Introduction of Agricultural Field Machines	3.0	Pastures and Fodder crops	2.5
	History of Education	2.0	Taxonomy of Higher Plants	3.0	Annual Crops	2.5	Non-Ruminant Production	4.0
	Introduction to Psychology	2.0	Plant Physiology 1	3.0	Animal Nutrition and Livestock Feeding	4.0	Tropical and Sub Tropical Fruits	3.0
	General Mathematics	3.0	Philosophy of Education	2.0	Introduction to Computer Applications	3.5	Green House Management	3.0
	Introduction to Soil Science	3.0	Soil Fertility and Plant Nutrition	3.0	Fundamentals of Entomology	3.0	Agro forestry	3.5
	General Zoology	3.0	Cell Biology	3.0	Farm Management Applications	3.0	Agricultural Marketing	3.0
	Agricultural Communication skills	3.0	Agricultural Communication and Technology	3.0	Methods of Teaching Agriculture	3.5	Agricultural Law and Environmental Law	3.0
	Introduction Workshop Technology	2.0	Measurement and Evaluation in Agricultural Education	2.0	Principles of Agricultural Extension	2.0	Management of Agricultural Organizations	2.0
	Basic Farm Power, Source and Utilization	2.0	Quantitative Genetics and Animal Breeding	4.0	Farm Structures	3.0	Agricultural Extension and Rural Development	2.0
	Principles of Crop Production	3.5	Basic Biochemistry	3.0	Perennial Crops	2.5	Field Visits and Seminars	2.0
	General Genetics	3.0	Introduction to Plant Pathology	3.0	Routine Livestock Practices	3.5	Soil and Water Management	3.5
	Plant Anatomy and Morphology	3.0	Sociology of Education	2.0	Educational Management and Administration	2.0	Animal Diseases	3.5
	Introduction to Organic Chemistry	3.5	General Fruit Production	3.0	Methods of Teaching Biology	3.0	Ruminant Production	4.0
	Introduction to Environmental Science	3.0	General Parasitology	3.0	Principles of Guidance and Counseling	2.0	Economics of Education and Planning of Education	2.0
	Developmental Psychology	2.0	Ecology	3.0	General Vegetable Crops	4.0	Health and Physical Education	2.0
	Principles and Practices of Horticulture	3.0	Vertebrate Anatomy and Physiology	3.0	Agricultural Education Projects	4.0	Field Attachment	4.0
					Teaching Practice	6.0		

	Year 1		Year 2		Year 3		Year 4	
Program Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO3: Plan, implement and evaluate agricultural extension and rural development programmes;	Introduction to Agricultural Economics	3.0	Principles of Entrepreneurship	3.0	Technical Reporting and Writing	2.0	Agri-business Management	3.0
	Fundamentals of Agricultural Education and Extension	2.0	Agricultural Production Economics	3.0	Financial Accounting and Human Resource management	3.0	Agricultural Information Management	2.5
	Introduction to Technical Drawing	2.0	Principles of Teaching and Learning Agriculture	2.0	Rural Sociology	2.0	Statistical and Research Methods in Agricultural Education	3.0
	General Botany	3.0	Plant Breeding	2.5	Introduction of Agricultural Field Machines	3.0	Extension Programme Planning and Implementation	2.0
	Introduction to Psychology	2.0	General Microbiology	3.0	Annual Crops	2.5	Pastures and Fodder crops	2.5
	Introduction to Soil Science	3.0	Plant Physiology 1	3.0	Animal Nutrition and Livestock Feeding	4.0	Non-Ruminant Production	4.0
	General Zoology	3.0	Soil Fertility and Plant Nutrition	3.0	Introduction to Computer Applications	3.5	Tropical and Sub Tropical Fruits	3.0
	Agricultural Communication skills	3.0	Cell Biology	3.0	Fundamentals of Entomology	3.0	Green House Management	3.0
	Introduction Workshop Technology	2.0	Agricultural Communication and Technology	3.0	Farm Management Applications	3.0	Agro forestry	3.5
	Basic Farm Power, Source and Utilization	2.0	Quantitative Genetics and Animal Breeding	4.0	Principles of Agricultural Extension	2.0	Agricultural Marketing	3.0
	Principles of Crop Production	3.5	Introduction to Plant Pathology	3.0	Farm Structures	3.0	Agricultural Law and Environmental Law	3.0
	General Genetics	3.0	General Fruit Production	3.0	Perennial Crops	2.5	Management of Agricultural Organizations	2.0
	Plant Anatomy and Morphology	3.0	General Parasitology	3.0	Routine Livestock Practices	3.5	Agricultural Extension and Rural Development	2.0
	Introduction to Environmental Science	3.0	Ecology	3.0	General Vegetable Crops	4.0	Field Visits and Seminars	2.0
	Principles and Practices of Horticulture	3.0	Vertebrate Anatomy and Physiology	3.0			Soil and Water Management	3.5
							Animal Diseases	3.5
							Ruminant Production	4.0
							Field Attachment	4.0
	PLO4: Manage educational and agricultural organizations;	Fundamentals of Agricultural Education and Extension	2.0	Agricultural Production Economics	3.0	Technical Reporting and Writing	2.0	Agri-business Management
Introduction to Psychology		2.0	Philosophy of Education	2.0	Financial Accounting and Human Resource management	3.0	Agricultural Information Management	2.5

	General Mathematics	3.0	Agricultural Communication and Technology	3.0	Curriculum Development in Agricultural Education	3.0	Statistical and Research Methods in Agricultural Education	3.0
	Agricultural Communication skills	3.0	Measurement and Evaluation in Agricultural Education	2.0	Rural Sociology	2.0	Extension Programme Planning and Implementation	2.0
	Developmental Psychology	2.0	Sociology of Education	2.0	Introduction to Computer Applications	3.5	Agricultural Marketing	3.0
					Farm Management Applications	3.0	Agricultural Law and Environmental Law	3.0
					Principles of Agricultural Extension	2.0	Management of Agricultural Organizations	2.0
					Educational Management and Administration	2.0	Agricultural Extension and Rural Development	2.0
					Principles of Guidance and Counselling	2.0	Field Visits and Seminars	2.0
							Economics of Education and Planning of Education	2.0
PLO5: Design and conduct research in agricultural education and agricultural extension	Fundamentals of Agricultural Education and Extension	2.0	Principles of Teaching and Learning Agriculture	2.0	Technical Reporting and Writing	2.0	Agricultural Information Management	2.5
	History of Education	2.0	Philosophy of Education	2.0	Curriculum Development in Agricultural Education	3.0	Statistical and Research Methods in Agricultural Education	3.0
	Introduction to Psychology	2.0	Agricultural Communication and Technology	3.0	Rural Sociology	2.0	Extension Programme Planning and Implementation	2.0
	General Mathematics	3.0	Measurement and Evaluation in Agricultural Education	2.0	Introduction to Computer Applications	3.5	Agricultural Law and Environmental Law	3.0
	Agricultural Communication skills	3.0	Sociology of Education	2.0	Methods of Teaching Agriculture	3.5	Management of Agricultural Organizations	2.0
	Developmental Psychology	2.0			Principles of Agricultural Extension	2.0	Agricultural Extension and Rural Development	2.0
					Educational Management and Administration	2.0	Economics of Education and Planning of Education	2.0
					Methods of Teaching Biology	3.0	Field Attachment	4.0
					Agricultural Education Projects	4.0		
					Teaching Practice	6.0		
PLO6: Develop and conduct training in agricultural extension	Introduction to Agricultural Economics	3.0	Principles of Entrepreneurship	3.0	Technical Reporting and Writing	2.0	Agri-business Management	3.0
	Fundamentals of Agricultural Education and Extension	2.0	Agricultural Production Economics	3.0	Financial Accounting and Human Resource management	3.0	Agricultural Information Management	2.5
	Introduction to Technical Drawing	2.0	Principles of Teaching and Learning Agriculture	2.0	Curriculum Development in Agricultural Education	3.0	Statistical and Research Methods in Agricultural	3.0

							Education	
	General Botany	3.0	Plant Breeding	2.5	Rural Sociology	2.0	Extension Programme Planning and Implementation	2.0
	Introduction to Physical Chemistry	4.0	General Microbiology	3.0	Introduction of Agricultural Field Machines	3.0	Pastures and Fodder crops	2.5
	History of Education	2.0	Taxonomy of Higher Plants	3.0	Annual Crops	2.5	Non-Ruminant Production	4.0
	Introduction to Psychology	2.0	Plant Physiology 1	3.0	Animal Nutrition and Livestock Feeding	4.0	Tropical and Sub Tropical Fruits	3.0
	General Mathematics	3.0	Philosophy of Education	2.0	Introduction to Computer Applications	3.5	Green House Management	3.0
	Introduction to Soil Science	3.0	Soil Fertility and Plant Nutrition	3.0	Fundamentals of Entomology	3.0	Agro forestry	3.5
	General Zoology	3.0	Cell Biology	3.0	Farm Management Applications	3.0	Agricultural Marketing	3.0
	Agricultural Communication skills	3.0	Agricultural Communication and Technology	3.0			Agricultural Law and Environmental Law	3.0
	Introduction Workshop Technology	2.0			Principles of Agricultural Extension	2.0	Management of Agricultural Organizations	2.0
	Basic Farm Power, Source and Utilization	2.0	Quantitative Genetics and Animal Breeding	4.0	Farm Structures	3.0	Agricultural Extension and Rural Development	2.0
	Principles of Crop Production	3.5	Basic Biochemistry	3.0	Perennial Crops	2.5	Field Visits and Seminars	2.0
	General Genetics	3.0	Introduction to Plant Pathology	3.0	Routine Livestock Practices	3.5	Soil and Water Management	3.5
	Plant Anatomy and Morphology	3.0	Sociology of Education	2.0	Educational Management and Administration	2.0	Animal Diseases	3.5
	Introduction to Organic Chemistry	3.5	General Fruit Production	3.0	Methods of Teaching Biology	3.0	Ruminant Production	4.0
	Introduction to Environmental Science	3.0	General Parasitology	3.0	Principles of Guidance and Counselling	2.0	Field Attachment	4.0
	Developmental Psychology	2.0	Ecology	3.0	General Vegetable Crops	4.0		
	Principles and Practices of Horticulture	3.0	Vertebrate Anatomy and Physiology	3.0				

DEPARTMENT OF CURRICULUM, INSTRUCTION AND EDUCATION MANAGEMENT

DIPLOMA IN EDUCATION (PRIMARY OPTION)

1. Philosophy of the Programme

The Diploma in Education (Primary Option) innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge, skills and attitudes. The programme provides equal opportunity in producing competitive and hands-on teachers who contribute to national and global development.

2. Rationale

Prepare education personnel to meet the changing needs of primary school education, teacher training institutions, education management, curriculum development institutions, corporate trainers and research institutions.

3. Goal of the Programme

The Diploma in Education (Primary Option) Programme aims to provide education graduates with the right knowledge, skills, competencies and attitudes for quality primary school instruction and management.

4. Programme Learning Outcomes

By the end of the programme, the graduate should be able to:

- i. Plan, utilize and manage resources in learning institutions
- ii. Design, develop, implement and evaluate curricula.
- iii. Identify and evaluate the various foundations of Education.
- iv. Acquire subject matter mastery and attitudes towards teaching primary school Subjects effectively.

- v. Apply the appropriate techniques in teaching primary school Subjects Develop the child's ability in creative thinking, problem solving and communication skills.

5. Mode of delivery

The mode of delivery is; Full Time and Part-Time (Face to Face).

6. Academic Regulations for the Programme

6.1 Admission Requirements

The following are eligible for consideration for admission:

- A holder of KCSE with a minimum grade of D+ and P1 certificate with a teaching experience of at least 2 years OR
- A holder of mean grade of 'C' plain and a P1 certificate

6.2 Regulation on Credit Transfer in a Programme

There is no Credit transfer in the Diploma in Education (Primary Option) Programme.

6.3 Course Requirements

Teaching will be conducted as per ISO Procedure (EU/AA/OP/06 Rev.3). In addition, a student will be required to prepare a teaching /learning resource in his/her subject area in his/her working station for a period of three months after the end of the second year of study. The learning resource will be assessed by the lecturers in the learners' working stations.

6.4 Student Assessment Policy /Criteria

Student assessment will be carried out in accordance with article 36(6) of Egerton University Statutes of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with the Egerton University Statute 36 (6 e, i).

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(5); and ISO procedure for examinations (EU/AA/OP/07).

6.7 Moderation of Examination

ISO procedure (DOC NO: EU/AA/OP/07) of Egerton University on moderation of examinations shall apply for all exams.

6.8 Graduation Requirements

To graduate, the student should take and pass ALL scheduled courses within the stipulated period and cover a minimum of 108 Credit Factors (CF)

6.9 Classification of Diploma

The Diploma classification shall be in accordance with Egerton University Statute of 2013 No.36 (17).

7. Course Evaluation

ISO Procedure (EU/VC/OP/04) on course evaluation shall apply.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted by the Department of Curriculum, Instruction and Education Management within the Faculty of Education and Community Studies. The Programme Academic leader shall be

appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal evaluation (self-assessment) at the end of each academic cycle. The ISO procedure on quality assurance of academic programmes (EU/VC/OP/05) shall apply. It shall also be benchmarked with at least one such programme in a highly ranked University.

8.3 Course coding

Students shall select one option from the following subject areas:-

- Mathematics, science and agriculture
- Social studies and Languages (where a student will choose to study either Kiswahili or English).

The Course code shall be designated as follows:

The first four letters refer to the subject discipline. For example,

EDCI stands for Education, Curriculum & Instruction.

EAPE stands for Education, Administration, Planning and Economics.

In the case of EDCI and EAPE courses offered by the department of Curriculum, Instruction and Education Management, the coding will be as follows;

- First digit (0) represents the diploma level of study.
Second digit represents the level/year of study.
Third digit represents the program (Dip in Education Primary Option)
Fourth digit represents departmental serialization of courses in a subject discipline taught in an academic year
- All other courses whose coding does not agree with (1) refer to courses shared with those of Diploma in Education Arts.

9. Courses/ Units offered for the Programme

The courses/units offered shall include:

9.1 Schedule of Courses

a) Common Core courses

PCOS 0111–Communication Skills.

COMP 0190– Computer Application in Education.

PHIL 0108 – Ethics, Integrity and national Values.

b) The schedule of courses

OPTION 1; SCIENCE, AGRICULTURE AND MATHEMATICS

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGRO 0102	Principles of Crop Production	45	15	3.5
AGRO 0111	Introduction to Kenya's Agriculture	45	0	3.0
BIOL 0121	Classification of Living Things	30	30	3.0
CHEM 0112	Basic Inorganic Chemistry	30	30	3.0
CHEM 0151	Environmental Chemistry	45	0	3.0
EDCI 0101	Introduction to Basic Mathematics Concepts	45	0	3.0
EDCI 0102	Introduction to Science and Agriculture	45	0	3.0
MATH 0151	Geometry & Basic Algebra	45	0	3.0
PEPS 0131	General Psychology	30	0	2.0
PHIL 0108	Ethics ,Integrity and National Values	45	0	3.0
TOTAL		315	75	29.5

YEAR 1 SEMESTER 2

BIOL 0145	Morphology and Physiology of Plants	30	30	3.0
COMP 0190	Computer Literacy and Use in Education	30	30	3.0
EDCI 0211	Curriculum Theory and Development	30	0	2.0

MATH 0153	Classical Mechanics	45	0	3.0
PAGE 0193	Farm Tools and Structures	30	30	3.0
PCOS 0111	Communication Skills	45	0	3.0
PEDF 0132	Historical and Contemporary Development in Education	30	0	2.0
PEPS 0133	Child Growth and Development	30	0	2.0
PHYS 0101	Introduction to Properties of Matter	30	30	3.0
PHYS 0102	Energy and Mechanics	30	30	3.0
STAT 0152	Basic Statistics	45	0	3.0
TOTAL		375	150	30.0

YEAR 2 SEMESTER 1

ANSC 0291	Principles of Livestock Production	30	30	3.0
BIOL 0212	Morphology and Physiology of Animals	30	30	3.0
CHEM 0121	Basic Physical Chemistry	30	30	3.0
EDCI 0221	Educational Communication and Technology	30	30	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
MATH 0251	General Calculus	45	0	3.0
MATH 0252	Elementary Linear Algebra	45	0	3.0
PEDF 0232	Comparative and International Education	30	0	2.0
PEPS 0231	Psychology of Learning	30	0	2.0

PHYS 0201	Electricity & Magnetism	30	30	3.0
TOTAL		345	150	28.0

YEAR 2 SEMESTER 2

BIOL 0431	Introduction to Cell Biology and Genetics	30	30	3.0
CHEM 0132	Basic Organic Chemistry	30	30	3.0
EAPE 0221	Educational administration and economics	30	30	2.0
EDCI 0202	Primary School Science and Agriculture Subject Methods	30	30	3.0
EDCI 0204	Primary School Mathematics Subject Methods	30	30	3.0
EDCI 0212	Health and Physical Education	30	0	2.0
EDCI 0298	Learning Resources Project	0	90	3.0
PEDF 0233	Law in Education	30	0	2.0
PHYS 0202	Introduction to Thermal Physics	30	30	3.0
STAT 0253	Applied Statistics	45	0	3.0
TOTAL		285	270	27.0

OPTIONS 2: SOCIAL STUDIES AND LANGUAGES

YEAR 1 SEMESTER 1

AGHE 0141	Family Life Education	45	0	3.0
EDCI 0103	Introduction to Social Studies	45	0	3.0
EDCI 0104	Language Education	45	0	3.0
GEOP 0162	Introduction to Human Geography	45	0	3.0

PEPS 0131	General Psychology	30	0	2.0
PHIL 0108	Ethics ,Integrity and National Values	45	0	3.0
PLLE 0121 OR	Introduction to the History of English	45	0	3.0
PLLK 0172	Misingi ya Historia ya Kiswahili	45	0	3.0
PLLL 0122	Introduction to Language and Linguistics	45	0	3.0
PNAR 0163	Natural Resources	30	30	3.0
TOTAL		360	30	29.0

YEAR 1 SEMESTER 2

AGHE 0113	Introduction to Human Ecology	30	30	3.0
COMP 0190	Computer Literacy and Use in Education	30	30	3.0
EDCI 0211	Curriculum Theory and Development	30	0	2.0
GEOP 0166	Introduction to Physical Geography	45	0	3.0
HISP 0167	Education for Citizenship	45	0	3.0
PCOS 0111	Introduction to Academic Communication Skills	45	0	3.0
PEDF 0132	Historical and Contemporary Dev. in Education	30	0	2.0
PEPS 0133	Child Growth and Development	30	0	2.0
PLLL 0173	Introduction to General Linguistics	45	0	3.0
RESP 0164	Religious Beliefs	45	0	3.0
TOTAL		375	60	27.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
ECON 0200	Entrepreneurship Development	45	0	3.0
EDCI 0221	Educational Communication and Technology	30	30	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
GEOP 0264	Economic Geography	45	0	3.0
GEOP 0261	Maps and Field Work	45	0	3.0
HISP 0263	Political Development and Systems in Kenya	45	0	3.0
HISP 0266	Transport and Communication	45	0	3.0
PEDF 0232	Comparative and International Education	30	0	2.0
PEPS 0231	Psychology of Learning	30	0	2.0
PLLE 0271 OR	Language Acquisition	45	0	3.0
PLLE 0272 OR	Grammatical Structures of English	45	0	3.0
PLLK 0271	Upataji Lugha	45	0	3.0
PLLK 0272	Sarufi ya Kiswahili	45	0	3.0
TOTAL		450	30	30.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F.
EAPE 0221	Educational administration and economics	30	0	2.0
EDCI 0203	Social Studies Subject Methods	30	30	3.0
EDCI 0205 OR	English Subject Methods	30	30	3.0

EDCI 0206	Mbinu ya Kufundisha Kiswahili	30	30	3.0
EDCI 0212	Health and Physical Education	30	0	2.0
EDCI 0298	Learning Resources Project	15	90	4.0
GEOP 0267	Geography of Kenya	45	0	3.0
HISP 0265	Political Development and Systems Outside Kenya	45	0	3.0
PEDF 0233	Law in Education	30	0	2.0
PLLE 0273 OR	Communication and Language Use in English	45	0	3.0
PLLK 0273	Mbinu za Mawasiliano Katika Kiswahili	45	0	3.0
PLLK 0274 OR PLLT 0274	Mbinu za Utafiti Katika Fasihi OR Methods of Oratures	45 45	0 0	3.0 3.0
TOTAL		300	180	34.0

c). Course Descriptions

EDCI 0101: Introduction to Basic Mathematical Concepts (45/0: C.F 3.0) Y1S1

Mathematical concepts. Psychological bases of teaching mathematical concepts (Gagne, Bruner and Piaget). The number systems: natural numbers, zero, integers, rational, irrational, complex numbers. Conducting mathematics lessons at lower primary school: pre-number activities; numeration: conservation, cardinality, ordering, whole numbers; historical approach to numeration systems; counting; operations with whole number (+, -, x, ÷); measurement; length, capacity, weight, money, time; geometry; line, curve, triangular, rectangular and circular shapes, patterns; operations with fractions (+, -, x, ÷).

EDCI 0102: Introduction to Science and Agriculture (45/0: C.F 3.0) Y1S1

Our environment. Living and non-livings. External

structure of plants and animals (man). Plant and animal habitats and interactions. General human cleanliness. Care of the environment. Meaning of soil. Soil formation, constituents and properties. Water sources and utilization. Environmental factors affecting agriculture. Classification of crop plants and types of livestock. Sciences and society. Water and hydrogen solubility, separation of mixtures. Physical and chemical changes. Environmental issues from scientific point of view physics and development in society. Measurement in physics –quantities, symbols, units and instruments. Weather measuring instruments and astronomy. Properties of matter. Energy and environment. Forms and Law of conservation of energy. States of matter sources and transmission of sound and light. Current electricity, simple circuits and house wiring. Magnets. Planning schemes of work and Lesson plans for Science and Agriculture. Methods of teaching Science and Agriculture.

EDCI 0103: Introduction to Social Studies (45/0: C.F 3.0) Y1S1

National goals of Education in Kenya. Foundations for social studies curriculum: nature and scope, objectives and its main features. Instruments for comparing and evaluation social studies programmes Joyce Jarolimek, Armstrong. Traditions about social studies curriculum in English speaking countries. Social Studies, Social Sciences, humanities, social Education and their relationship. Significance of social Education to cultural evolution; transmission elements, heuristic elements, critical elements. Creative elements Origin of formal social studies curriculum. Concepts, values and attitudes in social studies. Reasons why social studies in Kenya is as its history and tradition, needs of society and individual, world outlook and ideology.

EDCI 0104: Language Education (45/0: C.F 3.0) Y1S1

The teaching of English and Kiswahili languages in the

primary schools. The teaching of literacy in the primary schools. Sound systems of English and Kiswahili. The structure of English and Kiswahili. Linguistics and communicative competence. The teaching of fluent speaking, reading, writing and listening skills. Vocabulary teaching in primary schools. Language for specific purposes. The teaching of Literature. The verbal and non verbal interaction. Drama as a tool for communication. The process of language acquisition. Problems of language teaching in Kenya. Publishing in the local languages for children. Current issues in language growth and development. Language and communication in the classroom. Kiswahili/English across the curriculum.

EDCI 0211: Curriculum Theory and Development (30/0: C.F 2.0) Y1S2

The definition and meaning of school curriculum and curriculum development. Theory and principles of curriculum construction design and planning. Curriculum purposes and objectives. Participants of curriculum development. Dynamics of curriculum change and its strategies. Forces affecting curriculum decisions and implementation at primary school. Curriculum evaluation. The process of curriculum improvement. Primary school teacher Education. Emerging issues in primary school Education.

EDCI 0222: General Methods and Principles of Teaching (45/0: C.F 3.0) Y2S1

Definition and meaning of teaching and learning processes. Nature and Components of Learning/Teaching processes. Evaluation of teaching method Main approaches of teaching at Primary schools. Essentials of good teaching at Primary school. Characteristics and levels of classroom learning. Components of effective classroom communication. Merits and demerits of various teaching methods and strategies. Goals of primary Education as linked to national goals. Primary school goals (from subject

approach, Instructional objectives at Primary Education. Syllabus, schemes of work, lesson planning, and records of work. Classroom organization, management and effective instruction. Concepts of individual in learning and attention maintenance in the classroom. Methods of evaluating the learning outcomes. Emerging issues in teaching/ learning at Primary school.

EDCI 0202: Primary School Science and Agriculture Subject Methods (45/0: C.F 3.0) Y2S2

Philosophy and objectives of primary school science and agriculture. How children learn science and agriculture. The nature of primary science and agriculture. Language and Science. (Planning schemes of work, lesson plans) for science and agriculture. Organizing and management of instructional resources in science and agriculture. Children's ideas in science. Assessment, monitoring and evaluation. Strategies of developing science and agriculture in primary schools.

EDCI 0204: Primary School Mathematics Subject Methods (45/0: C.F 3.0) Y2S2

How children learn mathematics. Mathematics and society. Language and mathematics. Planning for mathematics. Organizing teaching and learning resources in mathematics. Teaching in primary schools. Gender issues in teaching and learning mathematics. Developing mathematical thinking. Assessment, monitoring and evaluation in mathematics.

EDCI 0221: Educational Communication and Technology (30/30: C.F 3.0) Y2S2

Definition of Education technology. Its contribution to teaching and learning; the communication process; use of different media formats for instruction; use of graphics; use of computer in Education. Production of teaching materials from local resources, resource-based learning.

EDCI 0212: Health and Physical Education (30/0: C.F 2.0) Y2S2

Nutrition and Health. Common diseases in the school and home environment. Contribution of Human activities to Human Health. Population control drugs and drug abuse.

EDCI 0298: Learning Resources Project (15/90: C.F 4.0) Y2S2

Student initiated practical projects in the teaching subject area. The project is intended to enable students to develop personal initiative in constructing teaching materials from local materials. The student will be required to select a suitable and relevant project Write out proposal and then carry out the actual project with approval from supervisors. The student will be expected to write and submit the project report. The project will be carried out during the school session while teaching.

EDCI 0205: English Subject Methods (30/30: C.F 3.0) Y2S2

Primary school English language teaching methods: Principles of teaching English Language in primary school. Objectives of English language teaching. How children learn English as a second language. Teaching primary school oral English. Developing children's writing skills, listening skills and grammar. Teaching fiction and poetry in the primary school. Communication through drama. Planning. Gender issues in English. Evaluation of the current books in use. Evaluation of the teaching material and resources. English across the curriculum.

EDCI 0206: Mbinu za Kufundisha Kiswahili (30/30: C.F 3.0) Y2S2

Mbinu za kufundishia Kiswahili katika shule za msingi. Misingi na madhumuni ya kufundisha Kiswahili, historia ya ufundishaji ya Kiswahili katika shule nchini

Kenya. Jinsi watoto huifunza Kiswahili kama lugha ya kwanza na pili. Ufundishaji wa stadi za kusema, kusikiza, kusoma na kuandika. Ufundishaji was sarufi. Ufundishaji was ufasaha katika Kiswahili zunfunmuuzi was ubunifu ushairi fasihi simulizi- fasihi kwa jumla. Mawasiliano darasani kupitia drama, upangaji wa masomo darasani. Tathmini darasani na viatabu mbali mbali vinavyotumika. Tathimini ya malighafi vifaa vya kufundishia masuala ya uana. Kiswahili mtalaa wa elimu.

EDCI 0203: Social Studies Subject Methods (30/30: C.F 3.0) Y2S2

Curriculum design and changing science in social studies. Contributions of academic discipline to social studies. Organization and instructional approaches to social studies programme. Defining and interpreting the three social studies traditions: Social studies as citizenship transmission, social studies as social science, social studies as reflective inquiry. Essential skills in social studies. Skills for writing social studies objectives skills for selecting learning activities (Content and Methods). Learning resources for social studies. Instructional techniques in social studies. Recent innovations in social studies curriculum, Effective social studies teacher.

EAP 0221: Education Administration and Economics (30/0: CF 2.0) Y2S2

Basic concepts, theories and practices underlying the administration and supervision of education. Leadership in schools, human resources management, and management of students' activities, school financial, legal and policy issues in school management.

9.2 Matrix aligning courses/units to programme learning outcomes

	Year 1		Year 2	
Program Learning Outcomes (PLO)	Courses	CF	Courses	CF
PLO 1 Plan, utilize and manage resources in learning institutions	- Computer literacy and use in Education - Language Education - Introduction to Social Studies - Introduction to Science and Agriculture - Introduction to Basic Mathematical Concepts	3.0 3.0 3.0 3.0 3.0	- Educational administration and economics - Learning Resources Project	3.0 4.0
PLO 2 Design, develop, implement and evaluate curricula.	Curriculum Theory and Development	2.0	General Methods and Principles of Teaching	
PLO 3 Identify and evaluate the various foundations of Education.	- Curriculum Theory and Development - Historical and Contemporary Development in Education - General Psychology - Child Growth and Development	2.0 2.0 2.0 2.0	- Comparative and International Education - Law in Education	2.0 2.0
PLO 4 Acquire subject matter mastery and attitudes towards teaching primary school Subjects effectively.	- Geometry and Basic Algebra - Basic Statistics - Classical Mechanics - Basic Organic Chemistry - Environmental Chemistry - Basic Physical Chemistry - Classification of Living Things - Morphology and Physiology of Plants - Introduction to Properties of Matter - Energy and Machines - Introduction to Kenya's Agriculture - Principles of Crop Production - Natural Resources - Farm Tools, Equipment and Farm Structures - Family Life Education - Introduction to Human Ecology	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Elementary Linear Algebra - General Calculus - Applied Statistics - Morphology and Physiology of Animals - Introduction to Cell Biology and Genetics - Electricity and Magnetism - Introduction to Thermal Physics - Principles of Livestock Production - Grammatical Structures of English - Communication and Language Use in English - Methods of Orature - Language Acquisition - Sarufi ya Kiswahili - Upataji Lugha ahili - Mbinu Za Mawaliliano Katika Kiswahili - Mbinu Za Utafiti Katika Fasihi - Human and Economic Activities	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0

	• Introduction to Language • Introduction to General Linguistics • Introduction to the History of English • Misingi Ya Historia Ya Kiswahili • Religious Beliefs • Human Population • Education for Citizenship • Physical Environment • Natural Resources	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	• Agriculture and Pastoralism • Urbanization • Entrepreneurship Development • Political Development s and Systems In Kenya • Political Development and Systems Outside Kenya • Transport and Communication • Health and Physical Education	3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.0
PLO 5 Apply the appropriate techniques in teaching primary school Subjects.			• Primary School Science and Agriculture Subject Method • General Methods and Principles of Teaching • Primary School Mathematics Subject Methods • Mbinu za Kufundisha Kiswahili • Social Studies Subject Methods • English Subject Methods	3.0 2.0 2.0 3.0 3.0 3.0

DIPLOMA IN EDUCATION (ARTS)

1. Philosophy of the Programme

Diploma in Education (Arts) programme provides a sound, broad-base for producing competitive and hands-on graduates education (Arts) that contribute to national and global development through competitive dissemination of knowledge.

2. Rationale

Competence in teaching is a critical area of concern world-wide. This is due to the essentiality of the products of the education process to the global job market. Teaching of an individual affects eternity. Further, the high demand of education by citizenry and the expectations of stake holders in the job market requires well trained teachers who will appropriately facilitate the acquisition of knowledge, skills and attitudes. The programme is designed to provide access to education and meet the increased demand for teachers nationally and regionally. Therefore, there is need to increase the number of trained teachers in line with the Egerton University vision, mission and philosophy, the Kenya Vision 2030 and United Nation's Sustainable Development Goals. This is particularly urgent in view of free secondary education in Kenya.

3. Goal of the Programme

The Diploma in Education (Arts) is a three academic year programme including a teaching practice and prepares the students to be teachers in secondary schools. The programme is designed to provide access to education and meet the increased demand for teachers nationally and regionally. It also prepares the students for pursuit of advanced degrees in education and other related fields through training in fundamental concepts, knowledge, skills, values, attitudes, and techniques of teaching and research.

4. Programme Learning Outcomes

On completion of the training, graduates of the programme are expected to:

PLO 1: Plan, utilize and manage resources for learning institutions

PLO 2: Design, develop and evaluate curricula

PLO 3: Identify and evaluate the various foundations of Education

PLO 4: Acquire subject matter mastery and attitudes towards teaching Art subject effectively.

PLO 5: Plan and implement appropriate programmes for different categories of learners

4.1 Specialisations

There are no specializations in this programme. However, Students shall select two teaching subjects from the following subject areas:-

- Geography
- History and Government
- Religious Education
- English
- Kiswahili
- Mathematics
- Business Studies
- Literature in English

5. Mode of Delivery

The programme will be delivered face-to-face on campus, on a full-time basis.

6. Academic Regulations for the programme

6.1 Admission Requirements

- (i) Candidates admitted to the Diploma in Education (Arts) must satisfy the minimum entry requirements as stipulated in the common university entrance regulations in the Egerton University statutes 36 (2b) of 2013.
- (ii) In addition, candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade in each of the

following subjects: The applicant must also have passed with at least grade C (Plain) in English or Kiswahili. The applicant must have a grade C+ in two teaching subjects.

- (iii) Those holding qualifications equivalent to the above from institutions recognized by the University may also be liable for admission.

6.2 Regulation on Credit Transfer

There are no credit transfers to the programme.

6.3 Course requirements

ISO procedure for teaching shall apply (EU/AA/OP/06 rev 3). In addition, the Diploma in Education programme shall comprise of Supportive and Practical Skills Enhancement courses. In the first and second years, students will take University Common Core courses, Supportive Basic courses from different faculties. All units will be compulsory as per the subject combination.

6.4 Student Assessment Policy/Criteria

Student assessment will be carried out in accordance with article 36(6) of Egerton University Statutes (2013).

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University statute 36(6e, i) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(6) of 2013; according to ISO procedure for teaching and examinations (EU/AA/OP/07).

6.7 Moderation of Examination

ISO procedure (DOC No EU/AA/OP/07) on moderation of examinations shall apply for all examinations.

6.8 Graduation Requirements

A Diploma in Education (Arts) student is required to take and pass a minimum of 137 Credit Factors which includes at least nine (7) Credit Factors of University Common Core courses. The duration of study for the Diploma will be Three (3) academic years for a full-time student.

6.9 Classification of Diploma

The Diploma classification shall be in accordance with Egerton University Statute No.36 (17a) of 2013.

7. Course Evaluation

Each course shall be evaluated after one full academic cycle as per ISO procedures for Quality Assurance of Academic Programmes (Ref EU/VC/OP/05).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted by the department of Curriculum, Instruction and Education Management, Faculty of Education & Community Services. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Program evaluation

The program shall undergo an internal evaluation (self-assessment) at the end of each academic cycle as per ISO procedure (EU/VC/OP/05).

8.3 Course Coding

The Course code shall be designated as follows:

The prefixes EDCI stands for Education Curriculum Instruction and EAPE stands Education, Administration, Planning and Economics.

The Course code shall be designated as follows:

The first four letters refer to the subject discipline followed by four digits. For example,

- i. First digit (0) represents the diploma level of study.
- ii. Second digit represents the level/year of study.
- iii. Third and fourth digits represent departmental serialization of courses in a subject discipline taught in an academic year

9.0 Courses/units offered should include

9.1 Schedule of Courses/Units offered

a) University Common Core courses

The programme shall have the following compulsory common core courses in line with the programme philosophy, University philosophy and national values.

CODE	COURSE TITLE	L	P	CF
COMP 0101	Computer Application in Education	30	30	3.0
COMS 0111	Communication Skills	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
MATH 113	General Mathematics	45	0	3.0
EDCI 0212	Health and Physical Education	45	0	3.0
EDCI 0212	Curriculum Theory and Development	30	0	2.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
CORE COURSE TOTAL		270	30	19.0

b) Schedule of courses organized by academic year and semester

OPTION 1: EDUCATION, GEOGRAPHY AND BUSINESS COMBINATION

YEAR1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
MATH 0113	Basic Mathematics	45	0	3.0

COMP 0111	Computer Application in Education	30	30	3.0
EDFO 0111	History of Education	45	0	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
GEOG 0111	Physical and Biological Geography	45	0	3.0
GEOG 0112	Practical Geography and Field work	30	30	3.0
BUST 0111	Introduction to Business Management	45	0	3.0
BUST 0112	Principles of Management	45	0	3.0
Total		315	60	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE		L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0142	Development Psychology and Learning	45	0	3.0
GEOG 0121	Human Geography in Africa	45	0	3.0
GEOG 0122	Agricultural Geography	45	0	3.0
BUST 0124	Principles of Marketing	45	0	3.0
BUST 0125	Intermediate Financial Accounting	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
PHIL 0211	Introduction to Philosophy	30	0	2.0
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0211	Environment and Development in Africa	45	0	3.0
GEOG 0212	Quantitative Techniques and Field work	30	30	3.0
BUST 0216	Quantitative Methods in Business	45	0	3.0
BUST 0217	Managerial Economics	45	0	3.0
Total		315	30	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE0 221	Education Administration	45	0	3.0
EDCI 0221	Educational Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Learning	30	0	2.0
EDFO 0213	Sociology of Education	30	0	2.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0221	Geomorphology	45	0	3.0
GEOG 0222	Aerial Photography and Remote Sensing	30	0	3.0
BUST	Entrepreneurship and	45	0	3.0

0228	Small Scale Business Management			
BUST 0229	Management Accounting	45	0	3.0
Total		360	0	25.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resource Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	30	0	2.0
EDCI 0319	Business Studies Subject Methods	45	0	3.0
EDCI 0316	Geography Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
GEOG 0311	Economic Geography	45	0	3.0
GEOG 0312	Applied Geomorphology	45	0	3.0
BUST 0312	Organizational Theory	45	0	3.0
BUST 0312	Business Law	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resource Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 2: EDUCATION, GEOGRAPHY AND HISTORY COMBINATION
YEAR1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
COMP 0111	Computer Application in Education	30	30	3.0
EDFO 0111	History of Education	45	0	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
GEOG 0111	Physical and Biological Geography	45	0	3.0
GEOG 0112	Practical Geography and Field work	30	30	3.0
HIST 0111	Introduction to Academic History	45	0	3.0
HIST 0112	Sources of African History I	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
Total		315	60	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Introduction to Academic Communication Skills	45	0	3.0
EPSC 0142	Development Psychology and Learning	45	0	3.0
GEOG 0121	Human Geography in Africa	45	0	3.0
GEOG 0122	Agricultural Geography	45	0	3.0
HIST 0121	Sources of African History II	45	0	3.0

HIST 0122	Topics in African History	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0211	Environment and Development in Africa	45	0	3.0
GEOG 0212	Quantitative Techniques and Field work	30	0	3.0
HIST 0211	Historiography I	45	0	3.0
HIST 0212	Selected Topics in African Economic History	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
Total		315	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE02 21	Education Administration	30	0	2.0
EDCI 0221	Educational Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Learning	45	0	7.0
EDFO 0213	Sociology of Education	30	0	2.0

EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0221	Geomorphology	45	0	3.0
GEOG 0222	Aerial Photography and Remote Sensing	45	0	3.0
HIST 0221	Historiography II	45	0	3.0
HIST 0222	History of Land and Agriculture in Kenya	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resource Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	30	0	2.0
EDCI 0313	History Methods	45	0	3.0
EDCI 0316	Geography Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
GEOG 0311	Economic Geography	45	0	3.0
GEOG 0312	Applied Geomorphology	45	0	3.0
HIST 0311	Seminar in Theories and Methods of History	45	0	3.0
HIST 0312	History of International Economic Institutions	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resource Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 3: EDUCATION, KISWAHILI AND CHRISTIAN RELIGIOUS EDUCATION COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
COMP 0111	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
KISW 0111	Misingi ya Lugha na Isimu	45	0	3.0
KISW 0112	Historia na Maendeleo ya Kiswahili	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
REST 0100	Religion and Ethics in Society	45	0	3.0
REST 0101	Introduction to the study of Religion	45	0	3.0
Total		315	30	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0

EPSY 0121	Developmental Psychology and learning	45	0	3.0
KISW 0121	Misingi ya Fasihi ya Kiswahili	45	0	3.0
KISW 0122	Mawasiliano na Mbinu za matumizi ya Lugha katika Kiswahili	45	0	3.0
REST 0102	Sociology of Religion	45	0	3.0
REST 0103	African Religion	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
KISW 0211	Fonetiki na Fonolojia	45	0	3.0
KISW 0212	Nadharia za Fasihi na Uihakiki	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
REST 0200	Introduction to Biblical Studies	45	0	3.0
REST 0203	Introduction to Islam	45	0	3.0
Total		315	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EPSC 0228	Measurement and Evaluation	45	0	3.0

EAPE 0221	Education Administration	30	0	2.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
EDFO 0213	Sociology of Education	30	0	2.0
KISW 0221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 0222	Fasihi Simulizi katika Kiswahili	45	0	3.0
REST 0207	Philosophy of Religion	45	0	3.0
REST 0208	Comparative Religion	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	30	0	2.0
EDCI 0317	Christian Religious Education Methods	45	0	3.0
EDCI 0315	Kiswahili Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
KISW 0311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 0312	Nadhari na Riwaya katika Kiswahili	45	0	3.0
REST 0300	Church History 1	45	0	3.0

REST 0301	Research Methods in Religion	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total			300	10.0

OPTION 4: EDUCATION, KISWAHILI & GEOGRAPHY COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
COMP 0190	Computer Application in Education	30	30	3.0
EDFO 0111	History of Education	30	0	2.0
EPSC 0121	Introduction to Psychology	30	0	2.0
GEOG 0111	Physical Environment	45	0	3.0
GEOG 0112	Practical Geography and Field Work	30	30	3.0
KISW 0111	Misingi ya Lugha na Isimu	45	0	3.0
KISW 0112	Historia na Maendeleo ya Kiswahili	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
Total		315	60	23.0

YEAR 1 SEMESTER 2(Y1S2)

EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
GEOG 0121	Human Geography in Africa	45	0	3.0
GEOG 0122	Agricultural Geography	45	0	3.0
KISW 0121	Misingi ya Fasihi ya Kiswahili	45	0	3.0
KISW 0122	Mawasiliano na Mbinu za matumizi ya Lugha katika Kiswahili	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	2.0
GEOG 0111	Environment and Development in Africa	45	0	3.0
GEOG 0112	Quantitative Techniques and Fieldwork	30	30	3.0
KISW 0211	Fonetiki na Fonolojia	45	0	3.0
KISW 0212	Nadharia za Fasihi na Uhakiki	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0

Total		315	30	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
EDFO 0213	Sociology of Education	30	0	2.0
GEOG 0221	Geomorphology	45	0	3.0
GEOG 0222	Aerial Photography and Remote Sensing	45	0	3.0
KISW 0221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 0222	Fasihi Simulizi katika Kiswahili	45	0	3.0
Total		375	0	25.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	30	0	2.0
EDCI 0315	Kiswahili Subject Methods	45	0	3.0
EDCI 0316	Geography Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
GEOG 0311	Economic Geography	45	0	3.0

GEOG 0312	Applied Geomorphology	45	0	3.0
KISW 0311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 0312	Nathari na Riwaya katika Kiswahili	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 5: EDUCATION, KISWAHILI AND HISTORY COMBINATION**YEAR 1 SEMESTER 1(Y1S1)**

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
COMP 0190	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
HIST 0111	Introduction to Academic History	45	0	3.0
HIST 0112	Sources of African History I	45	0	3.0
KISW 0111	Misingi ya Lugha na Isimu	45	0	3.0
KISW 0112	Historia na Maendeleo ya Kiswahili	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
Total		285	30	20.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
HIST 0121	Sources of African History II	45	0	3.0
HIST 0122	Topics in African History	45	0	3.0
KISW 0121	Misingi ya Fasihi ya Kiswahili	45	0	3.0
KISW 0122	Mawasiliano na Mbinu za matumizi ya Lugha katika Kiswahili	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
HIST 0211	Historiography I	45	0	3.0
HIST 0212	Selected Topics in African Economic History	45	0	3.0
KISW 211	Fonetiki na Fonolojia	45	0	3.0
KISW 212	Nadharia za Fasihi na Uihakiki	45	0	3.0

PHIL 0211	Introduction to Philosophy	30	0	2.0
Total		330	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPC 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Learning	45	0	3.0
EDFO 0213	Sociology of Education	30	0	2.0
HIST 0221	Historiography II	45	0	3.0
HIST 0222	History of Land and Agriculture in Kenya	45	0	3.0
KISW 0221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 0222	Fasihi Simulizi katika Kiswahili	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPC 0311	Economics and Planning of Education	30	0	2.0
EDCI 0313	History Subject Methods	45	0	3.0
EDCI 0315	Kiswahili Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and	45	0	3.0

	Counselling			
HIST 0311	Seminar in Theories and Methods of History	45	0	3.0
HIST 0312	History of International Economic Institutions	45	0	3.0
KISW 0311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 0312	Nathari na Riwaya katika Kiswahili	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0325	Learning Resources Project	0	120	4.0
EDCI 0326	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 6: EDUCATION, GEOGRAPHY AND CHRISTIAN RELIGIOUS EDUCATION COMBINATION
YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
COMP 0190	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
GEOG 0111	Physical and Biological Geography	45	0	3.0
GEOG 0112	Practical Geography and Fieldwork	30	30	3.0
MATH	Basic Mathematics	45	0	3.0

0113				
REST 0100	Religion and Ethics in Society	45	0	3.0
REST 0101	Introduction to the study of Religion	45	0	3.0
Total		300	60	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
GEOG 0121	Human Geography in Africa	45	0	3.0
GEOG 0122	Agricultural Geography	45	0	3.0
REST 0102	Sociology of Religion	45	0	3.0
REST 0103	African Religion	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	30	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0211	Environment and Development in Africa	45	0	3.0

GEOG 0212	Quantitative Techniques and Fieldwork	30	30	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
REST 0200	Introduction to Biblical Studies	45	0	3.0
REST 0203	Introduction to Islam	45	0	3.0
Total		315	30	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPC 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Learning	45	0	3.0
EDFO 0213	Sociology of Education	30	0	2.0
GEOG 0221	Geomorphology	45	0	3.0
GEOG 0222	Aerial Photography and Remote Sensing	45	0	3.0
REST 0207	Philosophy of Religion	45	0	3.0
REST 0208	Comparative Religion	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1 (Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPC 0311	Economics and Planning in Education	45	0	3.0

EDCI 0313	History Methods	45	0	3.0
EDCI 0316	Geography Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
GEOG 0311	Economic Geography	45	0	3.0
GEOG 0312	Applied Geomorphology	45	0	3.0
REST 0300	Church History 1	45	0	3.0
REST 0301	Research Methods in Religion	45	0	3.0
Total		405	0	23.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 7: EDUCATION HISTORY AND CHRISTIAN EDUCATION COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	45	0	3.0
COMP 0190	Computer Application in Education	30	30	3.0
EPSY 0111	Introduction to Psychology	30	0	2.0
HIST 0111	Introduction to Academic History	45	0	3.0

HIST 0112	Sources of African History I	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
REST 0100	Religion and Ethics in Society	45	0	3.0
REST 0101	Introduction to the study of Religion	45	0	3.0
Total		315	30	20.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
HIST 0121	Sources of African History II	45	0	3.0
HIST 0122	Topics in African History	45	0	3.0
REST 0102	Sociology of Religion	45	0	3.0
REST 0103	African Religion	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y1S2)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	30	0	2.0
EPSC 0228	Measurement and Evaluation	45	0	3.0

HIST 0211	Historiography I	45	0	3.0
HIST 0212	Selected Topics in African Economic History	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0
Total		315	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	30	0	3.0
EDFO 0112	Philosophy of Education	30	0	2.0
EDFO 0213	Sociology of Education	30	0	2.0
HIST 0221	History of Land and Agriculture in Kenya	45	0	3.0
HIST 0222	Historiography II	45	0	3.0
REST 0207	Philosophy of Religion	45	0	3.0
REST 0208	Comparative Religion	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	30	0	2.0
EDCI 0317	Christian Religious Education Subject Methods	45	0	3.0
EDCI 0313	History Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
HIST 0311	Seminar in Theories and Methods of History	45	0	3.0
HIST 0300	History of International Economic Institutions	45	0	3.0
REST 0301	Research Methods in Religion	45	0	3.0
REST 0312	Theology of New Testament	45	0	3.0
Total		305	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 8: EDUCATION, ENGLISH & LITERATURE COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	45	0	3.0
COMP 0111	Computer Application in Education	30	30	3.0
ENGL 0111	Introduction to Language	45	0	3.0
ENGL 0112	Introduction to Phonetics and Phonology	45	0	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
LITT 0111	Introduction to Literature and Literary Appreciation	45	0	3.0
LITT 0112	Creative Writing	45	0	3.0
MATH 0113	Basic Mathematics	45	0	3.0
Total		315	30	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
COMS 0111	Communication Skills	45	0	3.0
ENGL 0121	A history of English	45	0	3.0
ENGL 0122	Introduction to Grammar in English	45	0	3.0
EPSC 0142	Developmental Psychology and	45	0	3.0

	learning			
LITT 0123	Elements of Style	45	0	3.0
LITT 0124	Kenyan Literature	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
ENGL 0211	Introduction to Morphology and Syntax	45	0	3.0
ENGL 0212	Sociolinguistics	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
LITT 0211	Theatre Arts	45	0	3.0
LITT 0212	Theory of Literature	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
Total		300	0	20.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE 0221	Education Administration	30	0	2.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI	General Methods and	45	0	3.0

0222	Principles of Teaching			
EDFO 0112	Philosophy of Education	30	0	2.0
EDFO 0213	Sociology of Education	30	0	2.0
ENGL 0221	The Phonology of English	45	0	3.0
ENGL 0222	Aspects of Grammatical Analysis	45	0	3.0
LITT 0223	Academic Writing	45	0	3.0
LITT 0224	East African Literature	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
EAPE 0311	Economics and Planning in Education	45	0	3.0
ENGL 0311	Research Methods in Language	45	0	3.0
ENGL 0312	Psycholinguistics	45	0	3.0
LITT 0311	West African Literature	45	0	3.0
LITT 0312	Genres of Oral Literature	45	0	3.0
EDCI 0314	Literature Methods	45	0	3.0
EDCI 0311	English Methods	45	0	3.0
Total		345	0	23.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 9: EDUCATION, GEOGRAPHY AND MATHEMATICS COMBINATION**YEAR 1 SEMESTER 1(Y1S1)**

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
COMP 0111	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
GEOG 0111	Physical and Biological Geography	45	0	3.0
GEOG 0112	Practical Geography and Field work	30	30	3.0
MATH 0113	Basic Mathematics	45	0	3.0
MATH 0114	Geometry and Linear Algebra	45	0	3.0
MATH 0115	Calculus I	45	0	3.0
Total		315	60	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0

COMS 0111	Communication Skills	45	0	3.0
EPSC 0142	Developmental Psychology and learning	45	0	3.0
GEOG 0121	Human Geography in Africa	45	0	3.0
GEOG 0122	Agricultural Geography	45	0	3.0
MATH 0123	Quantitative Techniques	45	0	3.0
MATH 0124	Vector and Mechanics	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
GEOG 0211	Environment and Development in Africa	45	0	3.0
GEOG 0212	Quantitative Techniques and Fieldwork	30	30	3.0
MATH 0213	Calculus II	45	0	3.0
MATH 0214	Probability and Statistics I	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
Total		315	30	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EAPE 0221	Education Administration	30	0	2.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	30	0	2.0
EDFO 0213	Sociology of Education	30	0	2.0
MATH 0223	Linear Algebra I	45	0	3.0
MATH 0224	Probability and Statistics II	45	0	3.0
GEOG 0221	Geomorphology	45	0	3.0
GEOG 0222	Aerial Photography and Remote Sensing	30	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	60	0	4.0
EAPE 0311	Economics and Planning of Education	30	0	2.0
EDCI 0316	Geography Subject Methods	45	0	3.0
EDCI 0313	History Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
GEOG	Economic	45	0	3.0

0311	Geography			
GEOG 0313	Vector Analysis	45	0	3.0
MATH 0313	Vector Analysis	45	0	3.0
MATH 0314	Ordinary Differential Equations	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	LearningResources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 10: EDUCATION, BUSINESS STUDIES AND MATHEMATICS COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
BUST 0111	Introduction to Business Management	45	0	3.0
BUST 0112	Principles of Management	45	0	3.0
COMP 0111	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0
MATH 0113	Basic Mathematics	45	0	3.0
MATH 0114	Geometry and Linear Algebra	45	0	3.0

MATH 0115	Calculus I	45	0	3.0
Total		315	30	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
BUST 0124	Principles of Marketing	45	0	3.0
BUST 0125	Intermediate Financial Accounting	45	0	3.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
MATH 0123	Quantitative Techniques	45	0	3.0
MATH 0124	Vector and Mechanics	45	0	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
BUST 0216	Quantitative Methods in Business	45	0	3.0
BUST 0217	Managerial Economics	45	0	3.0
EDCI 0211	Curriculum Theory and Development	30	0	2.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
MATH	Calculus II	45	0	3.0

0213				
MATH 0214	Probability and Statistics I	45	0	3.0
PHIL 0211	Introduction to Philosophy	30	0	2.0
Total		315	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
EDFO 0213	Sociology of Education	30	0	2.0
BUST 0228	Entrepreneurship and Small Scale Business Management	45	0	3.0
BUST 0229	Management Accounting	45	0	3.0
EAPE 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
MATH 0223	Linear Algebra I	45	0	3.0
MATH 0224	Probability and Statistics II	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
EDCI 0321	LearningResources Project	60	0	4.0
EAPE 0311	Economics and Planning of Education	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
MATH	Vector Analysis	45	0	3.0

0313				
MATH 0314	Ordinary Differential Equations	45	0	3.0
EDCI 0318	Business Studies Subject Methods	45	0	3.0
EDCI 0319	Mathematics Subject Methods	45	0	3.0
BUST 0312	Organizational Theory	45	0	3.0
BUST 0312	Business Law	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

OPTION 11: EDUCATION, BUSINESS STUDIES AND HISTORY COMBINATION

YEAR 1 SEMESTER 1(Y1S1)

CODE	TITLE	L	P	C.F.
EDFO 0111	History of Education	30	0	2.0
BUST 0111	Introduction to Business Management	45	0	3.0
BUST 0112	Principles of Management	45	0	3.0
COMP 0111	Computer Application in Education	30	30	3.0
EPSC 0121	Introduction to Psychology	30	0	2.0

MATH 0113	Basic Mathematics	45	0	3.0
REST 0100	Religion and Ethics in Society	45	0	3.0
REST 0101	introduction to the study of Religion	45	0	3.0
Total		315	0	23.0

YEAR 1 SEMESTER 2(Y1S2)

CODE	TITLE	L	P	C.F.
EDFO 0112	Philosophy of Education	30	0	2.0
BUST 0124	Principles of Marketing	45	0	3.0
BUST 0125	Intermediate Financial Accounting	45	0	3.0
COMS 0111	Communication Skills	45	0	3.0
EPSC 0121	Developmental Psychology and learning	45	0	3.0
HIST 0121	Sources of African History II	45	0	3.0
HIST 0122	Topics in African History	45	0	3.0
PHIL	Ethics, Integrity and National Values	45	0	3.0
Total		345	0	23.0

YEAR 2 SEMESTER 1(Y2S1)

CODE	TITLE	L	P	C.F.
PHIL 0211	Introduction to Philosophy	30	0	2.0
BUST 0216	Quantitative Methods in Business	45	0	3.0
BUST 0217	Managerial Economics	45	0	3.0

EDCI 0211	Curriculum Theory and Development	45	0	3.0
EDCI 0212	Health and Physical Education	45	0	3.0
EPSC 0228	Measurement and Evaluation	45	0	3.0
HIST 0211	Historiography I	45	0	3.0
HIST 0212	Selected Topics in African Economic History	45	0	3.0
Total		315	0	22.0

YEAR 2 SEMESTER 2(Y2S2)

CODE	TITLE	L	P	C.F.
BUST 0228	Entrepreneurship and Small Scale Business Management	45	0	3.0
BUST 0229	Management Accounting	45	0	3.0
EAPE 0221	Education Administration	45	0	3.0
EDCI 0221	Education Communication and Technology	45	0	3.0
EDCI 0222	General Methods and Principles of Teaching	45	0	3.0
HIST 0221	History of Land and Agriculture in Kenya	45	0	3.0
HIST 0222	Historiography II	45	0	3.0
EDFO 0213	Sociology of Education	45	0	2.0
Total		405	0	27.0

YEAR 3 SEMESTER 1(Y3S1)

CODE	TITLE	L	P	C.F.
HIST 0311	Seminar in Theories and Methods of History	45	0	3.0

HIST 0300	History of International Economic Institutions	45	0	3.0
EDCI 0321	Learning Resource Project	60	0	4.0
EAPE 0311	Economics and Planning in Education	45	0	3.0
EDCI 0313	History Subject Methods	45	0	3.0
EDCI 0318	Business Studies Subject Methods	45	0	3.0
EPSC 0326	Introduction to Guidance and Counselling	45	0	3.0
BUST 0312	Organizational Theory	45	0	3.0
BUST 0312	Business Law	45	0	3.0
Total		405	0	27.0

YEAR 3 SEMESTER 2(Y3S2)

CODE	TITLE	L	P	C.F.
EDCI 0321	Learning Resources Project	0	120	4.0
EDCI 0322	Teaching Practice	0	180	6.0
Total		0	300	10.0

(c) Course Descriptions

EDCI 0211 Curriculum Theory and Development (30/0: CF 2.0) Y2S1

Broad definition: basic principles of constitution, design and planning. Emerging concepts of curriculum development. Balancing the curriculum. Curriculum purposes and objectives, curriculum evaluation. Strategic dynamics of curriculum change. Teacher education curriculum.

EDCI 0212: Health and Physical Education (30/0: CF 2.0) Y2S1

Evolution of teaching methods. Main approaches to teaching, characteristics of classroom learning. Components of classroom communication. Teaching strategies and methods. Aims of education, National goals of education and link with instructional objectives. Planning for teaching; syllabus, schemes, lesson plan, record of work. Classroom management. Evaluation: general and special methods. Micro-teaching, peer teaching and teaching practice.

EDCI 0221: Education Communication and Technology (45/0: CF 3.0) Y2S2

Introduction to principles and techniques of selecting and using appropriate media. Production of teaching materials. Management and use of resources in school workshop and laboratories.

EDCI 0311: English Subject Methods (45/0: CF 3.0) Y3S1

History and Philosophy of teaching English; the position of English in Kenya and the rest of the world, varieties of English and standard English, the nature of language, the goals and objectives of learning language. Teaching English as a second language. Aims, goals and objectives of teaching English; psychological basis of learning English; learning resources; strategies in teaching English; **methods of teaching**; skill/techniques of teaching; assessment and evaluation, formulation of lesson objectives, planning to teach (syllabus, schemes of work, lesson plan); microteaching skills, microteaching; and issues in English subject. (PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0317: Christian Religious Education Subject Methods (45/0: CF 3.0) Y3S1

History and Philosophy of CRE, contribution of Religious education as an educational subject in the

curriculum of secondary schools in Kenya, psychological basis of learning CRE, learning resources, strategies in teaching CRE, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues of CRE subject.(PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0313: History Subject Methods (45/0: CF 3.0) Y3S1

History and Philosophy of history, the meaning of history, history and its sources, history and the national goals of education in Kenya, psychological basis of learning history, learning resources, strategies in teaching history, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues in History subject. (PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0314: Literature Subject Methods (45/0: CF 3.0) Y3S1

History and philosophy of literature, psychological basis of learning literature, learning resources, strategies in teaching literature, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues in literature subject. (PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0315: Kiswahili Subject Methods (45/0: CF 3.0) Y3S1

History and philosophy of Kiswahili, to promote the knowledge and use of standard Swahili by emphasizing to the teachers and students the importance of listening, speaking, reading and writing. Encouraging correct pronunciation if possible by using modern implements and a language laboratory, to do research on language development as used in the media. To edit and increase any knowledge related to Swahili language,

psychological basis of learning Kiswahili, learning resources, strategies in teaching Kiswahili, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues in Kiswahili subject. (PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0316: Geography Subject Methods (45/0: CF 3.0) Y3S1

History and philosophy of Geography, the role of a teacher in geography education, evolution of secondary school geography curriculum, psychological basis of learning geography, learning resources, strategies in teaching geography, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues in geography subject. Geography education and its significance in secondary schools philosophy, concepts, nature, scope and goals, study of the local environment through fieldwork. (PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0317: Christian Religious Education Subject Methods (45/0: CF 3.0) Y3S1

History and Philosophy of CRE, contribution of Religious education as an educational subject in the curriculum of secondary schools in Kenya, psychological basis of learning CRE, learning resources, strategies in teaching CRE, methods of teaching, skill/techniques of teaching, microteaching skills, microteaching, assessment and evaluation, and issues of CRE subject.(PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0318: Business Education Subject Methods (30/30: CF 3.0) Y3S2

The nature of business Education subject areas, particularly commerce, accounting and typing with office practice. Business Education as an integrated subject. Advantages and limitations of integration. Other

approaches to designing the business Education curriculum. The relationship and differences between business Education and economics. Methods of teaching business Education. Specific methods of teaching Business Education, commerce and typing with office practice. Skills developed in business Education. The business Education curricula in Kenya, including the syllabi, guide books and business Education room. Preparation of schemes of work and lesson plans, examinations and grading. Micro teaching lessons of students. Micro-teaching.(PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0319: Mathematics Subject Methods (30/30: CF 3.0) Y3S1

An introduction to Mathematics Education. Philosophy and foundation of mathematics. General goals and objectives of mathematics teaching in schools. Changes and influence of mathematics secondary school curriculum. Learning and instructional theories in teaching mathematics (strategies and methods). Selection, preparation, use and management of mathematics teaching resources in schools. Evaluation and grading performance in mathematics. Micro-teaching.(PREREQUISITE EDCI 0221, EDCI 0222 AND EDCI 0212)

EDCI 0321: Learning Resources Project (0/120: CF 4.0) Y3S2

Practical teaching experience in secondary schools under the guidance of university supervisor and cooperating teacher, during the T.P. the student will undertake a teaching materials project.

EDCI 0322: Teaching Practice (0/180: CF 6.0) Y3S2

Practical teaching experience in secondary schools under the guidance of university supervisors and cooperating teachers. The student participants in the total experience of work and responsibilities at school.

EDFO 0111: History of Education (45/0: CF 3.0) Y1S2

Development of education and its relation to civilization from ancient times. Growth of informal and formal education in Kenya from pre-colonial and to post independence period. The role of missionaries, colonial government and the Africans in education establishment. Historical constitutional and administrative strategies in education management.

EDFO 0112: Philosophy of Education (45/0: CF 3.0) Y1S2

Classical and modern philosophical concepts of education. Introduction to schools of philosophical thought, educational theories and their application to school practices. Philosophical issues of knowledge, nature of man, society and values.

EDFO 0213: Sociology of Education (30/0: CF 2.0) Y2S2

The school as a social institution. The role and function of education as an agent of social and cultural change in society. Social dynamics and transmission of culture. Social structure and stratification.

EPSC 0121: Introduction to Psychology (30/0: CF 2.0) Y1S1

Psychology as a science. Schools and branches of psychology. Biological and environmental basis of human behaviour. Basic principles of learning. Concepts and aspects of personality, mental health and abnormal behaviour.

EPSC 0142: Developmental Psychology and Learning (45/0: CF 3.0) Y1S2

Historical basis of human development. Human growth and development. Developmental aspects during prenatal, infancy, early childhood and adolescence stages. Intellectual physical, emotional, language, personality development. The exceptional child,

adulthood and ageing. Behaviour and learning. Forms of learning. Factors that affect learning. Maturation, reinforcement, motivation, attitude, intelligence. Transfer of learning, problem solving and behaviour modification.

EPSC 0228: Measurement and Evaluation (45/0: CF 3.0) Y1S2

Descriptive statistics, elementary probability, estimation, hypothesis testing, linear regression, analyzing variance and non parametric methods. Relationship between measurement, evaluation, testing and assessment. Examinations: test constitution, qualitative and quantitative methods, Reliability and validity. Interpretation of educational measurements.

EPSC 0311: Guidance and Counselling (45/0: CF 3.0) Y1S2

Resources, skills, approaches and techniques in guidance and counselling. Use of psychological tests. Career awareness and occupational development. Psychological and social problems of adjustment. Role of counsellors and significant others e.g. Religious leaders, parents, peers, teachers etc. The scope, purposes, methods of developing, organizing and administering guidance and counselling services.

EAPE 0221: Education Administration (30/0: CF 2.0) Y2S2

Basic concepts, theories and practices underlying the administration and supervision of education. Leadership in schools, human resources management, management of students' activities, school financial, legal and policy issues in school management.

0311: Economics and Planning In Education (30/0: CF 2.0) Y3S1

General concerns of economics and their application to education – investment, consumption, capital demand and supply. Educational role in economic growth.

Financing education. Education equity and efficiency. Planning education for national development.

COMS 0121: Communication Skills (45/0: CF 3.0) Y1S2

Communication skills that are relevant to the students needs in the contemporary university academic situation. The language skills to be practiced are: reading and note-taking; writing; presentation skills, library skills, understanding abstract argument, interpreting graphs and statistics, discourse analysis, recognition of discourse layout – use of thesis/thematic statement, topic markers of various kinds and metalanguage, functional and register analysis/ language use in various situations, essay writing project, research process, understanding language use in writing, concepts of cohesion and coherence in writing/recognition of what makes texts cohesive and coherent. Emphasis will be on the students learning the skills and using them.

PHIL 0211: Introduction to Philosophy (30/0: CF 2.0) Y2S1

Definition of philosophy, popular and academic usages of philosophy. Major branches of philosophy: epistemology, ethics, metaphysics and logic. Philosophy and other disciplines. Philosophy and culture. Value of philosophy.

BUST 0111: Introduction to Business (45/0: CF 3.0) Y1S2

Meaning and concept of Business, Human activities, objectives of business, classification of business, classification of commerce, forms and business organization: sole trader, partnership, joint stock companies, statutory corporations, government companies, departmental undertakings, Joint sectors: cooperative movements. Business environment and its influence on business, management function, financial systems, functional areas of management. Business and society.

BUST 0112: Principals of Management (45/0: CF 3.0) Y1S2

Definition and nature of management, History and development of management thought. Management environment. Management functions: planning, organising, staffing, leading and controlling. Moral and social dimension of management.

BUST 0113 Fundamentals of Accounting (45/0: CF 3.0) Y1S2

Nature, purpose and scope of accounting, conceptual framework of accounting, objectives of financial reporting, accounting principles, concepts and assumptions, qualitative characteristics of accounting information. Accounting cycle: Journalizing, posting, trial balance, end of period adjustments, financial statements, closing entries, post closing trial balance. Accounting for errors, subsidiary books and ledgers. Control accounts. Accounting for merchandising concerns. Accounting for manufacturing companies. Interpretation of financial statements.

BUST 0124: Principles of Marketing (45/0: CF 3.0) Y1S2

Marketing overview, marketing strategies, marketing environment, key marketing policy decisions, consumer behaviour, marketing mix: product, promotion, price and place. Market segmentation. Marketing research and information, its acquisition and analysis as the basis for marketing strategies and decision making. Tools for marketing decisions: marketing audits, sales forecast, analysis of competition. Managing the marketing function-planning, organizing and controlling. Application of marketing concepts.

BUST 0125: Intermediate Financial Accounting (45/0: CF 3.0) Y1S2

Conceptual framework of financial reporting. Cash and short term marketable securities. Accounting for

receivables. Inventories. Accounting for issue of shares. Cash flow statements. Accounting for bonds.

BUST 0216: Quantitative Methods in Business (45/0: CF 3.0) Y1S2

Set theory and logics. The number system. Nature of statistical data. Statistics as a tool of management. Application of differential and integral calculus, and linear algebra to business. Application of sampling and probability theory to management. Correlation and regression analysis. Introduction to matrices and operation of matrices.

BUST 0217: Managerial Economics (45/0: CF 3.0) Y1S2

Nature and scope of managerial economics. Theory of demand and supply. Theory of consumer behaviour. Theory of the firm: the production process. Cost theory and measurement. Market structures. Investment theory.

BUST 0228: Entrepreneurship and Small Business Management (45/0: CF 3.0) Y1S2

The concept of Entrepreneurship, entrepreneurship evolution and development of entrepreneurship. Role of entrepreneurship in economic development. Types of entrepreneurship, functions, characteristics, motivation of entrepreneur, circumstance in which one becomes an entrepreneur. Meaning of small business. Creating and starting new ventures, Business plans. Promotion of small enterprises, problems of small enterprises. Entrepreneurial environment, entrepreneurial competence and mobility. Women and rural entrepreneurship.

BUST 0229: Management Accounting (45/0: CF 3.0) Y1S2

Nature scope and purpose of management accounting in decision making, costing concept and cost classification. Cost estimation methods. Cost accumulation. Product costing methods – jobs order costing, contract costing, process costing, marginal and absorption costing, Activity Based costing (ABC). Cost volume profit (CVP) analysis, budgeting, standard costing and variance analysis. Short term decision: Make or buy, special offer, dropping or adding a product line, choice of a product mix when there exist a limiting factor.

BUST 0312: Organizational Theory (45/0: CF 3.0) Y1S2

Nature and purpose of law. Sources of law in Kenya. Classification of law. The legal system in Kenya. Principles and concepts – rule of law, separation of powers and fundamental rights. The law of contract, law of persons, law of tort, agency law. Sale of goods act, negotiable instruments.

9.3 Matrix aligning courses/units to programme learning outcomes

	YEAR 1		YEAR 2		YEAR 3	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	
PLO 1 Plan, utilize and manage resources for learning institutions	Introduction to Academic Communication Skills		-Education Administration		-Economics and Planning in Education -Learning Resources Project -Teaching Practice -Educational communication and technology	
PLO 2 Design, develop, implement and evaluate curricula	-Computer Application in Education Ethics, Integrity and National Values		-Curriculum Theory and Development -Measurement and Evaluation		-Learning Resources Project -Educational communication and technology -Teaching Practice	
PLO 3 Identify and evaluate the various foundations of Education	-Philosophy of Education -History of Education		-Philosophy of Education -Curriculum Theory and Development -Health and Physical Education		Economics and Planning in Education	
PLO 4 Use relevant and appropriate teaching methods	-Practical Geography and Field work -Introduction to Business Management Principles of Management Agricultural Geography Principles of Marketing Intermediate --Financial Accounting		General Methods and Principles of Teaching Measurements and Evaluation		-Learning Resources Project -Educational communication and technology -Teaching Practice - History Subject Methods -Literature Subject Methods -Kiswahili Subject Methods -Geography Subject Methods -Religious Subject Education Methods -English Subject Methods -Business Studies Subject Methods -Mathematics Methods	

	Physical and Biological Geography Practical Geography and Field work Introduction to Academic History Sources of African History I Misingi ya Lugha na Isimu Historia na Maendeleo ya Kiswahili Religion and Ethics in Society Introduction to the study of Religion Misingi ya Fasihi ya Kiswahili Mawasiliano na Mbinu za matumizi ya Lugha katika Kiswahili Sociology of Religion African Religion Introduction to Language Introduction to Phonetics and Phonology Introduction to Literature and Literary Appreciation Creative Writing					

	A history of English Introduction to Grammar in English Developmental Psychology and learning Elements of Style Kenyan Literature Geometry and Linear Algebra Calculus I Quantitative Techniques Vector and Mechanics Environment and Development Quantitative Techniques and F Quantitative Methods in Business Managerial Economics Geomorphology Aerial Photography and Remote Sensing Entrepreneurship and Small Scale Business Management Accounting Human Geography in Africa					

	Agricultural Geography Sources of African History II Topics in African History Fonetiki na Fonolojia Nadharia za Fasihi na Uhakiki Introduction to Philosophy Introduction to Biblical Studies Introduction to Islam Misingi ya Sarufi ya Kiswahili Fasihi Simulizi katika Kiswahili Philosophy of Religion Comparative Religion Calculus II Probability and Statistics I Linear Algebra I Probability and Statistics II Economic Geography Applied Geomorphology Organizational Theory Business Law					

	Historiography I Selected Topics in African Economic History Seminar in Theories and Methods of History History of International Economic Institutions Mbinu za Utafiti katika Kiswahili Nathari na Riwaya katika Kiswahili Church History 1 Research Methods in Religion Research Methods in Language Psycholinguistics West African Literature Genres of Oral Literature Vector Analysis				

PLO 5 Plan and implement appropriate programmes for different categories of learners	-Computer Application in Education				- Learning Resources Project 4.0 -Teaching Practice - History Subject Methods - Literature Subject Methods-3.0 -Kiswahili Subject Methods-3.0 -Geography Subject Methods-3.0 -Religious Education SubjectMethods-3.0 -English Subject Methods -Business StudiesSubjectMethods - Mathematics Subject Methods	

BACHELOR OF EDUCATION (ARTS)

1. Philosophy of the Programme

The Bachelor of Education (Arts) Programme innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge, skills and attitudes. The programme provides equal opportunity in producing competitive and hands-on teachers who contribute to national and global development.

2. Rationale

Prepare education personnel to meet the changing needs of secondary school education, teacher training institutions, education management, curriculum development institutions, corporate trainers and research institutions.

3. Goal of Programme

Bachelor of Education (Arts) Programme aims to provide education graduates with knowledge, skills, competencies and attitudes to take appropriate professional positions in education upon graduation, for employment and development to enhance individual well-being, growth in leadership and pursue research in the field.

4. Programme Learning Outcomes

By the end of the programme, the graduates should be able to:

- i. Plan, utilize and manage resources in learning institutions
- ii. Design, develop, implement and evaluate curricula.
- iii. Identify and evaluate the various foundations of Education.
- iv. Acquire subject matter mastery and attitudes towards teaching Art Subjects effectively.

- v. Apply the appropriate techniques in teaching Art Subjects.

5. Mode of Delivery

The mode of delivery is; Full Time and Part-Time (Face to Face).

6. Academic Regulations for the programme

6.1 Admission Requirements

The programme is open to students who have passed with a mean grade of at least C+ at KCSE Level. The applicant must also have passed with at least grade C+ in English or Kiswahili. The applicant must have a grade C+ in two teaching subjects or Diploma in Education Art from institutions recognized by Egerton University. Admission may be granted to holders of relevant equivalent certificate(s) from institutions recognized Egerton University.

6.2 Regulation on Credit Transfer in a Programme

Credit transfer shall be done in accordance to Egerton University Statute 36(3) of 2013.

6.3 Course Requirements

Teaching will be as per ISO Procedure (EU/AA/OP/06 rev.3). Students shall take one school term of Teaching Practice in approved secondary schools or equivalent institutions. During teaching Practice, the students shall carry out a Project on production of a Teaching/Learning Resource in one of their teaching subjects which will be assessed by Lecturers in their teaching practice schools.

6.4 Student Assessment Policy/Criteria

Student assessment will be carried out in accordance with Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6e, i) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(6); according to ISO procedure for teaching and examinations (EU/AA/OP/07).

6.7 Moderation of Examination

ISO procedure on moderation of examination shall apply for all examinations as per ISO no. DOC No. EU/AA/OP/07.

6.8 Graduation Requirements

A Bachelor of Education (Art) degree student is required to take and pass a minimum of 175 Credit Factors. The duration of study for the Degree will be four (4) academic years for a full-time student and eight (8) academic years for a part-time student.

6.9 Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36 (17a) of 2013.

7. Course Evaluation

ISO Procedure (EU/VC/OP/04) on course evaluation shall apply.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted by the Department of Curriculum, Instruction and Educational Management. The Programme Academic Leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall undergo an internal evaluation (self-assessment) at the end of each academic cycle. The ISO procedure on quality assurance of academic programmes (EU/VC/OP/05) shall apply. It shall also be benchmarked with at least one such programme in a highly ranked University.

8.3 Course Coding

Students shall select two teaching subjects from the following areas:-

- Geography
- History and Government
- Religious Education
- English
- Kiswahili
- Mathematics
- Business Studies
- Literature in English

Course codes shall be designated as follows:

EDCI stands for Education, Curriculum & Instruction.
EAPE stands for Education, Administration, Planning & Economics.

Courses are identified through a four letter code and three digit system.

- The first digit denotes the year the Course is offered.
- Second and third digits represent the department's serialization of courses in a subject discipline taught in an academic year.

9.0 Courses Offered for the Programme

9.1 Schedule of Courses

a) Common Core Courses

COMS 111–Communication Skills

COMP 111– Computer Application in Education

PHIL 108 – Ethics, Integrity and National Values.

b) The schedule of courses

OPTION 1: ENGLISH/ LITERATURE

YEAR 1 SEMESTER 1: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
ENGL 111	Introduction to Language and Linguistics	45	0	3.0
ENGL 112	Introduction to Phonetics and Phonology of English	45	0	3.0
EPSC 121	Introduction to Psychology	30	0	2.0
LITT 111	Introduction to Literary Criticism	45	0	3.0
LITT 112	Creative Writing (Fiction and Drama)	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	30	0	2.0
Total	-	315	0	21.0

YEAR 1 SEMESTER 2: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
ENGL 121	History and Development of English language	45	0	3.0
ENGL 122	Introduction to Grammar of English	45	0	3.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
LITT 123	Elements of Style	45	0	3.0
LITT 124	Kenyan Literature	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
ENGL 211	Introduction to Morphology and Syntax	45	0	3.0
ENGL 212	Sociolinguistics	45	0	3.0
LITT 211	Theatre Arts	45	0	3.0
LITT 212	Literary Theory	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 2: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
ENGL 221	The Phonology of English	45	0	3.0
ENGL 222	Aspects of Grammatical Analysis	45	0	3.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
LITT 223	Academic Writing	45	0	3.0
LITT 224	East African Literature	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.5
ENGL 311	Research Methods in English	45	0	3.0
ENGL 312	Description of Grammatical Structures in English	45	0	3.0
LITT 311	West African Literature	45	0	3.0
LITT 312	Genres of Oral Literature	45	0	3.0
Total		307.5	30	20.5

YEAR 3 SEMESTER 2: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
EDCI 336	Literature in English Subject Methods	45	0	3.0
EDCI 338	English Language Subject Methods	45	0	3.0
ENGL 321	Historical and Comparative Linguistics	45	0	3.0
ENGL 322	Second Language Acquisition	45	0	3.0
LITT 321	Theory and Methods in Oral Literature	45	0	3.0
LITT 322	Literary Stylistics	45	0	3.0
Total		270	0	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0

EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
ENGL 411	Semantics and Pragmatics	45	0	3.0
EDCI 411	Entrepreneurship Education and Development	45	0	3.0
ENGL 412	Advanced Phonetics and Phonology	45	0	3.0
LITT 411	Southern African Literature	45	0	3.0
LITT 412	European Literature I (From Classical Greece to the Enlightenment)	45	0	3.0
Total		300	30	21.0

YEAR 4 SEMESTER 2: ENGLISH/LITERATURE

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
ENGL 421	Discourse Analysis	45	0	3.0
ENGL 422	Advanced Syntax	45	0	3.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
LITT 421	North African Literature	45	0	3.0
LITT 422	European Literature	45	0	3.0

	II (From Romanticism to Post-Modernism)			
Total		270	0	18.0

OPTION 2: KISWAHILI/RELIGIOUS STUDIES**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
KISW111	Misingi ya Lugha na Isimu	45	0	3.0
KISW112	Historia na Maendeleo ya Kiswahili	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
REST 100	Religion and Ethics in Society	45	0	3.0
REST 101	Introduction to the Study of Religion	45	0	3.0
Total		315	0	21.0

YEAR 1 SEMESTER 2:

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
KISW 121	Misingi ya Fasihi	45	0	3.0
KISW 122	Stadi za Mawasiliano	45	0	3.0

REST 102	Sociology of Religion	45	0	3.0
REST 103	African Religion	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1:

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
KISW 211	Fonetiki na Fonolojia	45	0	3.0
KISW 212	Nadharia za Uhakiki wa Fasihi	45	0	3.0
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 2:

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
KISW 221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 222	Hadithi Fupi na Riwaya ya Kiswahili	45	0	3.0
REST 207	Philosophy of Religion	45	0	3.0
REST 208	Comparative Religion	45	0	3.0
REST 209	History of Islam to Africa (Optional for Muslim Students)	45	0	3.0
Total		300	0	20.0

YEAR 3 SEMESTER 1:

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
EPSC 311	Measurement and Evaluation	30	0	2.0
KISW 311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 312	Fasihi Simulizi	45	0	3.0
KISW 313	Mofolojia na Mofonemiki	45	0	3.0
REST 300	Church History 1	45	0	3.0
REST 301	Research Methods in Religion	45	0	3.0
Total		330	30	22.0

YEAR 3 SEMESTER 2:

CODE	TITLE	L	P/T	C.F
EDCI 339	History and Government Subject Methods	45	0	3.0
EDCI 343	Religious Education Subject Methods	45	0	3.0
KISW 321	Mradi wa Utafiti	45	0	3.0
KISW 322	Nadharia na Mbinu za Utafiti katika Fasihi Simulizi	45	0	3.0
KISW 323	Sintaksi 'ya Kiswahili	45	0	3.0
REST 303	Islamic Civilization and Culture	45	0	3.0
REST 306	Church History	45	0	3.0
Total		270	0	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1:

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
KISW 411	Isimujamii	45	0	3.0
KISW 412	Historian na Maendeleo ya ushairi wa Kiswahili	45	0	3.0
KISW 413	Isimu Historia Linganishi	45	0	3.0
REST 400	New Religious Movement in Africa	45	0	3.0
REST 401	History of Christianity in East Africa	45	0	3.0
Total		270	30	18.0

YEAR 4 SEMESTER 2:

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
KISW 421	Fasihi Linganishi	45	0	3.0
KISW 422	Semantiki na Pragmatiki	45	0	3.0

KISW 423	Tamthilia ya Kiswahili	45	0	3.0
REST 407	Religion and Development in Africa	45	0	3.0
REST 409	Liberation Theology	45	0	3.0
Total		300	0	20.0

OPTION 3: KISWAHILI/ HISTORY

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
HIST 120	The Making of Kenya	45	0	3.0
HIST 130	Sources of African History	45	0	3.0
KISW111	Misingi ya Lugha na Isimu	45	0	3.0
KISW112	Historia na Maendeleo ya Kiswahili	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
Total		285	0	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
HIST 110	Topics in African History	45	0	3.0

HIST 121	Themes in East African History	45	0	3.0
KISW 121	Misingi ya Fasihi	45	0	3.0
KISW 122	Stadi za Mawasiliano	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
HIST 201	Survey of World History 1	45	0	3.0
HIST 220	Topics in the History of Agriculture 1	45	0	3.0
KISW 211	Fonetiki na Fonolojia	45	0	3.0
KISW 212	Nadharia za Uhakiki wa Fasihi	45	0	3.0
Total		270	0	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 228	Measurement and Evaluation	30	0	2.0
EPSC 224	Introduction to Statistics & Research Methods in Education	45	0	3.0
HIST 221	Selected Topics in African Economic History	45	0	3.0
HIST 202	Survey of World History 2	45	0	3.0

HIST 222	History of Land and Agriculture in Kenya	45	0	3.0
KISW 221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW 222	Hadithi Fupi na Riwaya ya Kiswahili	45	0	3.0
Total		300	0	20.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.5
HIST 326	History of Economic Thought 1	45	0	3.0
HIST 380	Issues In History of Women 1	45	0	3.0
KISW 311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 312	Fasihi Simulizi	45	0	3.0
KISW 313	Mofolojia na Mofofonemiki	45	0	3.0
Total		337.5	30	22.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 337	Kiswahili Subject Methods	45	0	3.0
EDCI 339	History and Government Subject Methods	45	0	3.0
HIST 327	History of Economic Thought 11	45	0	3.0

HIST 381	Issues in History of Women 11	45	0	3.0
KISW 321	Mradi wa Utafiti	45	0	3.0
KISW 322	Nadharia na Mbinu za Utafiti katika Fasihi Simulizi	45	0	3.0
KISW 323	Sintaksi `ya Kiswahili	45	0	3.0
Total		315	0	21.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
HIST 404	Contemporary History of the Middle East	45	0	3.0
HIST 432	Armed Conflicts in Independent Africa	45	0	3.0
KISW 411	Isimujamii	45	0	3.0
KISW 412	Historian na Maendeleo ya ushairi wa Kiswahili	45	0	3.0
KISW 413	Isimu Historia Linganishi	45	0	3.0
Total		315	30	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
HIST 400	Philosophy of History	45	0	3.0
HIST 414	International Working Class Movement	45	0	3.0
KISW 421	Fasihi Linganishi	45	0	3.0
KISW 422	Semantiki na Pragmatiki	45	0	3.0
KISW 423	Tamthilia ya Kiswahili	45	0	3.0
Total		315	0	21.0

OPTION 4: HISTORY / RELIGIOUS STUDIES

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
HIST 120	The Making of Kenya	45	0	3.0
HIST 130	Sources of African History	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
REST 100	Religion and Ethics in Society	45	0	3.0

REST 101	Introduction to the Study of Religion	45	0	3.0
Total		315	0	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
HIST 110	Topic in African History	45	0	3.0
HIST 121	Themes in East African History	45	0	3.0
REST 102	Sociology of Religion	45	0	3.0
REST 103	African Religion	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
HIST 201	Survey of World History 1	45	0	3.0
HIST 220	Topic in The History of Agriculture 1	45	0	3.0
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0
Total		270	0	18.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
HIST 202	Survey of World History 2	45	0	3.0
HIST 221	Selected Topics in African Economic History	45	0	3.0
HIST 222	History of Land and Agriculture in Kenya	45	0	3.0
HIST 223	History of Science and Technology II	45	0	3.0
REST 207	Philosophy of Religion	45	0	3.0
REST 208	Comparative Religion	45	0	3.0
REST 209	History of Islam to Africa (Optional for Muslim Students)	45	0	3.0
Total		300	0	20.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
EPSC 311	Measurement and Evaluation	30	0	2.0
HIST 326	History of Economic Thought 1	45	0	3.0
HIST 380	Issues In History of Women	45	0	3.0

REST 300	Church History 1	45	0	3.0
REST 301	Research Methods in Religion	45	0	3.0
Total		330	30	22.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 339	History and Government Subject Methods	45	0	3.0
EDCI 343	Religious Education Subject Methods	45	0	3.0
HIST 327	History of Economic Thought ii	45	0	3.0
HIST 381	Issues in History of Women ii	45	0	3.0
REST 303	Islamic Civilization and Culture	45	0	3.0
REST 306	Church History	45	0	3.0
Total		270	0	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
HIST 404	Contemporary History of Middle East	45	0	3.0
HIST 432	Armed Conflict in Independent Africa	45	0	3.0
REST 400	New Religious	45	0	3.0

	Movement in Africa			
REST 401	History of Christianity in East Africa	45	0	3.0
Total		270	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and <i>Counseling</i>	30	0	2.0
HIST 400	Philosophy of History	45	0	3.0
HIST 414	International Working Movement C/S	45	0	3.0
REST 407	Religion and Development in Africa	45	0	3.0
REST 409	Liberation Theology	45	0	3.0
Total		300	0	20.0

OPTION 5: GEOGRAPHY /HISTORY**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical	45	0	3.0

	Geography			
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
HIST 120	The Making of Kenya	45	0	2.0
HIST 130	Sources of African History	45	0	2.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
Total		315	30	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map Work and Analysis of Spatial	30	30	3.0
HIST 110	Topic in African History	45	0	3.0
HIST 121	Themes in East African History	45	0	3.0
Total		315	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0

EDFO 213	Sociology of Education	30	0	2.0
HIST 201	Survey of World History 1	45	0	3.0
HIST 220	Topic in The History of Agriculture 1	45	0	3.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
Total		300	30	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Education	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
HIST 202	Survey of World History 11	45	0	3.0
HIST 221	Selected Topics in African Economic History	45	0	3.0
HIST 222	History of Land and Agriculture in Kenya	45	0	3.0
Total		300	0	20.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EPSC 311	Measurement and Evaluation	30	0	2.0
EDCI 311	Secondary School	30	0	2.0

	Curriculum			
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	45	0	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
HIST 326	History of Economic Thought 1	45	0	3.0
HIST 380	Issues In History of Women	45	0	3.0
Total		330	0	22.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 335	Geography Subject Methods	45	0	3.0
GEOG 321	Research Methods in Geography	45	30	3.0
GEOG 322	Climate Change and Development	45	0	3.0
EDCI 339	History and Government Subject Methods	45	0	3.0
HIST 327	History of Economic Thought ii	45	0	3.0
HIST 381	Issues in History of Women ii	45	0	3.0
Total		270	30	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
HIST 404	Contemporary History of Middle East	45	0	3.0
HIST 432	Armed Conflicts in Independent Africa	45	0	3.0
Total		255	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
GEOG 416	Environmental Impact Assessment Studies	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
HIST 400	Philosophy of History	45	0	3.0
HIST 414	International Working C/S	45	0	3.0

	Movement			
Total		300	0	20.0

OPTION 6: GEOGRAPHY / RELIGIOUS STUDIES**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	30	30	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
REST 100	Religion and Ethics in Society	45	0	3.0
REST 101	Introduction to the Study of Religion	45	0	3.0
Total		300	0	21.0

YEAR 1 SEMESTER 2:

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EPSC 122	Developmental Psychology	30	0	2.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
REST 102	Sociology of Religion	45	0	3.0
REST 103	African Religion	45	0	3.0

GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map Work and Analysis of Spatial	30	30	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
REST 200	Introduction to Biblical Studies	45	0	3.0
REST 203	Introduction to Islam	45	0	3.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
Total		270	60	18.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0

REST 207	Philosophy of Religion	45	0	3.0
REST 208	Comparative Religion	45	0	3.0
REST 209	History of Islam to Africa (Optional for Muslim Students)	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
REST 300	Church History 1	45	0	3.0
REST 301	Research Methods in Religion	45	0	3.0
Total		285	0	20.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 335	Geography Subject Methods	45	0	3.0
EDCI 343	Religious Education Subject Methods	45	0	3.0
GEOG 321	Research Methods in Geography	45	30	3.0
GEOG 322	Climate Change and Development	45	0	3.0
REST 303	Islamic Civilization and Culture	45	0	3.0

REST 306	Church History	45	0	3.0
Total		270	30	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
REST 400	New Religious Movement in Africa	45	0	3.0
REST 401	History of Christianity in East Africa	45	0	3.0
Total		255	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance	30	0	2.0

	Counseling			
GEOG 416	Environmental Impact Assessment Studies	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
REST 407	Religion and Development in Africa	45	0	3.0
REST 409	Liberation Theology	45	0	3.0
Total		300	0	20.0

OPTION 7: MATHEMATICS / GEOGRAPHY

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 131	Vectors and Mechanics	45	0	3.0
MATH 132	Analytic Geometry	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
Total		360	0	24.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication	45	0	3.0

	Skills			
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map Work and Analysis of Spatial	30	30	3.0
MATH 111	Differential Calculus	45	0	3.0
STAT 131	Introductory Statistics	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0
STAT 230	Probability & Statistics	45	0	3.0
Total		315	0	21.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
MATH 213	Linear Algebra	45	0	3.0
STAT 233	Bivariate Probability & Statistics	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	0	2.0
EDCI 351	Educational Comm. and Technology	30	30	3.0
EPSC 311	Measurement and Evaluation	30	0	2.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
MATH 312	Real Analysis	45	0	3.0
Total		270	0	18.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 332	Mathematics Subject Methods	45	0	3.0
EDCI 335	Geography Subject	45	0	3.0

	Methods			
GEOG 321	Research Methods in Geography	45	30	3.0
GEOG 322	Climate Change and Development	45	0	3.0
MATH 313	Advanced Real Analysis	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
Total		270	0	18.0

BETWEEN YEAR 3 AND YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
MATH 422	General Topology	45	0	3.0
MATH 434	Partial Differential Equation	45	0	3.0
Total		270	0	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
GEOG 416	Environmental Impact Assessment Studies	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
MATH 421	Measure Theory	45	0	3.0
MATH 431	Advanced Ordinary Differential Equation	45	0	3.0
Total		300	0	20.0

OPTION 8: MATHEMATICS / BUSINESS STUDIES**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
BUST 111	Introduction to Business Management	45	0	3.0
BUST 112	Principles of Management	45	0	3.0
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 131	Vectors and	45	0	3.0

	Mechanics			
MATH 132	Analytic Geometry	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	30	0	2.0
Total		360	0	24.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST121	Fundamentals of Financial Accounting	45	0	3.0
BUST122	Principles of Marketing	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
MATH111	Differential Calculus	45	0	3.0
STAT 131	Introductory Statistics	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 212	Quantitative Methods in Business	45	0	3.0
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0

STAT 230	Probability & Statistics	45	0	3.0
Total		300	0	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 221	Managerial Economics	45	0	3.0
BUST 222	Entrepreneurship and Small Business Management	45	0	3.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
MATH 213	Linear Algebra	45	0	3.0
STAT 233	Bivariate Probability & Statistics	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 311	Management Accounting I	45	0	3.0
BUST 312	Organizational Theory	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	0	3.0
EPSC 311	Measurement and Evaluation	30	0	2.0
MATH 312	Real Analysis	45	0	3.0
MATH 314	Ordinary Differential Equation I	45	0	3.0

Total		330	0	22.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 321	Risk Management and Insurance	45	0	3.0
BUST 322	Business Law	45	0	3.0
EDCI 332	Mathematics Subject Methods	45	0	3.0
EDCI 340	Business Studies Subject Methods	45	0	3.0
MATH 313	Advanced Real Analysis	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
Total		270	0	18.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 411	Strategic Management	45	0	3.0
BUST 412	Financial Management	45	0	3.0
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
MATH 422	General Topology	45	0	3.0
MATH 434	Partial Differential Equations	45	0	3.0
Total		255	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 421	Management Accounting II	45	0	3.0

BUST 422	Business Taxation	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counselling	30	0	2.0
MATH 421	Measure Theory	45	0	3.0
MATH 431	Advanced Ordinary Differential Equation	45	0	3.0
Total		300	0	20.0

OPTION 9: GEOGRAPHY / BUSINESS STUDIES

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 111	Introduction to Business Management	45	0	3.0
BUST 112	Principles of Management	45	0	3.0
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	30	30	3.0
PHIL 108	Ethics, Integrity and National Values	30	0	2.0
Total		300	30	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 121	Fundamentals of Financial Accounting	45	0	3.0
BUST 122	Principles of Marketing	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map Work and Analysis of Spatial	30	30	3.0
Total		315	30	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 211	Intermediate Financial Accounting	45	0	3.0
BUST 212	Quantitative Methods in Business	45	0	3.0
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0

GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
Total		270	60	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 221	Managerial Economics	45	0	3.0
BUST 222	Entrepreneurship and Small Business Management	45	0	3.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 311	Management Accounting I	45	0	3.0
BUST 312	Organizational Theory	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
EPSC 311	Measurement and Evaluation	30	0	2.0
GEOG 311	Geomorphology	45	0	3.0

GEOG 314	Geography of Agriculture	45	0	3.0
Total		315	30	22.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 321	Risk Management and Insurance	45	0	3.0
BUST 322	Business Law	45	0	3.0
EDCI 335	Geography Subject Methods	30	30	3.0
EDCI 340	Business Studies Subject Methods	30	30	3.0
GEOG 321	Research Methods in Geography	45	30	3.0
GEOG 322	Climate Change and Development	45	0	3.0
Total		240	90	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST411	Strategic Management	45	0	3.0
BUST412	Financial Management	45	0	3.0
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles &	45	0	3.0

	Practices			
GEOG 414	Industrial Geography	45	0	3.0
Total		255	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 421	Management Accounting II	45	0	3.0
BUST 422	Business Taxation	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
GEOG 416	Environmental Impact Assessment Studies	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
Total		300	0	20.0

OPTION 10: GEOGRAPHY / KISWAHILI

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in	30	30	3.0

	Geography			
KISW111	Misingi ya Lugha na Isimu	45	0	3.0
KISW112	Historia na Maendeleo ya Kiswahili	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	30	0	2.0
Total		225	30	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map Work and Analysis of Spatial	30	30	3.0
KISW121	Misingi ya Fasihi	45	0	3.0
KISW122	Stadi za Mawasiliano	45	0	3.0
Total		315	30	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0

GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
KISW211	Fonetiki na Fonolojia	45	0	3.0
KISW212	Nadharia za Uhakiki wa Fasihi	45	0	3.0
Total		270	60	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
KISW221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW222	Hadithi Fupi na Riwaya ya Kiswahili	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	0	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
KISW 311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 312	Tanzu za Fasihi	45	0	3.0

	Simulizi			
KISW 313	Mofolojia na Mofonemiki	45	0	3.0
Total		330	0	23.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 335	Geography Subject Methods	30	30	3.0
EDCI 340	Business Studies Subject Methods	30	30	3.0
GEOG 321	Research Methods in Geography	45	30	3.0
GEOG 322	Climate Change and Development	45	0	3.0
KISW 321	Mradi wa utafiti	45	0	3.0
KISW 322	Nadharia na Mbinu za Utafiti katika Fasihi Simulizi	45	0	3.0
KISW 323	Sintaksi `ya Kiswahili	45	0	3.0
Total		285	90	21.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management:	45	0	3.0

	Principles & Practices			
GEOG 414	Industrial Geography	45	0	3.0
KISW 411	Isimujamii	45	0	3.0
KISW 412	Historian na Maendeleo ya ushauri wa Kiswahili	45	0	3.0
KISW 413	Isimu Historia Linganishi	45	0	3.0
Total		300	30	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
GEOG 416	Environmental Impact Assessment Studies	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
KISW 421	Fasihi linganishi	45	0	3.0
KISW 422	Semantiki na Pragmatiki	45	0	3.0
KISW 423	Tamthiliya ya Kiswahili	45	0	3.0
Total		345	0	23.0

OPTION 11: KISWAHILI /BUSINESS STUDIES

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST111	Introduction to Business Management	45	0	3.0
BUST112	Principles of Management	45	0	3.0
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
KISW 111	Misingi ya Lugha na Isimu	45	0	3.0
KISW 112	Historia na Maendeleo ya Kiswahili	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	30	0	2.0
Total		3150	0	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 121	Fundamentals of Financial Accounting	45	0	3.0
BUST 122	Principles of Marketing	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
KISW121	Misingi ya Fasihi	45	0	3.0
KISW122	Stadi za Mawasiliano	45	0	3.0

Total		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 211	Intermediate Financial Accounting	45	0	3.0
BUST 212	Quantitative Methods in Business	45	0	3.0
EDCI 211	Principles and Theory of Curriculum Development	30	0	2.0
EDCI 212	Health and Physical Education	30	0	2.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
KISW211	Fonetiki na Fonolojia	45	0	3.0
KISW212	Nadharia ya Fasihi na Uhakiki	45	0	3.0
Total		300	0	20.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 221	Managerial Economics	45	0	3.0
BUST 222	Entrepreneurship and Small Business Management	45	0	3.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
KISW221	Misingi ya Sarufi ya Kiswahili	45	0	3.0
KISW222	Hadithi Fupi na Riwaya ya Kiswahili	45	0	3.0
Total		255	0	17.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 311	Management Accounting I	45	0	3.0
BUST 312	Organizational Theory	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	0	3.0
KISW 311	Mbinu za Utafiti katika Kiswahili	45	0	3.0
KISW 312	Tanzu za Fasihi Simulizi	45	0	3.0
KISW 313	Mofolojia na Mofonemiki	45	0	3.0
Total		330	0	23.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 321	Risk Management and Insurance	45	0	3.0
BUST 322	Business Law	45	0	3.0
EDCI 335	Geography Subject Methods	30	30	3.0
EDCI 340	Business Studies Subject Methods	30	30	3.0
KISW 322	Nadharia na Mbinu za Utafiti katika Fasihi Simulizi	45	0	3.0
KISW 323	Sintaksi `ya Kiswahili	45	0	3.0
KISW 321	Mradi wa utafiti	45	0	3.0
Total		285	60	21.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST411	Strategic Management	45	0	3.0
BUST412	Financial Management	45	0	3.0
EAPF 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
KISW 411	Isimujamii	45	0	3.0
KISW 412	Historia na Maendeleo ya ushairi wa Kiswahili	45	0	3.0
KISW 413	Isimu Historia Linganishi	45	0	3.0
Total		300	30	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 421	Management Accounting II	45	0	3.0
BUST 422	Business Taxation	45	0	3.0
EAPF 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative	30	0	2.0

	Education			
EPSC 426	Principles and Guidance and Counseling	30	0	2.0
KISW 421	Fasihi linganishi	45	0	3.0
KISW 422	Semantiki na Pragmatiki	45	0	3.0
KISW 423	Tamthiliya ya Kiswahili	45	0	3.0
Total		345	0	23.0

OPTION 12: HISTORY / BUSINESS STUDIES**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
BUST 111	Introduction to Business Management	45	0	3.0
BUST 112	Principles of Management	45	0	3.0
COMP 111	Computer Application in Education	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
HIST 120	The Making of Kenya	45	0	3.0
HIST 130	Sources of African History	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	30	0	2.0
Total		315	0	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 121	Fundamentals of Financial Accounting	45	0	3.0
BUST 122	Principles of Marketing	45	0	3.0

COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
EPSC 123	Statistical Methods	45	0	3.0
HIST 110	Topic in African History	45	0	3.0
HIST 121	Themes in East African History	45	0	3.0
Total		330	0	22.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 221	Managerial Economics	45	0	3.0
BUST 222	Entrepreneurship and Small Business Management	45	0	3.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
HIST 202	Survey of World History 2	45	0	3.0
HIST 221	Selected Topics in African Economic History	45	0	3.0
HIST 222	History of Land and Agriculture in Kenya	45	0	3.0
Total		300	0	20.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 311	Management Accounting I	45	0	3.0
BUST 312	Organizational Theory	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0

EDCI 351	Educational Communication and Technology	30	0	3.0
HIST 326	History of Economic Thought 1	45	0	3.0
HIST 380	Issues In History of Women	45	0	3.0
Total		285	0	20.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 321	Risk Management and Insurance	45	0	3.0
BUST 322	Business Law	45	0	3.0
EDCI 335	Geography Subject Methods	45	0	3.0
EDCI 340	Business Studies Subject Methods	45	0	3.0
HIST 327	History of Economic Thought ii	45	0	3.0
HIST 381	Issues in History of Women ii	45	0	3.0
Total		270	0	18.0

BETWEEN YEAR 3 AND YEAR 4

EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching Practice	0	90	6.0
Total		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BUST 411	Strategic Management	45	0	3.0
BUST 412	Financial Management	45	0	3.0
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues	30	0	2.0

	in Education			
HIST 404	Contemporary History of Middle East	45	0	3.0
HIST 432	Armed Conflict in Independent Africa	45	0	3.0
Total		255	30	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BUST 421	Management Accounting II	45	0	3.0
BUST 422	Business Taxation	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 412	Law in Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance Counseling	30	0	2.0
HIST 400	Philosophy of History	45	0	3.0
HIST 414	International Working Movement C/S	45	0	3.0
HIST 421	Historical Studies in International Organizations	45	0	3.0
HIST 422	Research Project	45	0	3.0
Total		390	0	26.0

c). Course Description

EDCI 211: Principles and Theory of Curriculum Development (30/0: CF 2.0) Y2S1

The broad definition of curriculum development. Basic principles of curriculum construction, design and planning. Emerging concepts of curriculum development. Major areas and balance in the curriculum. Curriculum purposes and objectives; curriculum evaluation. Dynamics of curriculum change and strategies. Teacher Education curriculum.

EDCI 212: Health and Physical Education (30/0: CF 2.0) Y2S2

The history and background of Health and Physical Education in secondary schools in Kenya; the principles underlying mental and physical health development, such as nutrition, physical fitness and ageing process. A study of immune system and the body defence mechanism; communicable (infectious diseases) and non-communicable diseases (hypokinetic diseases such as metabolic, musculoskeletal and cardio-respiratory diseases). An evaluation of the harmful effects such as drug abuse, alcoholism and smoking dangers among students in secondary schools. A study of psychosocial health; a review of the environmental danger and other hazards. The relationship between physical Education and sports in schools and healthful living.

EDCI 311: Secondary Education Curriculum (45/0: CF 3.0) Y3S1)

Historical and philosophical foundations of secondary Education curriculum design. The National Education System. Social forces affecting curriculum decisions. The process of curriculum improvement, the different participants involved in the process as well as the impact of curriculum improvement upon staff development and student learning. Strategies used in curriculum development.(*PREREQUISITE EDCI 211*)

EDCI 321: General Methods and Principles of Teaching (45/0: CF 3.0) Y3S1

Evolution of teaching methods, traditional and modern teaching methods. Nature and components of teaching/learning processes. Main approaches to teaching and essentials of good teaching. Characteristics and levels of classroom learning. Classroom communication, components of effective classroom communication. Teaching strategies, various methods of teaching; merits and demerits of various methods. Goals of Education as linked to national goals. Secondary school goals (from subject approach), instructional objectives in the classroom. Planning: syllabus, schemes of work, lesson plan and record of work. Classroom organization and management, effective classroom instruction, individual differences, sustenance of attention in the classroom. Methods of evaluating; learning outcomes. General and special methods, microteaching, peer teaching and teaching practice.

EDCI 351: Educational Communication and Technology II (45/0: CF 2.0) Y3S2

Review of the communication process and media classification. Designing, production and utilization of audio-visual media (ASSURE model); multimedia systems; management of learning resource centres. Future developments in Educational media and resources. Students to have a hands-on experience in the production of instructional materials. Students to undertake a media project.(*PREREQUISITE EDCI 223*)

EDCI 332: Mathematics Subject Methods (30/30: CF 3.0) Y3S2

An introduction to Mathematics Education. Philosophy and foundation of mathematics. General goals and objectives of mathematics teaching in schools. Changes and influence of mathematics secondary school curriculum. Learning and instructional theories in teaching mathematics (strategies and methods). Selection, preparation, use and management of

mathematics teaching resources in schools. Evaluation and grading performance in mathematics. (Micro-teaching)(*PREREQUISIT EDCI 321*)

EDCI 335: Geography Subject Methods (30/30: CF 3.0) Y3S2

An introduction to geography Education - philosophy, concepts, nature, scope and goals. The role of teacher in geography Education. Evolution of secondary school geography curriculum. Preparation and planning of geography teaching syllabus, scheme of work, lesson plans. Methods of teaching and learning geography. Problems associated with the teaching of geography. Current research and approaches in geography Education. Acquisition, preparation, use and management of teaching - learning resources and equipment. Study of the local environment through fieldwork. Project work in geography Education. Evaluation and assessment in geography Education. Micro-teaching.(*PREREQUISITE EDCI 321, EDCI 351*)

EDCI 336: Literature in English Subject Methods (30/30: CF 3.0) Y3S2

The nature of literature. The importance of literature. Literature and language. Goals and objectives of teaching literary appreciation. The categories of literature lessons. The subtlety of African oral literature. Teaching aids: Design and selection. Preparation for the Literature lesson. Test and measurement. Micro teaching. Micro-teaching.(*PREREQUISITE EDCI 321, EDCI 351*)

EDCI 337: Kiswahili Subject Methods (Mbinu za Kufundisha Kiswahili) (30/30: CF 3.0) Y3S2

The status of Kiswahili language in Kenya and the rest of the world. The Analysis and Philosophy of teaching Kiswahili language and literature in secondary schools. A Re-evaluation of the syllabus. The Concept of second language acquisition in the teaching context. Common errors in spoken and written Kiswahili. General methods

of teaching Kiswahili Language and Literature. Teaching Aids; Preparation of Scheme of Work, Lesson Plans and Record of Work. The Teaching of Listening, Speaking, Reading and Writing Skills. The Teaching of Grammar and Vocabulary. The teaching of written literature, Oral literature; poetry, short stories, novels and plays. The teaching of Sociolinguistics. Tests and Measurement. Problems in Teaching Kiswahili Language and Literature. Microteaching. Learning ResourceProject.(*PREREQUISITE EDCI 321 and EDCI 351*)

EDCI 338: English Language Subject Methods (30/30: CF 3.0) Y3S2

The status of English. Socio-linguistics and the teacher. Active learning and the teaching of English: Communicative competence. The concepts of first language, second language and foreign language in the teaching context. The objectives of teaching English. The structure of English. The major categories of English language lessons. Methods of teaching English. Teaching aids: Design and selection. Preparation for the English lesson. Tests and measurement. Marking. English across the curriculum a collective responsibility approach. Micro teaching.(*PREREQUISITE EDCI 321, EDCI 223 and EDCI 331*)

EDCI 339: History and Government Subject Methods (30/30: CF 3.0) Y3S2

The meaning of history and government. History and its sources. History and government and national goal of Education in Kenya. The structure of the KCSE history and government syllabus schemes of work and lesson plans. Methods of effective teaching of the subject. Educational media in the teaching of history and government. The resource persons. Measurement and evaluation in history and government. Various types of tests and their uses. Micro-teaching (*PREREQUISITE EDCI 321 AND EDCI 351*)

EDCI 340: Business Education Subject Methods (30/30: CF 3.0) Y3S2

The nature of business Education subject areas, particularly commerce, accounting and typing with office practice. Business Education as an integrated subject. Advantages and limitations of integration. Other approaches to designing the business Education curriculum. The relationship and differences between business Education and economics. Methods of teaching business Education. Specific methods of teaching Business Education, commerce and typing with office practice. Skills developed in business Education. The business Education curricula in Kenya, including the syllabi, guide books and business Education room. Preparation of schemes of work and lesson plans, examinations and grading. Micro teaching lessons of students. Micro-teaching.(*PREREQUISITE EDCI 321 AND EDCI 351*)

EDCI 343: Religious Education Subject Methods (30/30: CF 3.0) Y3S2

Contribution of Religious Education as a subject in curriculum in Kenyan secondary school curriculum. Its contribution towards the preparation of youth (adolescents) for responsible citizenship, moral and spiritual development (valuing methods). Religious Education up to independence. The Ominde report, Education Act and Religious Education. Religious Education syllabus, past and present, books, teaching/learning resources. Researches in moral and Religious development. The teaching of Religious ethics, social ethics Education-schemes, lesson plans, evaluation and feedback. Micro-teaching.(*PREREQUISITE EDCI 321 AND EDCI 351*)

EDCI 398: Learning Resource Projects (0/120: CF 4.0) Y3S2

Student initiated practical projects in one of the teaching subjects, intended to enable students develop personal initiative in constructing teaching materials. Students

will be required to select a suitable project, write out a project, write out a project proposal and then carry out the project and finally submit the project report. The project will be carried out during teaching practice, and should be of use to the teaching practice school.(*PREREQUISITE EDCI 351 and Relevant Subject Teaching Methods*)

EDCI 399: Teaching Practice (0/180: CF 6.0) Y3S2

Practical teaching experience in approved secondary schools under the guidance of university supervisors and co-operating teaching in teaching and directing the activities of pupils. The student teachers will assume school responsibilities in order to develop competence for independent performances as a teacher.(*PREREQUISITE EDCI 321, EDCI 223, EDCI 321 and Relevant Subject Methods*)

EDCI 411: Entrepreneurship Education and Development (30/0: CF 2.0) Y4S1

Meaning of entrepreneurship and entrepreneurship Education, characteristics of entrepreneurs. Emergence of entrepreneurship factors that determine entrepreneurship growth; Education and entrepreneurship. Trends in employment and unemployment, self-employment and the informal sector in Kenya. Informal sector training. How to start and develop personal business. Essentials of business management, dimensions of business skills cognition; micro-financing. Country case studies on entrepreneurship skills development.

EAP 411: Educational Administration and Management (30/0: CF 2.0) Y4S1

Basic concepts, theories and practices, underlying the administration and supervision of Education. Leadership in schools, organizational climate, personnel management, school planning, supervision and management. Legal and policy issues and school communityrelationship. Financial management: filing,

record-keeping and reporting

**EAPE 421: Planning and Economics of Education
(30/0: CF 2.0) Y4S2**

Considerations of Educational planning. Professional process of logical steps. Types of plans in Educational planning. Approaches (methods) to problems and issues of concern. Programme and efficiency of operation in developing countries such as Kenya. General concerns of economics and their application to Education: investment, consumption, capital demand and supply. Measures of returns to investment in Education. Educational role in economic growth. Financing Education. Education equity and efficiency

EDCI 499: Education Seminars

Individual presentations and discussions on the topic related to problems, themes and issues in the teaching specific subjects in Secondary Schools and Education in general.

9.2 Matrix Aligning Courses to Programme Learning Outcomes

CLUSTER SUBJECT LEARNING OUTCOMES-B. ED ARTS	Year 1 Courses	CF	Year 2 Courses	CF	Year 3 Courses	CF	Year 4 Courses	CF
PLO1 Plan, utilize and manage resources in learning institutions	-Computer Application in Education	3.0	-Health and Physical Education	2.0	-General Methods and Principles of Teaching.	3.0	- Educational Administration and Management	2.0
					- Educational Communication and Technology	3.0	- Economics and Planning of Education	2.0
					-Learning Resource Projects	4.0	- Law in Education	3.0
					-Teaching Practice	6.0		
PLO2 Design, develop, implement and evaluate curriculum.			-Principles and Theory of Curriculum Development	2.0	-Secondary Education Curriculum	3.0	-Educational Administration and Management	2.0
							-Economics and Planning of Education	2.0
PLO3 Identify and evaluate the various Foundations of Education.	-History of Education	2.0	- Sociology of Education - Psychology of Learning	2.0	-Measurement and Evaluation	2.0	- Comparative Education	2.0
	-Philosophy of Education	2.0		2.0				
	-Introduction to Psychology	2.0						
	- Statistical Methods	2.0						

PLO 4: Acquire subject matter mastery and attitudes towards teaching Art Subjects effectively.	-Introduction to Language and Linguistics	3.0	-Introduction to Morphology and Syntax Sociolinguistics	3.0	-Research Methods in English	3.0	-Semantics and Pragmatics	3.0
	-Introduction to Phonetics and Phonology of English	3.0	-Theatre Arts		-Description of Grammatical Structures in English	3.0	-Advanced Phonetics and Phonology	3.0
	-Introduction to Literary Criticism	3.0	-Literary Theory	3.0	-West African Literature		-Southern African Literature	3.0
	-Creative Writing (Fiction and Drama)	3.0	-The Phonology of English	3.0	-Genres of Oral Literature	3.0	-European Literature I (From Classical Greece to the Enlightenment)	3.0
	-History and Development of English language	3.0	-Aspects of Grammatical Analysis	3.0	-Historical and Comparative Linguistics	3.0	-Discourse Analysis	3.0
	-Introduction to Grammar of English	3.0	-Academic Writing		-Second Language Acquisition		-Advanced Syntax	3.0
	-Elements of Style Kenyan Literature	3.0	-East African Literature	3.0	-Theory and Methods in Oral Literature	3.0	-North African Literature	3.0
	-The Making of Kenya	3.0	-Misingi ya Fasihi	3.0	-Literary Stylistics	3.0	-European Literature II (From Romanticism to Post-Modernism)	3.0
	-Sources of African History	3.0	-Stadi za Mawasiliano		-Mofolojia na Mofonemi Ki	3.0	-Elements of Style Kenyan Literature	
	-Misingi ya Lugha na Isimu	3.0	-Survey of World History 1	3.0	-History of Economic Thought 11	3.0	-Contemporary History of the Middle East	3.0
	-Historia na Maendeleo ya Kiswahili	3.0	-Topics in the History of Agriculture 1	3.0	-Issues in History of Women 11		-Armed Conflicts in Independent Africa	3.0
			-Fonetiki na Fonolojia	3.0	-Mradi wa Utafiti	3.0	-Isimujamii Historia na Maendeleo ya ushahiri wa Kiswahili	3.0
			-Nadharia za Ushahiri wa Fasihi	3.0	-Nadharia na Mbinu za Utafiti katika Fasihi		-Isimu Historia Linganishi	3.0

-Topics in African History Themes in East African History	3.0	-History of Land and Agriculture in Kenya History Survey of World History 2	3.0	Simulizi	3.0	-Philosophy of History	
			3.0	-Sintaksi `ya Kiswahili	3.0	-International Working Class Movement	3.0
-Introduction to Physical Geography		-Misingi ya Sarufi ya Kiswahili		-Geomorphology	3.0	-Fasihi Linganishi Semantiki na Pragmatiki	3.0
-Quantitative Techniques in Geography	3.0	-Hadithi Fupi na Riwaya ya Kiswahili	3.0	-Geography of Agriculture		-Tamthilia ya Kiswahili	3.0
-Introduction to Human Geography		-History of Economic Thought 1	3.0	-Research Methods in Geography	3.0		
-Map Work and Analysis of Spatial	3.0	-Issues In History of Women 1	3.0	-Climate Change and Development	3.0	-Environmental Management: Principles & Practices	3.0
		-Mbinu za Utafiti katika Kiswahili	3.0	-Church History 1	3.0	-Industrial Geography	3.0
-Religion and Ethics in Society	3.0	-Tanzu za Fasihi Simulizi	3.0	-Research Methods in Religion	3.0	-Environmental Impact Assessment Studies	
-Introduction to the Study of Religion	3.0	-Introduction to Remote Sensing and GIS	3.0	-Islamic Civilization and Culture	3.0	- Geography of Tourism	3.0
-African Religion		-Statistical Mapping and Spatial Planning	3.0	-Church History	3.0	-Strategic Management	
-Sociology of Religion		-Biogeography	3.0	-Risk Management and Insurance	3.0	-Financial Management	3.0
-New Religious Movement in Africa	3.0	-Applied Statistics in Geography	3.0	-Business Law		-General Topology	
-History of Christianity in East Africa	3.0	-Introduction to Biblical Studies	3.0	-Advanced Real Analysis	3.0	-Partial Differential	3.0
		-Introduction to Islam		-Complex Analysis	3.0	-Equations	
					3.0	-Management Accounting II	3.0
						-Business Taxation	3.0
						-Measure Theory	3.0

	-Religion and Development in Africa Liberation Theology	3.0	Philosophy of Religion	3.0			-Advanced Ordinary Differential Equation	3.0
		3.0	-Comparative Religion			3.0		3.0
	-Basic Mathematics	3.0	-History of Islam to Africa (Optional for Muslim Students)	3.0		3.0		3.0
	-Vectors and Mechanics			3.0		3.0		3.0
	-Analytic Geometry	3.0	-Quantitative Methods in Business	3.0				3.0
	-Introduction to Business Management	3.0	-Integral -Calculus	3.0				3.0
	-Principles of Management		-Vector Analysis					3.0
	-Fundamentals of Financial Accounting	3.0	-Managerial Economics	3.0				
		3.0	-Entrepreneurship and Small Business Management	3.0				
	-Principles of Marketing	3.0	-Linear Algebra					
	-Differential Calculus	3.0		3.0				
	-Management Accounting I	3.0						
	-Organizational Theory	3.0		3.0				
	-Real Analysis	3.0		3.0				
	-Ordinary Differential Equation I			3.0				

PLO 5: Apply the appropriate techniques in Teaching Art Subjects.					- General Methods and Principles of Teaching	3.0		
					- Subject Methods in Religious Education	3.0		
					- General Methods and Principles of Teaching	3.0		
					- Educational Communication and Technology	3.0		
					-Learning Resources Projects	4.0		
					-Teaching Practice	6.0		
					-Methods of Teaching Geography	3.0		
					- Literature Subject Methods	3.0		
					- Mbinu za Kufundisha Kiswahili	3.0		
					- English Language Subject Methods	3.0		
					- History and Government Subject Methods	3.0		
					-Business Studies Subject Methods	3.0		

BACHELOR OF EDUCATION (PRIMARY)

1. Philosophy of the Programme

The Bachelor of Education (Primary Option) Programme innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge, skills and attitudes. The program provides equal opportunity in producing competitive and hands-on teachers who contribute to national and global development.

2. Rationale

Prepare education personnel to meet the changing needs of primary school education, teacher training institutions, education management, curriculum development institutions, corporate trainers and research institutions.

3. Goal of the Programme

The Bachelor in Education (Primary) Programme aims to provide education graduates with the right knowledge, skills, competencies and attitudes for quality primary school instruction and management.

4. Programme Learning Outcomes

- i) Enhance the teacher's pedagogical knowledge, skills and attitudes.
- ii) Enhance teachers' subject content to handle one major subject area taught in primary schools, namely; a) Science and Agriculture b) Mathematics c) Social Studies d) Languages.
- iii) Be creative and capable of discovering, understanding, controlling and adapting to new technologies.
- iv) To develop the child's ability in creative thinking, problem solving and communication skills.
- v) Be aware, understand and committed to professional ethics, basic human rights and sound

environmental practices.

- vi) Develop a teacher's capacity to produce and use relevant learning materials.
- vii) Enhance a teacher's leadership and managerial skills.
- viii) Prepare teachers for further Education and training.

4.2 Specialization

There are no specializations in this programme.

5.0 Mode of delivery

The mode of delivery will be full time under school based programme.

6.0 Academic Regulations for the Programme

6.1 Admission Requirements

The following are eligible for consideration for admission: A holder of KCSE with a minimum grade of C (plain) or equivalent and P1 Certificate plus a minimum of 2 years teaching experience OR S1 or Diploma holders who have taught for at least 2 years and wish to specialize in primary Education.

6.2 Regulation on Credit Transfer in a Programme

Credit transfer shall be done in accordance to Egerton university statute of 2013 article 36(3) for undergraduate programmes.

6.3 Course requirements

Student will attend and be taught Block 1 in April (3 weeks), Block 2 in August (3 weeks) and Block 3 in November/ December (5 weeks), for a period of four calendar years. ISO procedure for teaching (EU/AA/OP/06 rev 3) will apply. In addition, a student will be required to prepare a teaching /learning resource project in his/her subject area in his/her working station for a period of three months after the end of block 3 of the fourth year of study. The learning resource will be assessed by the lecturers in their working stations.

6.4 Student Assessment Policy/Criteria

Two CATS Constitute 30%, and Semester exam constitutes 70%. Egerton University statute of 2013 article 36(6) shall apply.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University statute 36(6e, i)

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(5); according to ISO procedure for examinations (EU/AA/OP/07).

6.7 Moderation of Examination

ISO procedure (DOC NO:EU/AA/OP/07) of Egerton University on moderation of examinations shall apply for all exams.

6.8 Graduation Requirements

To graduate a Bachelor of Education (Primary) student shall be required to take and pass a minimum of 175 CFs. The duration of study for the degree will be eight academic years.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statute 36 (17).

7. Course Evaluation

ISO Procedure (EU/VC/OP/04) on course evaluation shall apply.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted by the Department of Curriculum, Instruction and Education Management within the Faculty of Education and Community Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The program shall undergo an internal evaluation (self-assessment) at the end of each academic cycle. The ISO procedure on quality assurance of academic programmes (EU/VC/OP/05) shall apply. It shall also be benchmarked with at least one such programme in a highly ranked University.

8.3 Course Coding

Students shall select one option from the following subject areas:-

- Mathematics,
- Science and agriculture
- Languages where a student will choose to study either Kiswahili or English.
- Social studies

The Course code shall be designated as follows:

The first four letters refer to the subject discipline. For example, EDCI stands for Education, Curriculum & Instruction. EAPE stands for Education, Administration, Planning and Economics.

- First digit represents the year of study
- Second and Third digits represents the teaching departments serialization of courses in a subject discipline taught in an academic year

9. Courses/ Units offered for the Programme

The courses/units offered shall include:

9.1 Schedule of Courses

a) Common Core courses

The Bachelor in Education (Primary Option) programme shall have at least 3 common core courses of 3CFs each outside the program's specialization (aligned to university philosophy and national values). The courses are;

COMS 101– Communication Skills

COMP 111– Computer Application in Education

PHIL 108- Ethics, Integrity and National Values

- The schedule of courses shall be organized on year and semester basis as follows:

OPTION 1: SCIENCE AND AGRICULTURE

YEAR ONE SEMESTER ONE

CODE	TITLE	L	P/T	C.F
EPSC 121	Introduction to Psychology	30	0	2.0
EDCI 101	Introduction to Basic Mathematical Concepts	45	0	3.0
EDCI 102	Introduction to Science and Agriculture	45	0	3.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
EDCI 103	Introduction to Social Studies	45	0	3.0
PEDF 121	Historical and Contemporary Development in Education	30	0	2.0
TOTAL		285	0	19.0

YEAR ONE SEMESTER TWO

BIOL 121	Classification of Living Things	30	0	2.0
CHEM 113	Introduction to Inorganic Chemistry	30	30	2.0
AGRO 111	Introduction to Kenya's Agriculture	45	0	3.0
PHYS 106	Introduction to Properties of Matter	30	0	2.0
COMP 111	Computer Literacy and Use in Education	30	30	3.0
EDCI 104	Language Education	45	0	3.0
PEDF131	Philosophy of Education	30	0	2.0
TOTAL		240	60	17.0

YEAR TWO SEMESTER ONE

EDFO 213	Sociology of Education	30	0	2.0
BIOL 211	Morphology of Plants and Animals	30	30	3.0
EDCI 211	Curriculum Theory and Development	30	0	2.0
CHEM 213	Structure and Bonding	30	30	3.0
PEPS 132	Child Growth and Development	30	0	2.0
PHYS 201	Energy and Machines	30	30	3.0
SOIL 101	Soil Science and Water Conservation	30	30	3.0
TOTAL		210	120	18.0

YEAR TWO SEMESTER TWO

CODE	TITLE	L	P/T	C.F
EPSC 223	Psychology of Learning	30	0	2.0
EPSC 228	Measurement and Evaluation	30	0	2.0

BIOL 221	Plant and Animal Nutrition	30	30	3.0
ANSC 232	Introduction to Nutrition and Livestock Feeding	30	30	3.0
AGRO 102	Introduction to Crop Production	30	30	3.0
EDCI 321	General Methods and Principles of teaching	45	0	3.0
PEPS 232	Research Methods in Education	30	30	3.0
TOTAL		225	120	19.0

YEAR THREE SEMESTER ONE

CHEM 214	Chemical Families	30	30	3.0
PHYS 202	Introduction to Thermal Physics	30	30	3.0
EDCI 312	Health and Physical Education	30	0	2.0
EPSC 326	Guidance and Counseling	30	0	2.0
ANSC 331	Principles of Ruminant Production	30	30	3.0
PHYS 101	Mechanics	30	30	3.0
BIOL 321	Personal Hygiene and Environmental Health	30	0	2.0
BIOL 331	Gas Exchange, Excretion and Transport in Plants and Animals	30	30	3.0
TOTAL		240	150	21.0

YEAR THREE SEMESTER TWO

CHEM 320	Introduction to Physical Chemistry	15	15	1.5
EAPE 301	Leadership and management in Education	30	0	2.0
EDCI 351	Educational Communication and Technology	30	30	3.0

PHYS 301	Optics and Waves	30	30	3.0
PEPS 332	Learners with Special Educational Needs	30	0	2.0
AGRO 322	Crop Production Practices	30	30	3.0
CHEM 321	Thermo Chemistry and Electro Chemistry	15	15	1.5
BIOL 311	Reproduction in Plants and Animals	30	0	2.0
TOTAL		210	120	18.0

YEAR FOUR SEMESTER ONE

ANSC 458	Principles of Non Ruminant Production	30	30	3.0
CHEM 420	Chemical Thermodynamic	30	30	3.0
ENSC 100	Environmental Education	30	0	2.0
PEDF412	Law in Education	30	0	2.0
PHYS 203	Electricity and Magnetism	30	30	3.0
PEPS 432	Personality Development and Behaviour Mgmt.	30	0	2.0
PHYS 402	Introduction to Electronics	15	30	2.0
BIOL 431	Introduction to Genetics	30	0	2.0
TOTAL		225	120	19.0

YEAR FOUR SEMESTER TWO

BIOL 411	Response to Stimuli and Co-ordination	30	0	2.0
CHEM 430	Organic Chemistry	30	30	3.0
EAPE 401	Educational Resource Mgmt, Control and Maint.	30	0	2.0
EDCI 301	Management of Learning Resources	30	30	3.0

EDCI 302	Primary School Science and Agriculture Subject Methods	30	30	3.0
PEDF 421	Law in Education	30	0	2.0
EAPE 402	Education Economics and Finance	30	0	2.0
PAGE 431	Farm Tools, Equipment and Farm Structures	30	30	3.0
TOTAL		240	120	20.0

EDCI 398	Learning Resources Project	0	90	3.0
EDCI 401	Research Project	0	120	4.0
TOTAL		0	210	7.0

OPTION 2: SOCIAL STUDIES

YEAR ONE SEMESTER ONE

EPSC121	Introduction to Psychology	30	0	2.0
EDCI 101	Introduction to Basic Mathematical Concepts	45	0	3.0
EDCI 102	Introduction to Science and Agriculture	45	0	3.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
COMS 111	Communication Skills	45	0	2.0
EDCI 103	Introduction to Social Studies	45	0	3.0
PEDF 121	Historical and Contemporary Development in Education	30	0	2.0
TOTAL		285	0	18.0

YEAR ONE SEMESTER TWO

COMP 111	Computer Literacy and Use in Education	30	30	3.0
AGHE 113	Human Ecology and Education	30	30	3.0
EDCI 104	Language Education	45	0	3.0
PEDF131	Philosophy of Education	30	0	2.0

PEPS 132	Child Growth and Development	30	0	2.0
GEOP 131	Introduction to Human Geography	45	0	3.0
AGHE 141	Family and Community Education	45	0	3.0
TOTAL		255	60	19.0

YEAR TWO SEMESTER ONE

EDFO 213	Sociology of Education	30	0	2.0
EDCI 211	Curriculum Theory and Development	30	0	2.0
HIST 211	Education for Citizenship	45	0	3.0
RESP 211	Religious Beliefs and Practices	45	0	3.0
SOCI 215	Culture and Social Services	45	0	3.0
GEOP 231	Introduction to Physical Geography	45	0	2.0
TOTAL		240	0	15.0

YEAR TWO SEMESTER TWO

EPSC 223	Psychology of Learning	30	0	2.0
EPSC 228	Measurement and Evaluation	30	0	2.0
RESP 221	Character Building	45	0	3.0
EDCI 321	General Methods and Principles of teaching	45	0	3.0
PEPS 232	Research Methods in Education	30	30	3.0
HISP 231	Political Developments and Systems in Kenya	45	0	3.0
HISP 231	Political Developments and Systems in Kenya	45	0	3.0
PNAR231	Natural Resources	30	30	3.0
TOTAL		300	30	22.0

YEAR THREE SEMESTER ONE

EDCI 312	Health and Physical	30	0	2.0

	Education			
EPSC326	Guidance and Counseling	30	0	3.0
DESN 318	Creative Arts and Crafts	30	30	3.0
ECON 200	Entrepreneurship Development	45	0	2.0
GEOP 311	Economic Geography	45	0	3.0
HISP 321	Political Development and Systems outside Kenya	45	0	3.0
TOTAL		225	30	16.0

YEAR THREE SEMESTER TWO

EAPE 301	Leadership and Management in Education	30	0	2.0
EDCI 351	Educational Communication and Technology	30	30	3.0
SOCI 317	Contemporary Social Issues	45	0	3.0
PEPS 332	Learners with special Educational needs	30	0	2.0
ECON 300	Trade	45	0	3.0
GEOP 331	Maps and Field Work	45	0	3.0
TOTAL		225	30	16.0

YEAR FOUR SEMESTER ONE

ENSC 100	Environmental Education	30	0	2.0
PEDF 412	Law in Education	30	0	2.0
HISP 411	Transport and Communication	45	0	3.0
SOCI 406	Social Change and Development	45	0	3.0
PEPS 432	Personality Development and Behavior Mgmt	30	0	2.0
GEOP 411	Industrial Geography	45	0	3.0
ECON 400	Economic Accounting	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER TWO

DESN 448	Practical Thinking Skills	45	0	3.0
EAPE 401	Educational Resource Management, Control and Maintenance	30	0	2.0
EDCI 301	Management of Learning Resources	30	30	3.0
EDCI 303	Social Studies Subject Methods	30	30	3.0
PEDF 421	Comparative and International Education	30	0	2.0
EAPE 402	Education Economics and Finance	30	0	2.0
GEOP 421	Geography of Kenya	45	0	3.0
TOTAL		240	60	18.0

EDCI 398	Learning Resources Project	0	90	3.0
EDCI 401	Research Project	0	120	4.0
TOTAL		0	210	7.0

OPTION 3: MATHEMATICS

YEAR ONE SEMESTER TWO

EPSC 121	Introduction to Psychology	30	0	2.0
EDCI 101	Introduction to Basic Mathematical Concepts	45	0	3.0
EDCI 102	Introduction to Science and Agriculture	45	0	3.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
EDCI 103	Introduction to Social Studies	45	0	3.0
PEDF 121	Historical and Contemporary	30	0	2.0

	Development in Education			
TOTAL		285	0	19.0

YEAR ONE SEMESTER TWO

COMP 111	Computer Literacy and Use in Education	30	30	3.0
EDCI 104	Language Education	45	0	3.0
PEDF 131	Philosophy of Education	30	0	2.0
PEPS 132	Child Growth and Development	30	0	2.0
MATH 0011	Basic Algebra	30	0	2.0
MATH 0012	Basic Calculus	30	0	2.0
MATH 0010	Vectors and Geometry	30	0	2.0
TOTAL		225	30	16.0

YEAR TWO SEMESTER ONE

EDFO213	Sociology of Education	30	0	2.0
EDCI 211	Curriculum Theory and Development	30	0	2.0
MATH 0021	Business Mathematics	30	0	2.0
STAT 0022	Statistics and Probability	30	0	2.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 114	Geometry and Linear Algebra	45	0	3.0
TOTAL		210	0	14.0

YEAR TWO SEMESTER TWO

EPSC 223	Psychology of Learning	30	0	2.0
EPSC 228	Measurement and Evaluation	30	0	2.0
EDCI 321	General Methods and Principles of teaching	30	0	2.0

PEPS 232	Research Methods in Education	30	30	3.0
MATH 111	Calculus 1	45	0	3.0
MATH 141	Introductory Statistics	45	0	3.0
TOTAL		210	30	15.0

YEAR THREE SEMESTER ONE

EDCI 312	Health and Physical Education	30	0	2.0
EPSC 326	Guidance and Counselling	30	0	2.0
MATH 113	Vectors and Mechanics	45	0	3.0
MATH 240	Probability and Statistics I	45	0	3.0
MATH 211	Calculus II	45	0	3.0
TOTAL		195	0	13.0

YEAR THREE SEMESTER TWO

EAPE 301	Leadership and Management in Education	30	0	2.0
EDCI 351	Educational Communication and Technology	30	30	3.0
PEPS 332	Learners with Special Education Needs	30	0	2.0
MATH 220	Vector Analysis	45	0	3.0
MATH 210	Linear Algebra 1	45	0	3.0
TOTAL		180	30	13.0

YEAR FOUR SEMESTER ONE

ENSC 100	Environmental Education	30	0	2.0
PEDF 412	Law in Education	30	0	2.0
PEPS 432	Personality Development and Behaviour Management	30	0	2.0

MATH 314	Ordinary Differential Equations	45	0	3.0
MATH 315	Complex Analysis I	45	0	3.0
MATH 341	Sampling Methods	45	0	3.0
TOTAL		225	0	15.0

YEAR FOUR SEMESTER TWO

MATH 325	Numerical Analysis I	45	0	3.0
EAPE 401	Educational Resource Mgmt, Control & Maint.	30	0	2.0
EDCI 304	Primary School Mathematics Subject Methods	30	30	3.0
EDCI 301	Management of Learning Resources	30	30	3.0
PEDF 421	Comparative and International Education	30	0	2.0
EAPE 402	Education Economics and Finance	30	0	2.0
MATH 420	Partial Differential Equations	45	0	3.0
TOTAL		195	30	18.0

EDCI 398	Learning Resources Project	0	90	3.0
EDCI 401	Research Project	0	120	4.0
TOTAL		0	210	7.0

OPTION 4: LANGUAGE EDUCATION

YEAR ONE SEMESTER ONE

EPSC 121	Introduction to Psychology	30	0	2.0
EDCI 101	Introduction to Basic Mathematical Concepts	45	0	3.0
EDCI 102	Introduction to Science and Agriculture	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
PEDF 121	Historical and	30	0	2.0

	Contemporary Development in Education			
PEDF 121	Historical and Contemporary Development in Education	30	0	2.0
COMS 111	Communication Skills	45	0	3.0
EDCI 103	Introduction to Social Studies	45	0	3.0
TOTAL		315	0	21.0

YEAR ONE SEMESTER TWO

COMP 101	Introduction to Computer Applications	45	15	3.5
EDCI 104	Language Education	45	0	3.0
PEDF 131	Philosophy of Education	30	0	2.0
PEPS 132	Child Growth and Development	30	0	2.0
PLLL 131	Introduction to General Linguistics	45	0	3.0
PLLL 132	Introduction to Literature and Literary Appreciation	45	0	3.0
PLLL 121	Introduction to Language and Linguistics	45	0	3.0
TOTAL		270	30	19.5

YEAR TWO SEMESTER ONE

EDFO 213	Sociology of Education	30	0	2.0
EDCI 211	Curriculum Theory and Development.	30	0	2.0
PLLE 211	Phonetics and Phonology of English	45	0	3.0
PLLE 212	Grammatical Structures of English	45	0	3.0
PLLE 221	Communication and Language Use in English	45	0	3.0
PLLE 222	Language Acquisition	45	0	3.0

OR

PLLK 211	Fonetiki na Fonolojia	45	0	3.0
PLLK 212	Sarufi ya Kiswahili	45	0	3.0

PLLK 221	Mbinu za Mawasiliano katika Kiswahili	30	0	2.0
PLLK 222	Upataji lugha	30	0	2.0
TOTAL		240	0	16.0

YEAR TWO SEMESTER TWO

EPSC 223	Psychology of Learning	30	0	2.0
EPSC 228	Measurement & Evaluation	30	0	2.0
PLLE 231	Introduction to the History of English	45	0	3.0
EDCI 321	General Methods and Principles of teaching	45	0	3.0
PEPS 232	Research Methods in Education	30	3	3.0
PLLL 234	Theory of Literature and Criticism	45	0	3.0
PLLT 232	Introduction to Poetry and Orature	45	0	3.0
PLLT 233	Literary Fiction & Non Fiction	45	0	3.0
TOTAL		315	0	22.0

OR

PLLK 234	Nadharia ya Fasihi na Uhakiki	45	0	3.0
PLLK 231	Historia ya Kiswahili	45	0	3.0
PLLK 232	Ushairi na Uzungumzi	45	0	3.0
PLLK 233	Mawasiliano na Muktadha I (Unifu Na Usibunifu)	45	0	3.0
TOTAL		315	0	22.0

YEAR THREE SEMESTER ONE

EDCI 312	Health and Physical Education	30	0	2.0
EPSC 326	Guidance and Counseling	30	0	2.0
PLLE 311	Language and Society	45	0	3.0
PLLT 312	Language and Style	45	0	2.0
PLLT 331	Theory and Methods of Orature	45	0	3.0

PLLE 332	Discourse and Textual Analysis	45	0	3.0
TOTAL		240	0	15.0

OR

PLLK 311	Lugha na Jamii	45	0	3.0
PLLK 312	Lugha na Mtindo	30	0	3.0
PLLK 331	Nadharia na Mbinu za Utafiti Katika Fasihi Simulizi Kiswahili	45	0	3.0
PLLK 332	Uchanganuzi Matini	45	0	3.0
TOTAL		240	0	15.0

YEAR THREE SEMESTER TWO

EDCI 351	Educational Communication and Technology	30	30	3.0
EAPE 301	Leadership and Management in Education	30	0	2.0
PEPS 332	Learners with Special Education Needs	30	0	2.0
PLLT 411	Children's Literature	45	0	3.0
PLLE 333	Morphology and Syntax	45	0	3.0
PLLT 334	Modern African Poetry & Drama	30	30	3.0
PLLE 412	Translation and Interpretation	45	0	3.0
TOTAL				

OR

PLLK 333	Mofolojia na Sintaksia	45	0	3.0
PLLK 411	Fasihi ya Watoto	45	0	3.0
PLLK 412	Msingi ya Tafsiri na Fasiri	45	0	3.0
PLLK 334		45	0	3.9
TOTAL		255	0	19.0

YEAR FOUR SEMESTER ONE

PLLT 421	Creative writing	45	0	3.0
PLLE 422	Aspects of Grammatical Analysis in English	45	0	3.0
ENSC 100	Environmental Education	30	0	2.0

PEDF 412	Law in Education	30	0	2.0
PEPS 432	Personality Development and Behaviour Management	30	0	2.0
PLLE 431	Semantics and Pragmatics in English	45	0	3.0
PLLT 433	Theatre Skills	45	0	3.0
TOTAL		270	0	18.0

OR

PLLK 421	Uandishi Bunifu katika Kiswahili	30	0	2.0
PLLK 422	Msingi ya Isimu Nafsia	45	0	3.0
PLLK 431	Semantiki na Pragmatiki	45	0	3.0
PLLK 433	Maigizo	45	0	3.0
TOTAL		270	0	18.0

YEAR FOUR SEMESTER TWO

PLLT432	Regional Literature: East African Literature	45	0	3.0
EAPE 401	Education Resource Management Control and Maintenance	30	0	2.0
EDCI 301	Management of Learning Resources	30	30	3.0
PEDF 421	Comparative and International Education	30	0	2.0
EAPE 402	Education Economics and Finance	30	0	2.0
EDCI 305	English Subject Methods	45	0	3.0
PLLT 434	Literature and Gender	30	0	2.0
PLLT 435	Drama in Education	30	0	2.0
TOTAL		270	30	19.0

OR

CODE	TITLE	L	P/T	C.F
EDCI 306	Mbinu za Kufundishia Katika Kiswahili	45	0	3.0
PLLK 432	Mandishi ya Kale katika Kiswahili	45	0	3.0

PLLK 434	Fasihi na Umenke	30	0	2.0
PLLK 435	Maigizo Katika Elimu	30	0	2.0
TOTAL		270	30	19.0

EDCI 398	Learning Resources Project	0	90	3.0
EDCI 401	Research Project	0	120	4.0
TOTAL		0	210	7.0

c) Course Descriptions

EDCI 171: Introduction to Basic Mathematical Concepts (45/0: CF 3.0) L1B1

Meaning of mathematical concepts. Psychological bases of teaching mathematical concepts (Gag'ne, Bruner and Piaget). The number systems: natural numbers, zero, integers, rational, irrational, complex numbers. Conducting mathematics lessons at lower primary school: pre-number activities; numeration: conservation, cardinality, ordering, whole numbers; historical approach to numeration systems; counting; operations with whole number (+, -, x, ÷); measurement: length, capacity, weight, money, time; geometry: line, curve, triangular, rectangular and circular shapes, patterns; operations with fractions (+, x, ÷).

EDCI 172: Introduction to Science and Agriculture (45/0: CF 3.0) L1B1

Our environment. Living and non-living things. External structure of plants and animals (man). Plant and animal habitats and interactions. General human cleanliness. Care of the environment. Meaning of soil. Soil formation, constituents and properties. Water sources and utilization. Environmental factors affecting agriculture. Classification of crop plants and types of livestock. Chemistry and society. Water and hydrogen. Solubility, separation of mixtures. Physical and chemical changes. Environmental issues from chemistry point of view Physics and development in society. Measurement in physics-quantities, symbols, units and

instruments. Weather measuring instruments and astronomy. Properties of matter. Energy and environment. Forms and Law of conservation of energy. States of matter sources and transmission of sound and light. Current electricity, simple circuits and house wiring. Magnets. Planning schemes of work and Lesson plans for Science and Agriculture. Methods of teaching Science and Agriculture.

EDCI 173: Introduction to Social Studies (45/0: CF 3.0) L1B1

National goals of Education in Kenya. Foundations for social studies curriculum: nature and scope, objectives and its main features. Instruments for comparing and evaluation social studies programmes: Joyce Jarolimek, Armstrong. Traditions about social studies curriculum in English speaking countries. Social studies, social sciences, humanities, social Education and their relationship. Significance of social Education to cultural evolution; transmission elements, heuristic elements, critical elements, creative elements. Origin of formal social studies curriculum. Concepts, values and attitudes in social studies. Reasons why social studies in Kenya is as it is: history and tradition, needs of society and individual, world outlook and ideology.

EDCI 174: Language Education (30/0: CF 2.0) L1B2

The teaching of English and Kiswahili languages in the primary schools. The teaching of literacy in the primary schools. Sound systems of English and Kiswahili. The structure of English and Kiswahili. Linguistics and communicative competence. The teaching of fluent speaking, reading, writing and listening skills. Vocabulary teaching in primary schools. Language for specific purposes. The teaching of literature. The verbal and non verbal interaction. Drama as a tool for communication. The process of language acquisition. Problems of language teaching in Kenya. Publishing in the local languages for children. Current issues in language growth and development. Language and

communication in the classroom. Kiswahili/English across the Curriculum.

EDCI 211:Curriculum Theory and Development (30/0: CF 2.0) L2B1

The definition and meaning of curriculum development. Theory and principles of curriculum construction, design and planning. Development of curriculum purposes and objectives. Agents of curriculum Development. Curriculum Evaluation. Dynamics of curriculum change and its strategies. Historical and philosophical foundations of primary school curriculum design. Forces affecting curriculum decisions and implementation at primary school. The processes of curriculum improvement. Primary school teacher Education. Emerging issues in primary school Education.

EDCI 231:General Methods and Principles of Teaching (30/0: CF 2.0) L2B3

Definition and meaning of teaching and learning processes. Nature and Components of Learning/Teaching processes. Evolution of teaching methods. Main approaches to teaching at Primary schools. Essentials of good teaching at Primary school. Characteristics and levels of classroom learning. Components of effective classroom communication. Merits and demerits of various teaching methods and strategies. Goals of primary Education as linked to national goals. Primary school goals (from subject approach. Instructional objectives at Primary Education. Syllabus, schemes of work, lesson planning, and records of work. Classroom organization, management and effective instruction. Concepts of individual in learning and attention maintenance in the classroom. Methods of evaluating the learning outcomes. Emerging issues in teaching/learning at Primary school.

EDCI 351:Educational Communication and Technology (30/30: CF 3.0) L3B2

Definition and meaning of Educational communication and technology. Principles and techniques of Educational communication and technology. Human communication theory. Role, selection and use of media in communication. Appropriate use of media by primary school teacher for effective communication. Production of teaching materials from local/raw materials. The concept of visual-audio literacy. Design, production and evaluation of Education media at primary school. Management and use of resources at primary schools – Developing workshops and laboratories. Emerging issues in Educational communication and technology.

EDCI 372:Primary School Mathematics Subject Methods (30/0: CF 2.0) L3B2

How children learn mathematics. Mathematics and society. Language and mathematics. Planning for mathematics. Organizing teaching and learning resources in mathematics. Teaching in primary schools. Gender issues in teaching and learning mathematics. Developing mathematical thinking. assessment, monitoring and evaluation in mathematics.

EDCI 374:Primary School Science and Agriculture Subject Methods (45/0: CF 3.0) L3B2

Philosophy and objectives of primary school science and agriculture. How children learn Science and agriculture. The nature of primary science and agriculture. Language and Science. (Planning schemes of work, lesson plans etc) for science and agriculture. Organizing and management of instructional resources in science and agriculture. Problems of teaching primary school science and agriculture. Gender and social issues in science and agriculture. Children's ideas in science. Assessment, monitoring and evaluation. Strategies of developing science and agriculture in primary schools.

EDCI 375: Social Studies Subject Methods (45/0: CF 3.0) L3B2

Curriculum design and changing scene in social studies. Contributions of academic disciplines to social studies. Organization and instructional approaches to social studies programme. Defining and interpreting the three social studies traditions: social studies as citizenship transmission, social studies as social science, social studies as reflective inquiry. Essential skills in social studies. Skills for writing social studies objectives. Skills for selecting learning activities (content and methods). Learning resources for social studies. Instructional techniques in social studies. Recent innovations in social studies curriculum. Effective social studies teacher.

EDCI 373: English Subject Methods (45/0: CF 3.0) L3B2

Primary school English language teaching methods: principles of teaching English language in primary school. Objectives of English language teaching. How children learn English as a second language. Teaching primary school oral English. Developing children's writing skills, listening skills and grammar. Teaching fiction and poetry in the primary school. Communication through drama. Planning. Gender issues in English. Evaluation of the current books in use. Evaluation of the teaching material and resources. English across the curriculum.

EDCI 376:Kiswahili Subject Methods (45/0: CF 3.0) L3B2

Primary school Kiswahili language teaching methods. Objectives of Kiswahili language teaching. Principles of Kiswahili language teaching in primary schools. How children learn Kiswahili as a second language. Teaching primary school listening, reading, spoken Kiswahili and writing skills. Fluency and accuracy in reading, writing and speaking and listening skills. Teaching grammar in primary schools. Fiction, Poetry and oral literature.

Communication through drama. Evaluation of the current books in use. Planning. Gender issues. Evaluation of the teaching material and resources. Kiswahili across the Curriculum.

EDCI 376: Mbinu Za Kufundishia Katika Kiswahili (45/0: CF 3.0) L3B2

Mbinu za kufundishia Kiswahili katika shule za msingi. Msingi na madhumuni ya kufundisha Kiswahili, Historia ya ufundishaji ya Kiswahili katika shule nchini Kenya. Jinsi watoto hujifunza Kiswahili kama lugha ya kwanza na pili. Ufundishaji wa stadi za kusema, kusikiza, kusoma na kuandika. Ufundishaji wa sarufi. Ufundishaji wa ufasaha katika Kiswahili zungumzi na andikwa. Ufundishaji wa ubunifu ushairi fasihi simulizi – fasihi kwa jumla. Mawasiliano darasani kupitia drama, upangaji wa masomo darasani. Tathmini darasani na vitabu mbali mbali vinavyotumika. Tathmini ya malighafi vifaa vya kufundishia masuala ya uana. Kiswahili katika mtalaa wa elimu.

EDCI 371: Management of Learning Resources (30/30: CF 3.0) L4B2

Concepts: Learning resources, management, the personnel, and management of learning resources. Establishment of learning resources centre: physical layout, physical facilities and equipment, human resources (staffing), funding sources and users. Multimedia: meaning, types and role. Types and qualities of teaching and learning materials. Collection, improvisation and production of learning materials. Concept of a library as a learning resource centre: acquisition, classification, cataloguing, storage, retrieval and evaluation. Role of information technology.

EDCI 471: Learning Resources Project (0/900: CF 3.0) L4B2

Student initiated practical projects in the teaching subject area. The project is intended to enable students

to develop personal initiative in constructing teaching materials from local materials. The students will be required to select a suitable and relevant project. Write out proposal and then carry out the actual project. The student will be expected to write and submit the project report. The project will be carried out during the school session while teaching.

EDCI 472: Research Project (0/120: CF 3.0) Y4S3

The candidate is required to conduct research in Education and submit a written report of at least 50 double spaced A4 pages. The research shall be carried out in any of the Educational areas.

EAP 371: Leadership and Management in Education (30/0: CF 2.0) Y4S2

Principles of Educational Management; Functions of school management; Leadership styles, theories of Educational administration; Leadership and supervision, delegation and authority, communication and negotiation, Decision-making, conflict and conflict resolutions. Stress management. Policy Issues in Education: policy formulation, implementation, monitoring and evaluation.

EAP 471: Education Resource Management, Control and Maintenance (30/0: CF 2.0) L4B2

Introduction to Educational planning, Personnel management: Workforce planning, staff Motivation and development, staff appraisal. Physical resources management: materials and facilities – stores management and maintenance, Procurement procedures, time-Management, Project planning, Monitoring and evaluation techniques.

EAP 472: Education Economics and Finance (30/0: CF 2.0) L4B2

Introduction to Economics of Education: Financing Education, Equity and Efficiency, demand and supply, Role of Education in development. Introduction to

school business administration: School budgeting, accounting, cash planning, cash management, supplies management, forecasting and cost-effective analysis, decision analysis.

EDCI 312: Health and Physical Education

Background to health Education in Schools. Background in human anatomy, human organ system, their interdependence, significant disorders and care; communicable diseases of importance in East African and their control; emergency treatment general principles of physical and mental health. Health and nutrition; sports in school environment. Family planning and population control. Health in East Africa.

9.2 Matrix Aligning Courses/Units to Learning Outcomes

[illegible]

							• Mbinu za Kufundishia Katika Kiswahili	
PLO 5 Plan and implement appropriate programmes for different categories of learning	• Introduction to Psychology • Child Growth and Development	2.0	• Psychology of Learning	2.0	• Guidance and Counseling • Learners with Special Educational Needs	3.0 3.0	• Personality Development and Behavior Mgmt.	2.0
PLO 6 Develop a teacher's capacity to produce and use relevant learning materials	• Ethics Integrity and National Values	3.0			• Educational Communication and Technology	3.0	• Learning Resources Project • Management of Learning Resources	3.0 3.0
PLO 7 Enhance a teacher's leadership and managerial skills.					• Leadership and management in Education	2.0	• Educational Resource Mgmt, Control and Maint.	2.0
PLO 8 Prepare teachers for further Education and training.	All courses offered in the year		All courses offered in the year		All courses offered in the year		All courses offered in the year	

BACHELOR OF EDUCATION (SCIENCE)

1. Philosophy of the Programme

The Bachelor of Education (science) innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge, skills and attitudes. The programme provides equal opportunity in producing competitive and hands-on teachers who contribute to national and global development.

2. Rationale

Prepare education personnel to meet the changing needs of secondary school education, teacher training institutions, education management, curriculum development institutions, corporate trainers and research institutions.

3. Goal of Programme

Bachelor of Education (Science) Programme aims to provide education graduates with knowledge, skills, competencies and attitudes to take appropriate professional position in education upon graduation, for employment and development to enhance individual well-being, growth in leadership and pursue research in the field.

4. Programme Learning Outcomes

By the end of the programme, the graduate should be able to:

- Plan, utilize and manage resources in learning institutions
- Design, develop, implement and evaluate curricula.
- Identify and evaluate the various foundations of Education.
- Plan and implement appropriate programmes for post primary education

v) Apply the appropriate techniques in teaching Science Subjects.

4.2 Specialisations

There are no specializations in this programme.

5. Mode of Delivery

Full time and part time (face to face).

6. Academic Regulations for the programme

6.1 Admission Requirements

Candidates admitted to the Degree of Bachelor of Education (Science) must satisfy the minimum entrance requirements of the Egerton University. They must also satisfy departmental requirements before registering for courses in the respective departments. In satisfying the minimum entrance requirements of the University, candidates must have passed the Kenya Certificate of Secondary Education (KCSE) with the minimum grades against each subject as indicated below:

C+ in Mathematics

C+ in English language

C+ in any of the following:

- Physics
- Chemistry
- Biology
- Geography

or

B- in any of the following subjects:

Physical Sciences

Biological sciences

Alternatively, admission may be granted to holders of Diploma in science Education from Institutions recognized by Egerton University provided the diplomas are at credits and above.

6.2 Regulation on Credit Transfer

Credit transfer shall be done in accordance to Egerton university statute of 2013 article 36 (3) for undergraduate programs.

6.3 Course requirements

Teaching will as per ISO Procedure (EU/AA/OP/06 Rev.3). Students shall take twelve (12) weeks of Teaching Practice in approved secondary schools or equivalent institutions. During teaching Practice, the students shall carry out a Project on production of a Teaching/Learning Resource in one of their teaching subjects which will be assessed by Lectures in their teaching practice schools..

6.4 Student Assessment Policy/Criteria

Student assessment will be carried out in accordance with Egerton University Statutes article 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University statute 36(6e, i) of 2013.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36(6) of 2013; according to ISO procedure for teaching and examinations (EU/AA/OP/07).

6.7 Moderation of Examination

ISO procedure on moderation of examination shall apply for all examinations as per ISO no. DOC No. EU/AA/OP/07

6.8 Graduation Requirements

The minimum CFs for the Programme shall be 144 CFs. In addition, the students shall take twelve weeks of Teaching Practice during which they shall also carry out a project in one of their teaching subjects.

6.9 Degree Classification

Degree classification shall be in accordance with Egerton University Statute 36 (14, 3, a) of 2013.

7. Course Evaluation

All courses in the programme will be evaluated using course evaluation form EU/VC/OP/04 as shall be provided by the Egerton university statute.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted by the department of Curriculum, Instruction and Education Management and the Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Program Evaluation

The programme shall undergo an internal programme evaluation at the end of each academic cycle. ISO procedure on quality assurance of Academic programs (EU/VC/OP/05) shall apply. It shall also be benchmarked with at least one such programme in a highly ranked university.

8.3 Course Coding

Students shall select two teaching subjects from the following subject areas:-

- Chemistry
- Physics
- Biology
- Mathematics
- Geography

The Course code shall be designated as follows:

EDCI stands for Education, Curriculum & Instruction.
EAPE stands for Education, Administration, Planning & Economics.

MATH stands for Mathematics

CHEM stands for Chemistry

PHYS stands for Physics

GEOG stands for Geography

BOTA stands for Botany

ZOOL stands for Zoology

COMS stands for Communication Skills

COMP stands for Computer

First digit indicates level or year the course is offered.

Second digit indicates nature or sub-discipline, interpreted as follows:

EDCI Courses:

- Curriculum
- Principles of Teaching
- Subject Methods
- Project /Seminar /Teaching Practice

9.0 Courses offered for the Programme

9.1 Schedule of Courses

a) Common Core Courses

COMS 111– Communication Skills

COMP 101– Computer Application in Education

AGHE 140 - Human Health

PHIL 104 - Philosophy and Society

b) The schedule of courses should be organized on semester basis as follows:

OPTION 1: Mathematics, Chemistry and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGHE 140	Human Health I	45	0	3.0
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 132	Analytic Geometry	45	0	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
TOTAL		270	30	19

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 111	Introduction to Computer Application	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
MATH 111	Differential Calculus	45	0	3.0
MATH 131	Vectors and Mechanics	45	0	3.0
MATH 133	Introductory Statistics	45	0	3.0
TOTAL		315	45	22.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Curriculum Development	30	0	2.0
CHEM 211	Quantum and Bonding	45	0	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms 1	30	30	3.0
EPSC 223	Psychology of Learning	30	0	2.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0
MATH 232	Probability & Statistics	45	0	3.0
TOTAL		270	30	19.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 212	Comparative Study of s and p Block Elements	30	30	3.0
CHEM 221	Gases and Phase Equilibria	45	0	3.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Introduction to Statistics & Research Methods in Educ.	45	0	3.0
EPSC 228	Measurement and Evaluation	30	0	2.0
MATH 213	Linear Algebra	45	0	3.0
MATH 233	Advanced Probability & Statistics	45	0	3.0

TOTAL		270	30	19.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 322	Chemical Thermodynamics	30	30	3.0
CHEM 323	Chemical Kinetics	30	30	3.0
CHEM 332	Carbonyls, their Derivatives and Amines	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
MATH 312	Real Analysis	45	0	3.0
MATH 332	Ordinary Differential Equation	45	0	3.0
STAT 332	Theory of Estimation(Optional Required for Msc. Stat)	45	0	3.0
TOTAL		345	90	26.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 313	Coordination Chemistry	30	30	3.0
CHEM 324	Physical Methods of Structure Determination	45	0	3.0
CHEM 341	Analytical Chemistry I	30	30	3.0
EDCI 331	Chemistry Subject Methods	30	30	3.0
EDCI 332	Mathematics Subject Methods	30	30	3.0
MATH 311	Group Theory	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
MATH 313	Advanced real Analysis (Optional)	45	0	3.0
TOTAL		300	120	24.0

BETWEEN YEAR 3 AND YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 425	Electrochemistry	30	30	3.0
CHEM 436	Stereochemistry and Reaction Mechanism 11	30	30	3.0
CHEM 452	Analytical Chemistry II	45	0	3.0
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
MATH 422	General Topology	45	0	3.0
MATH 434	Partial Differential Equations	45	0	3.0
STAT 432	Testing of Hypothesis (Optional)	45	0	3.0
TOTAL		315	90	24.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
CHEM 416	Comparative Study of d and f Block Elements	30	30	3.0
CHEM 417	Radiation and Nuclear Chemistry	45	0	3.0
CHEM 437	Organic Spectroscopy	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0

EPSC 426	Principles of Guidance and Counselling	30	0	2.0
MATH 411	Functional Analysis	45	0	3.0
MATH 431	Advanced Ordinary Differential Equations	45	0	3.0
MATH 421	Measure Theory (Optional)	45	0	3.0
TOTAL		345	30	24.0

OPTION 2: Mathematics, Physics and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 132	Analytic Geometry	45	0	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
PHYS 111	Mechanics	45	0	3.0
PHYS 112	Heat and Thermodynamics	45	0	3.0
PHYS110	Physics Practical I	0	60	2.0
TOTAL		270	45	22.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Development Psychology	30	0	2.0
MATH 111	Differential Calculus	45	0	3.0
MATH	Vectors and Mechanics	45	0	3.0

131				
MATH 133	Introductory Statistics	45	0	3.0
PHYS 121	Geometrical Optics	45	0	3.0
PHYS 122	Introduction to Quantum Physics	45	0	3.0
PHYS 120	Physics Practical II	0	60	2.0
TOTAL		300	45	21.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 211	Curriculum Development	30	0	2.0
COMP 111	Introduction to Computer Application	45	0	3.0
EPSC 213	Psychology of Learning	30	0	2.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0
MATH 232	Probability & Statistics	45	0	3.0
PHYS 211	Waves and Oscillations	45	0	3.0
PHYS 212	Electricity and Magnetism I	45	0	3.0
PHYS 210	Physics Practical III	0	60	2.0
TOTAL		300	45	21.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Intro. to Statistics and Research Methods in EDCI	30	30	3.0
EPSC 228	Education Measurement and Evaluation	30	0	2.0
MATH 213	Linear Algebra	45	0	3.0

MATH 233	Advanced Probability & Statistics	45	0	3.0
PHYS 221	Introduction to Material science	45	0	3.0
PHYS 222	Electricity and Magnetism II	45	0	3.0
PHYS 220	Physics Practical IV	0	60	2.0
TOTAL		255	60	19.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary school Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
MATH 312	Real Analysis	45	0	3.0
MATH 332	Ordinary Differential Equation	45	0	3.0
STAT 332	Theory of Estimation(Optional Required for Msc Stat)	45	0	3.0
PHYS 311	Quantum Mechanics I	45	0	3.0
PHYS 312	Basic Electronics	45	0	3.0
PHYS 310	Physics Practical V	0	60	2.0
TOTAL		315	60	23

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 332	Mathematics Subject Methods	30	30	3.0
EDCI 333	Physics Subject Methods	30	30	3.0
MATH 311	Group Theory	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0

MATH 313	Advanced real Analysis (Optional)	45	0	3.0
PHYS 321	Atomic Physics	45	0	3.0
PHYS 322	Physical Optics	45	0	3.0
PHYS 320	Physics Practical VI	0	60	2.0
TOTAL		270	90	21.0

BETWEEN YEAR 3 and YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Admin and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
MATH 422	General Topology	45	0	3.0
MATH 434	Partial Differential Equations	45	0	3.0
STAT 432	Testing of Hypothesis (Optional)	45	0	3.0
PHYS 411	Digital Electronics	45	0	3.0
PHYS 412	Nuclear Physics	45	0	3.0
PHYS 410	Physics Practical VII	0	60	2.0
TOTAL		300	60	22.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative and International Education	30	0	2.0
EPSC 426	Principles of Guidance and Counselling	30	0	2.0
MATH 411	Functional Analysis	45	0	3.0
MATH 431	Advanced Ordinary Differential Equations	45	0	3.0
MATH 421	Measure Theory (Optional)	45	0	3.0
PHYS 421	Solid State Physics	45	0	3.0
PHYS 422	Electromagnetic Theory	45	0	3.0
PHYS 420	Physics Practical VIII	0	60	2.0
TOTAL		315	0	21.0

OPTION 3: Physics, Chemistry and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	45	0	3.0
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
PHYS110	Physics Practical I	0	60	2.0
PHYS 111	Mechanics	30	30	3.0
PHYS 112	Heat and Thermodynamics	45	15	3.5
TOTAL		255	75	19.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMS	Communication Skills	45	0	3.0

111				
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
PHYS 211	Geometrical Optics	30	15	2.5
PHYS 212	Introduction to Quantum Physics	30	30	3.0
PHYS 210	Physics Practical III	0	60	2.0
TOTAL		255	75	19.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 211	Quantum and Bonding Theories	45	0	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms 1	30	30	3.0
COMP 111	Introduction to Computer Application	30	30	3.0
EDCI 211	Curriculum Development	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
PHYS 210	Waves and Oscillation	30	15	2.5
PHYS 211	Electricity and Magnetism I	30	30	3.0
PHYS 220	Physics Practical IV	0	60	2.0
TOTAL		240	75	18.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 212	Comparative Study S and P Block Elements	30	30	3.0
CHEM 221	Gases and Phase Equilibria	45	0	3.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Introduction to Statistics and Research Methods in Education	45	0	3.0
EPSC 228	Educational Measurement and Evaluation	30	0	2.0
PHYS 220	Electricity & Magnetism II	30	30	3.0

PHYS 221	Quantum Mechanics I	45	0	3.0
PHYS 310	Physics Practical V	0	60	2.0
TOTAL		255	60	19.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 322	Chemical Thermodynamics	30	30	3.0
CHEM 323	Chemical Kinetics	30	30	3.0
CHEM 332	Carbonyls, their Derivatives and Amines	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
PHYS 311	Mathematical Physics I	45	0	3.0
PHYS 312	Atomic Physics	30	15	2.5
PHYS 314	Physical Optics	30	30	3.0
PHYS 320	Physics Practical VI	0	60	2.0
TOTAL		300	165	25.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 313	Coordination Chemistry	30	30	3.0
CHEM 324	Physical Methods of Structure Determination	45	0	3.0
EDCI 331	Chemistry Subject Methods	30	30	3.0
CHEM 341	Analytical Chemistry I	30	30	3.0
EDCI 333	Physics Subject Methods	30	30	3.0
PHYS 321	Analogue Electronics	45	15	3.5
PHYS 322	Physical Optics	30	15	2.5
PHYS 410	Physics Practical VII	0	60	2.0
TOTAL		240	150	21.0

BETWEEN YEAR 3 & YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0

TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 425	Electrochemistry	30	30	3.0
CHEM 436	Stereochemistry and Reaction Mechanisms II	45	0	3.0
CHEM 443	Analytical Chemistry II	45	0	3.0
EAPE 411	Education Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
PHYS 410	Solid State Physics	45	15	3.5
PHYS 414	Nuclear Physics	45	15	3.5
TOTAL		285	90	22.0

YEAR 4 SEMESTER 2

CHEM 416	Comparative Study of d and f Block Elements	45	0	3.0
CHEM 417	Radiation and Nuclear Chemistry	45	0	3.0
CHEM 455	Organic Spectroscopy	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles of Guidance and Counselling	30	0	2.0
PHYS 423	Semiconductor Physics	45	15	3.5
PHYS 424	Energy & Environment Physics	30	30	3.0
PHYS 420	Physics Practical VIII	0	60	2.0
TOTAL		300	45	21.5

OPTION 4: Botany, Zoology, Chemistry and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	45	0	3.0
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0

CHEM 120	Introduction to Physical Chemistry	30	30	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
ZOOL 101	Lower Invertebrates	30	30	3.0
TOTAL		225	120	22.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 121	Plant Anatomy and Morphology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Development Psychology	30	0	2.0
ZOOL 102	Higher Invertebrates	30	30	3.0
ZOOL 103	Vertebrate Zoology	30	30	3.0
TOTAL		225	120	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BOTA 232	Phycology	30	30	3.0
BOTA 241	Taxonomy of Higher Plants	30	30	3.0
CHEM 211	Quantum and Bonding Theories	45	0	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms 1	30	30	3.0
COMP 111	Introduction to Computer Application	45	0	3.0
EDCI 211	Curriculum Development	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
ZOOL 210	Ecology	30	30	3.0
ZOOL 231	Cell Biology	30	30	3.0
TOTAL		255	150	25.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 233	Mycology	30	30	3.0
BOTA 271	Plant Physiology	30	30	3.0
CHEM 212	Comparative Study of S	30	30	3.0

	& P Block Elements			
CHEM 221	Gases and Phase Equilibria	45	0	3.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Introduction to Statistics and Research Methods in Education	45	0	3.0
EPSC 228	Educational Measurement and Evaluation	30	0	2.0
ZOOL 220	Arthropod Biology	30	30	3.0
ZOOL 232	Histology	30	30	3.0
TOTAL		225	120	25.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BOTA 302	Biostatistics	45	0	3.0
BOTA 322	Plant Growth and Development	30	30	3.0
CHEM 322	Chemical Thermodynamics	30	30	3.0
CHEM 323	Chemical Kinetics	30	30	3.0
CHEM 332	Carbonyls, their Derivatives and Amines	45	0	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
ZOOL 301	Animal Systematic and Evolution	30	30	3.0
ZOOL 330	Animal Physiology	30	30	3.0
TOTAL		330	180	30.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 361	Plant Ecology	30	30	3.0
BOTA 381	Research Methods	30	30	3.0
CHEM 313	Coordination Chemistry	30	30	3.0
CHEM 324	Physical Methods of Structure Determination	30	30	3.0
CHEM 341	Analytical Chemistry I	30	30	3.0

EDCI 331	Chemistry Subject Methods	30	30	3.0
EDCI 334	Biology Subject Methods	30	30	3.0
ZOOL 331	Developmental Biology	30	30	3.0
ZOOL 341	Helmithology	30	30	3.0
TOTAL		300	270	24.0

BETWEEN YEAR 3 AND YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Admin. & Management	30	0	2.0
BOTA 453	Plant Pathology	30	30	3.0
BOTA 474	Advanced Plant Physiology	30	30	3.0
CHEM 425	Electrochemistry	30	30	3.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
ZOOL 430	Comparative Animal Physiology	30	30	3.0
ZOOL 440	Protozoology	30	30	3.0
ZOOL 474	Plant Physiology II	30	30	3.0
TOTAL		225	183	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 413	Molecular & Microbial Genetics	30	30	3.0
BOTA 436	Industrial Microbiology	30	30	3.0
CHEM 416	Comparatives Study of d and f Block Elements	30	30	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles of Guidance&	30	0	2.0

	Counselling			
ZOOL 412	Population Biology	30	30	3.0
ZOOL 413	Animal Behaviour	30	30	3.0
TOTAL		210	120	21.0

OPTION 5: Botany, Zoology, Geography and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	45	0	3.0
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
ZOOL 101	Lower Invertebrates	30	30	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
TOTAL		240	90	22.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 121	Plant Anatomy and Morphology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Development Psychology	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map work and analysis of spatial Data	30	30	3.0
ZOOL 102	Higher Invertebrates	30	30	3.0
ZOOL 103	Vertebrate Zoology	30	30	3.0
TOTAL		270	150	26.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BOTA 232	Phycology	30	30	3.0

BOTA 241	Taxonomy of Higher Plants	30	30	3.0
COMP 111	Introduction to Computer Application	30	30	3.0
EDCI 211	Curriculum Development	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
ZOOL 210	Ecology	30	30	3.0
ZOOL 232	Cell Biology	30	30	3.0
TOTAL		285	180	22.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 233	Mycology	30	30	3.0
BOTA 271	Plant Physiology I	30	30	3.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Introduction to Statistics and Research Methods in Education	45	0	3.0
EPSC 228	Educational Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
ZOOL 220	Arthropod Biology	30	30	3.0
ZOOL 231	Histology	30	30	3.0
TOTAL		270	120	25.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BOTA 302	Biostatistics	30	0	2.0
BOTA 322	Plant Growth and Development.	30	30	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0

GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
ZOOL 301	Animal Systematics and Evolution	30	30	3.0
ZOOL 330	Animal Physiology	30	30	3.0
TOTAL		210	150	25.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 361	Plant Ecology	30	30	3.0
BOTA 384	Research Methods and Seminars	30	30	3.0
EDCI 334	Biology Subject Methods	30	30	3.0
EDCI 335	Geography Subject Methods	30	30	3.0
GEOG 321	Research Methods in Geography	45	0	3.0
GEOG 322	Climate Change and Development	45	0	3.0
ZOOL 311	Freshwater Biology	30	30	3.0
ZOOL 331	Developmental Biology	30	0	2.0
TOTAL		240	210	24.0

BETWEEN YEAR 3 YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
BOTA 453	Plant Pathology	30	30	3.0
BOTA 474	Plant Physiology II	30	30	3.0
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles	45	0	3.0

	& Practices			
GEOG 414	Industrial Geography	45	0	3.0
ZOOL 430	Comparative Animal Physiology	30	30	3.0
ZOOL 440	Protozoology	30	30	3.0
TOTAL		335	210	24.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
BOTA 413	Molecular and Microbial Genetics	30	30	3.0
BOTA 436	Industrial Microbiology	30	30	3.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles of Guidance and Counselling	30	0	2.0
GEOG 423	Applied Agricultural Geography	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
ZOOL 412	Population Biology	15	60	3.0
ZOOL 413	Animal Behaviour	30	0	2.0
TOTAL		195	150	18.0

OPTION 6: Mathematics, Geography and Education

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	30	0	2.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
MATH 112	Basic Mathematics	45	0	3.0
MATH 132	Analytic Geometry	45	0	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
TOTAL		270	30	19

YEAR1 SEMESTER2

CODE	TITLE	L	P/T	C.F
COMS 111	Communication skills	45	0	3.0
EDFO 112	Philosophy Education	30	0	2.0

EPSC 122	Developmental Psychology	30	0	2.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map work and analysis of spatial Data	30	30	3.0
MATH 111	Calculus	45	0	3.0
MATH 131	Vectors and Mechanics	45	0	3.0
MATH 133	Introductory Statistics	45	0	3.0
TOTAL		330	0	22.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
COMP 111	Introduction to Computer Application	30	30	3.0
EDCI 211	Curriculum Development	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
MATH 212	Integral Calculus	45	0	3.0
MATH 230	Vector Analysis	45	0	3.0
MATH 232	Probability & Statistics	45	0	3.0
TOTAL		330	30	22.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Introduction to Statistics and Res. Methods in Education	45	0	3.0
EPSC 228	Educational Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
MATH 213	Linear Algebra	45	0	3.0
MATH 233	Advanced Probability & Statistics	45	0	3.0
TOTAL		370	30	19.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Comm. and Technology	30	30	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
MATH 312	Real Analysis	45	0	3.0
MATH 332	Ordinary Differential Equation	45	0	3.0
STAT 332	Theory of Estimation(Optional - Required for Msc Stat)	45	0	3.0
TOTAL		315	60	23.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EDCI 332	Mathematics Subject Methods	30	30	3.0
EDCI 335	Geography Subject Methods	30	30	3.0
GEOG 321	Research Methods in Geography	45	0	3.0
GEOG 322	Climate Change and Development	45	0	3.0
MATH 311	Group Theory	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
MATH 313	Advanced real Analysis (Optional)	45	0	3.0
TOTAL		270	90	21.0

BETWEEN YEAR 3 AND YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
EAPE 411	Educational Administration and Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
MATH 422	General Topology	45	0	3.0
MATH 434	Partial Differential Equations	45	0	3.0
STAT 432	Testing of Hypothesis (Optional)	45	0	3.0
TOTAL		285	60	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles and Guidance and Counselling	30	0	2.0
GEOG 423	Applied Agricultural Geography	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
MATH 411	Functional Analysis	45	0	3.0
MATH 431	Advanced Ordinary Differential Equations	45	0	3.0
MATH 421	Measure Theory (Optional)	45	0	3.0
MATH 403	Ordinary Differential Equation II	45	0	3.0
TOTAL		315	0	21.0

OPTION 7: Chemistry, Geography and Education**YEAR 1 SEMESTER 1**

CODE	TITLE	L	P/T	C.F
AGHE 140	Human Health I	45	0	3.0

CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
EDFO 111	History of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
TOTAL		255	60	19.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 122	Developmental Psychology	30	0	2.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map work and analysis of spatial Data	30	30	3.0
TOTAL		225	30	16.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 211	Quantum and Bonding Theories	45	0	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms I	30	30	3.0
COMP 111	Introduction to Computer Application	45	0	3.0
EDCI 211	Curriculum Development	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
TOTAL		255	60	19.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 221	Gases and Phase Equilibria	45	0	3.0
CHEM212	Comparative Study of S and P Block Elements	30	30	3.0
EDFO 213	Sociology of Education	30	0	2.0
EPSC 224	Intro. to Statistics and Research Methods in Educ.	45	0	3.0
EPSC 228	Education Measurement and Evaluation	30	0	2.0
GEOG 221	Biogeography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
TOTAL		255	60	19.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 322	Chemical Thermodynamics	30	30	3.0
CHEM 332	Carbonyls, their Derivatives and Amines	45	0	3.0
CHEM 323	Chemical Kinetics	30	30	3.0
EDCI 311	Secondary School Curriculum	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	30	30	3.0
EDCI 351	Educational Communication and Technology	30	30	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
TOTAL		285	120	23.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 313	Coordination Chemistry	30	30	3.0
CHEM 324	Physical Methods of	45	0	3.0

	Structure Determination			
CHEM 341	Analytical Chemistry I	30	30	3.0
EDCI 331	Chemistry Subject Methods	30	30	3.0
EDCI 335	Geography Subject Methods	30	30	3.0
GEOG 321	Research Methods in Geography	45	0	3.0
GEOG 322	Climate Change and Development	45	0	3.0
TOTAL		240	150	21.0

BETWEEN YEAR 3 AND YEAR 4

CODE	TITLE	L	P/T	C.F
EDCI 398	Learning Resources Projects	0	60	4.0
EDCI 399	Teaching practice	0	90	6.0
TOTAL		0	150	10.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P/T	C.F
CHEM 425	Electrochemistry	30	30	3.0
CHEM 443	Analytical Chemistry II	30	30	3.0
CHEM 436	Stereochemistry and Reaction Mechanisms II	30	30	3.0
EAPE 411	Educational Administration & Management	30	0	2.0
EDCI 499	Educational Seminars	15	30	2.0
EDFO 415	Contemporary Issues in Education	30	0	2.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
TOTAL		210	120	18.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P/T	C.F
CHEM 416	Comparative Study of d and f Block Elements	30	30	3.0
CHEM 417	Radiation and Nuclear Chemistry	45	0	3.0
CHEM 455	Organic Spectroscopy	45	0	3.0
EAPE 421	Economics and Planning of Education	30	0	2.0
EDFO 418	Comparative Education	30	0	2.0
EPSC 426	Principles of Guidance and Counseling	30	0	2.0
GEOG 423	Applied Agricultural Geography	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
TOTAL		300	30	21.0

(c). Course Descriptions**EDCI 211: Curriculum Development**

The broad definition of curriculum. Basic principles of Curriculum construction, design, planning, implementation innovations, models of curriculum development and curriculum evaluation. Dynamics of curriculum change and strategies. Teacher Education Curriculum.

EDCI 311: Secondary School Curriculum

Historical and Philosophical foundations of Secondary School Curriculum Commissions. Social forces affecting Curriculum decisions and the process of Curriculum improvement. Technical and entrepreneurship Education. (Pre-requisite EDCI 211).

EDCI 312: Health and Physical Education

Background to Health Education in Schools. Background in Human Anatomy Human Organ System, their independence, significant disorders and care;

Communicable Diseases of importance in Kenya control; Emergency treatment. General Principles of Physical and Mental Health. Health and Nutrition; Sports in School in School Environment. Family Planning and Population Control. Drug use and misuse.

EDCI 321: General Methods and Principles of Teaching

Evolution of teaching methods, traditional and modern teaching methods. Nature and components of teaching/learning processes. Main approaches to teaching and essentials of good teaching. Characteristics and levels of classroom learning. Classroom communication, components of effective classroom communication. Teaching strategies, various methods of teaching; merits and demerits of various methods. Goals of Education as linked to national goals. Secondary School Goals (from subject approach), instructional objectives in the classroom. Planning: Syllabus, schemes of work, lesson plan and record of work. Classroom organisation and management, effective classroom instruction, individual differences, sustenance of attention in the classroom. Methods of evaluating; learning outcomes. General and Special Methods, Micro-teaching peer teaching and teaching practice.

EDCI 331: Chemistry Subject Methods

An Analysis of the philosophy and objectives of Chemistry Education in the School Curriculum. Learning and Instructional theories in teaching Chemistry. Chemistry teaching methods. Review of various Chemistry Syllabuses which have been developed in Kenya. Emphasis on the 8-4-4 Chemistry Syllabuses.(Physical Science Syllabus and Pure Chemistry Syllabus).Preparation of Chemistry Schemes of work, lesson plans and records of work in chemistry teaching. Organisation and management of a School Chemistry Laboratory. Emphasis on the audio-visual materials used in chemistry. Methods of evaluating and

grading performance in Chemistry. Practice teaching in small groups (Micro-teaching).(Prerequisite EDCI 321).

EDCI 332: Mathematics Subject Methods

An introduction to Mathematics Education. Philosophy and Foundation of mathematics. General goals and objectives of mathematics teaching in Schools. Changes and influence of Mathematics Secondary School Curriculum. Learning and Instructional theories in teaching Mathematics teaching resources in Schools. Evaluation and grading performance in Mathematics (Pre-requisite EDCI 321).

EDCI 333: Physics Subject Methods

What is Physics Education all about? Nature of Physics. Philosophy and objectives of Physics in the Secondary Schools Curriculum Instructional Theories relevant to the teaching of Physics. Skills, concepts, and attitudes as covered by Physics Syllabi. Schemes of work and lesson plans in Physics. Relevant teaching methods and evaluation emphasised in Physics Education. Organisation and Management of Physics Resources in Secondary School. (Prerequisite EDCI 321)

EDCI 334: Biology Subject Methods

An introduction to Biology Education. The Philosophy and objectives of teaching Biology at Secondary School Level. An Analysis of the Biology syllabus into specific knowledge and skills to be taught. Preparation of scheme of work and lesson plans to be used in implementing the Syllabus. Instructional teaching method relevant to the teaching of Biology. Selection, preparation and use of Biological teaching materials. Evaluation and grading performance in Biology. Organisation and management of Biological resources (e.g. Biology laboratory, equipment and software). (Prerequisite EDCI 321)

EDCI 335: Geography Subject Methods

An introduction to Geography Education – Philosophy, concepts, nature, scope and goals. The role of teacher in Geography in Geography and planning of Geography teaching syllabus, scheme of work, lesson plans. Methods of teaching and learning geography. Problems associated with the teaching of Geography. Current research and approaches in Geography Education. Acquisition, preparation, sue and management of teaching – learning resources and equipment. Study of the local environment through fieldwork. Project work in Geography Education. Evaluation and assessment in Geography Education.(Prerequisite EDCI 321)

EDCI 351: Educational Communication and Technology

Introduction to principles and techniques of selecting and using appropriate media to enable prospective teacher to communicate effectively and so improve the quality of teaching and learning. Production of teaching materials from local raw materials, Management and use of resources in the School Workshop and Laboratory.

EDCI 398: Learning Resources Projects

Student initiated practical projects in one the teaching subjects, intended to enable students to develop personal initiative in constructive teaching materials. Students will be required to select a suitable project, write out project proposal and then carry out the project and finally submit the project report. The project will be carried out during teaching practice, and should be of use to the teaching practice school.

EDCI 399: Teaching Practice

Practical teaching experience for a period of 12 weeks in approved secondary schools under the guidance of University supervisors and co-operating teachers in teaching and directing the activities of pupils. The student teachers will assume school responsibilities in

order to develop competence for independent performances as a teacher. (Prerequisite EDCI 321)

EAPE 410: Public Administration

Approaches to contemporary in administration, principles and theories of administration. Elements of administration affecting organization: planning, organizing, directing, controlling, decision-making and public relationship. Organizational structure formal organization, informal groups in organization and bureaucracy. Leadership in administration, administrative procedures, financial management and office management. Government and preliminary procedural matters at the time of entry; staff functions and responsibilities.

EAPE 411: Educational Administration and Management

Basic concepts, theories and practices underlying the administration and supervision of Education. Leadership in schools, financial control, personnel management, school planning and management, legal and policy issues of Educational institution and community relations.

EAPE 417: School Organization and Management

Organization of professional programmes; pre-primary, primary secondary tertiary Education. Personnel functions in a school staff: Board of Governors, School Committees and Parent Teacher Association (PTA). Maximizing human resources in a school: a useful framework for improving the interaction and growth within the school system including motivation, utilization and development. Administration and staff relations, including communication, discipline, stability and compensation of human resources. Collective negotiation processes. Financial management including filing, record-keeping and report.

EAPE 421: Economics and Planning of Education

Economic dimensions of Educational administration, application of selected economic concepts and tools to analyse administrative thinking, decision making and planning processes in Educational systems. Generation and distribution of scarce resources and the optimum utilisation of available resources to meet the supply and demand. Education as a long-term investment in the economic viewpoint and economic problems of Education in developing countries with special reference to Kenya.

9.2 SERVICE COURSES OFFERED TO OTHER DEPARTMENT

EDCI 211: Curriculum Development

The broad definition of curriculum. Basic principles of Curriculum construction, design, planning, implementation innovations, models of curriculum development and curriculum evaluation. Dynamics of curriculum change and strategies. Teacher Education Curriculum. B Sc (Nursing)

EDCI 334: Biology Subject Methods

An introduction to Biology Education, The Philosophy and objectives of teaching Biology at Secondary School Level. An Analysis of the Biology syllabus into specific knowledge and skills to be taught. Preparation of scheme of work and lesson plans to be used in implementing the Syllabus. Instructional teaching method relevant to the teaching of Biology. Selection, preparation and use of Biological teaching materials. Evaluation and grading performance in Biology. Organisation and management of Biological resources (e.g. Biology laboratory, equipment and software). (Prerequisite EDCI 321) B Sc (AGED),

EDCI 312: Health and Physical Education

Background to Health Education in Schools. Background in Human Anatomy Human Organ System,

their independence, significant disorders and care; Communicable Diseases of importance in Kenya control; Emergency treatment. General Principles of Physical and Mental Health. Health and Nutrition; Sports in School in School Environment. Family Planning and Population Control. Drug use and misuse. B Sc (AGED),

EDCI 321: General Methods and Principles of Teaching

Evolution of teaching methods, traditional and modern teaching methods. Nature and components of teaching/learning processes. Main approaches to teaching and essentials of good teaching. Characteristics and levels of classroom learning. Classroom communication, components of effective classroom communication. Teaching strategies, various methods of teaching; merits and demerits of various methods. Goals of Education as linked to national goals. Secondary School Goals (from subject approach), instructional objectives in the classroom. Planning: Syllabus, schemes of work, lesson plan and record of work. Classroom organisation and management, effective classroom instruction, individual differences, sustenance of attention in the classroom. Methods of evaluating; learning outcomes. General and Special Methods, Micro-teaching peer teaching and teaching practice. B Sc (Design),

EDCI 351: Educational Communication and Technology

Introduction to principles and techniques of selecting and using appropriate media to enable prospective teacher to communicate effectively and so improve the quality of teaching and learning. Production of teaching materials from local raw materials, Management and use of resources in the School Workshop and Laboratory. B Sc (Design), B Sc (Nursing)

EDCI 398: Learning Resources Projects

Student initiated practical projects in one the teaching subjects, intended to enable students to develop personal initiative in constructive teaching materials. Students will be required to select a suitable project, write out project proposal and then carry out the project and finally submit the project report. The project will be carried out during teaching practice, and should be of use to the teaching practice school. B Sc (Design),

EDCI 399: Teaching Practice

Practical teaching experience for a period of 12 weeks in approved secondary schools under the guidance of University supervisors and co-operating teachers in teaching and directing the activities of pupils. The student teachers will assume school responsibilities in order to develop competence for independent performances as a teacher (*Prerequisite EDCI 321*). B Sc (Design).

9.3 Matrix Aligning Courses to Programme Learning Outcomes

CLUSTER SUBJECT LEARNING OUTCOMES-B. ED Science	Year 1 Courses	CF	Year 2 Courses	CF	Year 3 Courses	CF	Year 4 Courses	CF
PLO1 Plan, utilize and manage resources in learning institutions			Health and Physical Education	3	General methods of teaching Educational Communication and Technology Learning Resources Projects Teaching Practice Mathematics Subject Methods Physics Subject Methods Geography Subject Methods	2 3 3 3 3 3	Planning and Economics of Education Law in Education	3 3
PLO2 Design, develop, implement and evaluate curricula.		3	Curriculum Development	3	Secondary School Curriculum	3		3

PLO3 Identify and evaluate the various Foundations of Education.	History of Education	2	Psychology of Learning	2	Secondary School Curriculum	3	Educational Administration and Management	2
	Philosophy of Education	2	Intro. to Statistics and Research Methods in Educ.	2	Educational Communication and Technology	3	Contemporary Issues in Education	2
	Introduction to Psychology	2	Education	2	Learning Resources	4	Comparative Education	2
	Developmental Psychology	2	Measurement and Evaluation	2	Projects	6	Principles of Guidance and Counselling	2
PLO4 Plan and implement appropriate programmes for different categories of learning			Curriculum Development	2	Secondary School Curriculum	3	Educational Admin and Management	2
					Educational Communication and Technology	3	Economics and Planning of Education	2
PLO5 Teach Science subjects effectively in their subject areas	Introduction to Inorganic Chemistry	3	Quantum and Bonding	3	Chemical Thermodynamics	3	Electrochemistry	3
	Introduction to Physical Chemistry	3	Stereochemistry and Reaction Mechanisms 1	3	Chemical Kinetics	3	Stereochemistry and Reaction Mechanism 11	3
	Basic Mathematics	3	Integral Calculus	3	Carbonyls, their Derivatives and Amines	3	Analytical Chemistry II	3
	Analytic Geometry	3	Vector Analysis	3	Real Analysis	3	General Topology	3
	Introduction to Organic Chemistry	3	Probability & Statistics	3	Ordinary Differential Equation	3	Partial Differential Equations	3
	Introduction to Computer Application	3	Comparative Study of s and p Block Elements	3	Theory of Estimation(Optional - Required for Msc. Stat)	3	Testing of Hypothesis (Optional)	3
	Differential Calculus	3	Gases and Phase Equilibria	3	Coordination Chemistry	3	Comparative Study of d and f Block Elements	3
	Vectors and Mechanics	3	Linear Algebra	3	Physical Methods of Structure Determination	3	Radiation and Nuclear Chemistry	3
	Introductory Statistics	3	Advanced Probability & Statistics	3	Analytical Chemistry I	3	Organic Spectroscopy	3
	Integral Calculus	3	Probability & Statistics	3	Group Theory	3	Functional Analysis	3
	Vector Analysis	3	Waves and Oscillations	3	Complex Analysis	3	Advanced Ordinary Differential Equations	3
	Comparative Study of s and p Block Elements	3	Electricity and Magnetism I	3	Advanced real Analysis (Optional)	3	Measure Theory (Optional)	3
	Gases and Phase Equilibria	3	Physics Practical III	3	Quantum Mechanics I	3	Quantum Mechanics I	3
	Linear Algebra	3	Introduction to Material science	3	Basic Electronics	3	Basic Electronics	3
	Advanced Probability & Statistics	3	Electricity and Magnetism II	3	Physics Practical V	3	Physics Practical V	3
	Mechanics	3	Physics Practical IV	3	Atomic Physics	3	Atomic Physics	3
	Heat and Thermodynamics	3	Phycology	3	Physical Optics	3	Physical Optics	3
	Physics Practical I	3	Taxonomy of Higher Plants	3	Physics Practical VI	3	Physics Practical VI	3
	Geometrical Optics	3	Ecology	3	Biostatistics	3	Digital Electronics	3
	Introduction to Quantum Physics	3	Cell Biology	3	Plant Growth and Development	3	Nuclear Physics	3
	Physics Practical II	3	Mycology	3	Animal Systematic and Evolution	3	Physics Practical VII	3
	General Botany	3	Plant Physiology	3	Animal Physiology	3	Solid State Physics	3
	General Genetics	3	Arthropod Biology	3	Plant Ecology	3	Electromagnetic Theory	3
	Lower Invertebrates	3	Histology	3	Research Methods	3		
	Plant Anatomy and Morphology	3	Introduction to Remote Sensing and GIS	3	Developmental Biology	3		
	General Microbiology	3	Statistical Mapping and Spatial Planning	3	Helmithology	3		
	Higher Invertebrates	3			Geomorphology	3		
	Vertebrate Zoology	3						

[illegible]

DEPARTMENT OF PSYCHOLOGY, COUNSELLING AND EDUCATION FOUNDATIONS

BACHELOR OF EDUCATION IN EARLY CHILDHOOD DEVELOPMENT AND EDUCATION

1. Philosophy of the Programme

This programme is anchored on the belief that early childhood education is beneficial to the children's social, emotional, physical and cognitive development. The graduates of this programme are therefore trained to create an enriched environment that promotes and fosters pre-school children's holistic development for sustainable learning.

2. Rationale

The programme is need driven. The need for this programme is guided by the following five principles: the constitutional provisions under the Bill of Rights; the devolution of social services under the two tier system of government; the Kenya Vision 2030; the Sessional Paper No. 14 of 2012 and the employability of the graduates.

First, Sections 43 (f) and 53 of the Constitution provides that education is a human right and on this ground it is the responsibility of the State and its organs to provide young children with early childhood education and care.

Second, the county government is mandated by the Constitution to oversee the provision of early childhood education and in this respect the county governments have put up classrooms in readiness for full implementation of the mainstreaming of early childhood education in the education system and the recruitment of teachers. In order to meet the Constitutional requirement, pre-school attendance will be a prerequisite for admission to grade 1. The implication of this requirement is that every primary school in the county and in the country

will need an early childhood unit attached to it. In addition, private primary schools will also have pre-school units as the catchment area for their grade 1 intake.

Third, the social pillar of the Kenya Vision 2030 presupposes that the ultimate production of the human capital that is required to drive and sustain this Vision rests on the provision of quality education at all levels. Indisputably, ECDE lays a good foundation for all these levels.

Fourth, Sessional Paper No.14 of 2012 provides policy framework on all sub-sectors of education. While providing the objectives of ECDE, this policy framework also identifies the insufficient number of trained teachers as one of the challenges facing this sub-sector of education.

Fifth, this programme will be most attractive to those already trained and certificated as P1 and Diploma teachers by the Kenya National Examinations Council (KNEC) and are employed by the Teachers Service Commission (TSC). This progressive professional development track of starting from P1 to Diploma is favoured by TSC and hence the envisaged benefits to the ECDE graduates are employment opportunities, promotions and upgrading by the employer. Invariably, this programme is therefore tailored to suit this prevailing market situation.

Globally, there is growing recognition of the importance of pre-school education and hence the need to have trained personnel to handle this sub-section of education. Since independence pre-school education has never been

mainstreamed with primary school education and the training and provision of quality teachers has not been the attention it deserves. Under the 2010 Constitution pre-school education is recognized as an integral part of the education system and the responsibility of its provision has been devolved to the County government. Besides the provisions of the Constitution, the recognition of the need and the importance of ECDE has been articulated in various government documents including Session Paper No.14 of 2012. There is therefore need for the development of early childhood professionals who have skills in the management of children's social, emotional, physical and cognitive development.

3. Goal of the Programme

The Bachelor of Education in Early Childhood Development and Education programme is designed to prepare the graduates as effective teachers, trainers and managers of pre-school institutions.

4. Programme Learning Outcomes

Upon the completion of the programme, the graduates are expected to:

- i. Identify the health needs of pre-school children that promote their wellness.
- ii. Apply theories and techniques in the development of children's learning activities and materials.
- iii. Demonstrates awareness of global, regional and local legal rights, safety and protection of young children.
- iv. Apply ethical standards in conducting research and handling pre-school children's needs and assessment.

- v. Demonstrate application of the principles of inclusive education with respect to children with disabilities, behavioural disorders and special needs.

2.5.2 Specialization

This programme does not have areas of specialization.

5. Mode of Delivery

Mode of delivery will involve blended learning that includes full time for pre-service trainees and part time basis for practicing teachers and will be conducted through:

6. Academic Regulations for the Programme

6.1 Admission Requirements

The general University admission requirement of at least a KCSE certificate with a mean Grade of C+ shall apply. Egerton University Statutes 36 (1 & 2) applies. In addition, applicants must have scored at least grade C in the following subjects:

- i. Either English or Kiswahili
- ii. Any one subject from: Mathematics or Physics or Chemistry or Physical Science
- iii. Any one subject from: History and Government, Geography, Religious Education or Social Education and Ethics.
- iv. Either Biology or Biological Sciences

Alternatively, applicants shall be admitted into the programme provided they hold either:

- i. PI Teachers' Certificate and at least a KCSE Certificate with a mean Grade of C plain or KCE Division II or KACE I principal and 2 Subsidiary passes

OR

- ii. Diploma in Early Childhood Development Education from a recognized examining body.

OR

- iii. Certificate in ECDE teaching from a recognized examining body and at least a KCSE Certificate with a mean Grade of C plain or KCE Division II or KACE 1 principal and 2 subsidiary passes.

OR

- iv. KACE or its equivalent with at least 2 principal passes and 1 subsidiary pass.

6.2 Regulation on Credit Transfer

Credit transfer will be done according to Egerton University statutes of 2013 article 36 (3) for undergraduate programmes.

6.3 Course Requirements

Egerton University statute 36 (4) and ISO procedure for teaching and examinations (EU/AA/OP/05) shall apply.

6.4 Student Assessment Policy /Criteria

Egerton University statute 36 (5, 6 & 7) and ISO procedure for teaching and examinations (EU/AA/OP/05; 6.2) shall apply.

6.5 Grading System

Grading will be done according to Egerton University statute 36 (6& 7) for undergraduate studies.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 of 2013 and ISO procedure for teaching and examinations (EU/AA/OP/05)

6.7 Moderation of Examination

Egerton University statutes of 2013 article 36 and ISO procedure on examination processing (Doc No. : EU/AA/OP/06) shall apply.

6.8 Graduation Requirements

To graduate, the student must have completed and passed 152.5 Credit Factors (CFs). In addition teaching practice and practicum will form an important and mandatory part of programme.

6.9 Classification of Degrees

The classification of degrees will be as stipulated in Egerton University Statute(s) of 2013 article 36 (14;3a).

7. Course Evaluation

All courses in the programme will be evaluated using course evaluation tools as shall be provided by the university.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

Early Childhood Development and Education degree will be hosted in the department of Psychology, Counselling and Educational Foundations, Faculty of Education and Community Studies. The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of each academic cycle.

8.3 Course coding

All courses in this programme shall be coded ECDE to reflect the identity of the programme ng Early Childhood Development Education. This will be followed by three digits as follows:

- i. First digit shall denote the year of study in which the course is offered.
- ii. Second digit shall denote the semester in which the course is offered.
- iii. The third digit will denote the sequence of the course in a particular semester

This coding shall not apply to those courses to be shared or already existing units in other Egerton University programmes. In which case, the existing codes and titles shall be retained.

2.10 Courses/ Units offered for the Programme

2.10.1 Schedule of Courses

a) Common Core courses

AGHE140: Human Health

COMP 101: Introduction to Computer Applications

COMS 111: Communication Skills

COMS 121: Communication Skills 11

ZOOL 143:H1V/A1DS and Society

b) Schedule of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
AGHE 140	Human Health	30	30	3.0
COMP101	Introduction to Computer Applications	45	15	3.5
COMS111	Communication Skills	45	0	3.0
ECDE 111	Principles of Early Childhood Dev Education	30	0	2.0
ECDE 112	Cultural Studies and ECDE	30	0	2.0
EDFO 111	History of Education	30	0	2.0
EDFO 112	Philosophy of Education	30	0	2.0
EPSC 121	Introduction to Psychology	30	0	2.0
TOTAL		270	45	19.5

YEAR 1 SEMESTER 2

COMS 121	Communication Skills 11	30	30	3.0

ECDE 121	Child Growth and Development I	45	0	3.0
EDCI 211	Theory and Principles of Curriculum Development	30	0	2.0
EDCI 223	Educational Technology	30	0	2.0
EDCI 321	General Methods and Principles of Teaching	45	0	3.0
EDFO 213	Sociology of Education	30	0	2.0
ZOOL 143	H1V/A1DS and Society	45	0	3.0
TOTAL		255	30	18.0

YEAR 2 SEMESTER 1

ECDE 211	Health and Nutritional Education for ECDE	30	0	2.0
ECDE 212	Educational Technology for ECDE	30	0	2.0
ECDE 213	Language studies for ECDE	30	0	2.0
ECDE 214	Mathematics for ECDE	30	0	2.0
ECDE 215	Social Studies for ECDE	30	0	2.0
ECDE 216	Religious Education for ECDE	30	0	2.0
ECDE 217	Child Growth and Development 11	30	0	2.0
EPSC 223	Psychology of Learning	30	0	2.0
TOTAL		240	0	16

YEAR 2 SEMESTER 2

ECDE 221	Creative and Psychomotor Skills for ECDE	30	15	2.5
ECDE 222	Music, Drama, Movement and Games for ECDE	30	15	2.5
ECDE 223	Science and Environmental Education for ECDE	30	0	2.0
ECDE 224	Curriculum for ECDE	30	0	2.0
ECDE 225	Practicum	0	120	4.0
EPSC 228	Measurement and Evaluation	45	0	3.0
TOTAL		165	150	16.0

YEAR 3 SEMESTER 1

ECDE 311	Comparative ECDE	30	0	2.0
ECDE 312	Methods of Teaching ECDE Language Skills	30	30	3.0
ECDE 313	Methods of Teaching ECDE Mathematics	30	30	3.0
ECDE 314	Methods of Teaching ECDE Social Studies	30	30	3.0
ECDE 315	Methods of Teaching ECDE Religious Education	30	30	3.0
ECDE 316	Child Rights and Protection	30	0	2.0
ECDE 317	Research Methods in Child and Family Studies	30	0	3.0
TOTAL		210	120	19.0

YEAR 3 SEMESTER 2

ECDE 321	Children with special Needs	30	0	2.0
ECDE 322	Organization and Management of Children's Feeding Programmes	30	0	2.0
ECDE 323	Personality Development	30	0	2.0
ECDE 324	Methods of Teaching ECDE Creative and Psychomotor Education	30	30	3.0
ECDE 325	Methods of Teaching ECDE Health and Nutritional Education	30	30	3.0
ECDE 326	Methods of Teaching ECDE Music Movement and Physical Education	30	30	3.0
ECDE 327	Methods of Teaching ECDE Science and Environmental Education	30	30	3.0
TOTAL		210	120	18.0

ECDE 398	Learning Resource Project	0	120	4.0

ECDE 399	Teaching Practice	0	180	6.0
TOTAL		0	300	10.0

YEAR 4 SEMESTER 1

EAPE 421	Educational Administration & Management	30	0	2.0
ECDE 411	Behavioural Disorders in Children	30	0	2.0
ECDE 412	Community Development and ECDE	45	0	3.0
ECDE 413	Children's Literature and Mass Media	45	0	3.0
ECDE 414	Group Dynamics and Children	30	0	2.0
ECDE 415	Issues in ECDE Teacher Education	30	0	2.0
ECDE 416	Screening Procedures for Children	30	0	2.0
ECDE 417	Remedial Education for ECDE	30	0	2.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER 2

EAPE 411	Planning and Economics of Education	30	0	2.0
ECDE 421	Administrations and Management of ECDE Programmes	30	0	2.0
ECDE 422	Mainstreaming of Children with Special Needs	30	0	2.0
ECDE 423	Contemporary Issues in ECDE	30	0	2.0
ECDE 424	Guidance and Counselling	30	0	2.0
ECDE 425	Foods and Nutrition for ECDE	30	0	2.0
ECDE 426	Indoor and Outdoor Play	30	0	2.0

	Activities for ECDE			
ECDE 427	Challenges of Family in a Changing Society	30	0	2.0
EDCI 411	Entrepreneurship Education	30	0	2.0
TOTAL		270	0	18.0
GRAND TOTAL		1890	765	152.5

c) Course Descriptions

ECDE 111: Principle of Early Childhood Development (30/0: CF 2.0) Y1S1

The concepts of Early Childhood Development and Early Childhood Education. The three different views of the child: Empiricism, Natives and Interactions. Common principles of the pioneers of early childhood Tradition: Friedrich Froebel (1782-1852). Rudolf Steiner (1861-1925), and Maria Montessori (1869-1952). Presentation of empirical support of the principles of Early Childhood Education by: Lev Vygotsky (1869-1934), Jean Piaget (1896-1983). Jerome Bruner (1915-) and Mia Kellmer Pringle (1920-1983).

ECDE 112: Cultural Studies and Early Childhood Development Education (30/0: CF 2.0) Y1S1

Cultural practices in selected African societies with particular reference to: pregnancy, birth and infancy rites, traditional religious beliefs, norms, values, music, material culture, economy, aesthetic and communication.

ECDE 121: Child Growth and Development (45/0: CF 3.0) Y1S2

Growth and Development of the child from conception to three years old. Distinction between child growth and child development. Theories of child growth and development according to Piaget, Erikson and Freud. Aspects of child growth and development:

physical/psychomotor, cognitive/mental, social, emotional, spiritual, moral, aesthetic, language and personality. Stages of early childhood growth and development: pre-natal and post-natal. Brain development and its functions. Factors that influence child growth and development. Importance of early childhood years and development. Importance of early childhood years' manipulation of material e.g. toys and play by infants.

ECDE 211: Health and Nutritional Education for ECDE (30/0: CF 2.0) Y2S1

Health Education and primary health care. Ante and post natal care. Factors related to physical and mental early childhood development. Nutritional needs at various stages of child growth up to eight years. Influence of nutrition on growth and development of children at various ages. Food deficiency disorders. Common childhood diseases: non immunizable and immunizable diseases. Symptoms and preventive measures. Strategies for improving health and nutrition of children. Child rearing practices and child safety: First aid and its applications, and road safety. Child hygiene and environmental sanitation. The child and HIV/AIDS: AIDS orphan child, the AIDS infected child. Community health Education for parents.

ECDE 212: Educational Technology for ECDE (30/0: CF 2.0) Y2S1

Design and development of materials for teaching/learning the following skills: Numeracy, manipulation, reading, writing and perception. Improvisation of teaching learning materials from free or inexpensive locally available materials, drawing, painting and modelling. Sensitization and mobilization of parents and communities in the development of ECDE teaching/learning materials. Use, storage and maintenance of ECDE materials. Techniques of

displaying and safety precautions. Evaluation of ECDE materials development. (Prerequisite: EDCI 223)

ECDE 213: Language Studies for ECDE (30/0: CF 2.0) Y2S1

Nature of human language and various forms of human communication. Relationship between language and thought, language and culture. The function of human language in child development. Stages of language development in children: socialized and adult language. Theories of language acquisition and their application to early childhood: Piaget's. Bernstein's. Vygotsky's. Chomsky's, skinner's theories etc. First language acquisition and second language learning. Language activities as a learning process in early childhood. Children with special language needs. De-learning bad linguistics habits, language policy in Kenya. Evaluating language skills in early childhood Education programmes.

ECDE 214: Mathematics for ECDE (30/0: CF 2.0) Y2S1

Nature and scope of Mathematics for ECDE. Numbers, numerals and basic Mathematical operations. Measurement. Goals of Mathematical instruction in ECDE. Significance of Mathematics in life. Application of the theories of Piaget and Bruner in ECDE Mathematics instruction. Development of Mathematical concepts and skills among children. Mathematical activities: classification, numbers, numeration and counting; measurement, geometry and computational skills. Child's Mathematical vocabulary such as 'all', 'big', 'more*', 'small', 'large', etc.

ECDE 215: Social Studies for ECDE (30/0: CF 2.0) Y2S1

Nature and scope of Social Studies Structure of society, including the family members and their roles, the child's

peers and community institutions and their functions. Community activities, including ceremonies. Integration of children into community activities. Leadership and local administrative and civic institutions. National holidays and their importance. Society and Education, health and development.

ECDE 216: Religious Education for ECDE (30/0: CF 2.0) Y2S1

The holy books of Christian. Islamic and Hindu religion. Revelation of God in those books. What the holy books say about religious teachers and children e.g. Jesus as a child and later a great teacher; Jesus loves children etc. Teaching children about their religion e.g. through Sunday schools/catechism. Madrasa etc. Ways of worship as learning opportunities and spiritual as well as moral guide for children.

ECDE 217: Child Growth and Development II (30/0: CF 2.0) Y2S1

Major features of growth and development of 3-8 year old children. Physical growth and development. Intellectual development and its influences e.g. nature, nurture and gender. Piaget's cognitive theory. Theories of child development according to Erickson, Freud, Kohlberg etc. Development of perception and thinking. Language development in children. Psychology and learning, including skinner's theory of learning. Agents and their significance, including gender socialization and gender roles. Play and its significance to child growth and development. Mental and health and adjustment in early childhood. The care givers or instructors of children with special needs. Educational implications of child growth, including school readiness, transition from home to pre-school and from pre-school to primary school. Methods of assessing child growth and development. (Prerequisite ECDE 121).

ECDE 221: Creative and Psychomotor Skills for ECDE (30/15: CF 2.5) Y2S2

Creative artistic expression in early childhood- psychomotor/physical coordination and dexterity. Providing artistic-friendly environment for children. Expression of feelings and development of hand dexterity through modelling and cutting by pair of scissors. Creating collages and mosaics. Basic skills of scribbling and drawing using black or coloured pencils, crayons, felt pens, charcoal, chalk. Painting on surfaces using sewing weaving and knitting. Display of children's creative work.

ECDE 222: Music, Drama, Movement and Games for ECDE (30/15: CF 2.5) Y2S2

Significance of music, drama, dance movement and play activities in early childhood development. Developing basic musical and dancing skills among young children. Music and dance as devices for emotional therapy, calming, social harmony in the early childhood years. Development of music appreciation and listening skills in young children. Child development stages and related suitable body movements, folk music, dance and costumes, suitable children's songs and musical instruments physical exercises for young children including free play and directed activities indoor and outdoor play activities.

ECDE 223: Science and Environmental Education for ECDE (30/0: CF 2.0) Y2S2

Philosophy and nature of science. African indigenous science. Theories of early childhood Educators and the teaching and learning of science: Piaget, Bruner and Dewey. Sensory perceptions and science. Properties of matter, state of matter, light and heat, sound, levers and machines, magnetism and electricity. Earth and environment; living things; plants and animals and their

classifications. Parts of plants and animals and their function in developing scientific skills in young children.

ECDE 224: Curriculum for ECDE (30/0: CF 2.0) Y2S2

National goals of Education in Kenya in relation to the objectives of early childhood development Education (ECDE) programmes. Educators who contributed to the development of ECDE curriculum: Pestalozzi, Froebel, Montessori, Steiner, Piaget, Tyler, Taba, Bruner and Dewey. Early childhood development Education curriculum activity areas in Kenya: language; mathematics; social studies; science and environment; music, drama, movement and games. Creative and psychomotor activities. The role of Kenya Institute of Education (KIE) in ECDE curriculum in Kenya. A visit to NACECE at KIE and/or ECDE institution. (Prerequisite: EDCI 211).

ECDE 225: Practicum (0/120: CF 4.0) Y2S2

Attachment to children's special homes and pre-schools among other relevant institutions for a period of one month. Observations made on children as they learn and play. Assisting ECDE teachers and managers to run the daily activities that focus on psychomotor skills, social and emotional behaviours, cognitive and language development. These observations culminate in the writing of an experiential report by each student. (Prerequisites: ECDE 11I, EPSC 121 & ECDE 121).

ECDE 311: Comparative ECDE (30/0: CF 2.0) Y3S1

ECDE in comparative setting. International dimensions of ECDE, for example, the recommendations of the third International Conference on Early Childhood Education, held in Accra, Ghana, May - June, 2005. ECDE in Kenya and Uganda, Egypt and South Africa, any other two African countries. ECDE in two countries from the developed world e.g., USA and Japan, Britain and China

etc. The basis of comparisons include: government policy, staff training and staffing. Goals and objectives of ECDE; organizational structure of ECDE. curriculum development for ECDE, implementation and evaluation, problems and prospects.

ECDE 312: Methods of Teaching ECDE Language Skills (30/30: CF 3.0) Y3S1

Basic language acquisition skills. Specific methods of teaching language with special emphasis on child-centred activity methods. Methods of teaching oral skills including the vocal tract, production of speech and development of speech. Methods and resources for teaching listening and receptive skills through rhymes, stories etc. Methods and resources for teaching children's language achievement through ECDE programme. Schemes of work and lesson planning. Microteaching skills and practice. (Prerequisite: ECDE 213).

ECDE 313: Methods of Teaching ECDE Mathematics (30/30: CF 3.0) Y3S1

Objectives of ECDE Mathematics. Piaget's theory of intellectual development and its implication for Mathematical instruction in ECDE programme. Methods of teaching Mathematics with emphasis on child centred activity approaches. Methods and resources for teaching measurement skills semi logical thinking. Methods and resources for teaching number recognition, number symbols, counting numerical values. Assessment of children's Mathematical learning and progress Schemes of work and Lesson planning. Micro teaching skills and practice.

ECDE 314: Methods of Teaching Social Studies (30/30: CF 3.0) Y3S1

Objectives of ECDE Social Studies. Methods and resources for teaching ECDE Social Studies with special reference to child - centred activity approaches. Methods

and resources for teaching Social Studies through observation trips, modelling, demonstration, role playing, debating etc. Methods and resources for teaching living values and life skills. Assessment of ECDE Social Studies learning and progress. Micro teaching skills and practice.

ECDE 315: Methods of Teaching ECDE Religious Education (30/30: CF 3.0) Y3S1

Objectives of teaching ECDE religious Education. Methods and resources for teaching Religious Education with special reference to child-centred activity approaches. Specific methods and resources for teaching e.g. Story Telling, Singing, Play Acting, Drawing, Discussion and Debate. Identification of Holy Icons etc. Assessment of ECDE Religious Education learning and progress Schemes of work and Lesson Planning. Micro teaching skills and practice. (Prerequisite ECDE 216).

ECDE 316: Child Rights and Protection (30/0: CF 2.0) Y3S1

Classification of child rights in both tradition and modern settings. International conventions, declarations and charters on child rights. Laws in Kenya relating to children's rights and protection. Ways in which children's rights are denied, abused and neglected within family, school and other social institutions child welfare institutions and rehabilitation programmes in Kenya. Awareness, intervention and advocacy for child rights and protection.

ECDE 317: Research Methods in Child and Family Studies (45/0: CF 3.0) Y3S1

The nature of child and family research. Need for research, types of research. Quantitative and Qualitative Research methodology and designs, sources for identifying a research problem: Teaching experience, past literature and research. Current problems in ECDE

selection of appropriate research designs for specific ECDE research problems. Population, samples and sampling procedures. Hypothesis and research questions. Data collection techniques. Appropriate data analysis procedures. Statistical processing of parametric and non-parametric data. Interpretation of research findings, preparation of research proposal and research report writings.

ECDE 321: Children with Special Needs (30/0: CF 2.0) Y3S2

The meaning of children with special needs. Categories of children with special needs: Gifted and talented, visually impaired, hearing impaired, physically disabled, mentally challenged, oral disorders, emotional difficulties, multiply handicapped, learning disabilities, deaf-blind, cerebral palsy, autistic, living under difficult circumstances e.g. prisons, orphanages, streets etc. Causes of children's special needs. Characteristics and patterns of children with special needs. Current trends and issues in Education for children with special needs in Kenya and the world. Assessment tools for children with special needs. Intervention strategies for children with special needs, including institutions that offer services to children with special needs.

ECDE 322: Organization and Management of Children's Feeding Programmes (30/0: CF 2.0) Y3S2

The philosophy of school feeding programmes. Selection of appropriate foods. Costing, budgeting and meal planning for children. Preparation, safety and storage of food in pre-schools. Kitchen and kitchen staff hygiene. Food record keeping, seasonal availability of foods and strategies to overcome it. Community involvement in school feeding programmes. World food problems.

ECDE 323: Personality Development (30/0: CF 2.0) Y3S2

The meaning of personality, character, individuality etc. Theories of personality; psychosocial, psychoanalytic and humanistic. Determinants of personality, biological, familial, Educational, social and emotional in early childhood. Attitudes, beliefs, motivation and emotions. Defence mechanism, personality assessment and problems.

ECDE 324: Methods of Teaching ECDE Creative and Psychomotor Education (30/30: CF 3.0) Y3S2

Objectives of creative and psychomotor skills in early childhood development Education. Methods of teaching and evaluating the following creative and psychomotor skills: hand dexterity through modelling of clay, mud, sawdust, scrap, dough, paper mache as well as cutting and pasting; cutting by pair of scissors, tearing and folding, scribing or drawing using pencil, crayons, felt pens, charcoal, chalk and making natural colours from charcoal, flowers, leaves, barks, soil etc and mixing such colours: painting-using brushes sponge, finger etc: creating collages and mosaics as well as construction activities based on wood; threading sewing, weaving and knitting. Schemes of work and lesson planning, micro teaching skills and practice.

ECDE 325: Methods of Teaching ECDE Health and Nutrition Education (30/30: CF 3.0) Y3S2

Objectives ECDE Health and Nutrition Education. Methods and resources for teaching: Health and diseases; maternal and child health care, primary health care: foods and nutrition; child rearing practices; child safety, including road safety and first aid rules, schemes of work and lesson planning. Measurement and assessment. Micro teaching skills and practice.

ECDE 326: Methods of Teaching ECDE Music Movement and Physical Education (30/30: CF 3.0) Y3S2

Objective of teaching ECDE Music, movement and Physical Education. Methods and resources for teaching: musical and dancing skills; games and sports. Emphasis should be placed on the following teaching and learning approaches; individual and peer centred approaches; group and team teaching approaches; imitation and demonstration, participation, visits to music and drama festivals including cultural dances. Assessment of ECDE music, movement and Physical Education, schemes of work and lesson planning. Micro teaching skills and practice.

ECDE 327: Methods of Teaching ECDE Science and Environmental Education (30/30: CF 3.0)

Objectives of teaching ECDE Science and Environmental Education, methods and resources for teaching ECDE Science and Environmental Education, child centred and teacher centred approaches. Teaching children to develop science and environmental skills through senses. Teacher activities that promote science skills, e.g. flotation and sinking, filling and emptying of containers, identifying and collection of plants and animals, manipulating materials and machines, perception of heat, light, sound etc. Schemes of work and lesson plans. Assessment of ECDE Science and Environmental Education. Micro teaching skills and practice.

ECDE 411: Behavioural Disorders in Children (30/0: CF 2.0) Y4S1

Meaning of behaviour disorders. Nature and characteristics of physical and behavioural disorders. Factors that contribute to behavioural disorders in children; family, peer group and community factors, biological factors and school factors. Methods of screening, assessment and classification of behavioural

disorders in children. Theories of aetiology and strategies for intervention, social and learning. Implications of behavioural disorders for early childhood development Education.

ECDE 412: Community Development and ECDE (45/0: CF 3.0) Y4S1

Meaning and agencies of community development. Principles of community capacity building through various agencies, including ECDE. Structure of community organisation and leadership patterns. Strategies for community capacity building, including mobilisation, advocacy, sensitization, empowerment, skills and Education development, micro finance. Group dynamics and community development socio-economic factors that affect child rearing practices. Mobilization of community resources towards ECDE programmes. Promotion of parental participation in ECDE programme, e.g. through feeding and nutrition teaching, materials development and health Education.

ECDE 413: Children's Literature and Mass Media (45/0: CF 3.0) Y4S1

Importance and appreciation of stories, poems and song for children. The arts of story -telling, poem recitation and singing and skills of self-expression. Transmission of feelings and imaginations through stories, poems and songs. Conveyance of stories poems and songs in pre-literacy stage through pictures, drawings, painting and through written words during literacy stage. Elements of mass media, e.g. television, radio, computer, videos, newspapers, magazines, posters etc. Social, cultural and psychological effects on children.

ECDE 414: Group Dynamics among Children (30/0: CF 2.0) Y4S1

Concept of group dynamics, origin of groups, group membership, aspects of group dynamics among children

i.e. group pressure, power and influence within groups, leadership in groups, group performance and motivational processes in groups as related to classroom learning. Influence of groups on development and learning.

ECDE 415: Issues in ECDE Teacher Education (30/0: CF 2.0) Y4S1

ECDE Teacher Education in Kenya and the world. Nature and policy issues related to admissions, training providers, ECDE Teacher Education curriculum and training models, levels and duration of training ECDE teaching profession and supervisory services, evaluation and assessment in ECDE Teacher Education. Influence of groups on development and learning.

ECDE 416: Screening Procedures for Children (30/0: CF 2.0) Y4S1

The meaning of screening needs and purposes. Methods of screening. Ways of monitoring behaviour and development. Physical, social emotional, intellectual, moral, spiritual and physical. Development of assessment tools. Administration of available screening tests: I.Q, Aptitude, Educational, organicity, personality and projective. Interpretation and communication of screening results to parents, teacher and other stakeholders. Preparation of appropriate intervention programme based on screening results.

ECDE 417: Remedial Education for ECDE (30/0: CF 2.0) Y4S1

Meaning of remedial Education. Children with learning difficulties. Causes of children's difficulties. Consequences of learning difficulties. Diagnosis of children's learning difficulties. Prescription and execution of appropriate intervention strategies: Sensory Stimulation, Process-Based Instruction (PBI). Cognitive Behavioural Instruction, Interactive learning approaches

based on children's direct experiences, interests and needs as well as Intra-task Transfer. Evaluation of effectiveness of intervention strategies.

ECDE 421: Administration and Management of ECDE Programmes (30/0: CF 2.0) Y4S2

Administration structure of ECDE programme at National. Provincial and District levels in Kenya. Challenges in the administration of an ECDE programmes, including records keeping and personnel training. Procedure of establishing an ECDE centre. Management functions as they relate to ECDE. Including supervising services. ECDE programmes evaluation and follow up activities. The role of the National Centre for Early Childhood Education (NACECE) and District Centres for Early Childhood Education (DICECE).

ECDE 422: Mainstreaming of Children with Special Needs (30/0: CF 2.0) Y4S2

Philosophical, psychological and pedagogical justifications of mainstreaming in ECDE centres in Kenya. Merits and demerits of mainstreaming. Strategies of mainstreaming in Kenya. Equipment and services required for effective implementation of mainstreaming. Tentative methods of intervention and emerging issues.

ECDE 423: Contemporary Issues in ECDE (30/0: CF 2.0) Y4S2

Seminar skills in ECDE. Students form groups and with the assistance of the lecturer select an issue in any area of ECDE. They research in the issue and prepare a draft. The draft is then jointly improved by members of the group in preparation for oral presentation before an audience consisting of fellow students and the lecturer. The group collectively reacts to comments and questions raised by the audience on the basis of such comments and questions; the group improves their seminar paper and submits it to the lecturer for examination.

ECDE 424: Guidance and Counselling (30/0: CF 2.0) Y4S2

Concepts of Guidance/counselling, significance of Guidance and Counselling among young children, role of teacher, parent and significant others in children counselling, approaches and techniques of counselling and guiding young children: the scope, purposes and methods of developing, organizing and administering school guidance and counselling programme services for ECDE.

ECDE 425: Foods and Nutrition for ECDE (30/0: CF 2.0) Y4S2

Foods sources and their nutritional values. Nutritional requirements for various children age groups. Foods and nutritional deficiencies: preventive and corrective measures. Food habits and taboos. Methods of cooking foods. Food hygiene. Food consumption, habits of children and food allergies

ECDE 426: Indoor and Out Door Play Activities for ECDE (30/0: CF 2.0) Y4S2

Importance of indoor and outdoor play activities in child development. Philosophy and objectives of indoor and outdoor play for individual children and groups. Range of various indoor and outdoor plays. Integration of plays activities into content subjects. Selection and improvisation of play equipment and materials. Safety precautions for children during play activities at home and school. First aid treatment for common accidents.

ECDE 427: Challenges of a Family in a Changing Society (30/0: CF 2.0)

Issues affecting parenting of growing children. Traditional versus modern and rural versus urban lifestyles and their respective challenges. The family conditions of living as a product of socio-economic conditions. Housing and housing problems in rural and urban family set up. Social and economic pressures of Kenya families. Challenges in family roles and responsibilities, including responsible parenthood. Challenges of family support services, including provision of recreational facilities in the community.

9.3 Matrix aligning courses/units to Programme Learning Outcomes(PLO)

		YEAR 1		YEAR 2		YEAR 3		YEAR 4	
Program Learning Outcomes (PLO)		Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Identify the health needs of pre-school children that promote their wellness		ECDE 121	3.0	ECDE 221	2.5	ECDE 322	2.0	ECDE 425	2.0
		AGHE 140	3.0	ECDE 211	2.0	ECDE 325	3.0	ECDE 426	2.0
		ZOOL 143		ECDE 217	3.0				
PLO 2: Apply theories and techniques in the development of children's learning activities and materials.		ECDE 121	3.0	ECDE 223	2.0	ECDE 323	2.0		
		ECDE 111	2.0	ECDE 225 ECDE	4.0	EDCI 321	3.0		
		EPSC 121	2.0	213 ECDE 214 EDCI	2.0	ECDE 324	3.0		
				211	2.0				
				ECDE 212	2.0				
				ECDE 222	2.0				
				EPSC223	2.5 2.0				
PLO 3: Demonstrates awareness of global, regional and local legal rights, safety and protection of young children.				ECDE 211	2.0	ECDE 311	2.0	ECDE 423	2.0
						ECDE 316	2.0		

PLO 4: Apply ethical standards in handling pre-school children's needs and assessment.			ECDE 212 ECDE 216 EPSC 228	2.0 2.0 2.0	ECDE 312 ECDE 315 ECDE 314 ECDE324ECDE325 ECDE 326 ECDE 327	2.0 3.0 3.0 3.0 3.0 3.03 .0	ECDE 424	2.0
PLO 5: Recognise children's individual differences in growth, development and learning.	ECDE 111 EPSC 121 ECDE 121	2.0 2.0 3.0	ECDE 217 ECDE 323	3.0 2.0	ECDE 312	2.0	ECDE 422	2.0
PLO 6: Demonstrate awareness of multi-cultural and socio-economic diversity of the children.	ECDE 112	2.0 2.0	ECDE 215 ECDE 222	2.5 2.0	ECDE 317	3.0	ECDE 414 ECDE 416 ECDE 427	2.0 2.0 2.0
PLO 7: Demonstrate application of the principles of inclusive education with respect to children with disabilities, behavioural disorders and special needs.					ECDE 321	2.0	ECDE 411 ECDE 417 ECDE 422 ECDE 416	3.0 2.0 2.02 .0
PLO 8: Demonstrate ability to stay current with the developments, trends and practices in early childhood development and education.			ECDE 224	2.0	ECDE 317 ECDE 311	3.0 3.0	ECDE 415 ECDE 421 EAPE 417 ECDE 423 ECDE	2.0 2.0 2.0 2.03

							412 ECDE 413	.03.
							ECDE 416	0
							ECDE 423	2.0
							EAPE 421	2.0
								2.0

BACHELOR OF PSYCHOLOGY

1. Philosophy of the Programme

The Bachelor of Psychology Programme is designed to meet the growing social, family, economic, technological and educational changes in society. It seeks to meet the demand for professional psychologists by building knowledge and skills in the graduates of the programme. The programme content reflects the vision and mission of the university. The programme offers skills and knowledge through quality training and practice that meets national and global expectations in psychology. The programme takes four years including coursework and practicum. There are three modes of study for Bachelor of Psychology namely; fulltime, part-time, and e-learning. Coursework covers instruction in theoretical psychology, approaches to psychology, and applications in psychology, counselling skills, and liberal areas. The student on practicum performs various role functions expected of a psychologist. The graduates of the Bachelor of Psychology Programme provide specialized manpower required in workplaces, health institutions, educational institutions, correctional facilities, counselling centres, stress management programmes, employee assistance programmes and research institutions.

2. Rationale

The programme is needs-driven. It was initially developed upon noting the growing need for psychologists in families, institutions and in the nation as a whole. This is evidenced by the high performance rating of the graduates in their work places and practicum/field work attachments.

2.3.2 Stakeholders Involvement

Several stakeholders were involved while redesigning the programme. This was undertaken during a recently

concluded self evaluation of the programme. The first group was the alumni of the programme whose views were incorporated. The other group whose views were sought were the current students undertaking the programme. The programme developers were also involved, and so were some of the employers of the graduates of the programme.

2.3.3 Justification

Globally, there is growing need for psychological and mental health assistance for many people. This need is borne by a wide range of issues in the world at large and Kenya in particular. The Bachelor of psychology programme is designed to offer behaviour and mental health assistance to a wide range of persons in the society including but not limited to families, educational and religious institutions, correctional facilities and medical facilities.

3. Goal of the programme

The programme was designed to produce highly trained and competent graduates with requisite professional knowledge and skills required in psychology to offer psychological services in workplaces, health institutions, educational institutions, correctional facilities, counselling centres among others. The programme also prepares graduates to pursue advanced education and training in theory and practice of psychology.

4. Programme Learning Outcomes (PLO)

Upon the completion of the programme, the graduates are expected to:

PLO 1: Provide counselling and psychological care to individuals based on principles and theories in psychology.

PLO 2: Organize, administer and manage counselling and psychological programmes.

PLO 3: Identify emerging issues and current trends in mental health.

PLO 4: Conduct and apply empirical research to find solutions to problems in psychology.

4.1 Specialization

This programme does not have areas of specialization. All courses are core courses.

5. Mode of Delivery

Delivery will involve blended learning that includes full time, part-time (evening programme) and E-learning. It will encompass theory and practical aspects as well as field trips and a practicum component.

6. Academic Regulations for the Programme

6.1 Admission Requirements

The general University admission requirement of at least a KCSE certificate with a mean Grade of C+ shall apply. Egerton University Statutes 36 (1 & 2) applies. In addition, applicants must have scored at least grade C in the following subjects:

- i) Either English or Kiswahili.
- ii) Any one subject from: Mathematics or Physics or Chemistry or Physical Science.
- iii) Any one subject from: History and Government, Geography, Religious Education or Social Education and Ethics.
- iv) Either Biology or Biological Sciences.

Alternatively, applicants shall be admitted into the programme provided they hold either:

Diploma in psychology, Counselling or medical-related courses

OR

KACE or its equivalent with at least 2 principal passes and 1 subsidiary pass.

6.2 Regulation on Credit Transfer

Credit transfer is applicable to those who hold a Diploma in Psychology from a recognized institution. This will be done according to Egerton University statutes of 2013 article 36 (3d) for undergraduate programmes. Further instructions are provided in ISO procedure DOC NO. EU /AA/WI/04.

6.3 Course Requirements

This includes all the requirements of the course such as student class attendance, practicum, and meet the requirements of the lecturer in terms of course delivery and facilitation. ISO procedure for teaching and examinations (EU/AA/OP/06; 6.1), and Egerton University statute 36 (4) will apply.

6.4 Student Assessment

Student assessment shall adhere to Egerton University Statutes 2013 Articles 36 (5, 6 & 7) and ISO procedures for teaching and examinations (EU/AA/OP/05; 6.2) will apply.

6.5 Grading System

Grading will be done according to Egerton University statute 36 (5) for undergraduate studies.

6.6 Examination Regulations

All examinations for this programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (5, 6, 7, 13, & 14) of 2013. ISO procedures for teaching and examinations (EU/AA/OP/05; 6.2); and ISO procedure for student discipline (EU/AA/OP/08; 6.1) will apply relating to handling of examinations as well as malpractices.

6.7 Moderation of Examination

Internal and external moderation of examinations in the programme will be guided by statute articles 36(5) and

ISO procedure number EU/AA/OP/07 (6.3). ISO procedure on processing examination results Doc No. : EU/AA/OP/07; 6.1 to apply.

6.8 Graduation Requirements

To graduate, a student shall be required to adhere to the requirements outlined in Egerton University Statute 36 of 2013; and in addition, pass a minimum of 173 Credit Factors (CFs) that includes practicum which will form an important and mandatory part of programme..

6.9 Classification of Degrees

The classification of degrees shall be in accordance with Degree classification Egerton University as stipulated in Statute(s) of 2013 article 36(14; 3a).

7. Course Evaluation

All courses in the programme will be evaluated using course evaluation tools as shall be provided by the university and coordinated by Quality Assurance Directorate.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be managed and administered by the department of Psychology, Counselling and Educational Foundations in the Faculty of Education and Community Studies.

The Programme Academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The Bachelor of Psychology programme will undergo an internal program evaluation (self-assessment) at the end of every four years program's academic cycle. The

program will be benchmarked with similar programmes in other universities in Kenya.

8.3 Course Coding

This shall be systematic and consistent with other programmes and shall be based on the senate approved course coding policy. The letters in the code shall be reflective of the main discipline i.e., PSYC which denotes Psychology

Three digits are used for coding as follows:-

- First digit shall denote the year of study in which the course is offered.
- Second digit shall denote the semester in which the course is offered.
- The third digit will denote the sequence of the course in a particular semester

9. Courses Offered for the Programme

9.1 Schedule of Courses

a) University Common core courses

Common core courses for the programme will be selected from among the University common core courses. These are:

Code	Title	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
COMP 111	Introduction to Computer Applications	30	30	3.0
SIHL 100	Society and International Humanitarian Law	45	0	3.0
PHIL 104	Philosophy and Society	45	0	3.0

b) Schedule of courses offered

YEAR 1 SEMESTER 1

Code	Title	L	P	C.F
COMP 111	Introduction to Computer	45	0	3.0
PHIL 104	Philosophy and	45	0	3.0
SOCI 101	Introduction to Sociology	45	0	3.0
PSYC 110	General Psychology	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
PSYC 111	History and Systems of Psychology	45	0	3.0
PSYC 112	Human Growth and Development	45	0	3.0
TOTAL		315	0	21.0

YEAR 1 SEMESTER 2

Code	Title	L	P	C.F
BENT 110	Introduction to Entrepreneurship	45	0	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
PSYC 121	Physiological Psychology	45	0	3.0
PSYC 122	Counselling Psychology	45	0	3.0
PSYC 123	Human Personality	45	0	3.0
PSYC 124	Group Dynamics	45	0	3.0
PSYC 125	Behaviour and Learning	45	0	3.0
TOTAL		315	0	21.0

YEAR 2 SEMESTER 1

Code	Title	L	P	C.F
SIHL 100	Society and International	45	0	3.0
PSYC 211	Addictions and Rehabilitation	45	0	3.0
PSYC 212	Sensation and Perception	45	0	3.0
PSYC 213	Statistical Methods in Behavioural Sciences	45	0	3.0
PSYC 214	Human Sexuality	45	0	3.0
PSYC 215	Case Formulation and Treatment Planning in	45	0	3.0
PSYC 216	Psychological Tests & Measurement	30	30	3.0
TOTAL		300	30	21.0

YEAR 2 SEMESTER 2

Code	Title	L	P	C.F
PSYC 221	Industrial and Organizational	45	0	3.0
PSYC 222	Career Counselling	45	0	3.0
PSYC 223	Psychology of Child and Adolescent	45	0	3.0
PSYC 224	Marriage and Family Psychology	45	0	3.0
PSYC 225	Environmental Psychology	45	0	3.0
PSYC 226	Group Facilitation	45	0	3.0
PSYC 227	Psychology of Refugees	45	0	3.0
TOTAL		315	0	21.0

YEAR 3 SEMESTER 1

Code	Title	L	P	C.F
PSYC 311	School Psychology	45	0	3.0
PSYC 312	Ethics in Psychology	45	0	3.0
PSYC 313	Experimental Psychology	30	30	3.0
PSYC 314	Stress Management	45	0	3.0
PSYC 315	Terminal illnesses and Palliative Care	45	0	3.0
PSYC 316	Environmental Psychology	45	0	3.0
PSYC 317	Emotions and Motivation	45	0	3.0
TOTAL		300	30	21.0

YEAR 3 SEMESTER 2

Code	Title	L	P	C.F
PSYC 321	Psychology of Special Populations	45	0	3.0
PSYC 322	Personal Development and Supervision	30	30	3.0
PSYC 323	Culture and Human Behaviour	45	0	3.0
PSYC 324	Health Psychology	45	0	3.0
PSYC 325	Psychology of Criminal Behaviour	45	0	3.0
SOCI 309	Social Policy, Welfare and Administration	45	0	3.0
SOCI 314	Gender Issues and Development	45	0	3.0
TOTAL		300	30	21.0

YEAR 3 SEMESTER 3

Code	Title	L	P	C.F
PSYC 330	Practicum in Psychology	0	150	6.0

YEAR 4 SEMESTER 1

Code	Title	L	P	C.F
PSYC 411	Forensic Psychology	45	0	3.0
PSYC 412	Psychology of Religion and Spirituality	45	0	3.0
PSYC 413	Disaster Psychology	45	0	3.0
PSYC 414	Abnormal Psychology	45	0	3.0
PSYC 415	Research Methods in Psychology	45	0	3.0
PSYC 416	Social and Cross-cultural Psychology	45	0	3.0
SOCI 407	Conflict Resolution and Management	45	0	3.0
TOTAL		300	0	21.0

YEAR 4 SEMESTER 2

Code	Title	L	P	C.F
PSYC 421	Gerontology and Geriatrics	45	0	3.0
PSYC 422	Community Psychology	45	0	3.0
PSYC 423	Project Planning and Management in	45	0	3.0
PSYC 424	Seminars in Psychology	15	30	2.0
PSYC 425	Media Psychology	45	0	3.0
PSYC 426	Research Project	45	0	3.0
PSYC 427	Clinical Psychology	45	0	3.0
TOTAL		285	30	20.0

(c) Course descriptions**PSYC 110: General Psychology (45/0: CF 3.0) Y1S1**

Definition of psychology; goals of psychology; Psychology as a science; Evolution of psychology; ancient and modern approaches to psychology; Schools of psychology; branches and sub-branches of psychology; careers in psychology; scope of psychology; psychology as a science; emotions, states of consciousness and memory.

PSYC 111: History and Systems of Psychology (45/0: CF 3.0) Y1S1

This course will focus largely on the history of modern psychology. It will begin with an emphasis on historiography, that is, the theory and methods of doing history. Evolution of mental asylums and the growth of psychiatry. This course explores major developments and ideas in the history of psychology as a discipline. This course examines the historical progression of ideas central to psychology, the philosophical and empirical roots of those ideas, and their confluence into the predominant systems of the present day. In so doing, it covers the fundamentals of scientific thinking, their bearing on theory development, the relationship between philosophical and empirical thought, and theoretical models of historical and current significance. It also focuses on the dynamic interplay between theoretical constructs and empirically derived knowledge. Particular emphasis is placed on principles used to examine the merits of evidence that supports or disconfirms theory. The course will review areas that currently define the study of psychology, and explore older ideas that are no longer current, those ideas that are still relevant, and areas that are likely to be important in the future.

PSYC 112: Human Growth and Development (45/0: CF 3.0) Y1S1

Theories of human development, the works of outstanding theorists e.g. Piaget, Freud, Erikson etc. who have contributed to the discipline. The course offers an exploration of historical basis of human development, basic principles and concepts of human growth and development, significance of the study of human development. Biological and environmental bases of development. Developmental aspects during the prenatal, infancy, early childhood and adolescence stages i.e. intellectual, physical, emotional, language, social adulthood and aging.

PSYC 121: Physiological Psychology (45/0: CF 3.0) Y1S2

Origins of physiological psychology. Basic assumptions of physiological psychology. Basic nervous system anatomy and functioning, an introduction to genetics and chemical processes in the body. An introduction to human physiology and its relationship to behaviour, Central Nervous System-behaviour interactions, behaviourally induced chemical changes and behavioural changes induced by chemical alterations. Biological basis of emotional responses, mental illness, sexual behaviour, memory, states of consciousness, sleep, sensory perception, thought and language, and several neurological disorders.

PSYC 122: Counselling Psychology (45/0: CF 3.0) Y1S2

Significance of Guidance and Counselling, Resources, skills, approaches and techniques in Guidance and Counselling, The scope purposes and methods of developing organizing and administering guidance and counselling services. Introduction to counselling practice: Egan's counselling model: an overview of the helping model, the Helping relationship. Communication in

counselling: Active listening, observing, physical attending. Core conditions, empathy, genuineness, unconditional positive regard: probing concreteness, summarizing and challenging skills; Advanced level empathy, self-disclosure, Immediacy, Confrontation. Counselling process: Stage I: helping clients to tell their story, Stage II: Helping clients to set viable goals. Stage III: Helping clients to develop strategies and plans to accomplish their goals.

PSYC 123: Human Personality (45/0: CF 3.0) Y1S2

The course will give an overview of the major topics in current personality research. Historical personality theories will not be covered. The main but not exclusive focus will be on the trait approach to personality. The course will start by introducing the major theoretical concepts and positions in current personality psychology. It will then move on to the assessment of personality traits, their evolutionary, biological and genetic underpinnings and development, their cross-cultural patterns and role in predicting major life-outcomes. Basic assumptions concerning human nature, Research and assessment in personality psychology; personality assessment, types of assessment techniques. Theories of personality: Psychodynamic, Learning-Behavioural, Social Cognitive, and Humanistic. Factors influencing personality.

PSYC 124: Group Dynamics (45/0: CF 3.0) Y1S2

This course focuses on the communication behaviour of individuals within group structures. Didactic and experiential techniques are used to explore the stages of group development, decision-making techniques, group problems and problem solving, resolution skills, norms, structures, leadership, authority, membership, ethics, cultural sensitivity, and the intra- and inter-personal dynamics within small groups. Introduction to group dynamics, the individual and the group, joining and

leaving groups, group structure, group pressure power and influence within groups, leadership in groups, group performance and motivational processes in groups related to significant field, decision making in groups, conflicts in groups, and collective behaviour.

PSYC 125: Behaviour and Learning (45/0: CF 3.0) Y1S2

Origins and evolution of behaviour. Main theories of behaviour. Biological basis of behaviour; foundations of behaviour, sensory processes, perceptions, memory, thinking, reasoning language, theories of learning, motivation and origins. Major theories of learning: Classical conditioning, Operant conditioning, Learning by Observation, Cognitive Learning. Types of learning.

PSYC 211: Addictions and Rehabilitation (45/0: CF 3.0) Y2S1

This course provides an overview of the fundamental concepts in addiction. The contents of this course will help to introduce students to terminologies used. Introduction to chemical dependency, loss of self-regulating capacities, dependence on alcohol, dependence on cigarettes, drug addiction, compulsive gambling, compulsive eating, current cult of dieting, causal factors, symptoms of addiction and dependence, effect on human body, impact on the development of the society, control of addictive and dependence behaviours, psychopharmacology and addiction, treatment methods and modalities of chemical dependency, theories and techniques of chemical dependency, Counselling, trends and issues in chemical dependency. Different intervention approaches, concepts and strategies applicable to substance abuse intervention from the micro to the macro level. Field trips to Drug Rehabilitation centres or Treatment facilities.

PSYC 212: Sensations and Perception (45/0: CF 3.0) Y2S1

This advanced laboratory course examines the mechanisms of our primary senses as well as how our brain interprets stimuli in order to allow us to respond with thoughts, emotions and behaviours. The influence of experience, cultural background, mood, social situations, and physiological factors on our interpretation of sensory stimuli will also be explored. The philosophical questions that humans have long posed about perception, and study the methods and techniques scientists use to try to answer them. Sensory pathways, fundamental perceptual processing, and higher-level meaning-making. Sense orientation, skin senses, chemical senses (smell and taste), audition, vision, and the perception of time. Sensation and perception from several perspectives: physiological, psychophysical, ecological, motivational, and computational.

PSYC 213: Statistical Methods in Behavioural Sciences (45/0: CF 3.0) Y2S1

This course is designed to introduce students to statistics, including both descriptive statistics (summarizing data obtained from a sample) and inferential statistics (drawing inferences about a population based on data obtained from a sample drawn from that population). Basic steps in conducting a survey, types of variables, Measures of Central tendency and measures of dispersion. Normal curve distributions, Simple linear regression and correlation, Chi-square, t-tests and Analysis of Variance.

PSYC 214: Human Sexuality (45/0: CF 3.0) Y2S1

Human sexuality, sexology, genitalia and gender, Theories of human sexuality, Biological changes in adolescence – puberty, hormonal effect, sexual maturation in boys and girls, Male and female reproductive organs, Psychological aspects of

adolescence development identity, sexual interest, late and early maturity, Process of pregnancy, childbirth and concepts, Teenage pregnancy, causes, impact, solutions, Sexual disorders, Sexual deviance, Sexual abuse, Solutions to sexual problems, Human physiology and behaviour.

PSYC 215: Case Formulation and Treatment Planning in Psychology(45/0:CF 3.0)Y2S1

Introduction to case formulation, gathering data, case formulation using behavioural and learning models, cognitive models, psychodynamic models, existential and spiritual models, integrative models, complete case formulation, approach to s treatment planning, developing a problem list, treatment planning using a phase approach, on-going measurement, review of progress, interactive planning and its applications, measures for tracking clients progress, conclusion.

PSYC 216: Psychological Tests and Measurement (30/30: CF 3.0) Y2S1

The purpose of this course is to introduce the field of psychological assessment and testing. The course will explore the history, roles, and issues involved in the field of psychological assessment. Principles of psychometrics and statistics, the applications of assessment in various contexts, including a review of various types of psychological tests and measures, and finally an examination of the social and ethical issues involved in psychological assessment. Historical development of tests, Practical issues relating to testing, Types of tests: personality, Intelligence, emotional, achievement, Aptitude, Interest inventories, Principles of test development, Uses of psychological tests, Statistical and Measurement Concepts in Psychological testing, Item analysis, practice of psychological testing.

PSYC 221: Industrial and Organizational Psychology (45/0: CF 3.0) Y2S2

Definition of Industrial and Organizational psychology. Understanding organizational behaviour. Key elements of organizational behaviour. Historical development of organizational behaviour. Fundamental concepts of organizational behaviour: Communication in organizations, Management and behavioural science/organization behaviour, Human resource management, Human socialization, Conflict management in organization, Decision making and problem solving, Public relations principles, Persuasion methods and strategies. Personnel selection and classification; personnel development and training. Alternative dispute resolution, Psychology of communication, Social psychology in an organization context, Measuring organizational characteristics, Prediction and measurement of human performance, Communication and leadership. Consumer psychology. Emerging issues in organizational behaviour.

PSYC 222: Career Counselling (45/0: CF 3.0) Y2S2

Major issues in career development and career psychology. Development of a career through the lifespan, Theories of Career development, issues arising from engaging in a career, Professional Burnout, Employee Assistance Programmes and other issues in career life, Retirement, retrenchment, and outplacement programmes. This course is a practical and theoretical foundation for understanding the relationships of personal and career development theories. Includes vocational choice theory, lifestyle choices, occupational and educational information, decision-making processes and career exploration techniques; all include working with diverse populations and ethical standards.

PSYC 223: Psychology of Child and Adolescent (45/0: CF 3.0) Y2S2

This course introduces the methods, theories and main concepts used by psychologists to develop a real insight into the world of children. Adolescent growth and development including physical, cognitive, emotional, self-concept and moral. Challenges facing adolescents, Issues of adolescent sexuality, family, friendship and peers, transition from school to the adult society. This course covers issues in human development that are especially relevant to children and adolescents, beginning with the earliest aspects of development during the prenatal period and ending with the final phase of transition from adolescence to adulthood. In-depth exploration of specific psychological disorders, emotional/behavioural disabilities, and problematic psycho-social states which occur in childhood and adolescence. Emphasis will be placed on descriptions, theoretical conceptualizations, etiologies, and evidence-based interventions for the disorders, disabilities, and states

PSYC 224: Marriage and Family Psychology (45/0: CF 3.0) Y2S2

This course is designed to provide students with a foundational understanding of the dynamics of family interaction from a 'systems' perspective. This course is an introduction to the history and systemic foundations of the study and understanding of family life with emphasis on the various theories of family process and development. The development of an understanding of 'systems theory', its application to family interaction, and its evaluation will form the basis of the course content. Topics include: historical and conceptual development of Family Systems Theory, introduction to General Systems Theory, family rules, roles, structure and interaction patterns, functional and dysfunctional family systems, life cycle issues in marriage and family and ethnicity and

family therapy. Dynamics of marriage and the family, social context of intimate relationships, developing intimate relationships, stages of marriage and family, parenting, challenges and opportunities and family and marriage therapy. The economic, political, Educational, cultural and religious factors contributing to socially ascribed roles attributed to masculinity and femininity, Gender and sex roles, Modern and traditional marriages, Contemporary issues in marriage, Information and Education communication on sex.

PSYC 225: Cognitive Psychology (45/0: CF 3.0) Y2S2

An examination of the experimental investigation of complex cognitive processes, including the storage and retrieval of information, concept formation, reasoning, problem-solving and decision making. general introduction to the field of cognitive psychology. Cognitive psychology is the scientific study of mental processes, Perception, attention, storage, consolidation of memory, retrieval, inductive and deductive reasoning. Theories of mind in which simple ideas are built into powerful psychological theories. Cognitive psychologists theories (or models) of mental processes, and how these models are used to understand and predict behaviour.

PSYC 226: Group Facilitation (45/0: CF 3.0) Y2S2

Introduction to group facilitation: Underlying assumptions, theoretical foundations, tasks of process focused group. Group leadership: leadership, co leadership, self as instrument, personal growth and group experiences. Planning groups: pre group planning, session planning, beginning stage and beginning phase, basic skills for group leaders; focusing groups; cutting off and drawing out, use of exercises: Introducing, conducting and processing exercises leading the middle of a group, closing a group session. Dealing with problem situations: Method of stirring the pot:

stimulating group effect; skills of termination: completing the cycle.

PSYC 227: Psychology of Refugees and Displaced Persons (45/0: CF 3.0) Y2S2

Reasons for refugee crises. History and status of displaced persons and refugees. Effects of forced migration. Problems of conflict war and gross violations of human rights, forced migration, civil strife, and other factors that cause human migration and escape from risks of life leading to refugee status. Legal and normative frameworks: Legal implications on Refugees, UNHCR, Post Traumatic Stress Disorder, Refugees' psychosocial adjustment and adaptation, Resettlement policies and their implications to mental health. Guiding principles on internal displacement. Bodies working with refugees and displaced persons. Care of refugees and displaced persons.

PSYC 311: School Psychology (45/0: CF 3.0) Y3S1

Historical foundations of school psychology. This course focuses on developing specific techniques including communication and interpersonal skills necessary in effective consultation at the individual, group, and systems levels. Integration of the various aspects of school psychology consultation, including knowledge of behavioural, mental health, collaborative, and other consultation models and their application within the school setting are explored. This course addresses the history, laws, policies, and practices in exceptional student education. Included are the definitions, prevalence, causes, and assessment techniques utilized with the various exceptionalities within special education.

PSYC 312: Ethics in Psychology (45/0: CF 3.0) Y3S1

Introduction to ethics in Psychology. Trends in the teaching of professional ethics. Applying ethics to social problems. Basic principles and concepts in ethics, human action, freedom and responsibility, ethical theories; utilitarianism; egoism, hedonism; emotivism and prescriptivism, application of various ethical principles in social life, ethical issues in research and experimentation on humans and animals, and confidentiality. Professional competence, education and training. Professional licensing and disclosure. Consultation. Continuing Education. Issues in a multicultural (perspective). Assessing ethical and unethical practices. The right of clients: The right of informed consent, Clients desire to enter counselling, Minor rights, The right to a referral. Issues in the client/counsellor relationship. Social and personal relationships with clients. Touching as a part of the client/counsellor relationship. Ethical and legal aspects of confidentiality. Ethical issues psychological experiments on humans.

PSYC 313: Experimental Psychology (30/30: CF 3.0) Y3S1

Introduction to Experimental Psychology. History of experimental psychology. Machines/equipments used in experimental psychology. Research ethics in experimental psychology. Non-experimental designs. Alternatives to experimentation – Surveys and interviews. Alternatives to experimentation – correlational and quasi experimental designs. Formulating hypotheses, Basics of experimentation and Solving problems. Between and within Subject designs. Statistics. Analyzing results. Making conclusions and reports from experiments. Psychology as a kind of knowledge and approach that can be used to improve the quality of human life. Scientific analysis of behaviour; tactics of scientific inquiry, biochemical and electrical

activities within the human body, thoughts and feelings, the human basic equipment for picking up, processing and reacting to signals from the environment, the reflex concept, the nervous functions.

PSYC 314: Stress Management (45/0: CF 3.0) Y3S1

Nature and meaning of stress, sources of stress, Eustress and Distress, stress and health, stress and work, factors influencing stress, signs and symptoms of stress, Organic and Physical implications of stress. Historical foundations of stress. Classification of stress. Predisposing Factors for stress. Stress and the biological need for equilibrium. The Stress Process. Biological Mechanisms and Stress: The Nervous System: The CNS and the PNS, The Endocrine System, The Immune System. Causes of Stress: Definition of stressor, Types of stressors. Burnout. Depression. Posttraumatic stress disorder. Diagnosis and Measurement of Stress. Stress Management: Factors Moderating the Impact of Stress, Meaning of stress management, Models of Stress management, Stress Management Techniques, Stress Prevention and Resilience Building.

PSYC 315: Terminal Illnesses and Palliative Care (45/0: CF 3.0) Y3S1

This course provides knowledge related to end of life issues faced by individuals with a terminal diagnosis across the lifespan. Emphasis will be placed on the cultural, ethical, and legal issues in end of life care; basic principles of palliative care and collaboration with interdisciplinary team members. Examines current and historical legal and ethical issues impacting health administration, including malpractice and other liability issues, licensing and regulation, professional ethics, contracts and property, insurance, corporate, taxation, antitrust, fraud and abuse, medical staff, confidentiality, health care access, peer review, ethics committees, legal and ethical aspects of patient care decision making and

consent. This course examines death, grief and loss including theories, cultural rituals, social traditions and taboos before and after death. Psychological and spiritual foundations of death, grief, and loss are explored from multiple perspectives and cultures including the experience of grief and bereavement in families, caregivers and health professionals. Field trips to Hospices or Referral Hospitals.

PSYC 316: Environmental Psychology (45/0: CF 3.0) Y3S1

Introduction to environmental psychology that examines human-environment interactions with a focus on environmental stewardship. Course develops an information processing model of human nature and uses this model to explore human behaviour, the settings they prefer and best function in, and how they maintain mental clarity and attention vitality. This course will explore the nature and nuances of interrelationships between people and their surroundings by examining an array of critical issues in environmental psychology. Here, the environment is broadly defined to include not only our physical surroundings (both natural and built) but also the larger, socio-cultural and political milieu. Starting with foundational theories on place attachment and place identity, the course will cover classic issues that help inform urban ecological design, such as relationships to nature, landscape preferences, personal space, territoriality, and crowding. Emerging importance of the politics of place, as manifest through the appearance, meanings and uses of urban public space. Design processes and the ways which they can be enriched through an environmental psychology perspective.

PSYC 317: Emotions and Motivation (45/0: CF 3.0) Y3S1

This course provides a survey of theories, models and research on the psychological aspects of human motivation and emotion by presenting social, cognitive, behavioural, and biological perspectives. The course explores how current understandings of human emotions and motivations apply to areas such as achievement, health, relationships, addictions, and creativity. The material will also address topics such as understanding what motivation is, where it comes from, how and why it changes over time, and how motivation can be increased and enhanced. Motivational incentives and theories of emotion will also be explored.

PSYC 321: Psychology of Special Populations (45/0: CF 3.0) Y3S2

The meaning of special populations, Society's attitude towards special populations; stigma and discrimination. Policy issues affecting persons with special needs. Legal and government resources; International and regional frameworks. Policy documents. Special populations: Intelligence disability, Learning disabilities, Emotional disabilities, Communication disabilities, Hearing impairment, Visual impairment, Physical disabilities, Giftedness. Field trips to Refugee camps, Special schools, or UNHCR headquarters.

PSYC 322: Personal Development and Supervision (45/0: CF 3.0) Y3S2

This course is designed as an introduction to theory and practice of clinical supervision in psychology. It is designed to develop the psychologist's wellness in terms of competence and skills as well as personality and emotional development. It is appropriate for licensed/certified psychologists involved in peer or trainee supervision, and students in psychology or related fields of psychology. Fundamental issues in theory and

practice of clinical supervision will be examined, including: models of supervision, the supervision relationship, the impact of personal factors on supervision, supervision techniques and practices, evaluation, and legal/ethical considerations in supervision. Students will develop supervisory attitudes and knowledge that will support their role in future supervisory relationships. Although the focus of this course is on fundamentals of clinical supervision in the broad field of psychology, issues specific to the supervision of psychologists in various settings will be highlighted throughout the course.

PSYC 323: Culture and Human Behaviour (45/0: CF 3.0) Y3S2

Descriptive anthropological study of selected African cultures with emphasis placed upon cultural and social complexity and diversity, acculturation, cultural traditions, interaction and resultant interpretation of cultures, prejudice; superstition, the structure and functions of social institutions, the general nature of race/tribe and ethnic relations in society including such aspects as cultural and structural assimilation, cultural pluralism, and social class, how race and ethnic inequalities etc are institutionalized, legitimized and established as stratification systems, cultural factors contributing to human behaviour, social status and social interaction. Functions of institutions in culture. Nature of race/tribe and ethnic relations in society. Impact on diversity and demographic characterisations on individual behaviour. Diversity in sexual orientations i.e. gay, lesbians, heterosexuals. Nature of race/tribe and ethnic relations in society. Cultural factors contributing to human behaviour roles.

PSYC 324: Health Psychology (45/0: CF 3.0) Y3S2
Introduction to Health Psychology, the relationship between choices made through life and the quality of life

lived, individual choices, social responsibilities, and optimal human functioning, theories and techniques of motivation, decision-making, value clarification, and behaviour change., personal health issues, social living, and actualizing one's life aspirations, issues and challenges of life during adolescence and through adulthood, health and primary prevention, health enhancing behaviour, health compromising behaviour, using health services. The role of psychology in health and wellbeing. The scope of health psychology. Origins and development of health psychology. The role of a health psychologist. Applications of health psychology. Clinical health psychology, community health psychology, public health psychology, critical health psychology. Health beliefs and behaviours. The contribution of biological, psychological, behavioural, social, cultural, and environmental factors to health and illness.

PSYC 325: Psychology of Criminal Behaviour (45/0: CF 3.0) Y3S2

Introduction to psychology of criminal conduct, Classification of offenders, Social and environmental theories of crime, Individually oriented and integrated theories of crime, Biological correlates of anti-social behaviour, familial and social correlates of crime, Personal attributes of offenders, Aggression and violent behaviour, Crime and mental disorder, sexual deviation and sexual offending, Forensic psychology and the offender, Psychological interventions with offenders, Treatment of dangerous offenders, Ethics and effectiveness of interventions.

PSYC 330: Practicum in Psychology (0/180: CF 6.0) Y3S3

This structure will enable the learner to get on job experience. The students will identify an institution of interest where they will be attached for a period of three

months. Practicum provides in-depth training in the application of behaviour to a specific and restricted area in the discipline of psychology. By the end of the practicum, the students must demonstrate competencies in conducting client assessment; clinical interview, use of mental status examination, psychological testing, case formulation and treatment planning.

PSYC 411: Forensic Psychology (45/0: CF 3.0) Y4S1

The major goal of this course is to provide a broad overview of the field of forensic psychology and the numerous ways that psychology interacts with the law. Addresses the application of psychological research, methods, and expertise to issues that come before the legal system. Some topics include insanity, competency, jury-selection, expert-testimony, decision making, child custody, dangerousness, and interrogations. The rationale of justification for punishment, efficacy or non-efficacy of type of punishment, social reaction of crime, alternatives to imprisonment and crime control in sources, role of the forensic psychologist, psychological factors affecting eye witness testimony, detecting deception, psychological techniques for evaluating testimony and documents, interviewing and interrogation techniques, and the psychologist as an expert witness.

PSYC 412: Psychology of Religion and Spirituality (45/0: CF 3.0) Y4S1

Religion is one of the most powerful forces animating the world today. This course will explore the psychology behind this propulsive power. The relationship between psychology, spirituality, and religion. Exploring the nature of religious experience, how religion and spirituality influence social and societal behaviours, and how religion and spirituality affects psychological and physical health will be examined. This course examines religions and religious phenomena from the point of view of empirical psychology. Which religious beliefs and

practices influence psychological functioning, and the ways in which psychological functioning influences religious beliefs and practices. The course will approach psychology of religion from three different but complementary perspectives --phenomenological, empirical and sociological.

PSYC 413: Disaster Psychology (45/0: CF 3.0) Y4S1

This course will discuss some special issues in providing and preparing to provide services in post disaster settings. These issues will include how to provide services for adults and children in post conflict countries and how to avoid provider burn-out in these settings. The course will also review successful psychosocial projects in post disaster situations in the United States and around the world. Students will prepare a competitive proposal for providing behavioural health and psychosocial services in a post disaster setting. This course is designed to introduce students to core concepts in the field of international disaster psychology. Through integration of perspectives from various disciplines (e.g., clinical and social psychology, medical anthropology, humanitarian studies), and with a focus on promising practice models and guidelines, students become familiar with mental health and psychosocial needs and associated response in complex emergencies.

PSYC 414: Abnormal Psychology (45/0: CF 3.0) Y4S1

This course provides an examination of the various psychological disorders as well as theoretical, clinical, and experimental perspectives of the study of psychopathology. Emphasis is on terminology, classification, etiology, assessment, and treatment of the major disorders. This course aims to build a broad foundation for the study of psychopathology by covering a whole range of abnormality described in the DSM-IV. The main aim is to acquaint students with the etiology and treatment of psychological disorders through the

major paradigms of abnormal behaviour. Students learn to appreciate the multifarious factors that lead to mental illnesses.

PSYC 415: Research Methods in Psychology (45/0: CF 3.0) Y4S1

This course provides an introduction to psychological research techniques and methodology. Topics to be covered include the logic of research, the issues that must be considered in deciding how to study various psychological phenomena, and ways to address the difficulties posed by the limitations of specific studies. Ways for assessing threats to the internal and external validity of studies will be examined. Methods of Psychological scientific research or inquiry, research planning, techniques of making observations, analysis and interpretation of data; problem identification, hypothesis, sampling, measurement and design and writing.

PSYC 416: Social and Cross-cultural Psychology (45/0: CF 3.0) Y4S1

This course covers issues involved in the assessment and counselling of culturally and linguistically diverse students. Focus is on the psychological impact of gender, race, ethnicity, culture, religious preference, socioeconomic status, sexual orientation, and able-bodiedness. This course also examines innovative assessment methods for clients of diverse backgrounds based upon individual characteristics, strengths, and needs. An individual's behaviour, thoughts and feelings are influenced by other people and by the social environment. This course examines topics such as interpersonal attraction, attitudes, social influences, social cognition, perception of the self, others and groups, altruism, aggression, conformity, and antisocial behaviour.

PSYC 421: Gerontology and Geriatrics (45/0: CF 3.0) Y4S2

Meaning of adulthood, middle age and old age, the physical, cognitive and emotional changes that these individuals experience, challenges experienced by adults, middle aged adults and the aged, the social aspects and implications of ageing at micro-levels, social services for the elderly and national planning, the socioeconomic, political and religious roles of the elderly, the influence of society on aging and its definition, ageing as a gender issue in traditional and modern societies, the socio-psychological aspects of ageing, retirement and expectations of death, health issues and senility, the care that the aged need, use of institutions in taking care of the aged.

PSYC 422: Community Psychology (45/0: CF 3.0) Y4S2

Definition of community. Elements of community. Types of communities. Issues affecting communities. Meaning of community psychology. History and origin of community psychology. Elements in community psychology. Theoretical approaches to community psychology. Models of community psychology. Introduction to Community Counselling, Theoretical Approaches to Community Counselling, Understanding a Sense of Community, Core Values of Community Counselling, Models of Community Counselling, Community Counsellor as a Social Change Agent, Preventive Education Programmes, Outreach to Vulnerable Populations, Application to Community Counselling. Organizing community programmes. Community-based interventions.

PSYC 423: Project Planning and Management in Psychology (45/0: CF 3.0) Y4S2

This course develops a foundation of concepts and solutions that supports the planning, scheduling,

controlling, resource allocation, and performance measurement activities required for successful completion of a project. Trains in the basic principles of project management, including concepts from the initiating, planning, executing, monitoring & controlling, and closing process groups. Introduces fundamentals from the ten project management knowledge areas: integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholder management. Principles of effective planning, communication, and motivation throughout the project life cycle are the focus of this course. Project Leadership and Communication presents principles of project control from initiation through execution to closure in a clear and practical manner. Provides students with an organized approach for managing the uncertainties that can lead to undesirable project outcomes. The course provides a systematic method for identifying risks. Provides training and experience with project management tools and techniques.

PSYC 424: Seminars in Psychology (15/30: CF 2.0) Y4S2

Learners will be exposed to a wide variety of issues and topics that are experienced in the contemporary society. They will be expected to identify a relevant topic, research on it, write a term paper and give a presentation.

PSYC 425: Media Psychology (45/0: CF 3.0) Y4S2

Introduction to psychological theories, principles, and research relevant to mass communication and the mass media. Violence in the media, advertising, news and politics, educational and public information programming, and entertainment. Professional practices and how these psychological principles might apply in your field of study or work. The implications of psychology and the mass media for parents, consumers, educators, and researchers.

PSYC 426: Research Project (15/60: CF 3.0) Y4S2

The student will write a paper on a topic approved by the instructor. The research project will be examined wholly on the basis of the research paper. A topic as chosen will be in the discipline of psychology.

PSYC 427: Clinical Psychology (45/0: CF 3.0) Y4S2

Students will be exposed to the science and practice of Clinical Psychology. Students will learn about the clinical characteristics of many major classes of psychiatric disorders, and the scientifically validated treatments available for these conditions. This course aims to teach students the roles and responsibilities of a clinical psychologist. They will be adept at conducting an initial interview using appropriate counselling skills and be able to prepare a case formulation that reflects holistic care for their client. They will also become familiar with ethical issues related to the professional practice of a clinical psychologist.

9.2 SERVICE COURSE OFFERED TO OTHER DEPARTMENTS

PEPS 0131: General Psychology (30/0: CF 2.0) L1B1

Basic concepts in psychology: Meaning, history, schools; branches of psychology; Factors influencing behaviour; intelligence, motivation, emotions, perception, sensation and learning. Application of psychological concepts and principles in Educational practices.

PEPS 0133: Child Growth and Development (30/0: CF 2.0) L1B3

An overview of human development and growth from birth to onset of adolescence influencing growth and development. Theories of development, physical, motor, emotional, mental, moral; language, and personality development. Child-rearing practices and challenges. Individual differences in development. Implications of

growth and developmental changes on the teaching and learning processes.

PEPS 0231: Psychology of Learning (30/0: CF 2.0) L2B1

Meaning and principles of learning. Factors affecting learning. Theories of learning and their application. Memory and transfer of learning and their applications in the classroom situation. Classroom management and individualized instruction. Programmed and computerized instruction.

PEPS 132: Child Growth and Development (30/0: CF 2.0) Y1S2

Definitions and principles of growth and development. Factors influencing growth and development. Theories of development. Physical, motor, emotional, mental, moral, language and personality development. Childrearing practices and challenges. Individual differences in development. Implications of growth and developmental changes on learning.

PEPS 232: Research Methods in Education (30/0: CF 2.0) Y2S2

Meaning and purpose of research. Basic and applied research. Characteristics of research. Ethics in research. Qualitative and quantitative research. Research methods in pure and social sciences. Problem identification and formulation of hypotheses. Identification of variables. Validity in research. Literature review. Preparing a research proposal. Sampling methods and tools of collecting data. Data organization and preparation. Statistical tools of data analysis, interpretation and hypothesis testing. Writing a research report. Foot notes, references, bibliography. Dissemination of research findings. Students to write a research proposal in preparation for the research project.

PEPS 332: Learners with Special Educational Needs (30/0: CF 2.0) Y3S2

Meaning of special Educational needs. Categories of children with special needs. Identification of children with needs. Special and integrated Education. Educational provisions for exceptional children in the regular classroom. Services available for children with special needs. The role of the classroom teacher.

PEPS 432: Personality Development and Behaviour Management (30/0: CF 2.0) Y4S2

Theories of personality development. Assessment of personality. Personality and classroom learning. Groups and personality. Psychological and behavioral disorders. Causes of personality and behavioral disorders. Modification/management of behavioral problems in a classroom setting.

EPSC 0121: Introduction to Psychology (30/0: CF 2.0) Y1S1

Psychology as a science. Schools and branches of psychology. Biological and environmental basis of human behaviour. Basic principles of learning. Concepts and aspects of personality, mental health and abnormal behaviour.

EPSC 0142: Developmental Psychology and Learning (45/0: CF 3.0) Y1S2

Historical basis of human development. Human growth and development. Developmental aspects during prenatal, infancy, early childhood and adolescence stages. Intellectual physical, emotional, language, personality development. The exceptional child, adulthood and ageing. Behaviour and learning. Forms of learning. Factors that affect learning. Maturation, reinforcement, motivation, attitude, intelligence. Transfer of learning, problem solving and behavior modification.

EPSC 0243: Basic Statistics, Measurements and Evaluation (45/0: CF 3.0) Y2S2

Descriptive statistics, elementary probability, estimation, hypothesis testing, linear regression, analyzing variance and non parametric methods. Relationship between measurement, evaluation, testing and assessment. Examinations: test constitution, qualitative and quantitative methods, reliability and validity. Interpretation of Educational measurements.

EPSC 0321: Guidance and Counselling (45/0: CF 3.0) Y3S1

Resources, skills, approaches and techniques in guidance and counselling. Use of psychological tests. Career awareness and occupational development. Psychological and social problems of adjustment. Role of counselors and significant others e.g. Religious leaders, parents, peers, teachers etc. The scope, purposes, methods of developing, organizing and administering guidance and counselling services.

PSC 0354: Group Dynamics (30/0: CF 2.0) Y3S2

Meaning and perspectives of group dynamics. Types of groups Preliminary group process: formation, development and growth of structure. Interpersonal processes: Decision making power, conformity, influence and performance. Environmental group processes: Territoriality, spatial behaviour and stress. Group behaviour: crowds and collective behaviour, inter and intra-group conflict; role of groups in social change. Case studies of selected community groups.

EPSC 121: Introduction to Psychology (30/0: CF 2.0) Y1S1

Basic concepts in psychology. Historical perspectives in psychology. Schools and branches of psychology. biological and environmental basis of human behaviour: basic principles of learning; concepts and aspects of

personality; abnormal behaviour and mental health. Factors influencing behaviour. Intelligence, motivation, emotions, perception, sensation and learning. Application of psychological concepts and principles in Educational practices.

EPSC 122: Developmental Psychology (30/0: CF 2.0) Y1S2

Historical basis of human development; basic principles and concepts of human growth and development; significance of the study of human development to teachers; developmental aspects during the prenatal, infancy, early childhood and adolescence stages (i.e. intellectual, physical, emotional, language, social intelligence and personality development). The exceptional child; adulthood and ageing.

EPSC 123: Statistical Methods in Education (30/0: CF 2.0) Y1S2

Means, percentages, frequency distributions of single and grouped data. Measures of central tendency. Measures of variability. Measures of relative standing, elementary probability, estimation, hypothesis testing, linear correlation, parametric methods.

EPSC 223: Psychology of Learning (30/0: CF 2.0) Y2S1

Meaning and principles of learning. Factors affecting learning. Theories of learning and their application. Learning and behaviour; forms of learning (e.g. classical conditioning, operant conditioning etc) based on the existing theories and their relevance to classroom teaching; factor that affect learning (i.e. maturation, reinforcement, motivation, attitude, intelligence, etc); memory transfer of learning; problem solving and behaviour modification. Memory and transfer of learning and their applications in the classroom situation.

Classroom management and individualized instruction. Programmed and computerized instruction.

EPSC 224: Introduction to Statistics and Research Methods in Education (45/0: CF 3.0) Y2S2 (B. ED Science)

Descriptive statistics, elementary probability, estimation, hypothesis testing, linear regression, analysis of variance and non-parametric methods. Meaning, purpose and principles of research and literature review in Education. Types of research methods and research designs. Data collection techniques. Organisation of data. Analysis and interpretation of research data. Writing research reports.

EPSC 227: Research methods in Education (30/0: CF 2.0) Y2S2 ((B. ED Arts)

Meaning, purpose and principles of research and literature review in Education. Types of research methods and research designs. Data collection techniques. Organisation of data. Analysis and interpretation of research data. Characteristics of research. Ethics in research. Qualitative and quantitative research. Research methods in pure and social sciences. Problem identification and formulation of hypotheses. Identification of variables. Validity in research. Literature review. Preparing a research proposal. Sampling methods and tools of collecting data. Data organization and preparation. Statistical tools of data analysis, interpretation and hypothesis testing. Writing a research report.

EPSC 228: Measurement and Evaluation (30/0: CF 2.0) Y2S2

Relationship between measurement, evaluation, testing and examination. Principles of evaluation. Historical development of measuring instruments. Scales of measurements. Characteristics of a good test. Types of tests and test formats. Test planning, construction and

administration. Qualitative and quantitative methods applied in selection of test items. Test validation. Interpreting and reporting test results. Examination system in Kenya: Statement and classification of Education objectives: test construction (i.e. achievement and standardized tests); quantitative and qualitative methods applied in selection of tests items and determination of reliability and validity; related statistical concepts underlying Educational measurement; interpretation and use of test results to improve teaching and learning.

EPSC 311: Educational Measurement and Evaluation (30/0: CF 2.0) Y3S1

Relationship between measurement, evaluation, testing and assessment. Examination system in Kenya: Statement and classification of Education objectives: test construction (i.e. achievement and standardized tests); quantitative and qualitative methods applied in selection of tests items and determination of reliability and validity; related statistical concepts underlying Educational measurement; interpretation and use of test results to improve teaching and learning.

EPSC 312: Early Childhood Education (30/0: CF 2.0) Y3S1

Historical perspective of childhood Education. Early childhood in Kenya. Theories of early development. Meeting the physical, motor, affective and cognitive needs of infants, toddlers and preschool children. Caring for infants, toddlers and preschool children. Educational programmes for infants, toddlers and preschool children. Parents role in early childhood Education.

EPSC 321: Guidance and Counselling (30/0: CF 2.0) Y3S2

Significance of Guidance and Counselling. Resources, skills, approaches and techniques of counselling,

including the use of psychological tests. Career awareness and occupational development. Factors underlying psychological and social problems psychological adjustment of individual students. Role of Counsellor, teacher, parent and significant others in guidance and counselling. Development, planning, organization and management of school guidance and counselling services.

EPSC 411: Personality and Group Dynamics (30/0: CF 2.0) Y4S1

Theories of personality, methods of assessing personality, personality and classroom learning, origins of groups, membership, aspects of group dynamics, i.e. group pressure, power and influence within groups, leadership in groups, group performance, and motivational processes in groups as related to classroom learning.

EPSC 421: Special Education (30/0: CF 2.0) Y4S1

Meaning of special Education. History of special Education. Exceptional children. Categories of exceptionality. Development of the disadvantaged and advantaged child. Early interventions. Behavior problems. Learning disabilities. Special vs. Integrated Education. Assessment and placement. Special Educators/teachers. The current trends.

EPSC 426: Principles of Guidance and Counselling (30/0: CF 2.0) Y4S2

Significance of guidance/counselling. Resources, skills, approaches and techniques in guidance and counselling, including the use of psychological tests. Career awareness and occupational development of students: Factors underlying psychological and social problems of adjustment of individual students; role of the counsellor, teacher, parent, and significant others in guidance and counselling. The scope, purposes and methods of developing, organizing and administering school guidance and counselling services.

9.3 Matrix aligning courses/units to programme learning outcomes

	YEAR 1		YEAR 2		YEAR 3		YEAR 4	
Programme Learning Outcomes (PLOs)	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Provide counselling and psychological care to individuals based on principles and theories in psychology.	- Principles of Human Nutrition - General Psychology - Human Growth and Development - Physiological Psychology - Counselling Psychology - Human Personality	3.0 3.0 3.0 3.0 3.0 3.0	- Addictions and Rehabilitation - Human Sexuality - Case Formulation and Treatment Planning in Psychology - Psychological Tests & Measurement - Career Counselling - Psychology of Child and Adolescent - Marriage and Family Psychology	3.0 3.0 3.0 3.0 3.0 3.0 3.0	- School Psychology - Experimental Psychology - Stress Management - Terminal illnesses and Palliative Care - Psychology of Special Populations - Personal Development and Supervision - Practicum in Psychology	3.0 3.0 3.0 3.0 3.0 6.0	- Psychology of Religion and Spirituality - Abnormal Psychology - Gerontology and Geriatrics - Community Psychology - Clinical Psychology	3.0 3.0 3.0 3.0 3.0
PLO 2. Organize, administer and manage counselling and psychological programmes.	- General Psychology - Human Growth and Development - Group Dynamics - Counselling Psychology - Behaviour and Learning	3.0 3.0 3.0 3.0	- Addictions and Rehabilitation Perception - Case Formulation and Treatment Planning in Psychology - Psychological Tests & Measurement - Career Counselling - Psychology of Child and Adolescent - Marriage and Family Psychology - Group Facilitation	3.0 3.0 3.0 3.0 3.0 3.0 3.0	- School Psychology - Ethics in Psychology - Stress Management - Terminal illnesses and Palliative Care - Psychology of Special Populations - Personal Development and Supervision - Practicum in Psychology	3.0 3.0 3.0 3.0 3.0 6.0	- Disaster Psychology - Research Methods in Psychology - Social and Cross-cultural Psychology - Community Psychology - Project Planning and Management in Psychology - Seminars in Psychology - Research Project	3.0 3.0 3.0 3.0 2.0 3.0
PLO 3. Identify emerging issues and current trends in mental health.	- Introduction to Sociology - History and Systems of	3.0 3.0	- Society and International - Humanitarian Law - Addictions and	3.0 3.0	- School Psychology - Stress Management - Terminal illnesses and Palliative Care	3.0 3.0 3.0	- Forensic Psychology - Psychology of Religion and	3.0 3.0

	- Psychology - Human Growth and Development - Physiological Psychology - Counselling Psychology - Human Personality - Group Dynamics	3.0 3.0 3.0 3.0 3.0	- Rehabilitation - Human Sexuality - Industrial and Organizational Psychology - Career Counselling - Psychology of Child and Adolescent - Marriage and Family Psychology - Environmental Psychology - Psychology of Refugees and Displaced Persons	3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Environmental Psychology - Psychology of Special Populations - Personal Development and Supervision - Culture and Human Behaviour - Health Psychology - Psychology of Criminal Behaviour - Gender Issues and Development	3.0 3.0 3.0 3.0 3.0 3.0	- Spirituality - Disaster Psychology - Abnormal Psychology - Resolution and Management - Gerontology and Geriatrics - Seminars in Psychology - Media Psychology - Clinical Psychology	3.0 3.0 3.0 2.0 3.0 3.0
PLO4. Conduct and apply empirical research to find solutions to problems in psychology.	- Introduction to Computer Applications - Introduction to Entrepreneurship	3.0 3.0	- Statistical Methods in Behavioural Sciences - Case Formulation and Treatment Planning in Psychology - Psychological Tests & Measurement - Group Facilitation	3.0 3.0 3.0 3.0	- School Psychology - Ethics in Psychology - Experimental Psychology - Practicum in Psychology	3.0 3.0 3.0 3.0	- Research Methods in Psychology - Community Psychology - Project Planning and Management in Psychology - Seminars in Psychology - Research Project	3.0 3.0 2.0 3.0

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF AGRICULTURAL ENGINEERING

BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

1. Philosophy of the Programme

The Agricultural Engineering Programme imparts knowledge that influences mindset to re-engineer Agriculture through internalising technology based comprehensive mechanisms for sustained yields and natural resource base.

2. Rationale

The Programme covers areas such as Soil and Water Conservation, Farm Power and Machinery, Irrigation, Agricultural Structures, Agricultural Processing, and Renewable Energy. The Programme provides core elements of Agricultural Engineering that are recognised by professional bodies such as Engineers Board of Kenya (EBK) and Institution of Engineers of Kenya (IEK) and are crucial in enhancing the performance of the Agricultural sector.

The decline in the contribution of the Agricultural sector to Kenya's Gross Domestic Product has been attributed to poor technologies, and lack of well-trained manpower in this sector, among other reasons. The Programme has thus been designed with emphasis on practical approach incorporating the current advancements in technology to satisfy the technical manpower requirements for the Agricultural Industry and to achieve Kenya's development goal of industrialisation in the year 2030.

The graduates of this Programme shall find employment in Government Ministries such as Water and Agriculture, National Environmental Management Authority (NEMA), Regional Development Authorities, Institutions of Higher Learning, Agricultural Processing Industries (Sugar, Tea, and Coffee), National Irrigation Board, Non-Governmental Organizations, Private Sector, and International Bodies, among others.

The Vision of the Department is to contribute towards the making a World Class Faculty and University. The Mission is to produce high-level trained work force that

can use their engineering knowledge to enhance agricultural production, food security, poverty alleviation, and contribute to the industrialisation of developing nations like Kenya.

3. Goal of the Programme

The goal of the Programme is to impart skills in various fields of Agricultural Engineering and build competencies in use of farm forces for sustained production, conservation of natural resources, effective storage and use of green energy.

4. Programme Learning Outcomes

At the end, the Programme will produce an Engineer who will be able to:

1. Plan, design, modify, and direct the manufacture of agricultural machinery and implements for different agricultural production systems.
2. Plan and design Soil & Water conservation engineering structures and modern irrigation and drainage systems.
3. Plan and design processing plant, postharvest technology machinery and agricultural structures.
4. Plan and design energy power plants and utilization systems with emphasis on green energy.
5. Equipped sound theoretical knowledge in engineering principles, sciences, research and in consultancy.
6. Impart positive and responsive out-reach attitudes, initiative and creative thinking in their mission as engineers
7. Produce a professional Engineer who understands ethical issues and responsibility of serving the society and the environment at large
8. Equipped with effective written and oral communication skills.

5. Mode of delivery

The Programme shall be delivered through full time face-to-face teaching and learning.

6. Academic Regulation for the Programme

6.1 Admission Requirements

All candidates admitted to the of Bachelor of Science in Agricultural Engineering Programme must satisfy the minimum University entrance requirements as will be determined from time to time by the Kenya Universities and College Central Placement Service (KUCCP).

Those holding qualifications equivalent to the Kenya Certificate of Secondary Education (K.C.S.E.) awarded by Institutions recognized by Egerton University Senate may also be considered for admission.

Admission may be offered to holders of Diploma certificates in related Engineering disciplines examined by the Kenya National Examinations Council (K.N.E.C.) or by Institutions recognized by Egerton University Senate. "Related discipline" will be determined by the short-listing committee at the time of considering the applications.

Self-Sponsored Kenya Certificate of Secondary Education (K.C.S.E.) applicants may also be considered for admission.

In addition to meeting the minimum University entrance requirements, the applicant must have obtained a minimum grade of B minus (B-) in each of the following cluster subjects; Mathematics, Physics and Chemistry.

6.2 Regulation on credit Transfer

Regulation on credit transfer shall be conducted in accordance with Egerton University Statute 36(3) of 2013.

6.3 Course Requirements

The course requirements include, class attendance including practicals, filed visits and engineering practice. These should follow ISO procedure for teaching (EU/AA/OP/06 rev3)

6.4 Student Assessment Criteria

Student assessment shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this Programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

Examinations regulations for this Programme shall be conducted in accordance with Egerton University Statute 36(5) of 2013.

The following practical courses shall be examined by project proposal, tests, practical implementation, oral examination, and final reports as appropriate.

AGEN 260: Engineering Practice

AGEN 312: Engineering Design Principles

AGEN 360: Industrial Attachment I

AGEN 412: Agricultural Engineering Design

AGEN 460: Industrial Attachment II

AGEN 561: Engineering Project I

AGEN 562: Engineering Project II

AGEN 563: Outside Visits and Seminars

6.7 Moderation of Examination

Moderation of examination shall be conducted in accordance with ISO procedures EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall be required to take all scheduled courses with a total of 258.5 CF's within the stipulated period.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute 36(17a) of 2013.

7. Course Evaluation

Course evaluation shall be conducted in accordance with ISO procedures on effectiveness evaluation EU/AA/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Programme shall be hosted in the Department of Agricultural Engineering in the Faculty of Engineering and Technology.

The Programme Academic Leader shall be appointed in accordance with the University Standards and Guidelines (2014).

8.2 Programme evaluation

The Programme shall be evaluation (self-assessment) at each academic cycle based on ISO procedures EU/VC/OP/05. The Programme shall be benchmarked with at least one such Programme in a reputable University.

8.3 Course Coding

Courses offered by the Department of Agricultural Engineering are each coded by a three-digit figure preceded by the term 'AGEN' to represent Agricultural Engineering.

- The first digit represents the year in which the course is offered.
- The second digit represents the discipline in which the course falls within the range of courses offered in the Department.
- The third digit represents the series of the course within a discipline in any given year of study as listed below:
 - Introductory courses
 - Electrical courses
 - Farm Power and machinery
 - Processing and structures
 - Soil and water engineering
 - Field/general experience
 - Service courses

9 Courses/units for the Programme

9.1 Schedule of Courses

a) University Common Core Courses

COMP 101: Introduction to Computer Applications

COMS 111: Communication Skills

ENSC 100: Environmental Science

ZOOL 143: HIV/AIDs and Society

b) Schedule of courses organized on semester basis

YEAR 1 SEMESTER 1

CODE	TITLE	L	P/T	CF
AGEN 111	Introduction to Agricultural Engineering	30	30	3.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
MATH 116	Discrete Mathematics	45	0	3.0
MATH 118	Applied Geometry	45	0	3.0
MENT 110	Engineering Drawing I	30	30	3.0
PHYS 104	Physics I	30	30	3.0
TOTAL		300	135	24.5

YEAR 1 SEMESTER 2

CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 102	Introduction to Computer Scientific Applications	30	15	2.5
ZOOL 143	HIV/AIDs and Society	45	0	3.0
MATH 117	Differential Calculus for Engineers	45	0	3.0
MATH 222	Integral Calculus for Engineers	45	0	3.0
MENT 111	Engineering Drawing II	30	30	3.0
MENT 120	Material Science I	30	30	3.0
PHYS 105	Physics II	30	30	3.0
TOTAL		285	135	23.5

YEAR 2 SEMESTER 1

AGED 313	Technical Writing and Reporting for Engineers	45	0	3.0
AGEN 251	Physics of the Plant Environment	30	30	3.0
CEEN 211	Fluid Mechanics I	30	30	3.0
MAT H 221	Vector Analysis for Engineers	45	0	3.0
MENT 210	Workshop Technology	30	30	3.0
MENT 220	Computer Aided Drawing	30	30	3.0
MENT 222	Machine Elements I	30	30	3.0
MENT 224	Engineering Thermodynamics I	30	30	3.0
MENT 226	Solid Structural Mechanics I	30	30	3.0
TOTAL		300	210	27.0

YEAR 2 SEMESTER 2

CEEN 212	Fluid Mechanics II	30	30	3.0
CEEN 231	Theory of Structures I	30	30	3.0
ICEN 216	Electrical Engineering Principles	30	30	3.0
MAT H 223	Multi-variable Calculus for Engineers	45	0	3.0
MENT 223	Machine Elements II	30	30	3.0
MENT 225	Engineering Thermodynamics II	30	30	3.0
MENT 227	Solid Structural Mechanics II	30	30	3.0
MENT 230	Manufacturing Engineering I	30	30	3.0
TOTAL		255	210	24.0
AGEN 260	Engineering Practice (Y2)	0	120	4.0

YEAR 3 SEMESTER 1

AGEN 332	Introduction to Farm Power	30	30	3.0
AGEN 357	Engineering Surveying	30	30	3.0
AGRO 102	Principles of Crop Production	45	15	3.5
CEEN 333	Theory of Structures II	30	30	3.0
ECON 111	Principles of Microeconomics	45	0	3.0
MAT H 340	Ordinary Differential Equations for Engineers	45	0	3.0
MENT 324	Engineering Thermodynamics III	30	30	3.0
MENT 330	Manufacturing Engineering II	30	30	3.0
TOTAL		285	165	24.5

YEAR 3 SEMESTER 2

AGEN 312	Engineering Design Principles	30	30	3.0
AGEN 333	Tractors and their power units	30	30	3.0
AGEN 343	Agricultural Process Engineering I	30	30	3.0
AGEN 351	Soil Mechanics	30	30	3.0
AGEN 356	Hydrology	45	0	3.0
CEEN 315	Law Ethics and Professional Practice	45	0	3.0
CEEN 351	Hydraulics I	30	30	3.0
ICEN 336	Instrumentation and Control Engineering	30	30	3.0
MATH 341	Analytic Methods for Engineers	45	0	3.0
TOTAL		315	180	27.0
AGEN 360	Industrial Attachment I (Y3)	0	120	4.0

YEAR 4 SEMESTER 1

AGEC 422	Agricultural Project Planning and Management	30	0	2.0
AGEN 412	Agricultural Engineering Design	15	60	3.0
AGEN 431	Farm Machinery I	30	30	3.0
AGEN 441	Building Materials and Technology	30	30	3.0
AGEN 444	Refrigeration and Air Conditioning	45	0	3.0
AGEN 445	Structural Design	45	0	3.0
AGEN 450	Design of Hydraulic Structures	45	0	3.0
AGEN 454	Soil and Water Conservation Engineering	30	30	3.0
STAT 456	Engineering Statistics	45	0	3.0
TOTAL		315	150	26.0

YEAR 4 SEMESTER 2

AGEN 432	Farm Machinery II	30	30	3.0
AGEN 442	Agricultural Structures	30	30	3.0
AGEN 443	Agricultural Process Engineering II	30	30	3.0
AGEN 455	Irrigation and Drainage Engineering I	30	30	3.0
AGEN 462	Research Methods	45	0	3.0
COMP 327	Scientific Programming	45	15	3.5
ENSC 100	Environmental Science	30	30	3.0
MAT H 439	Numerical Methods for Engineers	45	0	3.0
TOTAL		285	165	24.5
AGEN 460	Industrial Attachment II (End of 4 th Year)	0	120	4.0

YEAR 5 SEMESTER 1

AGEN 533	Farm Power and Machinery Management	30	30	3.0
AGEN 543	Properties of Agricultural Materials	45	0	3.0
AGEN 545	Green Energy Engineering	30	30	3.0
AGEN 551	Land Use Planning	30	30	3.0
AGEN 555	Irrigation and Drainage Engineering II	30	30	3.0
AGEN 561	Engineering Project I	15	60	3.0
AGEN 566	Engineering Economy	45	0	3.0
MENT 550	Operation Research	45	0	3.0
TOTAL		270	180	24.0

YEAR 5 SEMESTER 2

AGB M 102	Principles of Entrepreneurship	45	0	3.0
AGEN 556	Water Resources Engineering	30	30	3.0
AGEN 557	Agricultural and domestic Waste Management	45	0	3.0
AGEN 562	Engineering Project II	0	90	3.0
AGEN 563	Outside Visits and Seminars	15	60	3.0
ANSC 359	General Animal Production	45	15	3.5
ICEN 317	Electrical Energy Utilization	45	0	3.0
TOTAL		225	195	21.5
GRAND TOTAL		283	208	258.5

c) Course Description**AGEN 111: Introduction to Agricultural Engineering (credit hours: 45; CF: 3.0) Y1S1**

Definition of engineering and other engineering professions. Engineering ethics, practices, purpose, principles and policies; crop production equipment; soil and water conservation; farm structures and equipment; basic agricultural data; project design, contract implementation, tendering and evaluation; material design and fabrication; processing; refrigeration systems, tools for solving problems, technical report writing and public communication.

AGEN 251: Physics of the Plant Environment (Credit hours: 45; CF: 3.0) Y2S1

Soil as disperse three phase system, volume and mass relationships of soil constituents, soil texture and aggregation; soil consistence, plasticity, shear strength and aggregation; soil air and aeration; soil temperature and heat flow; soil water, soil water movement, soil-water-plant-relationship, water balance, crop water use.

AGEN 260: Engineering Practice (credit hours: 60; CF: 4.0) End of Y2

Hands-on practice and experiences for student in engineering to include machine workshop, welding workshop, wood workshop; Surveying; Use, repair and maintenance of Agricultural machines; irrigation systems, water treatment, postharvest technology machines and equipment; electrical installation.

AGEN 312: Engineering Design Principles (Credit hours: 45; CF: 3.0) Y3S2

Principles of systematic design innovation and market analysis. Phases of Engineering design: Feasibility studies; problem identification, definition and specification. Design office methods. Managerial and economic elements considered in design. Design for manufacture and assembly, material selection, suitability and processes manufacture. Design of fasteners, shafts, splines, keys, cotters and couplings. Functional relationship to other departments in an organization. Bill of quantities and its importance. Safety, quality control, assurance, and standardization. Reliability and safety issues in engineering design.

AGEN 332: Introduction to Farm Power (Credit hours: 45; CF: 3.0) Y3S2

Basic Sources of power on the farm. Principles of engine operation and construction. Familiarisation with engine systems, transmission, brakes, steering, suspension, and hydraulic systems. Tractor servicing, maintenance, operation, and implement hitching. Animal power.

AGEN 333: Tractors and their Power Units (credit hours: 45; CF: 3.0) Y3S2.

Functional requirements and characteristics of tractive, mobile and stationary agricultural power units. Design considerations, general construction and operational mechanisms of the agricultural tractor. Traction theory, trafficability and soil properties on vehicle mobility. Mechanics of the farm tractors including weight transfer and stability

AGEN 343: Agricultural Process Engineering I; (credit hours: 45; CF: 3.0) Y3S2

Applications of instrumentation concepts and systems to physical and biological measurements. Application of transistors and operational amplifiers for signal conditioning, interfacing, shielding and grounding, control systems: automatic, thermal, and proportional controls. Measurement of temperature and pressure, recording and controlling devices, fluid flow and measurements, air flow measurements and distribution, Fans and fan-air power. Fan selection. Design of pneumatic, screw, belt, and bucket conveyors. Size reduction theory and design factors. Field visits to agricultural processing industries.

AGEN 351: Soil Mechanics (credit hours: 45; CF: 3.0) Y3S1

Analysis and classification of soils. Soil compaction in the laboratory and in the field. Physical properties of soil and their relationship. Grain size analysis and Atterberg limits. Water in soils and permeability. Seepage, its effects and control through soil flow nets. Soil consolidation, shear strength and earth pressure. Introduction to exploration and engineering evaluation of sub soil and ground water conditions for selection and design of foundations for structures. Analysis and design of slopes, embankments and earth dams.

AGEN 356: Hydrology (credit hours: 45; CF: 3.0) Y3S1

Hydrology cycle. Main processes and their observation. Precipitation, evapotranspiration, infiltration and percolation. Physiographical characteristic, their measurements and effect on stream flow. Sedimentation. Groundwater occurrence, flow recharge analysis and drilling methods. Precipitation analysis: storm rainfall studies, rainfall frequency and intensity studies. Extreme value analysis. Stream flow: Rainfall - runoff relationships; hydrograph analysis. Field visits to drilling and stream flow measurements sites.

AGEN 357: Engineering Surveying (credit hours: 45; CF: 3.0) Y3S1

Introduction to Surveying; cadastral, geodetic, hydrographic, and mutation. Engineering survey: mine, topographical, aerial, and land. Principles of Surveying. Theory of errors: gross, systematic and accidental errors; sources, propagation and minimization of errors. Mapping and Plane Table surveying, chain and compass surveying. Ordinary leveling: instruments, procedures and applications, contouring, cross-sections and profiles for terraces, highways, drains, and pipelines. Traversing: theodolite observations for horizontal and vertical angles; reduction of readings, traverse computations and adjustments. Two-dimensional plane coordinate system. Use of computer Programmes in surveying.

AGEN 360: Industrial Attachment I (credit hours: 60; CF: 4.0) End of Y3

The student shall be trained within the Faculty on the safe use, operation and maintenance of timber, welding, and lathe machines. Engineering surveying practice shall be carried out to produce topographic maps and engineering plans. Students shall also be exposed to use, maintenance and repair of agricultural machines, implements and related equipment. Processing, soils, computer, water sewerage and irrigation systems and related tests will be introduced.

AGEN 412 Agricultural Engineering Design (credit hours: 45; CF: 3.0) Y4S1

Application of Engineering Design Principles to particulture issues/problems in Agricultural Engineering. Students to undertake guided projects in Farm Power and Machinery, Civil and Water Engineering,

Agricultural Processing and Structures; and in Renewable Energy.

AGEN 431: Farm Machinery I (credit hours: 45; CF: 3.0) Y4S1

Principles of Soil tillage. Construction, design, adjustment and operation of primary and secondary tillage implements, planting, and fertilizing equipment, and development machinery; Sensors and transistors and their use in precision farming, GPS and GIS application in precision farming Land levelling and earthmoving equipment, crop protection equipment; weed, pest, and disease control equipment. Land reclamation and drainage machinery.

AGEN 432: Farm Machinery II (credit hours: 45; CF: 3.0) Y4S2

Construction, design and operation of crop harvesting equipment - hay-harvesting equipment, forage grain, root crops, vegetables, cotton and sugar cane harvesters, functional requirements and operational characteristics. Field visits to mechanized large-scale farms.

AGEN 441: Building Materials and Technology (credit hours: 45; CF: 3.0) Y4S1

Production, properties and use of materials used in building such as earth, timber, cement, lime, pozzolana, stone, sand, ballast, concrete, glass. Selection for given jobs.

AGEN 442: Agricultural Structures (credit hours: 45; CF: 3.0) Y4S2

Planning/siting buildings. Building elements and production process. Safety Requirements. Planning and designing of agricultural structures. Design considerations: structural, environmental, space and safety. Review specific agricultural structures: Human, Animal & Crop Production, handling and storage structures; Sundry structures: farm roads, fences. Field visits.

AGEN 443: Agricultural Process Engineering II (credit hours: 45; CF: 3.0) Y4S2

Postharvest technology and the need for processing. Postharvest losses and their economic implications. Size reduction and milling. Processing of selected crops: coffee, tea, and sugar; oil and fibre extraction.

Preservation measures and structures for different products, Design of agricultural storage facilities including cold stores. Field visits to major crop processing firms.

AGEN 444: Refrigeration and Air Conditioning (credit hours: 45; CF: 3.0) Y4S1

Refrigeration systems: vapour compression, absorption, thermoelectric. Heat pumps. Refrigeration components and control systems. Refrigeration applications, Air conditioning: Psychrometry, Ventilation. Plant airflow design, duct design. Fans and fan selection. Controls for air conditioning systems.

AGEN 445: Structural Design (credit hours: 45; CF: 3.0) Y4S1

Concrete structures: Principles of limit state design, safety and serviceability. Behaviour, and limit state analysis and design of reinforced concrete beams, slabs, columns and frames under static and dynamic loading. Steel design: Elastic and plastic design procedures as applied to structural forms. Connections and stiffeners of timber elements: Design of connections; gluing, nailing and jointing. Design of laminated timber elements. Field visit to structural design and construction companies.

AGEN 450: Design of Hydraulic Structures (credit hours: 45; CF: 3.0) Y4S1

Design of weirs: sharp and broad crested weirs. Culvert design. Design and construction of dams: forces acting on the dam, stability criteria. design procedure. Design of spillway: Overflow spillway, hydraulic jump stilling basins, outlet works of spillways: Inlet structure of spillway, water passage and outlet of spillways. Gates and valves. Drop structures: grassed channel, chute drop structure, vertical drop structures. baffled chute drop structures. Conveyance and control structures: earth fills crossings, Flume, Siphon, Turnout and Waste way.

AGEN 454: Soil and Water Conservation Engineering (credit hours: 45; CF: 3.0) Y4S1

Land Degradation and its impact on national development. Forms and causes of Land Degradation. Factors influencing soil erosion by water and by wind. Soil erosion measurements and modelling. Soil loss Tolerance. Different strategies for erosion prevention and control. Design of soil water conservation structures:

terraces, cut-off drains, vegetated waterways, retention ditches and check dams. Gully rehabilitation and control. Water harvesting for crop production and erosion control. The Kenya National Soil and Water conservation Programme. Field visits to study erosion problems and their control measures.

AGEN 455: Irrigation and Drainage Engineering I (credit hours: 45; CF: 3.0) Y4S2

Soil Water properties: soil water relations; soil moisture tension, soil water availability, soil water potential, infiltration and hydraulic conductivity. Crop water relations, crop water requirements, effective precipitation, irrigation water requirements, irrigation scheduling. Soil chemical properties; classification of salt-affected soils, effects of salts on yields, salt balance of irrigated soils. Overview of irrigation structures; field irrigation application methods. Drainage of irrigated lands. Field visits to irrigation and drainage project sites.

AGEN 462: Research Methods (credit hours: 45; CF: 3.0) Y4S1

Role of research in technology. Problem identification. Situation analysis. Project proposal: objectives, literature review, research area/materials, methodologies, expected results and discussion. Project work: data collection and analysis techniques, information presentation methods. Research organization: planning, budgeting and costing of research projects. Technical report writing. Dissemination and publication of research results.

AGEN 460: Industrial Attachment II (credit hours: 60; CF: 3.0) End of Y4

Practical training in agro-based industries and agricultural equipment and spares manufactures and dealers to enable the students to gain experience in engineering design, research and development activities. Industrial/Field Attachment will be carried out for eight weeks immediately after the end of the fourth year of study. The course shall be graded through field assessment, field supervisor report, and a written report. The grading will be on a Pass/Fail basis.

AGEN 533: Farm Power and Machinery Management (credit hours: 45; CF: 3.0) Y5S1

Principles, practices, and decision making in selection, operation and maintenance of the farm equipment. Measurement of machine performance and power utilization; field capacity and machine size selection. Record keeping and costing of agricultural equipment; Break-even-theory, machine cost and width optimization.

AGEN 543: Properties of Agricultural Materials (credit hours: 45; CF: 3.0) Y5S1

Properties of agricultural materials: Definition, application in food processing, methods of measurement and precision required in the following properties: Physical properties: size, shape, volume, voids, moisture content, solid and bulk density; Rheological properties: Flow of material, viscosity measurement, deformation of material, viscoelastic behaviour, mechanical models, texture of foods; Thermal properties: latent heat of vaporization and fusion, specific heat, thermal conductivity and diffusivity; Electrical properties: resistance, capacitance and inductance, use in direct and indirect heating; Electromagnetic Properties: Colour, dielectric properties.

AGEN 545 Green Energy Engineering (credit hours: 45; CF: 3.0) Y5S1

Overview of energy needs in agricultural production and processing. The need to develop alternative sources of energy for agricultural use with emphasis on renewable sources. Detailed functional design and materials selection for; Solar energy collection and storage; wood and charcoal fuel; bio-mass digesters and methane generation; bio-mass gasifiers; power alcohol production; vegetable oils; windmills.

AGEN 551: Land Use Planning (credit hours: 45; CF: 3.0) Y5S1

Concept of land and its attributes. Goals of land use planning. Land classification systems. Land data capture using aerial photography. Land data capture using land sat technology and other remote sensing systems. Image Processing. Land cover and land use classification. Planning for cultivated land uses. Planning for rangeland uses. Planning for transportation systems and utility

corridors. Planning for waste disposal and utilization of land. Use of GIS in land use planning. Land use modelling using GIS for rural and urban areas. Catchment Planning. Concepts of land and its attributes. Goals of land use planning. Farm Planning. Field visits to remote sensing and GIS centres.

AGEN 555: Irrigation and Drainage Engineering II (credit hours: 45; CF: 3.0) Y5S1

Factors affecting the planning and design of irrigation and drainage system; Soils, water quantity and quality, land topography crops climate, infrastructure and social economic, factors. Design of field irrigation systems; surface, sprinkler, and trickle. Design of field drainage systems; shallow drainage systems, groundwater drainage systems. Design of main irrigation and drainage systems; pipelines, canals and associated structures, pumping units. Field visits to irrigation and drainage project sites.

AGEN 556: Water Resources Engineering (credit hours: 45; CF: 3.0) Y5S1

Introduction to river engineering: sediment transport in alluvial channels, engineering geomorphology and stable channel design. Design, management and maintenance of reservoirs. Flood control: causes of flood. Flood warning, damage and relief. Integrated water resources planning and management, principles and analysis. Design of water resources engineering schemes. Drought management. Water demand and allocation. Design works for water storage and development and distribution: water pans, dams, roof water harvesting, intakes, springs, shallow wells and boreholes.

AGEN 557: Agricultural and Domestic Waste Management (credit hours: 45; CF: 3.0) Y5S2

Sources of agricultural and domestic wastes; nature and characteristics. Engineering analysis and design of systems for handling, treatment, utilizing and disposing of agricultural and domestic wastes. Field visits to sewerage and recycling plants.

AGEN 561: Engineering Project I (credit hours: 45; CF: 3.0) Y5S1

Identification, design of a specific problem within the field of agricultural engineering under supervision of an

academic staff. The project will run throughout the academic year. An acceptable research proposal report is submitted to the project supervisor for review and evaluation by the end of the semester. The overall requirement is to assess initiative, originality of thought, sound report compilation, and report writing.

AGEN 562: Engineering Project II (credit hours: 45; CF: 3.0)

Implementation of Student Research Project I. The project will run throughout the academic year. At the end of the second semester of the fifth year a student will be expected to present a seminar on the research findings and submit a typed bound report to the departmental examiners. The overall requirement is to assess initiative, originality of thought, sound report compilation, and report writing.

AGEN 563 Outside Visits and Seminars (credit hours: 45; CF: 3.0) Y5S2

Visits to Agricultural Engineering and related establishments. Reports on their layouts and operations made and assessed. Guest speaker give model presentations and students assessed as they make technical presentations.

AGEN 566 Engineering Economy (credit hours: 45; CF: 3.0) Y5S1

Quantifying alternatives for easier decision making, time value for present and future payments, future payments compared to series of periodic payments, value of present payment compared to a series of periodic payments and the constant increment to a series of periodic payments. Present worth method; annual payments, future worth, rate of return method, incremental rate of return, break - even comparisons. Probability evaluation and benefit/cost analysis. Project investment evaluation: Taxes, depreciations, bond financing for public and private investment, mortgage investment property, utility rate studies, economic life, maintenance costs, life cycle costs and sensitivity analysis, double arithmetic gradient and inflation analysis.

DIPLOMA SERVICE COURSES

AGEN 0171: Technical Drawing (credit hours: 30; CF: 2.0) Y1S1

Use of sketching to express ideas, lettering, lines, circles and ellipse construction, proportioning; use and maintenance of drawing instruments; pictorial representations. Axonometric, oblique and perspective, simple geometrical construction to elementary architectural drafting with emphasis on plans and simple building details; technical illustration.

AGEN 0172: Workshop Practice (credit hours: 30; CF: 2.0) Y1S2

Introduction to correct selection and use of basic metal and wood-working hand tools with emphasis on layout procedure, material selection, working procedure, finishing process, forge work, tool maintenance, and care.

AGEN 0173: Metallurgy (credit hours: 45; CF: 3.0) Y1S2

Classification of metals according to occurrence and extraction methods. Physical and mechanical properties of metals. Ore concentration methods. Types of furnace. Iron and steel production. Factors affecting crystal structure of metals and alloys. Methods of shaping and forming metals. Properties of cast iron and steel. Heat treatment and surface treatment of steel and other metals. Process of metal corrosion and methods of corrosion protection. Bearing metals, powder metallurgy. Extraction, properties and uses of copper, aluminium, zinc, lead, tin, magnesium and calcium.

AGEN 0266 Water Resources Development (credit hours: 52.5; CF: 3.5) Y2S1

Introduction to the requirement and methods of development and maintenance of water supply systems. Location, selection and development of water sources. Treatment of surface and subsurface water supplies. Methods of selection and installation of appropriate structures and equipment for pumping, conveyance and control. Field visits to self-help water projects and water treatment plants.

AGEN 0271 Electrical Engineering (credit hours: 45; CF: 3.0) Y2S2

Introduction of fundamental concepts of electricity, electrical measurements, electric circuits; batteries; magnetism and electromagnetism, transformers, direct current generators and motors; principles of alternating current, alternating current generators and motors; portable electric appliances; industrial and agricultural wiring methods; basic fundamentals of industrial and agricultural electronic control of automation systems.

AGEN 0272 Tractor Serving, Maintenance and Operation (credit hours: 37.5; CF: 2.5) Y2S1

Tractor systems: The engine types and mode of operation, electrical systems, cooling systems, fuel systems, brake system, and power train. Tractor servicing, maintenance, and operation. Implement hitching, ballasting, traction width adjustment, servicing records. Periodic servicing to include clutch adjustment, brake adjustment, radiator service and oil change.

AGEN 0273: Introduction to Mechanized Agriculture (credit hours: 45; CF: 3.0) Y2S2

Introduction to the farm tractor equipment; primary tillage equipment, secondary tillage equipment, seed drills and planters, crop protection equipment, weed control equipment, forage harvesters, grain harvesters, root crop equipment, vegetable harvesting equipment, fruit crop harvesters, sugarcane harvesters, cotton harvesters. Emphasis will be made on design, operation, maintenance, and adjustments.

AGEN 0274: Introduction to Farm Machinery (credit hours: 37.5; CF: 2.5) Y2S2

Introduction to the farm tractor equipment; primary tillage equipment, secondary tillage equipment, seed drills and planters, crop protection equipment, weed control equipment, forage harvesters, grain harvesters, root crop equipment, vegetable harvesting equipment, fruit crop harvesters, sugarcane harvesters, cotton harvesters. Emphasis will be made on design, operation, maintenance, and adjustments.

AGEN 0275 Plant Engineering and Ergonomics (credit hours: 45; CF: 3.0) Y2S2

Determination of workshop requirements; work arrangement with safe working habits; management of

human resources; determination of spare part needs, their procurement, storage and control. Analysis of plant layout based on considerations of products, processes, product flow, functional design space requirements, equipments, labour efficiency and costs. Ergonomics should be supported by tour plant visits.

AGEN 0277 Soil and Water Management (credit hours: 67.7; CF: 4.5) Y3S2

Elementary techniques of horizontal distance measurements. Chain survey. Levelling: profile and differential. Compass survey. Theory of errors of measurements. The plane table. Soil and water conservation with reference to Kenya. Population and food requirements. Rainfall, runoff, erosion processes, measurements and controls; the USLE. Introduction to the principles and practices considered in selection, installation and management of irrigation systems. Introduction to practical solutions of both surface and sub-surface drainage problems. Field visits to study erosion problems and their control measures.

AGEN 0371 Farm Structures (credit hours: 52.5; CF: 3.5) Y3S2

Design and layout of farm structures based on considerations of animal and products loading. Space and environmental requirements; farmstead and range structures requirements; availability of building materials, materials selection and technology, assembly techniques; storage and storage requirements, surface finishing - paint, plastering, spraying. Basic building construction, fencing, gates, grids, roads, dips and spray races, water storage, feed, grain, vegetable and implement storage; quantity surveying and contracting procedure; specific farm structures.

B.Sc. SERVICE COURSES

AGEN 171: Introductory Drawing (credit hours: 30; CF: 2.0) Y1S1

Freehand sketching, lettering, projections, pictorials, multi-view drawing, drawing equipment. Architectural drawing with emphasis on plans. Working drawings and details of farm buildings. Technical drawing of machines parts.

AGEN 172: Introductory Workshop Technology (credit hours: 30 CF: 2.0) Y1S2

Workshop measurements. Workshop safety. Workshop experience in the use of hand and power tools. Forge work, shaping and heat treatment of metals. Patterns making and casting. Processes of engineering materials; forming, rolling and drawing. Electric arc, gas, and fusion welding; soldering and brazing; hard facing and cutting.

AGEN 173: Draughtsmanship for Interior Designers (credit hours: 52.5; CF: 3.5) Y1S1.

Introduction to drawing as a language of communication for interior designers, Drawing instruments, Drawing paper, Setting out, Scales, Dimensions, Alphabet of lines and lettering, Geometric construction of figures, lines and their bisection, Dividing lines into many equal parts. Angles and their bisections; circles, triangles, ellipse, tangency, polygons. Pictorial Drawings: Axonomic, oblique, and advanced perspective. Orthogonal Projection, 1st and 3rd angle projection of points, lines, and solids. Still life synthesis from orthographic projection to pictorial drawing and vice versa, sections, surface developments, freehand drawing. Architectural drafting principles, plans, elevations, sections, details, specifications, interiors. Models: Materials, process of model making and finished models. Figure rendering, use of colour, and light of interior and extended space.

AGEN 174: Basic Farm Power Source and Utilization (credit hours: 30; CF: 2.0) Y1S2

Tractor maintenance, operation and implement hitching. Principles of engine operation and implement hitching. Principles of engine operation and construction; familiarization with engine systems; transmission, brakes, steering and hydraulic systems.

AGEN 271: Measurements in Agriculture (credit hours: 45; CF: 3.0) Y2S1

Review of basic scientific measurements and units in agriculture: Weather Measurement: rainfall, humidity, temperature, light intensity and duration, wind speed, duration and direction, air composition and evaporation. Soil Measurements: structure, texture, air and water, pH, compaction, depth, erosion and nutrient loss, soil composition. Crop measurement: spacing, seed rates,

yields, moisture content, crop residue and canopy. Machinery Measurement: capacity, forces, tillage, spraying, and harvesting rates. Animal Measurement: Weight, length, height, girth, temperature, and production rates. Agricultural material measurements: yields, measurement of temperature, moisture content, fluid flow, pressure and their control.

AGEN 272: Materials for Interior Design (credit hours: 37.5; CF: 2.5) Y2S1

Analysis and classification of materials for use in interior design. Natural materials: stone, wood, slate etc; Man-made materials: brick, glass, plastics, ceramics, metal; applied materials: Wall paper, paints, murals etc and fabrics properties., Application and functionality of these materials. Collecting, cataloguing and storage of samples and brochures etc. Dealing with suppliers and manufacturers.

AGEN 273 Construction of Interiors (credit hours: 45; CF: 3.0) Y2S2

Basic principles; measuring buildings; structural materials; foundations and external walls; windows and external doors; roofs; floors and ceilings; partitions; stairs; environmental services; surfaces.

AGEN 371: Introduction to Agricultural Field Machines (credit hours: 45; CF: 3.0) Y3S1

Principles of soil tillage. Construction adjustment and operation of primary and secondary tillage implements, seeding and planting machines, land levelling and earth moving equipment. Construction, design, adjustment and preparation of manure and fertilizer spreaders and distributors, sprayers and dusters; forage harvester and choppers, combine harvesters; cotton pickers; vegetable machines; chaff cutters and mowers.

AGEN 372 Furniture and Fittings (credit hours: 45; CF: 3.0) Y3S1

Period styles; room planning, floor finishes, internal fittings, accessories, pictures, antiques, pottery, lighting and mirrors. Space in the home. Furniture design and workshop practice for home and both small and large scale industrial environments.

AGEN 373: Farm Structures (credit hours: 45; CF: 3.0) Y3S1

Introduction to types of farm structures. Factors in the site selection of the farmstead. Planning of farm structures. Materials used in the construction of farm structures. Principles and design procedures for farm buildings. Design and constructional techniques of different types of farm structures. Specific farm structures: farm dwellings, livestock and crop buildings, fences, and roads. Cost estimation.

AGEN 374: Agro Climatology (credit hours: 45; CF: 3.0) Y3S2

The basic elements of weather and climatic information in various aspects of agricultural production, management, decision-making and planning. Distribution and characteristics of climate and its effect on land use planning, conservation works and water resources.

AGEN 375: Soil and Water Management (credit hours: 52.5; CF: 3.5) Y3S2

Introduction to surveying and mapping. Methods of surveying and surveying equipment: Distance and area measurements, levelling. Compass survey and Plane table survey. Concept of error and precision in surveying. Rainfall and runoff. Land degradation. Water and wind erosion. Soil erosion measurement and modelling. Conservation need analysis and conservation planning. Design of soil and water conservation structures: Terraces, Cut-off drains, retention ditches, vegetated waterways and check dams. The Kenya National Soil and Water conservation Programme and other institutions involved in soil and water conservation measures prevalent in some parts of Kenya. Field visits to study erosion problems and their control measures.

AGEN 376: Irrigation and Drainage (credit hours: 45; CF: 3.0) Y3S2

Physical factors influencing irrigation planning. Determination of irrigation water requirements. Crop water uptake, use and availability. Water application methods. Drainage functions, requirements and field methods. Field visits to irrigation and drainage project sites.

AGEN 377: Photogrammetry and Remote Sensing (credit hours: 45; CF: 3.0) Y3S2

Photography and types of aerial photographs. Techniques of obtaining and handling aerial photographs. Geometric properties of aerial photographs; air-photo interpretation. Photogrammetric equipment and map production techniques; aerial triangulation; scale, area and height measurements, projection and control; Digital Terrain Modeling. Remote sensing; satellite remote sensing. Digital Image processing. GIS; GIS techniques and applications; integration of GIS and remote sensing. Specific applications to Resources Management

AGEN 433: Farm Machinery III (Principles of Precision Farming); credit hours: 30; CF: 2.0) Y4S2

Types of sensors; Strain gage sensors, piezoelectric sensors, Ion-selective field effect transistors; Vision sensors: Advanced sensors; smart sensors, wireless sensors, and sensor fusion. Global positioning system (GPS), Geographical information system and Geospatial information system (GIS): Use of variable rate application and controller area network in agricultural machineries.

AGEN 571: Agricultural Machinery and Materials Processing (credit hours: 45; CF: 3.0) Y5S1

Agricultural machinery; Functional requirements and characteristics of tractive, mobile and stationary agricultural power units. Mechanics of farm tractors including weight transfer and stability. Construction, design, adjustment, and operation of primary and secondary tillage implements. Construction, design, and operation of crop harvesting equipment. Material processing: physical-, aero- and hydro-dynamic characteristics of agricultural materials including mechanical, thermal, electrical, optical, rheological properties, mechanical damage, and friction. Processing of selected crops: coffee, tea, sugar, oil and fibre extraction.

AGEN 572: Irrigation and Drainage Engineering (credit hours: 45; CF: 3.0) Y5S2

Soil Water properties: soil water relations; soil moisture tension, soil water availability, soil water potential, infiltration and hydraulic conductivity. Crop water

relations, crop water requirements, effective precipitation, irrigation water requirements, irrigation scheduling. Soil chemical properties; classification of salt-affected soils, effects of salts on yields, salt balance of irrigated soils. Overview of irrigation structures; field irrigation application methods. Drainage of irrigated lands. Factors affecting the planning and design of irrigation and drainage system; Soils, water quantity and quality, land topography crops climate, infrastructure and social economic, factors. Design of irrigation systems; surface, sprinkler, and trickle.

9.2 Matrix aligning courses to programme learning outcomes

	Year 1		Year 2		Year 3		Year 4		Year 5		
Programme Learning Outcomes (PLOs)											
	Courses	CF	Courses	CF	Courses	CF	Courses	CF	Courses	CF	
PLO 1: To prepare an Agricultural Engineer to plan, design, modify, and direct the manufacture of agricultural machinery and implements for different agricultural production systems.	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Introduction to Farm Power	3.0	Agricultural Project Planning and Management	2.0	Farm Power and Machinery Management	3.0	
	Introduction to Computer Applications	3.5	Workshop Technology	3.0	Engineering Surveying	3.0	Refrigeration and Air Conditioning	3.0	Engineering Project I	3.0	
	Engineering Drawing I	3.0	Vector Analysis for Engineers	3.0	Engineering Thermodynamics III	3.0	Agricultural Engineering Design	3.0	Engineering Economy	3.0	
	Introduction to Computer Scientific Applications	2.5	Machine Elements I	3.0	Principles of Microeconomics	3.0	Farm Machinery I	3.0	Principles of Entrepreneurship	3.0	
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Ordinary Differential Equations for Engineers	3.0	Engineering Statistics	3.0	Agricultural and domestic Waste Management	3.0	
	Material Science I	3.0	Solid & Structural Mechanics I	3.0	Manufacturing Engineering II	3.0	Environmental Science	3.5	Engineering Project II	3.0	
			Physics of the Plant Environment	3.0	Engineering Design Principles	3.0	Farm Machinery II	3.0	Outside Visits and Seminars	3.0	
			Fluid Mechanics I	3.0	Tractors and their power units`	3.0	Research Methods	3.0			
			Computer Aided Drawing	3.0	Soil Mechanics	3.0	Scientific Programming	3.5			
			Electrical Engineering Principles	3.0	Analytic Methods for Engineers	3.0	Numerical Methods for Engineers	3.0			
			Multi-variable Calculus for Engineers	3.0	Instrumentation and Control Engineering	3.0					
			Machine Elements II	3.0							
			Engineering Thermodynamics II	3.0							
			Solid & Structural Mechanics II	3.0							
			Manufacturing Engineering I	3.0							
			Fluid Mechanics II	3.0							
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0			
PLO 2: To enable an Engineer to plan and design soil & water	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Introduction to Farm Power	3.0	Agricultural Project Planning and Management	2.0	Land Use Planning	3.0	
	Introduction to	3.5	Workshop Technology	3.0	Engineering Surveying	3.0	Design of Hydraulic	3.0	Irrigation and Drainage	3.0	

conservation engineering structures and modern irrigation and drainage systems	Computer Applications						Structures		Engineering II	
	Engineering Drawing I	3.0	Vector Analysis for Engineers	3.0	Principles of Crop Production	3.5	Agricultural Engineering Design	3.0	Engineering Project I	3.0
	Introduction to Computer Scientific Applications	2.5	Machine Elements I	3.0	Engineering Thermodynamics III	3.0	Building Materials and Technology	3.0	Engineering Economy	3.0
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Principles of Microeconomics	3.0	Structural Design	3.0	Principles of Entrepreneurship	3.0
	Material Science I	3.0	Solid & Structural Mechanics I	3.0	Ordinary Differential Equations for Engineers	3.0	Soil and Water Conservation Engineering	3.0	Agricultural and domestic Waste Management	3.0
			Physics of the Plant Environment	3.0	Theory of Structures II	3.0	Engineering Statistics	3.0	Engineering Project II	3.0
			Fluid Mechanics I	3.0	Manufacturing Engineering II	3.0	Environmental Science	3.5	Outside Visits and Seminars	3.0
			Computer Aided Drawing	3.0	Engineering Design Principles	3.0	Agricultural Structures	3.0	Water Resources Engineering	3.0
			Electrical Engineering Principles	3.0	Hydraulics I	3.0	Irrigation and Drainage Engineering I	3.0		
			Multi-variable Calculus for Engineers	3.0	Soil Mechanics	3.0	Research Methods	3.0		
			Machine Elements II	3.0	Hydrology	3.0	Scientific Programming	3.5		
			Engineering Thermodynamics II	3.0	Analytic Methods for Engineers	3.0	Numerical Methods for Engineers	3.0		
			Solid & Structural Mechanics II	3.0	Instrumentation and Control Engineering	3.0				
			Manufacturing Engineering I	3.0						
			Theory of Structures I	3.0						
			Fluid Mechanics II	3.0						
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		
PLO 3: To enable an Engineer to plan and design processing plant, postharvest technology machinery and agricultural structures	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Introduction to Farm Power	3.0	Refrigeration and Air Conditioning	3.0	Properties of Agricultural Materials	3.0
	Introduction to Computer Applications	3.5	Workshop Technology	3.0	Engineering Surveying	3.0	Agricultural Engineering Design	3.0	Engineering Project I	3.0
	Engineering Drawing I	3.0	Vector Analysis for Engineers	3.0	Engineering Thermodynamics III	3.0	Building Materials and Technology	3.0	Engineering Economy	3.0
	Introduction to	2.5	Machine Elements I	3.0	Principles of	3.0	Structural Design	3.0	Principles of	3.0

	Computer Scientific Applications for				Microeconomics				Entrepreneurship	
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Engineering Ordinary Differential Equations for Engineers	3.0	Engineering Statistics	3.0	Agricultural and domestic Waste Management	3.0
	Material Science I	3.0	Solid & Structural Mechanics I	3.0	Theory of Structures II	3.0	Environmental Science	3.5	Engineering Project II	3.0
			Physics of the Plant Environment	3.0	Manufacturing Engineering II	3.0	Agricultural Structures	3.0	Outside Visits and Seminars	3.0
			Fluid Mechanics I	3.0	Engineering Design Principles	3.0	Agricultural Process Engineering II	3.0		
			Computer Aided Drawing	3.0	Agricultural Process Engineering I	3.0	Research Methods	3.0		
			Electrical Engineering Principles	3.0	Soil Mechanics	3.0	Scientific Programming	3.5		
			Multi-variable Calculus for Engineers	3.0	Analytic Methods for Engineers	3.0	Numerical Methods for Engineers	3.0		
			Machine Elements II	3.0	Instrumentation and Control Engineering	3.0				
			Engineering Thermodynamics II	3.0						
			Solid & Structural Mechanics II	3.0						
			Manufacturing Engineering I	3.0						
			Theory of Structures I	3.0						
			Fluid Mechanics II	3.0						
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		
PLO 4: To enable an Engineer to plan and design energy power plants and utilization systems with emphasis on green energy	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Introduction to Farm Power	3.0	Agricultural Project Planning and Management	2.0	Green Energy Engineering	3.0
	Introduction to Computer Applications	3.5	Workshop Technology	3.0	Engineering Surveying	3.0	Refrigeration and Air Conditioning	3.0	Engineering Project I	3.0
	Engineering Drawing I	3.0	Vector Analysis for Engineers	3.0	Engineering Thermodynamics III	3.0	Agricultural Engineering Design	3.0	Engineering Economy	3.0
	Introduction to Computer Scientific Applications	2.5	Machine Elements I	3.0	Principles of Microeconomics	3.0	Building Materials and Technology	3.0	Principles of Entrepreneurship	3.0
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Ordinary Differential Equations for Engineers	3.0	Structural Design	3.0	Agricultural and domestic Waste Management	3.0

	Material Science I	3.0	Solid & Structural Mechanics I	3.0	Theory of Structures II	3.0	Engineering Statistics	3.0	Engineering Project II	3.0
			Physics of the Plant Environment	3.0	Manufacturing Engineering II	3.0	Environmental Science	3.5	Outside Visits and Seminars	3.0
			Fluid Mechanics I	3.0	Engineering Design Principles	3.0	Research Methods	3.0	Electrical Energy Utilization	3.0
			Computer Aided Drawing	3.0	Analytic Methods for Engineers	3.0	Scientific Programming	3.5		
			Electrical Engineering Principles	3.0	Instrumentation and Control Engineering	3.0	Numerical Methods for Engineers	3.0		
			Multi-variable Calculus for Engineers	3.0						
			Machine Elements II	3.0						
			Engineering Thermodynamics II	3.0						
			Solid & Structural Mechanics II	3.0						
			Manufacturing Engineering I	3.0						
			Theory of Structures I	3.0						
			Fluid Mechanics II	3.0						
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		
PLO 5: To inculcate the Engineer with sound theoretical knowledge in engineering principles, sciences, research and consultancy in	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Principles of Microeconomics	3.0	Agricultural Project Planning and Management	2.0	Engineering Project I	3.0
	General Inorganic & Physical Chemistry	3.0	Vector Analysis for Engineers	3.0	Theory of Structures II	3.0	Engineering Statistics	3.0	Engineering Economy	3.0
	Discrete Mathematics	3.0	Physics of the Plant Environment	3.0	Principles of Crop Production	3.5	Agricultural Engineering Design	3.0	Operation Research	3.0
	Applied Geometry	3.0	Multi-variable Calculus for Engineers	3.0	Analytic Methods for Engineers	3.0	Research Methods	3.0	Principles of Entrepreneurship	3.0
	Physics I	3.0	Theory of Structures I	3.0	Engineering Design Principles	3.0	Scientific Programming	3.5	Engineering Project II	3.0
	Differential Calculus for Engineers	3.0					Numerical Methods for Engineers	3.0	General Animal Production	3.5
	Integral Calculus for Engineers	3.0								
	Physics II	3.0								
PLO 6: To impart positive and responsive out-reach attitudes,	Introduction to Agricultural Engineering	3.0	Technical Writing and Reporting for Engineers	3.0	Principles of Microeconomics	3.0				
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		

initiative and creative thinking in their mission as Engineers										
PLO 7: To produce a professional Engineer who understands ethical issues and responsibility of serving the society and the environment at large.	Introduction to Agricultural Engineering	3.0			Law Ethics and Professional Practice	3.0	Environmental Science	3.5	Agricultural and domestic Waste Management	3.0
	Introduction to Academic Communication Skills	3.0								
	HIV/AIDs and Society	3.0								
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		
PLO 8: To equip the Engineer with effective written and oral communication skills.	Introduction to Academic Communication Skills	3.0	Technical Writing and Reporting for Engineers	3.0						
			Engineering Practice	4.0	Industrial Practice I	4.0	Industrial Practice II	4.0		

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

BACHELORS OF SCIENCE IN CIVIL AND ENVIRONMENTAL ENGINEERING

1. Philosophy of the Programme

The Programme is designed to train engineers who will contribute solutions to the ever-changing Civil and Environmental problems of a society.

2. Rationale

The Programme lays a heavy emphasis on the practical application of knowledge, while at the same time recognizing the importance of theoretical knowledge in developing intellectual capacity of the graduate Engineer. The course profile provides sufficient core elements of Civil Engineering education for the graduate to gain recognition and accepted by professional bodies such as Engineers Board of Kenya (EBK) and Institute of Engineers of Kenya (IEK). Possible employers of Civil and Environmental Engineers graduates are Ministry of Public Works, Ministry of Water and Irrigation, Ministry of Environment and Natural resources, Regional Development Authorities, County government water service companies, private consultants, national and international non-governmental organisations, civil engineering contractors, institution of higher learning and National Environmental Management Authority (NEMA).

3. Goal of the Programme

The Programme aims at developing a skilled and dynamic Civil and Environmental Engineer with adequate knowledge to plan, design, construct and manage Civil engineering systems and related infrastructural facilities.

4. Programme Learning Outcomes

At the end of the Programme, the graduate will be able to:

PLO 1: Plan, design and construct Civil and Environment systems and infrastructures.

PLO 2: Respond and adapt to technological, social or environmental changes affecting Civil Engineering projects and to anticipate and initiate such a change.

PLO 3: Demonstrated adequate knowledge of standards and convection to enable effective communication to various individuals or groups involved in the field of Civil and Environmental Engineering.

PLO 4: Utilize the acquired knowledge and skills for gainful self-employment and also creating employment for others.

PLO 5: Be innovative and creative in responding adequately to the needs of the society.

5. Mode of Delivery

The Programme shall be delivered through full time face to face teaching.

6. Academic Regulations of the Programme

6.1 Admission Requirement

All candidates admitted to the degree Programme must satisfy the minimum entrance requirements stipulated in the common university entrance regulations.

In addition, the students must obtain at least a C+ (plus) in each of the following cluster subjects at Kenya Certificate of Secondary Education: Mathematics, Physics and Chemistry.

Admission may be offered to Diploma certificate holders in related Engineering Disciplines examined by Kenya National Examination Council (KNEC) or by institutions recognised by the senate.

6.2 Regulations on credit transfer

Credit transfer will adhere to Egerton University Statutes of 2013 article 36 (3).

6.3 Course Requirements

The course requirements include class attendance, practicals, tutorials and industrial/field visits to actualize the application of diverse knowledge and skills acquired in various courses covered in the Programme. Those should follow ISO procedure for teaching (EU/AA/OP/06rev 3).

6.4 Student Assessment policy/criteria

The student assessment shall be conducted in accordance with Egerton University Statutes 36 (6) of 2013.

6.5 Grading System

The grading of examination for the Programme shall be conducted in accordance with Egerton University Statutes 36 (6) of 2013.

6.6 Examination Regulations

Examination regulations for the Programme shall be conducted in accordance with Egerton University Statutes 36 (5) of 2013.

The following practical courses that shall be examined by project proposal, tests, assessments, project/practical implementation, oral examination and final reports as appropriate.

CEEN 260: Engineering Practice

CEEN 360: Industrial Attachment I

CEEN 460: Industrial Attachment II

CEEN 561: Engineering Project I CEEN 562: Engineering Project II CEEN 312: Engineering Design Principles

6.7 Moderation of Examinations

The moderation of examination shall be conducted in accordance to ISO procedures EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass ALL prescribed courses within the stipulated period. The total C.F.s a student should take for all scheduled courses within the stipulated period is 252.5.

6.9 Classification of Degrees

The degree classification shall be in accordance with Egerton university Statutes number 36 (17a) of 2013.

7. Course Evaluation

The course evaluation shall be conducted in accordance with ISO procedures on effectiveness evaluation EU/AA/OP/04.

8. Management and administration of the course

8.1 Hosting Department and Programme Academic Leader

The Programme shall be hosted in the department of Civil and Environment Engineering in the Faculty of Engineering and Technology.

The Programme Academic Leader shall be a Registered Engineer in the area of Civil Engineering and appointed in accordance with the University Standards and Guidelines (2014).

8.2 Programme Evaluation

Programme shall be evaluated (self-assessment) at the end of each academic cycle based on ISO procedures EU/VC/OP/05. The Programme shall be benchmarked with at least one such Programme in a reputable university.

8.3 Course Coding

The course code shall be **CEEN**, standing for Civil and Environment Engineering followed by 3 digits.

- Digit 1**, shall indicate the year the course is offered (i.e. 1,2,3,4,5).
- Digit 2**, indicates the nature of course discipline as follows:-
0 - Introductory courses
1 - Basic engineering courses
2 - Geotechnical and highway engineering courses
3 - Structural Engineering
4 - Environmental engineering courses
5 - Water resource engineering courses
6 - Research, industrial attachment and Projects.
- Digit 3** represent the in the sequence of the courses with a discipline.

9.0 Courses/Units offered for Programme

9.1 Schedule of course

(a) University Common Courses

Code	Course Title	L	P/ T	C.F.
COMS 111	Communication Skills	45	0	3.0
COMP 101	Introduction to Computer application	45	15	3.5
ZOOL 143	HIV/AIDs and Society	45	0	3.0

(b) Schedule of Courses

YEAR I SEMESTER I (Y1S1)

CODE	TITLE	L.	P/T	C.F.
CEEN 101	Introduction to Civil and Environmental	30	30	3

	Engineering			
CHEM 111	General Inorganic and Physical Chemistry	30	30	3
COMP 101	Introduction to Computer application	45	15	3.5
COMS 111	Communication Skills	45	0	3
MATH 116	Discrete Mathematics	45	0	3
MATH 118	Applied Geometry	45	0	3
MENT 110	Engineering Drawing I	30	30	3
PHY 104	Physics I	30	30	3
TOTAL		300	135	24.5

YEAR I SEMESTER 2 (Y1S2)

CODE	TITLE	L	P/T	C.F.
CEEN 121	Engineering Geology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 102	Introduction to Computer for Scientific Applications)	30	15	2.5
MATH 117	Differential Calculus for Engineers	45	0	3.0
MENT 111	Engineering Drawing II	30	30	3.0
MENT 120	Engineering Material Science I	30	30	3.0
PHYS 105	Physics II	30	30	3.0
ZOOL 143	HIV/AIDs and Society	45	0	3.0
TOTAL		270	165	23.5

YEAR 2 SEMESTER 1 (Y2S1)

CODE	TITLE	L	P/T	C.F.
AGED 313	Technical Writing and Reporting for Engineers	45	0	3.0
CEEN 211	Fluid Mechanics I	30	30	3.0
CEEN 213	Civil Engineering Drawing	15	60	3.0
MATH 222	Integral Calculus for Engineers	45	0	3.0
MENT 210	Workshop Technology	30	30	3.0
MENT 220	Computer Aided Drawing	30	30	3.0
MENT 222	Machine Elements I	30	30	3.0
MENT 226	Solid & Structural Mechanics I	30	30	3.0
TOTAL		255	210	24.0

YEAR 2 SEMESTER 2 (Y2S2)

CODE	TITLE	L	P/T	C.F.
CEEN 212	Fluid Mechanics II	30	30	3.0
CEEN 222	Soil Mechanics	30	30	3.0
CEEN 231	Theory of Structures I	30	30	3.0
CEEN 232	Engineering Materials I (Materials: Cement and Concrete)	30	30	3.0
ECEN 216	Electrical Engineering Principles	30	30	3.0
MATH 221	Vector Analysis for Engineers	45	0	3.0
MATH 223	Multi-variable calculus for engineers	45	0	3.0
MENT 227	Solid & Structural Mechanics II	30	30	3.0

TOTAL		270	180	24.0

END OF YEAR 2

CEEN 260	Engineering Practice	0	120	4.0

YEAR 3 SEMESTER 1 (Y3S1)

CODE	TITLE	L	P/T	C.F.
CEEN 313	Fluid Mechanics III	30	30	3.0
CEEN 314	Engineering Surveying I	30	30	3.0
CEEN 321	Highway Geometric Design	30	30	3.0
CEEN 323	Geotechnical Engineering	30	30	3.0
CEEN 334	Engineering Materials II	30	30	3.0
CEEN 341	Environmental Engineering I	30	30	3.0
ECEN 316	Electrical and Control Engineering	30	30	3.0
MATH 340	Ordinary Differential Equations for E	45	0	3.0
TOTAL		225	180	24.0

YEAR 3 SEMESTER 2 (Y3S2)

CODE	TITLE	L	P/T	C.F.
AGEN 377	Photogrammetry & Remote Sensing	30	30	3.0
BOTA 131	General Microbiology	45	0	3.0
CEEN 316	Engineering Surveying II	30	30	3.0
CEEN 333	Theory of Structures II	30	30	3
CEEN 342	Environmental Engineering II	30	30	3.0
CEEN 351	Hydraulics I	30	30	3.0
COMP	Scientific	30	30	3.0

327	Programming			
MATH 341	Analytical Methods for Engineers	45	0	3.0
TOTAL		270	180	24.0

END OF YEAR 3

CEEN 360	Industrial Attachment I	0	120	4.0

YEAR 4 SEMESTER 1 (Y4S1)

CODE	TITLE	L	P/T	C.F.
CEEN 424	Transportation Engineering I	30	30	3.0
CEEN 433	Theory of Structures III	30	30	3.0
CEEN 435	Structural Design I	30	30	3.0
CEEN 443	Public Health Engineering I	30	30	3.0
CEEN 451	Water Supply Engineering	30	30	3.0
CEEN 452	Hydrology I	30	30	3.0
CEEN 453	Hydraulics II	30	30	3.0
STAT 456	Engineering Statistics	45	0	3.0
TOTAL		255	180	24.0

YEAR 4 SEMESTER 2 (Y4S2)

CODE	TITLE	L	P/T	C.F.
CEEN 425	Transportation Engineering II	30	30	3.0
CEEN 436	Structural Design II	30	30	3.0
MATH 439	Numerical Methods for Engineers	45	0	3.0
CEEN 444	Public Health Engineering II	30	30	3.0
CEEN 454	Hydrology II	30	30	3.0
AGEN	Irrigation and	45	0	3.0

455	Drainage Engineering I			
CEEN 455	Water Treatment Technologies	30	30	3.0
AGEN 462	Research Methods	45	0	3.0
TOTAL		285	150	24.0

END OF YEAR 4

CEEN 460	Industrial Attachment II	0	120	4.0

YEAR 5 SEMESTER 1 (Y5S1)

CODE	TITLE	L	P/T	C.F.
AGEN 566	Engineering Economy	45	0	3.0
CEEN 538	Construction Eng. Management	30	30	3.0
CEEN 539	Design of Hydraulic Structures	30	30	3.0
CEEN 545	Environmental Engineering III	30	30	3.0
CEEN 547	Coastal Engineering	30	30	3.0
CEEN 556	Water Resource Engineering I	30	30	3.0
CEEN 561	Engineering Projects I	15	60	3.0
MENT 550	Operations Research	45	0	3.0
TOTAL		255	210	24.0

YEAR 5 SEMESTER 2 (Y5S2)

CODE	TITLE	L	P/T	C.F.
AGBM 102	Principles of Entrepreneurship	45	0	3.0
ENSC 309	Environmental impact Assessment and Audit	30	45	3.5
CEEN 511	Law, ethics and Professional	45	0	3.0

	Practise			
CEEN 521	Pavement Design	30	30	3.0
CEEN 531	Structural Design III	30	30	3.0
CEEN 541	Environmental Engineering IV	30	30	3.0
CEEN 557	Water Resource Engineering II	30	30	3.0
CEEN 562	Engineering Project II	0	90	3.0
TOTAL		240	255	24.5

(c) COURSE DESCRIPTION

CEEN 101: INTRODUCTION TO CIVIL AND ENVIRONMENTAL ENGINEERING (L 30: P/T 30: C.F. 3.0) Y1 S1

Role of technology in national industrial growth. The engineering profession, Traditional-engineering disciplines. The civil and environmental engineer. History of civil and environmental engineering. Natural and man-made environment. Reconnaissance, data collection, data analysis and presentation, planning, feasibility, preliminary design, final design, implementation, supervision, operation and maintenance. Reporting and related documents; inspection reports and contract documents. Past, modern and future technological changes and their impacts on society. Field Trip.

CEEN 121: ENGINEERING GEOLOGY (L 30: P/T 30: C.F. 3.0) Y1 S2

The Earth: its origin, composition and position in the Universe; Plate tectonics and geological time scale. Minerals: Classification and physical properties. Rocks: Origin, composition, texture, and classification. Structural geology: faulting, folding, unconformities. Geological maps: Dip, strike, outcrops, interpretation, geological section, geology of Kenya. Earthquakes: Causes, measurement, and prediction. Site investigation: Methods rock mass rating; Geophysical methods of site investigation; Influence of geology on tunnelling and dam construction. Field trip.

CEEN 211: FLUID MECHANICS I (L 30: P 30: C.F. 3.0) Y2 S1

Properties of Fluids: Density, Specific weight, Specific volume, Specific gravity, Viscosity, Newtonian and non-Newtonian fluids, Surface tension, Capillarity, Compressibility and Bulk modulus, Vapour pressure. Fluid Statics: Definition of pressure, Pascal's law, Pressure variation in a Static Fluid, Measurement of Pressure: Manometers, Mechanical gauges, Transducers. Hydrostatic forces: Resultant pressure and Centre of pressure, Forces on immersed plane and curved surfaces, design of Sluice and lock gates, Dams. Relative Equilibrium: Uniform linear acceleration, Rotation about a vertical axis, Forced vortex. Buoyancy and floatation: Buoyancy and Centre of Buoyancy, Types of equilibrium, Stability of submerged and floating bodies, Metacentre and Metacentric height, Determination of metacentric height, Oscillation (Rolling) of a floating body.

CEEN 212: FLUID MECHANICS I (L 30: P 30: C.F. 3.0) Y2 S2

Fluid Kinematics: Description of fluid motion, Types of fluid flow, Types of flow lines, Rate of flow, Continuity equation, Circulation and vorticity, Velocity potential and stream function, Flow nets. Fluid Dynamics: Types of energy for a liquid in motion, Euler's equation, Bernoulli's equation, Applications of Bernoulli's equation, Pitot, Venturi, Small and large orifices, Notches, Weirs, Power of a stream of fluid, Hydraulic and energy grade lines. Momentum: Momentum and fluid flow, Momentum equation, Force exerted by jets, Force exerted on pipe bends and closed conduits, Reaction of jets. Laminar flow: Laminar flow through pipes, Frictional head loss in viscous flow, Laminar flow between flat plates, Laminar flow through an annulus. Turbulent flow: Turbulent flow in pipes, Frictional head loss in turbulent flow, Pipe friction formulas, Minor head losses.

CEEN 213: CIVIL ENGINEERING DRAWING (L 15: P/T 60: C.F. 3.0) Y2 S1

Drawing and detailing for architectural views: 3 dimensional views, perspectives, elevations and plan, structural drawings: reinforced concrete detailing and structural steel work detailing, transportation infrastructure; Road furniture, cross-sections and

longitudinal views and water works: longitudinal and cross-sectional views for sewer-lines and water distribution, structures along the sewerage system and hydraulic structures.

CEEN 222: SOIL MECHANICS (L 30: P/T 30: C.F. 3.0) Y2 S2

Introduction to soil mechanics. Occurrence and formation of soils. Soil composition physical properties and their relationships. Grain size analysis and atterberg limits. Classification of soils by field and laboratory tests. Compaction of soils. Water in soils and permeability. Seepage; Effects and control. Practical laboratory tests in classification, compaction and permeability. Laboratory tests.

CEEN 231: THEORY OF STRUCTURES I (L 30: P/T 30: C.F. 3.0) Y2 S2

Introduction to statics. Structural forms. Structural idealization. Concept of a free body. Analysis of statically determinate structures. Axial force structures, trusses; analysis; methods of joints, method of sections, method of tension coefficients, graphical analysis, truss displacement by virtual force method, graphical method. The arch. The cable. Bending structures; axial force, shear force, bending moment diagrams, deflection curve. Analysis of simple beams and frames: virtual force method, moment area method, conjugate beam, method of singularity and Macaulay functions. Influence lines for statically determinate structures.

CEEN 232: ENGINEERING MATERIALS I (L 30: P /T30: C.F. 3.0) Y2 S2

Manufacture and properties of inorganic cement. Portland cements. Sources of cement in Kenya. Hydration of Portland cement. Cement additives. Natural and artificial aggregates. Water for concrete. Rheology for fresh concrete: workability, segregation. Properties of hardened concrete. Standard methods of testing. Non destructive tests. Creep, shrinkage. Quality control. Corrosion of steel in concrete. Durability, cement aggregate reactions. Curing of concrete. Thermal properties of concrete. Effects of fire on concrete. Special properties of concrete, concrete additives. Field trip.

CEEN 260: ENGINEERING PRACTICE (L 0: P 120: C.F. 4.0) AFTER Y2 S2

The students shall receive further practical training on the use of workshop equipment in timber, welding and lathe machines and safe handling of all workshop equipment. The students shall also carry out field survey practice and the use of Computer Aided Drafting and Design (CADD).

CEEN 313: FLUID MECHANICS III (L 30: P/T 30: C.F. 3.0) Y3 S1

Dimensional and model analysis: Fundamental and derived dimensions, Dimensional homogeneity, Methods of dimensional analysis, Model analysis, Similitude, Common dimensionless numbers, Similarity laws, Types of models: Undistorted and Distorted models, Scale effect in models, Limitations of hydraulic Similitude. Boundary layer theory: Definitions and characteristics, Boundary layer thickness, Laminar and turbulent Boundary layer, Drag due to Laminar and Turbulent layers, Boundary layer separation and wake. Incompressible flow around immersed bodies: Force Exerted by a flowing fluid on a body, Expressions for Drag and Lift, Stream-lined and Bluff bodies, Drag on Immersed bodies: Drag on a sphere, Drag on a cylinder, Drag and Lift on an Airfoil. Compressible flow: Thermodynamic concepts, Propagation of sound waves, Energy equation with variable density, Flow through a nozzle, Normal and oblique shock waves.

CEEN 314: ENGINEERING SURVEYING I (L 30: P 30: C.F. 3.0) Y3 S1

Introduction to surveying: definition, methods of surveying such as cadastral, geodetic, hydrographic and mutation. Engineering survey: mine, topographical, aerial and land. Principles of surveying. Theory of errors: gross, systematic and accidental errors; sources, propagation and minimization of errors. Detailed mapping. Plane table surveying, chain surveying and compass surveying. Ordinary levelling: instruments, procedures and applications, contouring, cross-sections and profiles for highways, drainage, channels, pipelines. Two dimensional plane coordinate system. Traversing: theodolite observations of vertical and horizontal angles, reduction of readings, traversing and adjustments.

CEEN 316: ENGINEERING SURVEYING II (L 30: P 30: C.F. 3.0) Y3 S2

Tacheometric surveying: instruments, procedures and applications. Introduction to precise levelling: instruments, procedures and applications. Gauging: setting out and using bonding rod methods. Volumes of earthworks: various techniques of computing volume and mass haul of earthworks. Introduction to application of EDM techniques in engineering applications. Curves in Highway Engineering: computation and setting out of simple, compound, circular, vertical and transition curves. Errors: weighting of observations and the principles of least squares for adjustment of survey computations. Introduction to triangulation, trilateration and resection.

CEEN 321: HIGHWAY GEOMETRIC DESIGN (L 30: P/T 30: C.F. 3.0) Y3 S1

Speed, sight distance and capacity: Design speeds for rural and urban roads. Traffic flow and design capacity: Basic considerations, rural and urban highway design flows. Sight distances at Geometric design: Horizontal alignment: Curvature and centrifugal force, sight distance at horizontal curves, widening of circular curves, applications of transitional curve and super elevation. Vertical alignment: gradients design of climbing lanes and sight distances at vertical curves. Cross-section elements: traffic lanes, central reservations, shoulders, lay-bys, bus bays and bus stops, camber and side slopes. Road furniture: Traffic islands, kerbs, safety fences, traffic signs and road markings. Intersection design: At grade junctions: roundabouts, conflict points, kerbed and ghost islands, lane separation, acceleration and deceleration lanes, intersection triangle and intersections with grade separation. Use of highway geometric design computer packages.

CEEN 323: GEOTECHNICAL ENGINEERING (L 30: P/T 30: C.F. 3.0) Y3 S1

Shear strength of soil: Cohesion and internal friction, coulomb law, Mohr circle of stress. Direct shear, triaxial compression test, unconfined compression test. Bearing capacity: General and local shear failure. Ultimate, net, safe and allowable bearing capacity. Terzaghi's coefficient of shallow foundations. Effect of shape, depth, water table, eccentricity and load inclination; General

bearing capacity equation. Pile foundations. Field methods of determining bearing capacity. Stress distribution: Boussinesq's theory. Bulb of pressure. Influence line chart for regular and irregular foundation. Approximate estimates of stress distribution. Settlement: Components of settlement. Immediate and consolidation settlement. Oedometer test. Determination of consolidation settlement. Slope stability: Translation slip in granular soil; analysis of circular slip in cohesive soils. Methods of slice in C- Φ soils. Stability chart. Earth pressure and retaining walls: Rankine's theory, stability of gravity walls, cantilever sheet pile walls. Field visit. Practical exercises in determination of shear strength parameters, and consolidation coefficients in the laboratory. Laboratory reports

CEEN 333: THEORY OF STRUCTURES II (L 30: P/T 30: C.F. 3.0) Y3 S2

Analysis of statically indeterminate structures: beams and frames; moment area method, three-moment theorem, slope deflection method, moment distribution method, trusses, Castigliano's theorem, Maxwell's theorem, reciprocal theorem, virtual work method. Analysis of statically indeterminate arches. Influence line for statically indeterminate beams, frames and grids. Plastic analysis of continuous beams and frames.

CEEN 334: ENGINEERING MATERIALS II (L 30: P/T 30: C.F. 3.0) Y3 S1

Timber: classification of woods. Timber moisture. Physical and mechanical properties of timber. Timber defects. Resistance of wood to chemical attack. Timber preservation. Structural grading of timber. Improvements in timber; plywood, glue laminated timber. Polymers: definition and chemical structure. Physical and mechanical properties. Degradation of polymers. Metals: physical, chemical and mechanical properties of metals. Corrosion of metals and protection. Ceramics: physical and chemical properties. Production of construction ceramic products. Field visit

CEEN 341: ENVIRONMENTAL ENGINEERING I (L 30: P/T 30: C.F. 3.0) Y3 S1

An introduction to environmental quality and pollution problems, their nature, causes and control. Man's

interaction with air-land and water resource. Sources, nature, problems and effects of specific water and air pollutants, surface and groundwater pollution, Green house and global warming. Pollution indicator organisms, Wastewater microbiology, growth kinetics, Deoxygenating and re-aeration constants and OD sag curves. Application of principals of chemical equilibrium, surface chemistry, chemical kinetics, and photochemistry to air and water quality considerations; water quality standards for water sources and drinking water . Kenya bureau of standards on water, surface water appearance, quality characteristics, carbonate and phosphate systems in natural waters. dissolved gases, hardness, hydrolysis of coagulants, coagulation flocculation theory, disinfectant theory, water softening, manganese and iron removal, determination of metals corrosion, chemistry of disinfectants; removal of impurities by absorption and reactions of various pollutants in the atmosphere. Field Trip.

Laboratory: Water quality tests for Colour, turbidity, pH and chlorine, Acidity test, Alkalinity test.

CEEN 342: ENVIRONMENTAL ENGINEERING II (L 30: P/T 30: C.F. 3.0) Y3 S2

Sources of Wastewater. Physical, chemical and biological characteristics of wastewater. Quantities of effluent, Scale of the problem, surface and groundwater pollution. Determination of Wastewater flow loads such as COD, BOD and other parameters. Estimation of solids, Nitrogen and Phosphorus. Bacterial examination. Laboratory: BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), TOC (Total Oxygen Demand), Solids and Bacteriological examination, Nitrates and Ammonia

CEEN 351: HYDRAULICS I (L 30: P/T 30: C.F. 3.0) Y3 S2

Flow in pipes and pipe networks: Pipes in series, Equivalent pipes, Pipes in parallel, Branching pipes, Siphon flow, Pipe networks. Power transmission through pipes, Maximum power through a pipeline. Water Hammer in pipes, Gradual and Instantaneous closure of a valve, Transmission of a pressure wave. Flow in open channels: Types of channels. Types of flow: Steady and unsteady flow, Uniform and non-uniform flow, Laminar

and Turbulent flow, Sub-critical and Critical flow, Super-critical flow. Uniform flow: Flow with a free surface in open and covered channels, Chezy's formula, Best hydraulic sections. Non-uniform flow in open channels, Specific energy and Specific energy curve, Critical depth in non-rectangular channels, Critical flow conditions, Gradually varied flow, Classification of water surface profiles, Rapidly varied flow: Hydraulic jump. Flow in closed pipelines: Pressure transient theory, Surge control. Field trip.

Laboratory: Measurement of pressure, Experiment on hydrostatics Experiment on buoyancy.

CEEN 360: INDUSTRIAL ATTACHMENT I (L 0: P 120: C.F. 4.0) After Y3 S2

The student will be attached to organizations in civil and environmental engineering industry in order that they may understand theory and practice under supervision of qualified staff. The student will be attached in an office or on a construction site and should participate in the day to day activities of the organization. The students will maintain a logbook of their daily participation, observation and remarks. The students will prepare a technical report on their attachment. Regular supervision by the organization's supervisor and at least once by the departmental academic staff should be carried out.

CEEN 424: TRANSPORTATION ENGINEERING I (L 30: P/T 30: C.F. 3.0) Y4 S1

Mode of transportation. Introduction of urban and regional transportation planning. Road transport system: a historic perspective. Introduction to highway planning. The road user: Vehicle, driver and pedestrian characteristics. Route location: principle factors affecting route location, location surveys in urban areas, location surveys in rural areas, bridge surveys, highway plan appraisal. Accidents and road safety. Assessment of road improvements; highway materials and traffic engineering: survey data collection characteristics, traffic measurements, forecasting and traffic estimation; highway capacity and level of service. Road construction. Construction contracts. Maintenance of paved and unpaved roads. Highway drainage. Field visit.

CEEN 425: TRANSPORTATION ENGINEERING II (L 30: P/T 30: C.F. 3.0) Y3 S2

Flow density and speed: Queuing, planning, implementation and operations of traffic control systems. System operating environments: Policy and institutional issues, selection of strategies and tactics, evaluation and furniture. Parking: Parking studies, on-street parking, off-street parking and location, peripheral parking. Operational planning and management of highways transportation systems. Railways: Permanent ways; Definition, components; sub-grade, ballast, slippers, rail fixtures and fasteners. Gauge: Concept of gauge and suitability. Track materials. Geometrics of broad gauge; typical sections of single and broad gauge railway track in cutting and embankment; permanent and temporary land width; gradient; ruling, maximum and minimum yard. Curves: Limiting radius of curvature for broad gauge, transitional length, super-elevation; necessity and limitation. Maintenance of rail track. Safety: accident statistics. Environmental consideration: noise, vibration and pollution Field visit.

CEEN 433: THEORY OF STRUCTURES III (L 30: P/T 30: C.F. 3.0) Y4 S1

Flexibility and stiffness matrices. Force method of analysis for indeterminate structures. Moment distribution with sway for multi-storey and multi-bay frames. Structural dynamics: Co-ordinate and lumped masses. Undamped free vibration of single degree of freedom. Response of a single degree of freedom. Suddenly applied constant force, impulse sinusoidal forcing function, resonance support movement, damped free vibrations. Transmissibility:- Transmitted forces, half power method, properties of Eigen vectors.

CEEN 435: STRUCTURAL DESIGN I (L 30: P/T 30: C.F. 3.0) Y4 S1

Introduction to structural design. Elements of concrete construction. Principles of reinforced concrete design. Serviceability and ultimate limit states. Design of reinforced concrete elements for bending, shear and compression loading. Bond and anchorage. Fire protection. Reinforced concrete slabs and shear walls. Yield line analysis. Reinforced concrete footings: detailing of beams, slabs, columns, staircases and walls.

Foundation and retaining walls. Codes of practice. Field Visit.

CEEN 436: STRUCTURAL DESIGN II (L 30: P/T 30: C.F. 3.0) Y4 S2

Elements of structural steel construction. Principles of structural steel design. Tension members, column, beams, beam-columns, composite beams, plate girders. Design of joints and connections. Fire protection, corrosion control. Design of solid timber struts, ties, columns and beams. Design of laminated beams and built-in timber columns. Connections: nailed, screwed and bolted. Design of trusses and portal frames. Codes of practice. Field visit.

CEEN 443: PUBLIC HEALTH ENGINEERING I (L 30: P/T 30: C.F. 3.0) Y4 S1

Sewerage system design: estimation of quantity, collection, conveyance, types of pipes, drains, trenching and laying of sewers, gradients, sewer appurtenances: manholes, Testing of Sewers, operation and maintenance of Sewerage systems. Pump selection, O & M wastewater pumping stations. Field visit.

CEEN 444: PUBLIC HEALTH ENGINEERING II (L 30: P/T 30: C.F. 3.0) Y4 S2

Waste water treatment processes; objectives, basic considerations for a design of a treatment facility; environmental impact assessment of the plant. Treatment methods; conventional method and waste stabilization ponds and other alternative treatment methods. Design and construction of stabilization ponds; anaerobic, facultative, aeration, maturation ponds and Wetlands. Disposal in lakes and reservoirs, Oxygen sag Model. Sludge treatment and disposal: wastewater treatment by septic tanks. Operation and maintenance. Low-cost sanitation methods: human waste grey water disposal methods. Field visit.

CEEN 451: WATER SUPPLY ENGINEERING (L 30: P/T 30: C.F. 3.0) Y4 S1

Water demand: domestic use, industrial use, other consumers, factors influencing water demand. Estimation of demand. Design of works to procure water from springs, Spring protection, lakes, rivers and rainwater catchments, Water harvesting using roof

catchment and water pans. Types and design of intake works, pumps and pumping stations, Design of raw water mains, Design of water distribution systems: Trunk mains, branch type or looped systems. gravity and pumped systems. Water supply systems appurtenances: pipes and fittings, pressure valves, control valves, water meters, storage tanks, break pressure tanks and Surge tanks. Field visit.

CEEN 452: HYDROLOGY I (L 30: P/T 30: C.F. 3.0) Y4 S1

Water occurrence in nature. The hydrologic cycle. Meteorology: the mechanism of rain generation, condensation, types of clouds, convection, effects of cold and warm fronts, aspects of rain storms, instrument for weather/climate measurement. Methods of hydrologic processes measurements. Analysis of rainfall data. Stream flow: Sources of stream flow: measurement of stream flow. Hydrograph analysis and synthesis. Introduction to ground water: confined and unconfined aquifers. Physical and chemical properties of groundwater. Well hydraulics. Groundwater management and contamination. Seawater intrusion. Field visit.

CEEN 453: HYDRAULICS II (L 30: P/T 30: C.F. 3.0) Y4 S1

Hydraulic turbines: Impulse turbines: The Pelton wheel. Reaction turbines: Francis turbines, Axial flow turbines: Propeller and Kaplan turbines. Performance characteristic curves of Hydraulic turbines. Governing of Impulse and Reaction turbines. Cavitation, Selection of turbines, Surge tanks. Centrifugal pumps: Working principle, Centrifugal Pumps versus Reciprocating pumps, Pump head and efficiency, Factors affecting pump efficiency, Multi-stage Centrifugal pumps, Pumps in series and parallel, Specific speed, Geometrically Similar pumps, Characteristics of Centrifugal pumps, Priming, Reciprocating pumps: Classification, Discharge, Power and Efficiency, Single and double-acting pumps, Indicator diagrams, Rotary pumps, Rotary gear pumps, Rotary vane pumps, Rotary piston pumps, Hydraulic motors, Cavitation and Selection of pumps.

CEEN 454: HYDROLOGY II (L 30: P/T 30: C.F. 3.0) Y4 S2

Surface water: excess rainfall and direct runoff, abstractions using infiltration equations and SCS method of abstractions. Hydrologic statistics: probability treatment of hydrologic data, frequency and probability functions, fitting a probability distribution. Frequency analysis: Return period, extreme value distributions: probability plotting, reliability of analysis, flood routing. Hydrologic design: Selection of the design level, analysis of uncertainty, composite risk analysis and safety margins and factors. Calculation of probable maximum precipitation. Design flows: storm sewer design. Introduction to stochastic modelling. Field visit.

CEEN 455: WATER TREATMENT TECHNOLOGIES (L 30: P/T 30: C.F. 3.0) Y4 S2

Water quality: WHO and KBS standards, Conventional water treatment processes. Preliminary water treatment methods. Purpose, theory and design of aeration units. Design of Coagulation/flocculation theory and practice. Design and operation of sedimentation tanks for water treatment. Hydraulics of filtration. design and operation of filter units. Disinfection methods. Residual chlorine, water softening, Removal of dissolved solids, organics and other nutrients, Water treatment plant design. Appropriate technologies in water treatment: Low-cost treatment methods. Field visit.

CEEN 460: INDUSTRIAL ATTACHMENT II (L 0: P: 120: C.F. 4.0) AFTER Y4 S2

The student will be attached to organizations in civil and environmental engineering industry in order that they may understand theory and practice under supervision of qualified staff. The student will be attached in an office or on a construction site and should participate in the day to day activities of the organization. The students will maintain a logbook of their daily participation, observation and remarks. The students will prepare a technical report on their attachment. Regular supervision by the organization's supervisor and at least once by the departmental academic staff should be carried out.

CEEN 511: LAW, ETHICS AND PROFESSIONAL PRACTISE (L 30: P/T 30: C.F. 3.0) Y5 S2

Engineering profession and its evolution, ethical issues vs basic laws: General ethical issues, outline or Engineering roles in the society, sources of law, governance structure, basic laws of contract, legal relations law of torts or basic law: Features of law of torts, specific to engineers, role of engineer: obligation of the engineer, valuation of work. Arbitration: When suitable to enter arbitration, prerequisite, procedures in arbitration. Insurance matters and claims, categories of claims specifications- definitions and drafting. Management of construction projects: Basic concepts in project management, project planning, procurement of services providers for goods, works and services, project execution and management, project closure. Structure of profession practice in Kenya: Regulation of engineering practise, steps towards registration as a professional engineer, codes of ethics for engineers. Patenting: What to be patented, procedure for patenting

CEEN 521: PAVEMENT DESIGN (L 30: P/T 30: C.F. 3.0) Y5 S2

Type of pavements: Flexible pavements and rigid pavements. Functions of pavement layers, behaviour of layered systems under wheel loads. Stresses in flexible and rigid pavements, factors affecting stress distribution in flexible and rigid pavements. Introduction of empirical and semi-empirical design methods. Design of flexible pavement: CBR method, group index, road note 29 and road note 31 method. The Kenya Roads Design Manual method. Analytical concepts of pavement design. Design of rigid pavement. Drainage design of highways. Introduction to pavements construction methods: labour intensive low-cost road construction. Mechanised method. Highway maintenance: The maintenance problems, construction problem, methods of evaluating pavement maintenance needs and strengthening of pavements. Maintenance models. Route location. Environmental Impact of Highways. Field visit. Laboratory/Fieldwork: Deflection beam and plate loading test. Use of pavement design computer software. Field visit.

CEEN 531: STRUCTURAL DESIGN III (L 30: T 30: C.F. 3.0) Y5 S2

Design of bridge floor systems: Composite design of continuous beams and girders bridges. Piers, abutments and bridge bearings. Design of low-rise industrial, residential, agricultural buildings in concrete, steel and timber. Storage structures: Design of tanks and silos, cracking joints, retaining walls, basements.

CEEN 538: CONSTRUCTION ENGINEERING MANAGEMENT (L 30: P/T 30: C.F. 3.0) Y5 S1

Construction industry in Kenya. Construction process. Principles of management practice in Kenya. Project management. Planning and scheduling. Estimating and project control. Construction methods; Mechanized methods, labour based construction. Construction plants and equipment; Running costs and depreciation. Network analysis; PERT method, CPM method. Measurements; Concept of measurements, various standards of measurements. Taking off and billing methods. Specifications for civil and building works. Tenders & contracts types and procedures. Estimating; Definitions, building up of rates, for civil engineering works. Site and office procedures. Costing; Accounting procedures, cost control, book keeping, financial statements, cost benefit analysis, discounted cash flow. Materials management. Quality control. Labour relations. Field visit.

CEEN 539: DESIGN OF HYDRAULIC STRUCTURES (L 30: P/T 30: C.F. 3.0) Y5 S1

Design of weirs: sharp and broad crested weirs. Culvert design. Design and construction of dams: forces acting on the dam, stability criteria. design procedure. Design of spillway: Overflow spillway, hydraulic jump stilling basins, outlet works of spillways: Inlet structure of spillway, water passage and outlet of spillways. Gates and valves. Drop structures: grassed channel, chute drop structure, vertical drop structures. baffled chute drop structures. Conveyance and control structures: earth fills crossings, Flume, Siphon, Turnout and Waste way.

CEEN 541: ENVIRONMENTAL ENGINEERING IV (L 30: P/T 30: C.F. 3.0) Y5 S2

Meteorology and air pollution, plume types and behaviours, estimation of plume rise, air pollution

dispersion models, Air quality standards. Study of basic theory of pollution control devices: inertia separators, scrubbers, cyclones, filters, electrostatic precipitators, designs and their industrial application to air pollution control problems. Principles of control equipments selection. Study of principles of sampling for particles and gases in the field of air pollution, and their limitations, examination of instrumental techniques relevant to the design of sampling systems in process control. Methods of sample analysis: chemical, instrumental and biological, and their limitations. Field visit.

CEEN 545: ENVIRONMENTAL ENGINEERING III (L 30: P/T 30: C.F. 3.0) Y5 S1

Sources of solid waste: Agricultural, Municipal, Industrial and Mining wastes. Nature of waste: type, composition and properties. Waste generation. Solid waste management: storage, collection and transportation. Utilization and minimization technologies of solid waste; Reuse and Recycle. Disposal of solid waste: methods and design of Landfills, incineration units and composting processes. International Standards on Solid Waste Management. Field visit.

CEEN 547: COASTAL ENGINEERING (L 30: P/T 30: C.F. 3.0) Y5 S1

Tides: types of tides, tide levels, effects of tides on the coast. Currents: theory of currents, origin of currents, effects of current such as land accretion and erosion. Wind: Wind force, predominant wind direction. Waves: Type of waves and wave patterns, effect of wind and fetch. The mechanism of a wave, significant wave height, the effect of wave on marine structures. The combined effect of wind and waves. Harbour Engineering: location of harbour, accessibility and layout of the harbour. Maintenance of marine structures against aggressive marine environment. Field visit.

CEEN 556: WATER RESOURCE ENGINEERING I (L 30: P/T 30: C.F. 3.0) Y5 S1

Water resource in a catchment, watershed management and slope control. Erosion and sedimentation: measurement of sediment in rivers and stream. Design of erosion and sediment control structures. Introduction to river engineering: sediment transport in alluvial channels,

engineering geomorphology and stable channel design. Design, management and maintenance of reservoirs. Flood control: causes of flood. Flood warning, damage and relief. Use of dams, river deviations in flood control. Power generation: steam and hydropower.

**CEEN 557:WATER RESOURCE ENGINEERING II
(L 30: P/T 30: C.F. 3.0) Y5 S2**

Integrated water resources planning. Water and environmental law. Principles and design of water resources engineering schemes. Drought management, river navigation, drainage systems. Recreational use of water. Planning, design and management of multi-component water resource systems. Probabilistic models: dynamic Programming, stochastic systems. Water resource planning and management in arid and semi-arid areas. Ground water recharge. Field visit.

**CEEN 561: ENGINEERING PROJECT I (L 15 P 60:
C.F. 3.0) Y5 S1**

An investigation into a specific problem within the field of civil and environmental engineering under staff supervision will be carried out by the student in this course students will submit a research proposal having literature review and preliminary designs. The project will normally be undertaken by an individual student but a group project may also be undertaken. Where a group project is allowed, each member of the group will be expected to write a separate report for examination purposes. The overall requirement is to assess initiative and originality of thought.

**CEEN 562:ENGINEERING PROJECT II (L 0 P 90:
C.F. 3.0) Y5 S2**

The project undertaken in CEEN 561 will be implemented and the student shall be expected to, present a seminar on the research findings and submit a typed bound report to the departmental examiners. The project will normally be undertaken by an individual student but a group project may also be undertaken. Where a group project is allowed, each member of the group will be expected to write a separate report for examination purposes. The overall requirement is to assess initiative, originality of thought, sound report compilation and report writing.

9.2 Alignment of Courses/Units To Programme Learning Outcomes

Learning Outcomes	Year 1		Year 2		Year 3		Year 4		Year 5	
	Unit	C.F.	Unit	C F	Unit	CF	Unit	CF	Unit	CF
PLO 1: Plan, design and construct Civil and Environment systems and infrastructures.	Engineering Geology	3	Computer Aided Drawing	3	Fluid Mechanics II	3	Structural Design I (Reinforced Concrete Design)	3	Construction Eng. Management	3
	Engineering Drawing I		Civil Engineering Drawing	3	Engineering Surveying I	3	Public Health Engineering I (Sewerage Design)	3	Pavement Design	3
	Engineering Drawing II	3	Fluid Mechanics II	3	Theory of Structures II	3	Hydraulics II (Turbines and Pumps)	3	Water resource Engineering I (Planning and Designing of Water Resources)	3
			Theory of Structures I	3	Engineering Materials II (Timber and Metal studies)	3	Transportation Engineering II	3	Environmental Engineering III (Solid Waste Management)	3
			Engineering Materials I (Cement and Concrete studies)	3	Geotechnical Engineering	3	Structural Design II	3		
					Highway Geometric Design	3				
PLO 2: Respond and adapt to change and to anticipate and initiate such a change.	Communication skills	3	Engineering Material I	3	Engineering Material II	3	Public Health Engineering I	3	Construction Engineering Management	3
	Computer I (Introduction to Computer Application)				Computer III (Scientific Programming)		Public Health Engineering II		Environmental Impact Assessment and Audit	
	Computer II (Introduction to Computer Scientific Application)	2.5			Environmental Engineering II		Transportation Engineering II		Design of Hydraulic Structures	3.5
					Industrial Attachment	4	Hydrology	3	Engineering Project I	

				I						
						Industrial Attachment II	4	Engineering Project II		
								Engineering Economy		
PLO 3: Effectively communicate to various individuals or groups involved in the field of Civil and Environmental Engineering.	Engineering Drawing I	3.0	Computer Aided Drawing	3.0	Highway Geometric Design	3.0	Structural Design I (Reinforced Concrete Design)	3.0	Construction Management	Eng. 3.0
	Engineering Drawing II	3.0	Civil Engineering Drawing	3.0	Computer III (Scientific Programming)	3.0	Public Health Engineering I (Sewerage Design)	3.0	Pavement Design	3.0
			Technical Report Writing	3.0			Structural Design II	3.0	Environmental Impact Assessment and Audit	3.5
									Engineering Project I	3.0
									Engineering Project II	3.0
PLO 4: Utilize the acquired knowledge and skills for gainful self-employment and also creating employment for others.			Civil Engineering Drawing	3.0	Highway Geometric Design	3.0	Structural Design I (Reinforced Concrete Design)	3.0	Construction Management	Eng. 3.0
					Engineering Surveying I	3.0	Structural Design II		Law, ethics and professional Practise	3.0
					Engineering Surveying II	3.0			Engineering Project I	3.0
									Engineering Project II	3.0
									Principles of Entrepreneurship	3.0
PLO 5: Be innovative and creative in responding adequately to the needs of the society.					Environmental Engineering I	3.0	Structural Design I	3.0	Engineering Project I	3.0
					Photogrammetry & Remote Sensing	3.0	Structural Design II	3.0	Engineering Project II	3.0
					Hydraulics I	3.0	Water Supply Systems	3.0	Engineering Economy	
							Water Treatment Technologies	3.0		3.0
							Research Methods	3.0		

DEPARTMENT OF ELECTRICAL AND CONTROL ENGINEERING

BACHELOR OF SCIENCE IN ELECTRICAL AND CONTROL ENGINEERING

1. Philosophy of the Programme

The department innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge and skills, with emphasis on Electrical and Control Engineering.

2. Rationale

Electrical and control systems form a major part of a production or process industry setup where instruments are used to measure/monitor signals and then control the machinery/processes accordingly. Electrical and control forms part of most modern control and communication systems where automation is involved. Additionally, in research/academic, medical and quality assurance/standards laboratories, instruments are used for measurements, testing and control which makes electrical and control very important in engineering and science. The programme is intended to produce highly trained manpower ready to take up challenges in industrial control and automation, research/design, and in management of industrial and commercial organizations. The programme is broad-based and is developed so as to attain both academic and practical skills. Although the programme is biased towards electrical and control systems, it also integrates the whole spectrum of basic electrical engineering systems/machines. The programme is industry oriented and is designed to produce graduate engineers capable of adapting to technological changes and in line with government policy of industrialization as spelled out in Vision 2030.

The graduates of the programme find career/employment opportunities in a wide range of industries and organizations including; production/process industries, research industries, space-craft industries, power generation and transmission industry, telecommunication industry, and healthcare industry. The programme also provides a

sound base for those graduates who aspire to be self employed or/and advance in their academic career path.

3. Goal of the Programme

The programme aims at developing a skilled and dynamic electrical and control engineer with adequate knowledge to plan, design and construct electrical and control systems.

4. Programme Learning Outcomes

The learner will be able to:

PLO 1: Plan, design and construct electrical and control systems.

PLO 2: Respond and adapt to change and anticipate and initiate such a change.

PLO 3: Proceed with further education.

PLO 4: Communicate/transfer the acquired knowledge and skills to various individuals or groups involved in the field of Electrical and Control Engineering.

PLO 5: Utilize the acquired knowledge and skills for gainful self-employment and also create employment for others.

5. Mode of delivery

The Programme shall be delivered through full time face to face teaching.

6. Academic Regulations of the Programme

6.1 Admission Requirement

All candidates admitted to the programme must meet the minimum university admission criteria stipulated in the common university entrance regulations by University requirements and the specific Faculty/Departmental requirements and Kenya Universities and Colleges Central Placement Service (KUCCPS) cluster combinations.

In addition the candidates must obtain at least the minimum cut-off points for the year as determined from any one of the following four cluster subjects in the Kenya Certificate of Secondary Education (KCSE).

Cluster Subjects

- Mathematics

- Physics
- Chemistry
- Either Biology or any group III, IV or V
- C+ in either English or Kiswahili

Those holding qualifications equivalent to the KCSE or above from institutions recognized by Egerton University Senate may also be admitted. Admission may be offered to diploma holders in engineering disciplines passed with at least a pass. Self-sponsored applicants shall be required to meet the University and Faculty admission criteria.

6.2 Regulations on credit transfer

Where credit transfer is applicable, it shall be specified and adhere to Egerton University statutes article 36 (3) of 2013.

6.3 Course Requirements

The course requirements include; class attendance, practicals and industrial visits. These should follow ISO procedure for teaching (EU/AA/OP/06 rev3).

6.4 Student Assessment policy/criteria

Student assessment shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

Examinations regulations for this programme shall be conducted in accordance with Egerton University Statute 36(5). University Examinations shall be held at the end of each semester of each year of study in accordance with the examination regulations of the University. The following practical courses shall be examined by project proposal, tests, practical implementation, oral examination, and final reports as appropriate:

- ECEN 270: Engineering Practice

- ECEN 271: Electrical and Electronics Workshop Practice
- ECEN 370: Industrial Attachment I
- ECEN 472: Industrial Attachment II
- ECEN 477: Electrical and Control System Design
- ECEN 571: Engineering Project I
- ECEN 572: Engineering Project II

6.7 Moderation of Examinations

Moderation of examination shall be conducted in accordance with ISO procedures EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass ALL prescribed courses within the stipulated period. The programme has a total CF of 260.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute number 36(17a) of 2013.

7. Course Evaluation

Course evaluation shall be conducted in accordance with ISO procedures on effectiveness evaluation - EU/AA/OP/04.

8. Management and administration of the course

8.1 Hosting Department and Programme Academic Leader

The programme shall be conducted in the Department of Electrical and Control Engineering within the Faculty of Engineering and Technology of Egerton University. The programme Academic Leader shall be appointed according to University standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated (self assessment) at the end of each academic cycle based on ISO procedures EU/VC/OP/05. The programme shall be benchmarked with at least one such programme in a highly ranked University.

8.3 Course Coding

Courses offered by the Department of Electrical and Control Engineering are coded by a three-digit figure preceded by the term 'ECEN' to represent Electrical and Control Engineering. The first digit represents the year in which the course is offered. The second digit represents the discipline in which the course falls within the range of courses offered in the Department. The third digit represents the series of the course within a discipline in any given year of study. Listed below are the various disciplines in which the Electrical and Control Engineering courses fall and their corresponding digits:

- 1 – Electrical
- 2 – Instruments and measurements
- 3 – Electronics
- 4 – Computers
- 5 – Control and process engineering
- 6 – Telecommunications
- 7 – Design, projects, attachments and seminars
- 8 – Management

9. Courses/Units offered for Programme

9.1 Schedule of course

(a) University Common Courses

(b) Schedule of study

YEAR ONE SEMESTER ONE

CODE	TITLE	L	P/T	C/F
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMP 110	Computer Architecture I	45	15	3.5
COMS 111	Communication skills	45	0	3.0
ECEN 121	Introduction to Electrical and Control Engineering	30	30	3.0
MATH 116	Discrete Mathematics	45	0	3.0
MATH 118	Applied Geometry	45	0	3.0
MENT	Engineering Drawing I	15	60	3.0

110				
PHYS 104	Physics for Engineers	30	30	3.0
	Total	285	165	24.5

YEAR ONE SEMESTER TWO

CODE	TITLE	L	P/T	C/F
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMP 102	Introduction to Computer for Scientific Applications	30	30	3.0
ECEN 131	Physical Electronics	45	0	3.0
MATH 117	Differential Calculus for Engineers	45	0	3.0
MATH 222	Integral Calculus for Engineers	45	0	3.0
MENT 111	Engineering Drawing II	15	60	3.0
MENT 120	Engineering Materials Science	30	30	3.0
PHYS 105	Physics for Engineers II	30	30	3.0
ZOOL 143	HIV/AIDS and society	45	0	3.0
	Total	510	180	27

YEAR TWO SEMESTER ONE

CODE	TITLE	L	P/T	C/F
AGED 313	Technical Writing and Reporting for Engineers	45	0	3.0
CEEN 211	Fluid Mechanics I	30	30	3.0
MATH 218	Engineering Mathematics I	45	0	3.0
MENT 210	Workshop Technology	30	30	3.0
MENT 220	Computer Aided Drawing (CAD)	15	60	3.0
MENT 222	Machine Elements I	30	30	3.0

MENT 224	Engineering Thermodynamics I	30	30	3.0
MENT 226	Solid structural Mechanics I	30	30	3.0
	Total	255	210	24.0

YEAR TWO SEMESTER TWO

CODE	TITLE	L	P/T	C/F
CEEN 212	Fluid Mechanics II	30	30	3.0
COMP 203	UNIX Programming	45	15	3.5
ECEN 211	Electrical Engineering Principles I	30	30	3.0
ECEN 231	Electronic Devices	30	30	3.0
ECEN 251	Principles of Control Engineering	45	0	3.0
ECEN 271	Electrical and Electronic Workshop Practice	15	60	3.0
ENSC 100	Environmental Studies	45	0	3.0
MATH 223	Multivariable Calculus for Engineer	45	0	3.0
	TOTAL	285	165	24.5
ECEN 270	Engineering Practice	320		4.0

YEAR THREE SEMESTER ONE

CODE	TITLE	L	P/T	C/F
COMP 222	Assembly Language Programming	45	15	3.5
COMP 413	Microprocessor Based System Design	30	60	4.0
ECEN 312	Electrical Engineering Principles II	30	30	3.0
ECEN 322	Electrical and Electronic Instruments	30	30	3.0
ECEN 332	Analogue Electronics I	30	30	3.0
ECEN 333	Digital Electronics I	30	30	3.0
ECEN	Power Electronics	30	30	3.0

334				
MATH 340	Ordinary Differential Equations for Engineers	45	0	3.0
	TOTAL	285	165	25.5

YEAR THREE SEMESTER TWO

CODE	TITLE	L	P/T	C/F
AGEN 312	Engineering Design Principles	30	30	3.0
CEEN 511	Law, Ethics and Professional Practice	45	0	3.0
ECEN 241	Principles of Measurement systems I	30	30	3.0
ECEN 313	Network & Circuit Analysis	45	0	3.0
ECEN 335	Analogue Electronics II	30	30	3.0
ECEN 336	Digital Electronics II	30	30	3.0
ECEN 352	Linear Systems and Control I	30	30	3.0
MATH 341	Analytical methods for Engineers	45	0	3.0
	TOTAL	285	150	24.0
ECEN 370	Industrial Attachment I - end of 3 rd year	0	320	4.0

YEAR FOUR SEMESTER ONE

CODE	TITLE	L	P/T	C/F
COMP 313	Computing I	45	15	3.5
ECEN 414	Electrical Machines I	30	30	3.0
ECEN 424	Principles of Measurement Systems II	30	30	3.0
ECEN 425	Reliability Engineering	30	30	3.0
ECEN 435	Analog Integrated Circuits	30	30	3.0
ECEN	Electromagnetics	30	30	3.0

461				
ECEN 477	Electrical and Control System Engineering Design	30	30	3.0
STAT 456	Engineering Statistics	45	0	3.0
	TOTAL	270	195	24.5

YEAR FOUR SEMESTER TWO

CODE	TITLE	L	P/T	C/F
AGEN 462	Research Methods	45	0	3.0
ECEN 415	Electrical Machines II	30	30	3.0
ECEN 426	Specialized Measurement Systems I	30	30	3.0
ECEN 441	Embedded Systems and Applications	30	30	3.0
ECEN 453	Process Engineering	30	30	3.0
ECEN 454	Linear Systems and Control II	30	30	3.0
ECEN 481	Engineering Management	45	0	3.0
MATH 439	Numerical Methods for Engineer	45	0	3.0
	TOTAL	285	150	24.0
ECEN 470	Industrial Attachment II. the end of 4 th year	0	320	4.0

YEAR FIVE SEMESTER ONE

CODE	TITLE	L	P/T	C/F
AGEN 566	Engineering Economy	45	0	3.0
CHEM 457	Electrochemical Analysis and Measurements	30	30	3.0
ECEN 516	Electrical Machines Drives	30	30	3.0
ECEN 525	Signal Processing I	30	30	3.0
ECEN 555	Digital Control Systems	30	30	3.0

ECEN 556	Non Linear Systems and Control	30	30	3.0
ECEN 571	Engineering Project I	0	90	3.0
MENT 550	Operations Research	45	0	3.0
	Total	195	240	24.0

YEAR FIVE SEMESTER TWO

CODE	TITLE	L	P/T	C/F
AGBM 102	Introduction to Entrepreneurships	45	0	3.0
CHEM 458	Special Analytical Measurements	30	30	3.0
ECEN 517	Power Systems and Electro Heating	30	30	3.0
ECEN 527	Signal Processing II	30	30	3.0
ECEN 528	Specialized Measurements Systems II	30	30	3.0
ECEN 557	Multi Variable Control Systems	30	30	3.0
ECEN 558	Linear Optimal Control	45	0	3.0
ECEN 572	Engineering Project II	0	120	4.0
	Total	240	270	25.0

(c) COURSE DESCRIPTIONS

ECEN 121: Introduction to Electrical and Control Engineering (45/0: CF 3.0)

The expected learning outcome of the course include: Fundamentals of instrumentation and control: basic concepts of measurements, Instrument classification and characteristics, dimensions and engineering units. Standards. Concept of control in engineering context. Modes of automatic control and terminology, symbols and notations. **Y1S1**

ECEN 131:Physical Electronics (45/0: CF 3.0)

Introduction to Physical Electronics. Physical electronics: basic semiconductors, physical atomic

structure, conduction mechanisms. Dispersion of light in semi conductors in relation to energy gaps. Introduction to solar cells. Photovoltaic effect on solar cells, solar cell characteristics. Solar spectrum. Tunneling phenomenon, Schrödinger wave equations, tunnel diode. **Y1S2**

ECEN 211: Electrical Engineering Principles I (30/30: CF 3.0)

Energy conversions, DC series and parallel circuits. Network theorems. Electromagnetism and magnetic circuits; self and mutual inductance coupled circuits, force and energy stored. Electrostatics; capacitance, force and energy stored. Generation of alternating emf, average, r.m.s, peak, waveforms and phasors.**Y2S1. Prerequisite ICEN 131.**

ECEN 231: Electronic Devices (30/30: CF 3.0)

Construction, voltage-current characteristics, operations and applications of semiconductor devices: rectifier diodes, signal diodes, tunnel diodes, **Y2S2. Prerequisite ICEN 131.**

ECEN 251: Principles of Control Engineering (45/0: CF 3.0)

Introduction to control: Control Applications, Control System Design, Open-Loop and Closed-Loop Control. Mathematical Foundations: Complex Variable Concepts, Laplace Transform, Properties and Theorems, Inverse Laplace Transform, Partial Fraction Expansion. Using Laplace Transforms to Solve Differential Equations. System Dynamics: Mechanical Systems, Electrical Systems, Electrical and Mechanical Systems, Linearization of Nonlinear Systems. Transfer Functions and Block Diagrams: Transfer Functions of Linear Systems, Block Diagrams, and Multiple Inputs.System Response: Response Analysis of First-Order Systems, Second-Order Systems, Sinusoidal Response of the System, Bode Diagrams. Feedback Control Systems: Transient Response, Case Study - Speed Control of a DC Motor, Three-Term PID Controller, Control of First-Order Systems, Proportional (P) Control of First-Order Systems, Integral (I) Control of First-Order Systems, PI Control of First-Order Systems, Derivative (D) Control. **Y2S2**

ECEN 271: Electrical and Electronic Workshop Practice (0/60: CF 3.0)

Safety: use of hand and power tools, first aid, types of fires and extinguishers, safety standards and regulations. Piping installations; electrical, gas, water, air and identification. Soldering, cable jointing and lugging.IEE and KEBS regulations. Types of cables: single and 3-phase cables and color coding. Electrical and electronic drawing: use of standard symbols as recommended by KEBS in block, circuit, wiring and layout diagrams. Use of control system symbols. Electronic circuit design: component rating and color codes, use of: veroboards, breadboards, strip boards and printed circuit boards. Use of design tools: circuit maker, electronic work bench and CAD software packages. Design of wiring circuits for buildings and bill of quantities, reading and interpretation of layout and wiring diagrams. **Y2S2**

ECEN 270: Engineering Practice (0/320: CF 40)

Use and interpret drawings and other supporting engineering documentation and standards use of hand tools in wood, mechanical and metallurgical workshops. Use and interpret electrical drawings. Installation; testing and commissioning of an electrical installation. Computer aided design systems. **Y2S2**

ECEN 312: Electrical Engineering Principles II (30/30: CF 3.0)

Basic circuit elements and their response to AC wave forms: frequency response to simple circuits, power, reactive power and apparent power. Resonance; series and parallel resonance, frequency response. 3-phase system balanced star and delta connected loads. Circuit transients: DC transients in RL and RC circuits. AC transients in RL and RC circuits, circuit response to step, ramp and impulse inputs. Harmonics, harmonics analysis, industrial spectrum of signal. **Prerequisite ICEN 211.**

ECEN 322: Electrical and Electronic Instruments (30/30: CF 3.0)

Construction, principles of operation and application of common analogue indicating instruments. Construction, principles of operation and applications of general-purpose electronic test equipment: Digital

voltmeters and ammeters signal generators, Cathode ray oscilloscopes, Recording instruments, instrument selection and specifications. Digital versus analogue instruments. **Prerequisite ICEN 211**

ECEN 332: Analogue Electronics I (30/30: CF 3.0)

Bipolar Junction Transistor: Bias circuits, Small-signal circuit analysis: re – model, h-parameter and Hybrid- π models. The BJT difference amplifier analysis. BJT as a switch; digital signal control, relay control, the Schmitt trigger. Field Effect Transistors (FET): biasing circuits, small signal circuit analysis, a.c equivalent circuits. **Prerequisite ICEN 231**

ECEN 333: Digital Electronics I (30/30: CF 3.0)

Basic logic circuits. Number representation. Boolean algebra, logic gates, logic families: TTL, MOS, ECL. Combinational logic circuit: half and full adder circuits, digital comparators, parity checker generator, decoder, Decoders/Demultiplexers; line decoders, lamp driver, parallel-to-serial conversion, sequential data selection, code converters, data selector, encoders. Sequential circuits & systems: JK, T, D, and RS flip flops, shift registers: serial-parallel and parallel-serial converters, Parallel-parallel, serial- serial, Right-and-Left shift registers. Counters: asynchronous & synchronous, sequence generators, ring and Johnson counters, up-down counters, divide by N counters, synchronous decade counters, applications of counters: direct counting, measurement of frequency, time, distance and speed.

ECEN 334: Power Electronics (30/30: CF 3.0)

Rectifying devices: diode thyristor, triac, power transistor, silicon-controlled rectifiers firing circuits; requirements, typical circuits and control features. Rectifying circuits: Uncontrolled and controlled rectifying circuits; half and full wave in 1-phase and 3-phase circuits, converter operation: overlap, power factor, inversion, regulation. DC line communication: parallel capacitance, resonant turn-off, coupled pulse. Frequency conversion: cycloconverter, 1-phase and 3-phase inverter, power transistor inverter. Harmonics: Harmonic analysis, load aspects supply, filters, rectifier output smoothing, inverter output filters, AC line filters.

Machine control: DC and AC machine control. **Prerequisite ICEN 231.**

ECEN 323: Principles of Measurement Systems I (30/30: CF 3.0)

General principles, the purpose and structure of a measurement system. Static and dynamic characteristics, loading effects. Environment effects. Errors of measurement system, sensing elements: analogue and digital transducers. Signal conditioning elements. Signal processing elements. Data presentation elements. **Prerequisite ICEN 312.**

ECEN 335: Analogue Electronics II (30/30: CF 3.0)

Class A amplifiers, Push-Pull amplifiers, Class C Tuned power amplifiers, narrow-band and broad-band Class D amplifiers, voltage-switching and current-switching circuits; series feedback, parallel feedback, advantages of negative feedback. Transistor oscillator circuits; tuned-collector and tuned-emitter oscillators, Hartley and Colpitts oscillators, Clapp oscillators, negative resistance oscillators, crystal-controlled oscillators, power oscillators. Transistor modulators; Amplitude modulation; collector and base modulation, balanced modulation, Frequency modulation; transistor reactance modulation and frequency converter circuits. Recent Devices and their applications: Parametric devices, masers and lasers, gunn effect devices, tunnel diodes, photo-diodes and photo-transistors. **Prerequisite ICEN 332.**

ECEN 336: Digital Electronics II (30/30: CF 3.0)

Sequential circuits & systems: pattern detectors, state machine design, timing circuits. Arithmetic circuits, Multipliers (Architectural design), divider circuits, parallel/serial adders. A/D & D/A converter, semi conductor memory & technology. MOS/LSI digital systems; dynamic MOS circuits, MOS shift registers, MOS Read Only Memory, Read-Only-Memories; programming the ROM, ROM applications; look-up tables Random Access Memory; linear selection, basic RAM elements, bipolar RAM, static RAM, dynamic RAM Programmable logic devices. Noise analysis in digital systems, basic I/O interfacing transmission line,

fault detection in digital system design. Digital delay lines. **Prerequisite ICEN 333.**

ECEN 313: Network & Circuit Analysis (45/0: CF 3.0)

Development of circuit concept, concepts for describing networks: reference directions for current and voltage, active element conventions, dot convention for coupled circuits, topological description of networks. Network equations, from theorems, source transformations, node/loop/state variable analysis, duality, state variable analysis, solution to network problems, determinants. Node variable analysis. Initial conditions in networks. Differential equations: first order, second order, internal excitation, higher order internal excitation, networks excited by external energy sources, response as related to the s plane location of roots. Introduction to Laplace & Fourier transformation. Heavyside expansion theorem.

ECEN 352: Linear Systems and Control I (45/0: CF 3.0)

Introduction to Process Control, Mathematical Modeling of Processes, Laplace-Transforms, Transfer Functions, State Variable Models, Dynamic Behavior of Processes, Dynamic Response Characteristics of More Complicated Systems, Development of Empirical Dynamic Models from Step Response Data, Feedback Control System characteristics and Controllers, Control System Instrumentation, Dynamic Behavior of Closed-Loop Control Systems, Feed-forward, Ratio & Cascade Control, Introduction to Enhanced Single-Loop Control Strategies.

ECEN 414: Electrical Machines I (30/30: CF 3.0)

Review of three phase systems: Calculation of currents, voltage and power in balanced and unbalanced star and delta systems. Transformers: Emf equation, voltage, current, impedance transformation. Equivalent circuits at power frequencies. Regulation and efficiency. Three Phase Induction Motors: Wound and cage rotor designs – Rotor emf, slip, current and power. Torque from power balance equations. Equivalent circuits. . Single phase Induction Motor: - Pulsating field represented by

two rotating fields, equivalent circuits. **Y4S1. Prerequisite ICEN 312.**

ECEN 424:Principle of Measurements II (30/30: CF 3.0)

Generalized steady state transfer model for system elements, statistical variations in model inputs and parameters, use of Gaussian and rectangular distributions, calculating error probability density function for multi-element measurement. Error reduction techniques in steady state systems., Dynamic Models and dynamic system Error: Calculation of dynamic error for multi-element measurement systems subject to step, sinusoidal and periodic inputs. Error reduction techniques in dynamic systems. Feedback and oscillators and resonators. Signals and Noise in measurement systems. **(Y4S1)Prerequisite ICEN 312.**

ECEN 425:Reliability Engineering (30/30: CF 3.0)

Concept of reliability; failure: frequency, distribution, rate and failure probability. Statistical reliability and estimation for components system selection, Exponential formula for chance and wear out failure, confidence limits, cumulative and conditional probability, Poisson distribution series, parallel redundancy and Bayer Theorem, system design and development, design reliability analysis, derating techniques. Tolerance design, component reliability characteristics, failure modes and effect analysis, faults-free analysis. Prototype and sequential tests, Evaluation of systems reliability using Monte Carlo Technique.System maintenance; Planned and preventative maintenance, Man-hour calculations, systems utilization factor, maintainability design and modeling equations for system availability and dependency, spares and manuals .**Y4S1**

ECEN 435:Analogue Integrated Circuits (30/30: CF 3.0)

Operational amplifier, operational amplifier equivalent circuit, circuit frequency response and compensation; operational amplifier circuit stability, slew rate, settling time, stray capacitance effects. Operation amplifier circuit analysis: Inverting and non-inverting configurations; offset, drift, noise and common-mode

rejection effects. Operational amplifier applications: the difference amplifier, instrumentation amplifier, chopper amplifier techniques, current amplifiers, current and voltage sources, linear and switching voltage regulators imperfections, use of operational amplifier circuits for level shifting, scaling, single and dual power supply operation. IC amplifiers; IC tuned amplifier, Y-parameters, IC cascade video amplifier. Monolithic power supply regulators. Monolithic IC design and analysis techniques.**Y4S1**

ECEN 461:Electromagnetics (30/30: CF 3.0)

Electrostatic Fields; Coulomb's Law, Field Intensity Electric Fields, Electric Flux Density, Gauss's Law.Electric Fields in Material Space; Poisson's and Laplace's Equations, Uniqueness Theorem, General Procedure for Solving Poisson's or Laplace's. Maxwell's Equations; Maxwell's Equations in Final Forms, Time-Varying Potentials Time-Harmonic Fields. Electromagnetic Wave Propagation; Wave Propagation in Dielectrics, Plane Waves in Free Space , Plane Waves in Good Conductors , Power and the Pointing Vector. Transmission Lines; Introduction Transmission Line Parameters, Transmission Line Equations, Input Impedance, SWR and Power. The Smith Chart. **Y4S1**

ECEN 477:Electrical and Control System and Engineering Design (30/30: CF 3.0)

Design criteria;- signal factors, environmental factors, process or machine factors, and economic factors. Development process;- needs assessment, feasibility analysis (both technical and non Technical).System specifications;- input and sensor specifications, signal processing specifications, output specification, errors and reliability, physical and miscellaneous specifications. Design components;- signal sensing devices(includes actuators), signal processing devices and signal display or indicating devices.**(Y4S1)**

ECEN 415:Electrical Machines II (30/30: CF 3.0)

Three Phase Synchronous machines: - simple equivalent circuits, voltage and torque equations. V-curves and power factor control. DC machines: - basic EMF and torque equations, characteristics of shunt, series and

compound machines, basic speed control characteristics from field control and armature voltage control. Special control machines: - DC servo motor, two-phase servo motor, stepper motors. Synchros and resolvers.DC and AC tachometer.**(Y4S2) Prerequisite ICEN 414.**

ECEN 426:Specialized Measurements I (30/30: CF 3.0)

Flow measurement systems; Essential principles, measurement of velocity, volume flow rate, mass flow rate and flow rate in difficult situations. Pneumatic measurement systems; flapper- nozzle displacement sensing element, relay amplifier principles, torque-balance transmitters, transmission and data presentation. Heat transfer effects in measurement systems. Optical measurement systems: types of system, sources, Transmission medium, geometry of coupling of detector to source, detectors, signal conditioning, summary of practical systems. **(Y4S2)**

ECEN 441:Micro-Automation (30/30: CF 3.0)

An introduction to microcontrollers. The 8051 single chip micro-controller, interfacing (hardware & software), The basics of C programming, 8051 C programming examples, state machines and Interrupt programming, system design techniques. Microcontroller based real time systems: - architectures and structures, task structures and synchronization, real-time, deterministic applications, multitasking management, communications between tasks; examples for an 8-bit microcontroller. PLC architecture , interfacing and programming. **(Y4S2)**

ECEN 453: Process Engineering (30/30: CF 3.0)

The use of chemical equipment and instrumentation illustrated by flow sheets. Heat and mass balances describing simple process operations. Heat transfer and conditions, convection and radiation; typical industrial applications heat transfers coefficients introduction to mole fractions, distillation; vapor-liquid equilibrium, continuous binary distillation. McCabe-Thiele construction. Gas absorption; equilibrium relationship, operation relationship of packed columns. Development of differential equations describing the dynamics of

simple process operations. Simultaneous differential equations applied to a lumped parameter system. Systems with more than one independent variable.

ECEN 454: Linear Systems and Control II (30/30: CF 3.0)

Overview of Control System Design, Performance of Feedback Control Systems, Steady-State Errors, Stability of Linear Feedback Systems, Controller Design Based on Transient Response Criteria and Frequency Response Techniques:-Bode & Nyquist plots, Stability in the Frequency domain:-Control techniques: P, I, D, PI, PD, and PID controllers, Design via State-Space.

ECEN 481: Engineering Management (45/0: CF 3.0)

Project management, project planning and coordination, role of electrical, mechanical, civil and structural engineers and other consultants in project management, management procedures, B.O.Q specification, project supervision, legal aspects of project management, computer control of building services.(Y4S2)

ECEN 470: Industrial Attachment (0/320: CF 3.0)

Gain further experience by working increasingly along professional engineers. Appreciate responsibility, particularly the interface with skilled and unskilled operatives or the general public. Write an attachment report.(Y4S2)

ECEN 516: Electrical Machine Drives (30/30: CF 3.0)

DC Machine Drives: Dynamics and performance equations, machine drive systems, Control of DC drives using rectifier and choppers. Two and four quadrant chopper control, Speed and Current Feedback Control Systems, Microprocessor control system, variable speed drives in traction, including railway traction, lifts, etc.

AC Machine Drives: Dynamics and performance equations, machine drive systems e.g. induction motor and synchronous motor drives, Control of AC motor drives using inverters, harmonic distortion and losses, control of frequency, voltage and power. Transfer functions of AC machine drive systems. Microprocessor control. (Y5S1) *Prerequisite ICEN 415.*

ECEN 517: Power System Control and Electro-Heat (45/0: CF 3.0)

Power system components, control of power and frequency, control of voltage and reactive power, fault analysis and protection. Power transmission. Electric heating: resistance, induction, dielectric and microwave heating arc furnace and Var compensation. (Y5S2)

Prerequisite ICEN 415 and ICEN 334

ECEN 525: Signal Processing I (30/30: CF 3.0)

Introduction to discrete data systems, sampling, difference equation, Z-transforms and relationship to Fourier and Laplace. Transfer functions of discrete data systems. Basic network structures: recursive and non-recursive systems. Discrete Fourier transforms. Digital filtering and spectral analysis; FIR and IIR systems. Application of FFT to spectral analysis. Data transmission: introduction to information theory, distortion free transmission, Baseband digital transmission, carrier transmission of digital data, digital communication networks. Y5S1

ECEN 527: Signal Processing II (45/0: CF 3.0)

Random signal analysis: properties of Random signals, relationship between power spectral and autocorrelation function of a signal, cross-correlation, crossover spectrum, random signal generation, and quantisation noise and correction process analyzers. Image processing: relationship between electronic and optical processing. Photographic film detector, electronic imaging device optical system performance coherent and incoherent light. Y5S2

ECEN 528: Specialized Measurement II (45/0: CF 3.0)

Ultrasonic measurement system: General principles, piezoelectric ultrasonic transmitters and receivers, principles of ultrasonic transmission, examples of ultrasonic measurement systems. Data acquisition and telemetry systems; multiplexing, parallel and serial digital signals, error detection and correction, typical telemetry systems. Y5S2

ECEN 555: Digital Control Systems (30/30: CF 3.0)

Introduction to Discrete-Time Control Systems. The z-Transform, z-Plane Analysis of Discrete-Time Control Systems. Digital Control System Design: - Time domain specifications, Dynamic Response, Stability, Digital PID design, Pole-placement design.

Frequency domain specifications, Gain & Phase margins, Compensator design with bilinear-transformations. State-Space Design:-State-Space description of discrete systems, state feedback design via pole-placement, state estimator design, controller design with state estimator. Y5S1

ECEN 556: Non-Linear Systems and Control (30/30: CF 3.0)

Introduction to Nonlinear phenomena: Multiple equilibria, Limit cycles, Bifurcations, Complex dynamical behavior. Planar dynamical systems, Analysis using phase-plane techniques. Describing functions. Input-output analysis and stability. Lyapunov stability theory. The Lure problem, Circle and Popov criterion. Feedback linearization, sliding-mode control. Y5S1

ECEN 557: Multivariable Control Systems (45/0: CF 3.0)

Review of mathematical theory - Norms, Matrix Algebra, Eigenvalues and Eigen Vectors. Transfer functions and Multivariable frequency response analysis. Analysis, control structural properties of multivariable systems. Directionality and interaction. Advantages and drawbacks of different, control structures, design, and implementation of control. Decentralized and decoupled control, analysis of loops, interaction, variables selection, loop-pairing, and guidelines for tuning. Centralized control structure, classical state-feedback, state-observers, in a digital computer. Optimal, and robust control design techniques. Implementation, general guidelines, programming code and simulation diagrams. Y5S2

ECEN 558: Linear Optimal Control (45/0: CF 3.0)

Introduction to Optimal Control. Formulation of the Optimal Control Problem. Calculus of variations, Minimum Principle, Dynamic Programming, Numerical

Solution of the Two-Point Boundary Value Problem. Introduction to Optimal Feedback Control, Discrete-time Linear State Regulator, Continuous-time Linear State Regulator, Time-Invariant Linear State Regulators, Numerical Solution of the Riccati Equation, Use of Linear State Regulators results to solve other Linear Optimal Control Problems. **Y5S2**

ECEN 571: Engineering Project I (0/45: CF 3.0)

Design and make /or investigation project with the field of instrumentation and control engineering. A student chooses a research topic and is allocated a supervisor. The student develops and presents a project proposal for assessment. Assessment shall be by seminar presentation and written report. This will incorporate visits to places of instrumentation and control interest, such as process industries and submit a report after each visit. **Y5S1**

ECEN 572: Engineering Project II (0/45: CF 3.0)

This shall involve implementation of the project proposal developed in ICEN 571. The assessment shall be by seminar presentation of the research findings and a written report. (**Y5S2**). *Prerequisite ICEN 571.*

9.2 SERVICE COURSES TO OTHER DEPARTMENTS

ICEN 0211: Electrical Engineering (30/30: CF 3.0)

Introduction to fundamental concepts of electricity; electrical measurements, electric circuits, batteries, magnetism and electromagnetism, transformers, DC generators and motors, AC generators and motors, portable appliances. Industrial wiring methods. Basic electronic and control of industrial automation systems.

ECEN 212: Electrical Engineering I (30/30: CF 3.0)

Classification of electrical system, Fundamentals of instrumentation and control; basic concepts of an electric circuit, energy conversions(electro- mechanical, electro thermal, electro-chemical), basic concepts of measurements. Instrument classification and characteristics, dimensions , units and standards. Concept of control in engineering context and control terminologies. Energy conversions, Direct series and

parallel circuits. Network theorems. Electromagnetisms and magnetic circuits, self and mutual inductance coupled circuits, force and energy stored. Generation of alternating , e.m.f, average, r.m.s, peak, waveforms and phasors. **Y2S2**

ICEN 216: Electrical Engineering Principles (30/30: CF 3.0)

Circuit theorems (dc), dc transients, ac circuits: Single-phase and 3- phase. Electrical machines and transformers. Basic electronics: PN junction diode, zener diodes, transistors, transistor amplifiers, operational amplifiers and their applications.

ECEN 312: Electrical Engineering II (30/0/30: C.F 3.0)

Three Phase Synchronous machines; simple equivalent circuits, voltage and torque equations. V- curves and power factor control. V-curves and power factor control. DC machines; Basic EMF and torque equations, characteristics of shunt, series and compound machines, basic speed control characteristics from the field control and armature voltage control. Special control machines. DC servo motor, two phase servomotor, stepper motor, Synchros and resolvers. DC and AC tachometer. **Y2S2**. *Prerequisite ICEN 212.*

ICEN 317: Electrical Energy Utilization (45/0: CF 3.0)

Introduction to generation, transmission and distribution of energy. Electrical energy sources. Choice of electrical motors for specific drives. Operation, protection and speed control of DC and AC induction motors. Applications of diodes, transistors and thyristors to DC and AC machines. Oscillators: Hartley, Colpitt's and Wien. *Prerequisite ICEN 216.*

ECEN 421: Instrumentation (45/0: CF 3.0) Y3S2

Applications of instrumentation concepts in measurement of physical and biological systems, common transducers, signal conditioning (analogue and digital), signal processing, data presentation and transmission and noise discrimination in instrumentation systems. **Y3S2**.

ECEN 422: Control Engineering (45/0: CF: 3.0)

Concept of control, control strategies, transfer functions and feedback control, Open and closed loop systems, principles of feedback, voltage, speed and position control. Open and closed system: continuous and discrete types, simulation of simple system; block diagrams as conceptual tools. Principle of error detection, process controllers and servo mechanism. Determination of common system parameters. Analysis of linear continuous system, stability analysis; - characteristics equation, pole zero location, Routh-Hurwitz criterion, root locus, inquest stability criteria, rude plots, gain and phase margin commendation. Stability improvement using networks. **Y4S2**, *Prerequisite ICEN 421.*

ICEN 336: Instrumentation and Control Engineering (30/30: CF 3.0)

Instrumentation: application of instrumentation concepts in measurement of physical and biological systems, common transducers, signal conditioning (analogue and digital), signal processing, data presentation and transmission. Noise discrimination in instrumentation systems. Control systems: concept of control, control strategies, transfer functions, feedback control, system modeling, stability.

9.3 Alignment of Courses/Units to Programme Learning Outcomes

	Year 1		Year 2		Year 3		Year 4		Year 5	
Program Learning Outcomes (PLO)	Courses	C F		C F	Courses	C F	Courses	CF	Courses	CF
PLO 1: Plan, Design and Construct Electrical and Control Systems.	Engineering Drawing I	3.0	Engineering Mathematics I	3.0	Microprocessor Based System Design	3.5	Computing I	3.5	Operations Research	3.0
	Introduction to Computer Scientific Applications	3.5	Solid structural Mechanics I	3.0	Assembly Language Programming	3.5	Electrical Machines I	3.0	Electrochemical Analysis and Measurements	3.0
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Electrical Engineering Principles II	3.0	Principles of Measurement Systems II	3.0	Electrical Machines Drives	3.0
	Engineering Material Science I	3.0	Computer Aided Drawing (CAD)	3.0	Electrical and Electronic Instruments	3.0	Reliability Engineering	3.0	Signal Processing I	3.0
	Engineering Drawing I	3.0	Workshop Technology	3.0	Analog Integrated Circuits	3.0	Analog Integrated Circuits	3.0	Digital Control Systems	3.0
	General Inorganic & Physical Chemistry	3.0	Machine Elements I	3.0	Electromagnetics	3.0	Electrical and Control System Engineering Design	3.0	Non Linear Systems and Control	3.0
	Introduction to Organic Chemistry	3.0	Fluid Mechanics I	3.0	Electrical Electronics I	3.0	Electrical and Control System Engineering Design	3.0	Engineering Project I	3.0
	Physics for Engineers	3.0	Environmental Studies	3.0	Digital Electronics I	3.0	Engineering Statistics	3.0	Engineering Economy	3.0
	Computer Architecture Communication Skills	3.0	Electrical Engineering Principles I	3.0	Power Electronics	3.0	Research Methods	3.0	Introduction to Entrepreneurships	3.0
	Introduction to Instrumentation & Control	3.0	Electronic Devices	3.0	Ordinary Differential Equations for Engineers	3.0	Electrical Machines II	3.0	Special Analytical Measurements	3.0
	Physical Electronics	3.0	Principles of Control Engineering	3.0	Engineering Mathematics	3.0	Specialized measurement systems I	3.0	Power Systems and Electro heating	3.0
			Electrical and Electronic Workshop Practice	3.0	Engineering Design Principles	3.0	Embedded systems and Applications	3.0	Signal Processing II	3.0
			Multivariable Calculus for Engineers	3.0	Principles of Measurement systems I	3.0	Process Engineering	3.0	Specialized Measurements systems II	3.0
			Fluid Mechanics II	3.0	Analogue Electronics II	3.0	Linear Systems and Control II	3.0	Multi Variable Control Systems	3.0
					Digital Electronics II	3.0	Engineering Management	3.0	Linear Optimal Control	3.0
						3.0	Numerical Methods for Engineers	3.0	Engineering Project II	3.0

			UNIX Programming	3.0	Network & Circuit Analysis	3.0	Industrial Attachment II	3.0		3.0
			Engineering Practice	3.0	Linear Systems and Control	3.0		3.0		
					Law, Ethics and Professional Practice	3.0				
					Industrial Attachment I	3.0				
PLO 2: Respond and Adapt to Change and to Anticipate and Initiate Such a Change.	Engineering Drawing I	3.0	Engineering Mathematics I	3.0	Microprocessor Based System Design	3.5	Computing I	3.5	Operations Research	3.0
	Introduction to Computer Scientific Applications	3.5	Solid structural Mechanics I	3.0	Assembly Language Programming	3.5	Electrical Machines I	3.0	Electrochemical Analysis and Measurements	3.0
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Electrical Engineering Principles II	3.0	Principles of Measurement Systems II	3.0	Electrical Machines Drives	3.0
	Engineering Material Science I	3.0	Computer Aided Drawing (CAD)	3.0	Electrical and Electronic Instruments	3.0	Reliability Engineering	3.0	Signal Processing I	3.0
	General Inorganic & Physical Chemistry	3.0	Machine elements I	3.0	Analog Integrated Circuits	3.0	Electromagnetics	3.0	Digital Control Systems	3.0
	Introduction to Organic Chemistry	3.0	Fluid Mechanics I	3.0	Electrical and Electronic Instruments	3.0	Electrical and Control System	3.0	Non Linear Systems and Control	3.0
	Communication Skills	3.0	Electrical Engineering Principles I	3.0	Digital Electronics I	3.0	Engineering Design	3.0	Engineering Project I	3.0
	Introduction to Instrumentation & Control	3.0	Electronic Devices	3.0	Power Electronics	3.0	Engineering Statistics	3.0	Engineering Economy	3.0
			Principles of Control Engineering	3.0	Ordinary Differential Equations for Engineers	3.0	Research Methods	3.0	Introduction to Entrepreneurships	3.0
			Electrical and Electronic Workshop Practice	3.0	Engineering Mathematics	3.0	Electrical Machines II	3.0	Special Analytical Measurements	3.0
			Multivariable Calculus for	3.0	Engineering Design Principles	3.0	Specialized measurement systems I	3.0	Power Systems and Electro heating	3.0
							Embedded systems and Applications	3.0	Signal Processing II	3.0
									Specialized Measurements systems II	3.0

			Engineers							
			Fluid Mechanics II	3.0	Principles of Measurement systems I	3.0	Process Engineering		Multi Variable Control Systems	3.0
			UNIX Programming	3.5	Analogue Electronics II	3.0	Linear Systems and Control II	3.0	Linear Optimal Control	
			Engineering Practice	3.0	Digital Electronics II	3.0	Engineering Management Numerical Methods for Engineers	3.0	Engineering Project II	3.0
					Network & Circuit Analysis	3.0	Industrial Attachment II	3.0		3.0
					Linear Systems and Control	3.0				3.0
					Law, Ethics and Professional Practice	3.0				
					Industrial Attachment I	3.0				
PLO 3: Proceed with Postgraduate Studies.	Engineering Drawing I	3.0	Technical Writing and Reporting for Engineers	3.0	Microprocessor Based System Design	3.5	Computing I	3.5	Operations Research	3.0
	Introduction to Computer Scientific Applications	3.5	Engineering Mathematics I	3.0	Assembly Language Programming	3.5	Electrical Machines I	3.0	Electrochemical Analysis and Measurements	3.0
	Engineering Drawing II	3.0	Solid structural Mechanics I	3.0	Electrical Engineering Principles II	3.0	Principles of Measurement Systems II	3.0	Electrical Machines Drives	3.0
	Engineering Material Science I	3.0	Engineering Thermodynamics I	3.0	Electrical and Electronic Instruments	3.0	Reliability Engineering	3.0	Signal Processing I	3.0
	Engineering Drawing I	3.0	Computer Aided Drawing (CAD)	3.0	Analogue Electronics I	3.0	Analog Integrated Circuits	3.0	Digital Control Systems	3.0
	General Inorganic & Physical Chemistry	3.0	Workshop Technology	3.0	Digital Electronics I	3.0	Electromagnetics	3.0	Non Linear Systems and Control	3.0
			Machine elements I	3.0			Electrical and Control System	3.0	Engineering Project I	3.0
							Engineering Design	3.0	Engineering Economy Introduction to	3.0

	Introduction to Organic Chemistry	3.0	Fluid Mechanics I	3.0	Power Electronics		Engineering Statistics	3.0	Entrepreneurships	3.0
	Physics for Engineers	3.0	Environmental Studies	3.0	Ordinary Differential Equations for Engineers	3.0	Research Methods	3.0	Special Analytical Measurements	3.0
	Computer Architecture	3.5	Electrical Engineering Principles I	3.0	Engineering Mathematics		Electrical Machines II	3.0	Power Systems and Electro heating	3.0
	Communication Skills	3.0	Electronic Devices	3.0	Engineering Design Principles	3.0	Specialized measurement systems I	3.0	Signal Processing II	3.0
	Introduction to Instrumentation & Control	3.0	Principles of Control Engineering	3.0	Principles of Measurement systems I	3.0	Embedded systems and Applications	3.0	Specialized Measurements systems II	3.0
	Physical Electronics	3.0	Electrical and Electronic Workshop Practice	3.0	Analytical of		Process Engineering	3.0	Multi Variable Control Systems	3.0
			Multivariable Calculus for Engineers	3.0	Analytical Electronics II	3.0	Linear Systems and Control II	3.0	Linear Optimal Control	3.0
			Fluid Mechanics II	3.0	Digital Electronics II	3.0	Engineering Management	3.0	Engineering Project II	3.0
			UNIX Programming	3.5	Network & Circuit Analysis	3.0	Numerical Methods for Engineers	3.0		3.0
			Engineering Practice	3.0	Linear Systems and Control	3.0	Industrial Attachment II	3.0		3.0
PLO 4: Communicate/Transfer the Acquired Knowledge and Skills to Various Individuals or Groups Involved	Engineering Drawing I	3.0	Engineering Mathematics I	3.0	Microprocessor Based System Design	3.5	Computing I	3.5	Operations Research	3.0
	Introduction to Computer Scientific Applications	3.5	Computer Aided Drawing (CAD)	3.0	Technical Writing and Reporting for Engineers	3.0	Analog Integrated Circuits	3.0	Signal Processing I	3.0
			Principles of Control Engineering	3.0			Electromagnetics	3.0	Digital Control Systems	3.0
									Non Linear Systems and Control	3.0

in the Field of Electrical and Control Engineering.	Engineering Drawing II	3.0	Electrical and	3.0	Assembly Language Programming	3.5	Electrical and Control System Engineering Design	3.0	Engineering Project I	3.0
	Engineering Material Science I	3.0	Electronic Workshop Practice	3.0	Electrical and Electronic Instruments	3.0	Engineering Statistics	3.0	Engineering Economy	3.0
	Engineering Drawing I	3.0	Multivariable Calculus for Engineers	3.0	Analogue Electronics I	3.0	Research Methods	3.0	Introduction to Entrepreneurships	3.0
	General Inorganic & Physical Chemistry	3.0	Fluid Mechanics II	3.0	Digital Electronics I	3.0	Specialized measurement systems I	3.0	Special Analytical Measurements	3.0
	Introduction to Organic Chemistry	3.0	UNIX Programming Engineering Practice	3.5	Ordinary Differential Equations for Engineers	3.0	Embedded systems and Applications	3.0	Signal Processing II	3.0
	Physics for Engineers	3.0			Engineering Mathematics	3.0	Process Engineering	3.0	Specialized Measurements systems II	3.0
	Computer Architecture	3.5			Engineering Design Principles	3.0	Linear Systems and Control II	3.0	Multi Variable Control Systems	3.0
	Communication Skills	3.0			Analogue Electronics II	3.0	Engineering Management	3.0	Linear Optimal Control	3.0
					Digital Electronics II	3.0	Numerical Methods for Engineers	3.0	Engineering Project II	3.0
					Network & Circuit Analysis	3.0	Industrial Attachment II	3.0		3.0
					Law, Ethics and Professional Practice	3.0				
					Industrial Attachment I	3.0				

PLO 5: Utilize the Acquired Knowledge and Skills for Gainful Self-Employment and also Create Employment for Others.	Engineering Drawing I	3.0	Engineering Mathematics I	3.0	Microprocessor Based System Design	3.0	Computing I	3.5	Operations Research	3.0
	Introduction to Computer Scientific Applications	3.5	Solid structural Mechanics I	3.0	Assembly Language Programming	3.5	Electrical Machines I	3.0	Electrochemical Analysis and Measurements	3.0
	Engineering Drawing II	3.0	Engineering Thermodynamics I	3.0	Electrical Engineering Principles II	3.0	Principles of Measurement Systems II	3.0	Electrical Machines Drives	3.0
	Engineering Material Science I	3.0	Computer Aided Drawing (CAD)	3.0	Electrical and Electronic Instruments	3.0	Reliability Engineering	3.0	Signal Processing I	3.0
	General Inorganic & Physical Chemistry	3.0	Workshop Technology	3.0	Analyse and Electronics I	3.0	Analog Integrated Circuits	3.0	Digital Control Systems	3.0
	Introduction to Organic Chemistry	3.0	Machine elements I	3.0	Digital Electronics I	3.0	Electromagnetics	3.0	Non Linear Systems and Control	3.0
	Physics for Engineers	3.0	Fluid Mechanics I	3.0	Power Electronics	3.0	Electrical and Control System	3.0	Engineering Project I	3.0
	Computer Architecture	3.5	Electrical Engineering Principles I	3.0	Ordinary Differential Equations for Engineers	3.0	Engineering Design	3.0	Engineering Economy	3.0
	Introduction to Instrumentation & Control	3.0	Principles of Control Engineering	3.0	Engineering Mathematics	3.0	Engineering Statistics	3.0	Introduction to Entrepreneurships	3.0
	Physical Electronics	3.0	Electrical and Electronic Workshop Practice	3.0	Engineering Design Principles	3.0	Research Methods	3.0	Special Analytical Measurements	3.0
			Multivariable Calculus for Engineers	3.0	Principles of Measurement systems I	3.5	Electrical Machines II	3.0	Power Systems and Electro heating	3.0
			Fluid Mechanics II	3.0	Analyse Electronics II	3.0	Specialized measurement systems I	3.0	Signal Processing II	3.0
			UNIX Programming	3.5	Digital Electronics II	3.0	Embedded systems and Applications	3.0	Specialized Measurements systems II	3.0
			Engineering Practice	3.0	Network & Circuit Analysis	3.0	Process Engineering	3.0	Multi Variable Control Systems	3.0
					Linear Systems and	3.0	Linear Systems and Control II	3.0	Linear Optimal Control	3.0
							Engineering Management	3.0	Engineering Project II	3.0
							Numerical Methods for Engineers	3.0		3.0
							Industrial Attachment II	3.0		3.0
								3.0		

					Control	3.0				
					Law, Ethics and Professional Practice	3.0				
					Industrial Attachment I	3.0				

DEPARTMENT OF INDUSTRIAL AND ENERGY ENGINEERING

BACHELOR OF INDUSTRIAL TECHNOLOGY

1. Philosophy of the programme

The Bachelor of Industrial Technology Programme imparts knowledge that influences mindset to re engineer industrial and related systems through internalizing Science based comprehensive mechanisms for sustained development.

2. Rationale

There is a great demand for Industrial technologists with a strong bias in Energy, manufacturing, plant and building as well as automotive sectors in both emerging and developed economies of the world. These specialists should be equipped with the state of the art skills, knowledge and work attitude necessary in accomplishing product design and maintenance of machines / plants in their respective sectors, and in addition, ability to provide needed marketing and leadership in industries

The need of having a technically oriented graduate with emphasis on application of modern engineering sciences particularly in the design and production of machines greatly influenced the development of the programme. The principal objective is to impart to the learners knowledge necessary to make a carrier working as a technologist in this rapidly changing discipline

Graduates with knowledge in engineering sciences and training in modern industrial processes make sound technical and commercial judgement crucial to industrialization of a developing nation and bring creative and forward looking to the future of work. Not to be forgotten, industrial technology graduates get suitable and ready employment in a wide range of industries and service sectors both locally and in the world at large

3. Goal of the Programme

Bachelor of Industrial Technology Programme aims to train highly skilled graduates who are technological leaders of industries and actively engage in research and innovations.

4. Programme Learning Outcomes

At the end of the programme the graduate should be able to apply with judgement the knowledge, skills and attitudes to:

PLO 1: design products, material selection, planning efficient production, evaluation and marketing, in addition to providing needed leadership in the industrial, public or private industrial sectors of the economy.

PLO 2: Solve problems by analytical methods, work effectively with others, communicate effectively and make good commercial judgement and decisions.

PLO 3: Engage society and be diligent and competent in the performance of their professional obligations.

PLO 4: Effectively participate and practice in modern technological professions.

4.2 Specialization

The programme has no specialization. However, courses offered adequately cover all the areas and complementary units of an undergraduate course in Industrial Technology and provides room for options in the third year of study where students select one of the following options:

- (i) Design and Manufacturing Technology
- (ii) Plant and Building Services Technology
- (iii)Automotive and Prime-movers Technology
- (iv)Energy Technology

5. Mode of delivery

The programme will be on full-time face-to-face basis.

6. Academic Regulation for the Programme

6.1 Admission Requirements

- i. All candidates admitted to the degree program of Bachelor of Industrial Technology must satisfy the minimum entry requirement as stipulated in the common university entrance regulations.
- ii. In addition, candidates must meet the cut-off points for the year, as determined from the following subject clusters in Kenya Certificate of Secondary Education (K.C.S.E).
- iii. Diploma holders in Engineering or related areas (Diploma in Mechanical engineering – Production, plant, automotive etc) with two years industrial experience shall be considered for admission

Alternative A

- Mathematics
- Physics
- Chemistry
- Biology, Geography or any Technical Subject

Alternative B

- Mathematics
- Physical Sciences
- Either Geography or Biological Sciences Or any Technical Subjects

- iv. Those holding qualifications equivalent to the above from institutions recognized by Egerton University Senate may be also admitted. Such cases will be determined on individual merit by the University.

6.2 Regulation on credit Transfer

Credit transfers shall be as approved by the University Senate in accordance with Egerton University Statute number 36(3) of 2013.

6.3 Course Requirements

The course requirements shall include, class attendance (including practicals), industrial visits and Engineering practice. These shall follow ISO procedure for teaching (EU/AA/OP/06 rev3)

6.4 Student Assessment Criteria

Student assessment shall be conducted in accordance with Egerton University Statute of 2013 36(6).

6.5 Grading System

The grading shall be conducted in accordance with Egerton University Statute number 36(6) of 2013.

6.6 Examination Regulations

Examinations regulations shall be in accordance with Egerton University Statute number 36(5) of 2013.

The following practical courses shall be examined as stipulated below:

MENT 110 / 111 / 220 / 432 / 433 / 532 / 533 Engineering Design Courses. Final examination shall accounts 40% of total marks and Corse Work Assignments 60 %

MENT 260 Engineering Practice shall be examined wholly by continuous assessment as follows

Practical	70%
Written Report	30%
TOTAL	100

MENT 360/460 Industrial Attachment I and II shall be examined by assessing the student at his/her industrial attachment place and oral and final report submission to the Department as follows:

I.	Industrial Supervisor	20%
II.	University Supervisor	20%
III.	Oral Presentation	20%
IV.	Final Report Submission	40%
Total		100%

MENT 461/462 Research Project I and II: Design and implementation of student Research projects shall be examined by course work during semester I and II of fifth year of the study including project proposal, project implementation, final report and oral

examination at the end of second semester of the fifth year

The final report must be typed and bound in standard format and shall be examined as follows:

I.	Project Proposal Defences	20%
II.	Industrial Research Proposal Submission	20%
III.	Industrial Research project oral presentation	20%
IV.	Industrial Research Final Submission copy	30%
V.	Manuscript preparation	10%
Total		100%

6.7 Moderation of Examination

Moderation of examination shall be conducted in accordance with ISO procedures EU/AA/OP/07.

6.8 Graduation Requirements

A student shall be required to take for **all** scheduled courses The total CFs within the stipulated period.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute number 36(17a) of 2013

7. Course Evaluation

Course evaluation shall be conducted in accordance with ISO procedures on effectiveness evaluation EU/AA/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be conducted in the Department of Industrial and Energy Engineering in the Faculty of Engineering and Technology at Egerton University.

The programme leader shall be appointed as per the CUE Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated (self assessment) at the end of each academic cycle based on ISO procedures EU/VC/OP/05. The programme shall be benchmarked with at least one such programme in a highly ranked University.

8.3 Course Coding

The coding used for all courses pertaining to the programme is **ITEC**, standing for Industrial and Technology followed by three (3) digits as set out below;

First digit indicates the year of the course (i.e. 1, 2, 3, and 4)

Second digit indicates the course and level in- group as:

- 1- Basic Engineering and Technology courses
- 2- Computer Application Engineering courses
- 3- Industrial Management courses
- 4- Industrial Attachment/Research project
- 5- Design, Manufacturing and Systems Engineering options
- 6- Automotive & Prime- Movers Engineering options
- 7- Plant & Building Services Engineering options
- 8- Energy Engineering options
- 9- Medical Engineering options
- 0- Industrial Electronics Engineering options

Third digit indicates the sequencing of courses.

The codes for courses offered to this programme by other departments in the University shall apply as described in their respective schedules.

9. Courses/Units for the programme

9.1 Schedule of Courses

(a) Common Core Courses

Year	CODE	TITLE
Y1SI	COMS 111	Communication Skills
Y1SI	ZOOL 143	HIV/AIDS and Society
Y1SI	COMP 111	Computer Science I.
Y2S1	AGED 248	Technical Report Writing.
Y4S1	ENSC 248	Environmental Studies.

Y4S2	MENT 462	Research Methods
Y5S2	AGBM 102	Entrepreneurship

Year 1 Semester 1

CODE	TITLE	L	P	C.F
ITEC 100	Introduction to Industrial Technology	30	30	3
MENT 110	Engineering Drawing I.	30	30	3
MATH 116	Introduction to Pure Mathematics	45	0	3
CHEM 102	Chemistry I.	30	30	3
PHYS 104	Physics I.	30	30	3
COMP 111	Computer Science I.	30	30	3
AGED 248	Technical Report Writing.	45	15	3.5
MATH 118	Applied Geometry.	45	0	3
	TOTALS	285	165	24.5

Year 1 Semester 2

CODE	TITLE	L	P	C.F
MENT 111	Engineering Drawing II.	30	30	3
MATH 222	Integral Calculus for Engineering	45	0	3
CHEM 130	Chemistry II.	30	30	3
PHYS 105	Physics II.	30	30	3
COMP 102	Computer Science II.	30	30	3
ZOOL 143	HIV/ AIDS and Society.	45	15	3.5
COMS 111	Communication Skills.	45	0	3
MENT 120	Materials Science I.	30	30	3
	TOTALS	285	165	24.5

TOTALS FOR YEAR I	570	330	49.0

Year 2 Semester 1

CODE	TITLE	L	P	C.F
MENT 215	Fluid Mechanics I.	30	30	3
MENT 222	Machine Elements I.	30	30	3
MENT 224	Engineering Thermodynamics I.	30	30	3
MENT 226	Solid and structural Mechanics I.	30	30	3
MATH 221	Vector Calculus for Engineering	45	0	3
ECEN 212	Electrical Engineering I.	30	30	3
ITEC 201	Introduction to Energy Technology.	30	30	3
ITEC 202	Introduction to Design & Manufacturing.	30	30	3
	TOTALS	255	210	24.0

Year 2 Semester 2

CODE	TITLE	L	P	C.F
MENT 223	Machine Elements II.	30	30	3
MENT 225	Engineering Thermodynamics II.	30	30	3
MENT 227	Solid and Structural Mech. II	30	30	3
MATH 223	Multivariable Calculus for Engineering.	45	0	3
ECEN 312	Electrical Engineering II.	30	30	3
MENT 217	Fluid Mechanics II	30	30	3
ITEC 203	Introd. to Plant & Building Serv .	30	30	3

ITEC 204	Introd. Automotive Technology.	To 30	30	3
MENT 260	Engineering Practice (8 weeks)	0	120	4
	TOTALS	255	330	28.0
	TOTALS FOR YEAR 2	510	540	52.0

Year 3 Semester 1

CODE	TITLE	L	P	C.F
MENT 324	Eng. Thermodynamics III.	30	30	3
MATH 340	Differential Equations for Engineering.	45	0	3
COMP 202	Assembly Language Programming.	30	30	3
AGBM 554	Entrepreneurship.	45	0	3
MENT 558	Internal Combustion Engines.	30	30	3
*****	Elective.	30	30	3
*****	Elective	30	30	3
*****	Elective.	30	30	3
	TOTALS	255	210	24.0

Year 3 Semester 2

CODE	TITLE	L	P	C.F
MENT 325	Engineering Thermodynamics IV.	30	30	3
MENT 462	Research Methods.	45	0	3
MENT 221	Material Science II.	30	30	3
MENT 452	Industrial Management II.	45	0	3
ECEN 421	Instrumentation.	30	30	3
MENT 360	Industrial Attachment I (8 weeks).	0	120	4

*****	Elective.	30	30	3
*****	Elective.	30	30	3
*****	Elective.	30	30	3
	TOTALS	255	330	27.0
	TOTALS FOR YEAR 3	510	540	52.0

SPECIAL COURSES (ELECTIVES)

(i) Industrial Electronics

Y3S1

CODE	TITLE	L	P	C.F
MENT 432	Machine Design I.	30	30	3
ITEC 381	Energy and Environment.	30	30	3
ITEC 554	Manufacturing Plant Eng.	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
ITEC 384	Fossil Fuel Power Plant Tech.	30	30	3
ITEC 386	Geothermal Energy Technology.	30	30	3
MENT 534	Computer Numerical Control.	30	30	3

(ii) Design and Manufacturing Technology

Y3S1

CODE	TITLE	L	P	C.F
MENT 432	Machine Design I.	30	30	3
ITEC 351	Design and Manufacturing Technology I.	30	30	3

MENT 530	Manufacturing Engineering V	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
ITEC 352	Design and Mfg. Tech II.	30	30	3
MENT 534	Computer Numerical Control.	30	30	3
MENT 542	Experimental stress Analysis.	30	30	3

(iii) Automotive and Prime-movers Technology

Y3S1

CODE	TITLE	L	P	C.F
ITEC 361	Auto. & Prime-movers I	30	30	3
MENT 554	Power Plant Eng.	30	30	3
MENT 433	Machine Design II	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
MENT 546	Tribology	30	30	3
ITEC 362	Automotive & Prime-movers II.	30	30	3
MENT 558	Internal Combustion Engines.	30	30	3

(iv) Plant and Building Services Technology

Y3S1

CODE	TITLE	L	P	C.F
ITEC 371	Plant and Works Serv. I.	30	30	3
MENT 554	Power Plant Engineering.	30	30	3
MENT 433	Machine Design II	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
MENT 546	Tribology	30	30	3
ITEC 372	Plant and Works Serv. II.	30	30	3
MENT 558	Internal Comb. Engines.	30	30	3

(v) Energy Technology

Y3S1

CODE	TITLE	L	P	C.F
ITEC 381	Energy and Environment.	30	30	3
ITEC 382	Hydropower Technology.	30	30	3
ITEC 383	Wind Energy Technology	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
ITEC 384	Fossil Fuel Power Plant Technology	30	30	3
ITEC 385	Biomass Energy	30	30	3
ITEC 386	Geothermal Energy Technology	30	30	3

(vi) Medical Engineering

Y3S1

CODE	TITLE	L	P	C.F
MENT 432	Machine Design I	30	30	3
ITEC 381	Energy and Environment	30	30	3
ITEC 554	Manufacturing Plant Engineering	30	30	3

Y3S1

CODE	TITLE	L	P	C.F
ITEC	Fossil Fuel Power	30	30	3

384	Plant Technology			
ITEC 386	Geothermal Energy Technology	30	30	3
MENT 534	Computer Numerical Control	30	30	3

Year 4 Semester 1

CODE	TITLE	L	P	CF
MENT 335	Metrology and Quality Control	30	30	3
MENT 451	Industrial Management I	45	0	3
ENSC 100	Environmental Studies.	45	0	3
ITEC 432	Project Operations & Management	45	0	3
MENT 512	Industrial Law.	45	0	3
*****	Elective 1.	30	30	3
*****	Elective 2.	30	30	3
ITEC 442	Industrial Research Project I.	15	60	3
	TOTALS	285	150	24.0

Year 4 Semester 2

CODE	TITLE	L	P	CF
MENT 513	The Engineer in Society	30	30	3
MENT 550	Operations Research.	45	0	3
MENT 450	Engineering Economics and Finance.	45	0	3
MENT 542	Experimental Stress Analysis.	30	30	3
MENT 442	Industrial Research Project II.	15	60	3
*****	Elective 3.	30	30	3
*****	Elective 4.	30	30	3

	TOTALS	240	150	24
	TOTALS FOR YEAR 4	525	300	48

SPECIAL COURSES (ELECTIVES)

(i) Industrial Electronics Y4S1

CODE	TITLE	L	P	C.F
ITEC 401	Industrial Electronics I	30	30	3
ITEC 402	Industrial Electronics II	30	30	3

Y4S2

CODE	TITLE	L	P	C.F
ITEC 403	Industrial Electronics III	30	30	3
ITEC 404	Industrial Electronics IV	30	30	3

(ii) Design and Manufacturing Technology Y4S1

CODE	TITLE	L	P	C.F
MENT 432	Machine Design I.	30	30	3
ITEC 454	Jig and Tool Design.	30	30	3
MENT 554	Power Plant Engineering.	30	30	3

Y3S2

CODE	TITLE	L	P	C.F
MENT 531	Industrial Robotics.	30	30	3
MENT 541	Gear Mechanism.	30	30	3
MENT 433	Machine Design II.	30	30	3

(iii) Automotive and Prime-movers Technology Y4S1

CODE	TITLE	L	P	C.F
ITEC 461	Automotive & Prime-movers III.	30	30	3
MENT 553	Refrigeration. & Air Conditioning.	30	30	3
MENT 556	Boiler Operations & Maintenance.	30	30	3

Y4S2

CODE	TITLE	L	P	C.F
MENT 531	Industrial Robotics	30	30	3
ITEC 462	Automotive & Prime-movers IV.	30	30	3
MENT 541	Gear Mechanism.	30	30	3

(iv) Plant and Building Services Technology Y4S1

CODE	TITLE	L	P	C.F
ITEC 471	Plant and Works Services Technology III.	30	30	3
MENT 556	Boiler Operations & Maintenance	30	30	3
MENT 553	Refrigeration & Air Conditioning	30	30	3

Y4S2

CODE	TITLE	L	P	C.F
MENT 541	Gear Mechanism	30	30	3
ITEC 472	Plant and Works Services Technology IV	30	30	3
ITEC 382	Hydropower Technology.	30	30	3

**(v) Energy Technology
Y4S1**

CODE	TITLE	L	P	C.F
ITEC 481	Nuclear Energy Technology.	30	30	3
ITEC 482	Solar Energy Technology	30	30	3
ITEC 483	Energy Conservation & Management	30	30	3

Y4S2

CODE	TITLE	L	P	C.F
ITEC 484	Energy Law & Economics	30	30	3
ITEC 485	Environmental Impact Assessment & Audit	30	30	3
ITEC 486	Energy Storage Technology	30	30	3

**(vi) Medical Engineering
Y3S1**

CODE	TITLE	L	P	C.F
ITEC 491	Medical Engineering I	30	30	3
ITEC 492	Medical Engineering II	30	30	3

Y3S1

CODE	TITLE	L	P	C.F
ITEC 493	Medical Engineering III	30	30	3
ITEC 494	Medical Engineering IV	30	30	3

(c) Course Descriptions.

ITEC 100-Introduction to Industrial Technology; (L/P-30/30); CF: 3.0; Y1S1

Introduction: Technologist as a profession, Industrial Technology and its scope, Industrial system – types, optimization and sub optimization concepts, open and closed loop control, etc; Decision Making Process; Decision theories-decision making under certainty, risk and uncertainty; Introduction to Quantitative Techniques: Resources allocation and Linear Programming (introduction and graphical method); Linear Programming -Simplex method for multiple variables, sensitivity analysis, shadow prices, etc. Transportation Programming– allocation procedures and methods; Transportation Programming-optimization under various conditions, Assignment programming; Manufacturing Cost Concepts and Break-Even analysis (Linear and nonlinear); Demand management and forecasting models; Plant location and evaluation techniques; Plant Layout: solution techniques; Material Handling – importance, types of equipment, travelling salesman problem (TSP); Material Handling – importance, types of equipment, travelling salesman problem (TSP); Shop floor scheduling - comparison of different rules

ITEC 201-Introduction to Energy Technology; (L/P-30/30); Y2S1

Definition of energy and measurements, Types of energy resources available; fossil fuels, nuclear energy, wood fuels, biogas, renewable and non renewable energy sources. Energy conversions. Principles of energy generation and environmental impacts, Energy utilization, conservation, storage and management. Energy supply and demand. Types of power plants. Technical, Environmental, and economic considerations in choice of sources and conversion processes. Correlation between energy use and development. A survey of patterns of energy consumption between the developed and the developing worlds.

ITEC 202 Introduction to Design & Manufacturing (L/P-30/30); CF: 3.0; Y2S1

Historical Developments in Manufacturing, Economic Role of Manufacturing, Manufacturing as a Technical Activity; Manufacturing Enterprise: specification, Development, Conceptual Design, Process Design, Production and Customer Relations; Sequential Manufacturing, Concurrent Engineering, Computer Integrated Manufacturing, and Control of Manufacturing Processes; Geometric Attributes of Manufactured Parts: Shape, Dimensions, Metrology, Surface Topography; Service Attributes of Manufactured Parts: Mechanical Properties, Impact Energy and Fracture Toughness, Residual Stresses, Non destructive Testing, Physical Properties; Materials in Design and Manufacturing: Classification of Engineering Materials, Environmental Aspects, Recycling; Manufacture of Semiconductor Devices: Elements of Semiconductor Devices, Manufacture of Silicon Wafers, and Device Fabrication; Material movement, Production Organization, Quality Management, and Manufacturing Management

ITEC 203-Introduction to Plant and Building Services Technology; (L/P-30/30); CF: 3.0; Y2S2

General introduction: types of building services, water supply sources .Direct system of cold water supply. Indirect system of cold water supply. Cold water to high rise buildings mains connections Hot water supply system. Direct system of hot water supply. Indirect system of hot water supply. Simple water treatment, filtrations of water, sterilization and softening, Storage and distribution of water. Valves and Taps used for water. Joins on water mains. Connection to water mains, Water metering Calculating cold water storage requirements.

ELECTIVES

Design and Manufacturing Technology

ITEC 432-Project Planning and Management; (L/P-45/0); CF: 3.0; Y3S1

Project planning in design;-the Gantt Charts, Network analysis. Basic requirements in design; factors to

consider, material selection, manufacturing aspect, standardization and preferred numbers. Applied ergonomics; the human in the work space and liability. Design Economics; principles of economic design, comparative and economic analysis, value engineering. Criteria of Design Calculations; stress concentration, factor of safety and yielding criteria for ductile metals. Design of machine elements; - shafts and axles, couplings, clutches, cams, bearings. Design Reports-drawings produced during product design, bills of materials, patent applications, quality assurance, maintenance instructions and design change notes.

ITEC 361-Automotive and Prime-movers I; (L/P-30/30); Y3S1

Reciprocating internal combustion engines: historical background, types, comparison of various types' engine nomenclature. Gasoline engine; structure, mechanism, components and functions; cylinder and crank throw arrangement. Cylinder block: crank case and cylinder head; design and construction. Piston assemblies and connecting rods; construction materials, structural features and nomenclature. Crankshaft, bearing and seals. Valve mechanisms; methods of operation, advantages and disadvantages of various arrangements. Engine lubrication system; splash and pressure lubrication systems. Engine fuel systems; general layout of supply system and purpose of components. Engine cooling systems; types, components and working mechanisms. Ignition systems; the battery and coil types.

Plant and Building Services Technology

ITEC 371-Plant and Building Services Technology 1; (L/P-30/30); CF: 3.0; Y3S1

Services identification and selection. Energy systems: - building heating systems, hot water systems, calculating cold water storage requirements systems. Hot water generation & storage hot water system pressurization. Electric water heaters, gas water heaters, drainage systems, fumes exhaust and gas supply systems. Acoustics, boilers, hoists, lifts and escalators. Travelletors Therapeutic and recreational application of heating system. Design of plumbing

systems for multi-story buildings. Electric lighting, lumen method of design, cost of lamp replacement, heat from light

Year 3 Semester 2

ELECTIVES

Design and Manufacturing Technology

ITEC 362-Automotive and Prime movers Engineering II; (L/P-30/30); CF 3.0) Y3S2

Chassis: layout; frames; integral chassis construction. Articulated vehicles. Mono- construction of vehicles bodies. Transmission; Clutches, gearboxes, propeller shafts, final drive and differential systems. Suspension systems, wheel and tyres, legal aspects of tyre sizes, markings, valves and inflation pressure; wheel alignment. Steering system: steering geometry; the Ackermann principle; oversteer and understeer; steering gears. Brake systems; types.

Vehicle braking performance, the hand brake arrangements, methods of adjustments. Repair and reconditioning.

Plant and Building Services Technology

ITEC-372 Plant and Building Services Technology II, (L/P-30/30); CF: 3.0 Y3S2

Building services design and installation: -electrical services, utility and safely services design. Drainage system considerations: - Vacuum drainage systems. Sanitation and waste disposal. Industrial ventilation and exhaust requirements and environmental design and legal requirements. Interior and ergonomics. Hot water and other dual supply systems, hot water System pressurization Pneumatic boosting. Heating system- heat emitters. Panel heating system. Heat loss calculation, calculation of U values, Environmental temperature

ITEC 381-Energy and Environment; (L/P-30/30); CF: 3.0; Y3S1

Environment and environmental impacts of energy production and processing of fossil fuels, conventional

power generation, Renewable energy technologies and waste disposal. Environmental impacts of energy transportation; electric power transmission; energy use. Flue gas filtration and pollutant transport in the atmosphere. Energy and global climate change. Safety and risks of energy sources. Pollution prevention: cleaner production, energy efficiency conservation. Society environmental responsibilities. Quality, safety and health environmental systems regulations (ISO 9000/14000). Scientific and political responses to climatic change.

ITEC 382-Hydro Power Technology; (L/P-30/30); CF: 3.0; Y2S1

Stream flow analysis for assessment of hydropower potential of rivers: Applications of Flow Duration Curves and Power Duration Curves. Design flow and reservoir storage capacity, Design flow required, determining power and energy. Civil works: Classification of Hydro schemes, components of a hydropower scheme, design and construction. Turbines: Basic principles, types of turbines and selection. Plant design and installation. Governing. Electricity generation system. Waterwheels, Hydrams. Environmental impacts of a hydro-electric project: Principles of Pelton turbine. Condition of maximum efficiency. Turgo and cross-flow turbines. The Euler turbine equation. Velocity triangles. Principles of Francis and Kaplan turbines. Ideal turbine characteristics, losses. Specific speeds, turbine selection. Unit quantity and performance map. Affinity laws. Draft tube, cavitations. Field study to illustrate turbine sizing and selection. The wells turbine. Characteristics and overall efficiency schemes. Comparison of hydro-turbine technology with steam turbines, gas turbine and firing gas turbine technologies. Hydrological effects, dams and their effects, social effects etc. Economics of hydro and micro-hydro power

ITEC 383-Wind Energy Technology; (L/P-30/30); CF: 3.0; Y3S1

Wind generation and distribution: Wind measuring devices; wind speed analysis; site selection. Wind energy: wind energy converters, energy and power in the wind, power coefficient. Lift and drag forces. Thrust

on the turbine (torque). Blade element theory (mechanical power). Electricity generation: the elementary dynamo, generators. Wind pumping: types of wind pumping systems, water requirements and storage, matching the characteristics of windmill and the piston pump, procedure for wind pump sizing. Environmental impacts energy systems. Wind turbine control: optimal assessment of cut in, rated and cut out wind speeds. Wind turbine dynamics with induction and synchronous generators. Wind farms; planning, electrical design and integration of wind energy into large and small systems. Effect of wind turbulence and wind farm geometry on electrical system voltage flicker. Environmental impact assessment. Design of wind turbine blades. Yawed flow. Unsteady aerodynamics. Vortex wake structure and models

Year 4 Semester 1

ITEC 442- Industrial Research Project I- (L/P-15/60); CF: 3.0 Y4S1

Preparation of a project proposal on the relevant topics of own choice followed by preliminary work on the project under the supervision of an academic staff. The proposal is subsequently assessed on the basis of seminars and continuous assessment. Any acceptable proposal report is submitted to the project supervisor for review and evaluation by the end of semester one of year five.

ELECTIVES

Industrial Electronics

ITEC 401- Industrial Electronics1; (L/P-30/30); CF3.0; Y4S1

Analogue Electronics: Semiconductor devices: PN junction diode, Zener diode LEDs, Schottky barrier diodes; Bipolar junction transistor:- Transistor biasing, hybrid parameters, II model, switching properties, transistor amplifiers, frequency response. Field effect transistors:- FETs and MOSFETs, V – I characteristics, enhancement & depletion models, FET and MOSFET

amplifiers, frequency response. OPAMPS:- Adders, subtractors, integrators, differentiators.

Power Electronic and Applications: Power diodes, triacs, diacs, thyristors, UJT, power transistors, single phase rectifier circuits:- characteristics, ripple factor, smoothing. Polyphase rectifiers:- rectifier circuits, applications:- ac and dc loads, DC and AC converters, inverters, DC conversion, output filtering.

ITEC 402- Industrial Electronics II; (L/P-30/30); CF3.0; Y4S1

Digital Electronics: Analog and digital signals; Binary number system, logic gates; truth tables, Boolean algebra and Karnaugh maps; Open collector and tristate devices; switching functions; combinational logic networks, De-morgan's theorem; Digital multiplexers and demultiplexers; Encoders and Decoders; Adders and subtractors, Flip flops and their applications in counters and registers; D/A and A/D converters; sequential circuit design.

Opto-Electronics: Opto-Electronic devices: LED, photo diodes, optocouplers; Opto circuit designs and fibre optic modes and applications.

Design and Manufacturing Technology

Automotive and Prime-movers Technology

ITEC 461 Automotive and Prime-movers Engineering III; (L/P-30/30); CF: 3.0; Y4S1

Mechanical design considerations: internal combustion engines; theoretical and actual engine cycles; performance parameters. Spark and compression ignition engine; ignition systems, types of carburetors, critical airflow, electronic injection systems. Combustion and fuels; combustion and fuel chemistry; air fuel ratio; fuel quality and additive; engine emissions; pollution control; combustion modeling. Supercharging: types of superchargers; radial and axial flow machines. Engine performance: indicated and brake mean effective pressure, engine efficiencies and fuel consumption, engine rating and engine heat balance.

Vehicle braking performance, the hand brake arrangements, methods of adjustments. Repair and reconditioning.

Plant and Building Services

ITEC 471-Plant and Building Services Technology III; (L/P-30/30); CF: 3.0; Y4S1

Building services equipment and appliances design, sanitary appliances, fire-fighting appliances, Fire protection terminology, choice of fire resistant materials, fire escape, and fire fighting equipment. Fume cupboards, refrigeration and air-ventilation: - Ventilating ducts, Volume of air flow, sizing system of duct works, Selection of fans. Air-conditioning hot water systems design, gas systems. Control systems and instrumentation. Preventing bacterial growth. Preventing dead legs in hot water system. Sizing commercial hot water systems. Solid waste management. Material Cycle Producing Waste. Mechanical systems, pumps sizes and location. Pump circulation, pipe sizing for gravity circulation

Energy Technology

ITEC 481-Nuclear Energy Technology; (L/P-30/30); CF: 3.0; Y4S1

Radioactive decay; Atomic and nuclear structure, Nuclear fission, Thermo nuclear fusion. Nuclear fuel cycle. Harnessing nuclear energy. Types of nuclear reactions and nuclear materials. Nuclear reactor components: moderator, coolant, control rods, shield. Nuclear power reactors: boiling water reactor (BWR), pressurized water reactions (PWR), high-temperature gas cooled reactor (HTGR), Heavy water reactor (HWR), CANDU, Breeder reactors. Reactor performance characteristics. Reactor control. Pollutants and hazards from nuclear energy generation: green house effect, reactor safety, radioactive emissions from power plants, radioactive waste management, waste heat. Nuclear power economics.

ITEC 482 -Solar Energy Technology; (L/P-30/30); CF: 3.0; Y4S1

Fundamentals of photovoltaic conversion: photon energy, solar cell materials, silicon solar cell technology: purification, crystal growth, module design, polycrystalline and amorphous silicon cells. Other solar cells. Balance of system; structure and installation power conditioning and controls, storage batteries. Photovoltaic applications. Photovoltaic circuit properties and loads. Design of PV systems. Economic analysis of PV systems. Current trends in photovoltaic technology. Fundamentals of solar radiation: solar radiation trigonometry, solar measurements. Solar collector principles and practices. Photo-thermal conversion surfaces: selective and non-selective, glazing materials, insulation materials. Thermal storage; heat exchangers; solar systems control. Principles of design and operation of flat plate solar collectors, transmission of solar radiation, energy balance analysis, heat transfer and loss analysis. Selection of sub-system components. Principles of design and operation of solar concentrators. Applications of solar collectors. Solar energy storage. Solar process economics. Environmental impacts.

ITEC 483- Energy Conservation Management; (L/P-30/30); CF: 3.0; Y3S1

Energy supply: fuels; electricity; co-generation (CHP), handling, storage and preparation; fuel upgrading. Energy conversion systems and losses. Energy saving measures: fuel substitution, heat loss reduction, waste heat recovery, recycling of waste materials, maintenance of conversion systems, process modification. Economic evaluation of energy conservation measures. Need and approaches to energy management. Energy management structure; motivation; information systems; marketing and investment. Energy assessment: survey; auditing and conservation opportunities. Implementation and monitoring of energy saving measures Environmental impacts of energy transportation; electric power transmission; energy use. Flue gas filtration and pollutant transport in the atmosphere.

ITEC 491 Medical Engineering I; (L/P-30/30); CF: 3.0; Y4S1

Biomedical Science: - Revision of human anatomy; Physiology and Pathology of Cardiovascular, respiratory, excretory, muscular, nervous and endocrine system. *Biomedical Instrumentation:* Elements/Sensors and their characteristics, Physiological Signals and Signal processing, Cardiovascular signals and instruments, Respiratory signals and respiratory instruments, Audiometry signals and audiometry instruments, Nervous system signals and nervous system instruments. *Medical Equipment's* :- Revision on Anaesthetic Equipment and Ventilators, Defibrillators, Short-wave diathermy, microwavediathermy, Bedside Monitors, Dialysis machines, Clinical Safety and Design Requirements of Medical equipment and Instruments,

(Pre-requisite: Diploma in Medical Engineering)

ITEC 492 Medical Engineering II (L/P-30/30); CF: 3.0; Y4S1

Laboratory Equipment/Instruments : Blood gas analysers, Blood cell counters; Imaging/scanning Equipment:- Principles of ionizing and non-ionizing radiation, ionizing radiation equipment (general X-ray equipment and CT scanners), non-ionizing equipment (ultrasound equipment, laser equipment, MRI equipment). *Radiotherapy Equipment* :- Radio-nuclide equipment-ray therapy equipment.

(Pre-requisite: ITEC 491 and Diploma in Medical Engineering)

Year 4 Semester 2

ITEC 443 – Industrial Research Project II (15/60); CF: 3.0; Y4S2

The students will be allowed a day (8 hours) per week to research, design and fabricate, and consult with the supervisors. Another 2 hours are allowed every week for the students to present their progress reports on rotational basis. Academic staff members will usually attend.

ELECTIVES

Industrial Electronics

ITEC 403- Industrial Electronics III; (L/P-30/30); Y4S2

Microprocessor system: Microprocessor architecture: Data bus, address, control bus, control bus, CPU, internal registers, ALU; instruction word flow, Data word flow, Microprocessor instruction set: Addressing modes, status register, the binary code, hexadecimal code, fetch machine cycle, WRITE and READ machine cycle, interrupt, Address Location Techniques, Address Decoding Techniques, Memory mapped Input/ output, Assembly language programming, Interfacing techniques, industrial application of microprocessors.

ITEC 404-Industrial Electronics IV (Y4S2)

Computer applications for controls: Stepper motor control circuits; machine sensors; temperature control; automobile control; automatic system control protocol; circuit design and analysis

Design and Manufacturing Technology

ITEC 462- Automotive and Prime-movers Engineering IV; (L/P-30/30); CF 3.0; Y4S2

Electrical principles directly applicable to automotive systems. Conventional, ignition, charging and starting systems; lighting and other accessories. Introduction to electronic principles and their application to charging, ignition, lighting and accessories. The charging system: The d.c generator: principle, communication, construction, operation. The voltage- control regulator. The cut-out. Constant voltage control. Compensator TEC voltage control; adjustments. System checking. Current-voltage control: control –box construction, operation. a.c generation and auxiliaries: diodes, transistors. a.c generation . The alternator: construction, operation. The control box. System checking. Transistorized ignition system. Auxiliaries: windscreen wipers, screen washer, horns, direction indicators, fuel gauges. Automotive Electrical systems in use: Coil Ignition, electronic ignition; DC and AC generators and their controls; Starter motors the ignition and starter system: coil

ignition: coils: construction, operation, negative spark. Insula TEC return coil. Oil coil. Condenser: construction, operation. Contact breaker; construction, Operation, gaps, dwell angle. Multi-contact breakers. Advance and retard mechanisms: mechanical, vacuum. Distributor: construction, operation. Spark plug: operating conditions, heat range, construction, operation, gaps. Starter system: motor principles, construction, battery capacity. Starter torques. Inertia drive: construction, operation. Other drives. Switches and cables. Fault diagnosis: instruments, battery checks, ignition system checks, faults shown, rectification. Starter system checks, faults shown, rectification. The Nife/ Alcad battery: construction, action, electrolyte, charging. Comparison with Lead-acid type. A study of thermodynamics of auto air conditioning and comfort controls. Inspection and repair of compressor, dryer, evaporator, condenser, and controls. Electric and ignition, and electrical control systems and electrical control systems and accessories.

Plant and Building Services Technology

ITEC472-Plant and Building Services Technology IV; (L/P-30/30); CF: 3.0 Y4S2

Building services operations and maintenance: planning and design of operations and Maintenance. Building services management. Legislation, regulations and safety requirements. Preventive maintenance. Reliability. Building contract. Contract evaluation. Estimation and appraisals. Cost recovery programs. Estates Management. Thermal insulation and sound insulation terminology, heat sound transmission, heat /sound insulation materials heat and sound insulation of roofs and walls.

ITEC 382-Hydro Power Technology, (L/P-30/30); CF: 3.0 Y2S1

Stream flow analysis for assessment of hydropower potential of rivers: Applications of Flow Duration Curves and Power Duration Curves. Design flow and reservoir storage capacity, Design flow required, determining power and energy. Civil works: Classification of Hydro schemes, components of a

hydropower scheme, design and construction. Turbines: Basic principles, types of turbines and selection. Plant design and installation. Governing. Electricity generation system. Waterwheels, Hydrams. Environmental impacts of a hydro-electric project: Principles of Pelton turbine. Condition of maximum efficiency. Turgo and cross-flow turbines. The Euler turbine equation. Velocity triangles. Principles of Francis and Kaplan turbines. Ideal turbine characteristics, losses. Specific speeds, turbine selection. Unit quantity and performance map. Affinity laws. Draft tube, cavitations. Field study to illustrate turbine sizing and selection. The wells turbine. Characteristics and overall efficiency schemes. Comparison of hydro-turbine technology with steam turbines, gas turbine and firing gas turbine technologies. Hydrological effects, dams and their effects, social effects etc. Economics of hydro and micro-hydro power

Energy Technology

ITEC 484 -Energy Law & Economics; (L/P-45/0); CF: 3.0; Y3 S2

Energy Act: Institutions as a result of the Act and their functions, International Energy Agency, Global Energy Agreements, Nuclear Energy and Non Proliferation, Role of law in Energy Conservation, Energy Laws and Environment laws, World Trade Law and Renewable Energy.

Energy and security scenarios. Concept of energy security, its meaning and uses. Major energy security issues and problems. Global energy reserve. Demand and supply; Energy and politics, Energy-socio-economic interrelationships. Non-renewable and renewable energy. The effects of higher energy prices. Dependence on imported oil. Energy conversion and the environment: externalities; benefit-cost analysis; environmental standards; environmental costs. Economic and cost analysis, energy investment decision making. Allocation of limited resources. Economics of exploration, distribution and utilization: economic evaluation of resource exploration, fuel transportation and distribution. Economic evaluation of renewable

energy systems. Economics of exploration, distribution and utilization. Economic evaluation of energy projects

ITEC 485-Environmental Impact Assessment and Audit; (L/P-30/30); CF: 3.0; Y3S2

Legal principles and institutional framework: EIA as a management tool. Basic concepts; preliminary activities; impact identification (scooping); baseline study; impact evaluation (quantification); mitigation measures; assessment; documentation; decision making; post auditing; falsehoods surrounding EIA. Strategic Impact Assessments: Social Impact Assessments: Health Impact Assessments: Problems and solutions of EIA institutional arrangements. Nature of environmental auditing; role of environmental auditing in environmental policy process; the need for environmental auditing; tools for environmental auditing; categories of environmental stock; critical and environmental audits. National accounts: problems and resource depletion.

ITEC 486-Energy Storage Technology; (L/P-30/30); CF: 3.0; Y3S1

Electricity demand side variability; Technical issues and economic impacts of peak loading on grid systems; Base load issues and the national energy mix; Renewable energy supply side variability and intermittency: wind, solar, hydro, wave, tidal; Physical storage media: Compressed air, Electrochemical cells; Virtual storage media: Electricity distribution infrastructure, Liquid and solid biomass; The 'hydrogen economy'; Calculation of electrode potentials and cell voltages; Electrolysis; Hydrogen production through reformation; Fuel ,feed stocks for the hydrogen economy; Polymer electrolyte membrane fuel cells; Alkaline fuel cells; Phosphoric acid fuel cells; Molten carbonate fuel cells; Solid oxide fuel cells; Regenerative fuel cells; Fuel cell applications: Transport, Combined Heat and Power; Small scale storage systems: flywheels and springs, hydraulic and pneumatic accumulators, continuous and standby uninterruptible power supplies; Large scale storage solutions: hydro pump storage, Large scale storage solutions: compressed air energy storage, underground gas reservoirs, Sensible and Latent heat storage. Energy storage economics; Environmental

implications of energy storage; Regenerative fuel cell overall efficiency; Storage and Recovery efficiency of a wind generator/rectifier-controller/battery/inverter system

ITEC 493 Medical Engineering III; (L/P-30/30); CF: 3.0; Y4S2

Anatomy and properties of bone and muscle. Mechanical forces developed by muscles and joints ; static and dynamic behaviour of muscles ;transducers for dynamic measurements ;force measurements in the body,Joint fabrication ,design requirements for artificial limbs and implants (aids for disabled).Mechanics of blood circulation and breathing ;Neurosurgery and spinal bifida.

(Pre-requisite: ITEC 491 and ITEC 492)

ITEC 494 Medical Engineering IV; (L/P-30/30); CF: 3.0; Y4S2

Hospital Equipment and Building Management :- Hospital Building and Grounds Maintenance, Contracting and Tendering ,Medical equipment selection, installation and commissioning, Planned Preventive Maintenance ,Requirements for electrical Installations, Requirements for Refrigeration and Air conditioning systems, Requirements for medical Gas supply and Vacuum Systems, Requirements for Central Sterilization systems, Tendering and commissioning of hospital supply systems. Fire protection .Design Requirements for Laboratory,X- Ray ,Dental, Theatre and other hospital facilities. Environment protection:- Pest control and Waste Management (both general waste and hospital waste) Health System management Structures

(Pre-requisite: ITEC 491, ITEC 492, ITEC 493)

9.2 Matrix aligning courses to programme learning outcomes

Programme Learning Outcomes (PLOs)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: design products, material selection, planning efficient production, evaluation and marketing, in addition to providing needed leadership in the industrial, public or private industrial sectors of the economy.	Engineering Drawing I	3.0	Technical Writing and Reporting for Engineers	3.5	Engineering Design Principles	3.0	Environmental Science	2.0
	Engineering Drawing II	3.0	Fluid Mechanics I	3.0				
	Engineering Material Science I.	3.0	Computer Aided Drawing Principles	3.0				
	Machine Elements I	3.0	Fluid Mechanics II	3.0				
	Machine Elements II	3.0						
	Engineering Thermodynamics I	3.0						
	Engineering Thermodynamics II	3.0						
	Solid & Structural Mechanics I	3.0						
	Solid & Structural Mechanics II	3.0						
	Electrical Engineering I	3.0						
PLO 2: Solve problems by analytical methods, work effectively with others, communicate effectively and make good commercial judgement and decisions.	Engineering Drawing I	3.0	Technical Writing and Reporting for Engineers	3.5				
	Introduction to Computer for Scientific Applications	3.0	Workshop Technology	3.0				
	Engineering Drawing II	3.0	Vector Analysis for Engineers	3.0				
	Engineering Material Science I	3.0	Machine Elements I	3.0				
			Engineering Thermodynamics I	3.0				
			Solid & Structural Mechanics I	3.0				

			Computer Aided Drawing	3.0				
			Electrical Engineering Principles	3.0				
			Machine Elements II	3.0				
			Engineering Thermodynamics II	3.0				
			Solid & Structural Mechanics II	3.0				
			Fluid Mechanics II	3.0				
PLO 3: Engage society and be diligent and competent in the performance of their professional obligations.	Introduction to Computer Applications	3.0	Technical Writing and Reporting for Engineers	3.0	Engineering Thermodynamics III :	3.0	Environmental Science	3.0
	Engineering Drawing I	3.5	Workshop Technology	3.0			Research Methods	3.0
	Introduction to Computer for Scientific Applications	3.0	Vector Analysis for Engineers	3.0			Entrepreneurship	3.0
	Engineering Drawing II	3.0	Machine Elements I	3.0				
	Engineering Material Science I	3.0	Engineering Thermodynamics I	3.0				
			Solid & Structural Mechanics I	3.0				
			Fluid Mechanics I	3.0				
			Computer Aided Drawing	3.0				
			Electrical Engineering Principles	3.0				
			Multi-variable Calculus for Engineering	3.0				
			Machine Elements II	3.0				
			Engineering Thermodynamics II	3.0				
			Solid & Structural Mechanics II	3.0				

			Manufacturing Engineering I	3.0				
			Theory of Structures I	3.0				
			Fluid Mechanics II	3.0				
PLO 4: Effectively participate and practice in modern technological professions.	Introduction to Computer Applications	3.0	Technical Writing and Reporting for Engineers	3.0	Engineering Thermodynamics III	3.0	Environmental Science	3.0
	Engineering Drawing I	3.0	Machine Elements I	3.0	Machine Elements II	3.0	Research Methods	3.0
	Introduction to Computer for Scientific Applications	3.0	Engineering Thermodynamics I	3.0	Engineering Thermodynamics II	3.0		
	Engineering Drawing II	3.0	Solid & Structural Mechanics I	3.0	Solid & Structural Mechanics II	3.0		
	Engineering Material Science I.	3.0	Fluid Mechanics I	3.0	Fluid Mechanics II	3.0		
			Computer Aided Drawing	3.0				

BACHELOR OF SCIENCE IN MECHANICAL AND MANUFACTURING ENGINEERING

1. Philosophy of the programme

The Mechanical and Manufacturing Engineering Programme imparts knowledge that influences mindset to reengineer mechanical and related systems through internalizing science based comprehensive mechanisms for sustained development.

2. Rationale

There is a great demand for mechanical engineers with a strong bias in manufacturing and maintenance sectors of the discipline in both emerging and developed economies of the world. These specialists should be equipped with the state of the art skills, knowledge and work attitude necessary in accomplishing product design, manufacture and maintenance of machines / plants, and in addition, ability to provide needed marketing and leadership in industries. The need of having a technically oriented with emphasis on application of modern engineering sciences particularly in the design and production of machines greatly influenced the development of the programme. The principal objective is to impart to the learners knowledge necessary to make a carrier working as an engineer in this rapidly changing discipline. Graduates with knowledge underlying engineering sciences and training in modern manufacturing processes and systems make sound technical and commercial judgement crucial to industrialization of a developing nation and bring creative and forward looking to the future of work. Not to be forgotten, mechanical engineering graduates get suitable and ready employment in a wide range of industries and service sectors both locally and in the world at large.

3. Goal of the Programme

Bachelor of Science in mechanical and manufacturing engineering programme aims to train highly skilled graduates who are technological leaders of industries and actively engage in engineering research and innovations.

4. Programme Learning Outcomes

At the end of the programme the graduate should be able to apply with judgement the knowledge, skills and attitudes to:

PLO 1: Design product, select material, plan produce, evaluate and market products.

PLO 2: Solve problems by analytical methods, work effectively with others, communicate effectively and make good commercial judgment and decision.

PLO 3: Engage the society; be diligent and competent in the performance of their professional obligations.

PLO 4: Effectively participate and practice in modern mechanical and engineering professions. In addition s/he should provide leadership in the industrial, public or private manufacturing sectors of the economy.

The programme adequately covers all the thematic areas and complementary units of an undergraduate course in mechanical engineering but there is little room left for specialization in the final year of study where one would select option in either;

- i) Manufacturing Engineering or
- ii) Plant Engineering

5. Mode of delivery

The programme will be on Full Time and Part Time basis.

6. Academic Regulation for the Programme

6.1 Admission Requirements

- i) All candidates admitted to the degree program of B.Sc. in Mechanical and Manufacturing Engineering must satisfy the minimum entry requirement as stipulated in the common university entrance regulations.
- ii) In addition, candidates must meet the cut-off points for the year, as determined from the following subject clusters in Kenya Certificate of Secondary Education (K.C.S.E.).

Alternative A

- Mathematics
- Physics
- Chemistry
- Biology, Geography or any Technical Subject

Alternative B

- Mathematics
- Physical Sciences
- Either Geography or Biological Sciences Or any Technical Subjects

- (iii) Those holding qualifications equivalent to the above from institutions recognized by Egerton University Senate may be also admitted.
- (iv) Admission may be offered to qualified outstanding Diploma holders in related Engineering disciplines or equivalent qualifications with industrial experience. Such cases will be determined on individual merit by the University.

6.2 Regulation on Credit Transfer

Credit transfers shall be in accordance with Egerton University Statute number 36(3) of 2013.

6.3 Course Requirements

The course requirements include, class attendance including practical's, Industrial visits and Engineering practice. These should follow ISO procedure for teaching (EU/AA/OP/06 rev3)

6.4 Student Assessment Criteria

Student assessment shall be conducted in accordance with Egerton University Statute number 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute number 36(6) of 2013.

6.6 Examination Regulations

Examinations regulations for this programme shall be conducted in accordance with Egerton University Statute number 36(5) of 2013.

The following practical courses shall be examined as stipulated below:

- (i) Engineering Design Courses (MMEN 110 / 111 / 220 / 432 / 433 / 532 / 533)
Final examination shall accounts 40% of total marks and Course Work Assignments 60 %
- (ii) Engineering practice (MMEN 260) shall be examined wholly by continuous assessment as follows:

Practical	70%
Written Report	30%
TOTAL	100%

- (iii) Industrial Attachment I and II (MMEN 360 & MMEN 460) shall be examined by assessing the student at his/her industrial attachment place, oral examination and final report submission to the Department as follows:

i.	Industrial Supervisor	20%
ii.	University Supervisor	20%
iii.	Oral Presentation	20%
iv.	Final Report Submission	40%

TOTAL	100%

- (iv) Research Project I and II (MMEN 561 & MMEN 562): Design and implementation of student Research projects shall be examined by course work during semester I and II of fifth year of the study including project proposal, project implementation, final report and oral examination at the end of second semester of the fifth year

The final report must be typed and bound in standard format and shall be examined as follows:

i.	Project Proposal Defences	20%
ii.	Industrial Research Proposal Submission	20%
iii.	Industrial Research project oral presentation	20%
iv.	Industrial Research Final Submission copy	30%
v.	Manuscript preparation	10%
TOTAL	100%	

6.7 Moderation of Examination

Moderation of examination shall be conducted in accordance with ISO procedures EU/AA/OP/07.

6.8 Graduation Requirements

The duration for this programme is five academic years equivalent to ten semesters. Each academic year shall consist of two semesters.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute number 36(17a) of 2013

7. Course Evaluation

Course evaluation shall be conducted in accordance with ISO procedures on effectiveness evaluation EU/AA/OP/04.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme shall be conducted in the Department of Industrial and Energy Engineering in the Faculty of Engineering and Technology at Egerton University. The programme academic leader shall be appointed as per the University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated (self assessment) at the end of each academic cycle based on ISO procedures EU/VC/OP/05. The programme shall be benchmarked with at least one such programme in a highly ranked University.

8.3 Course Coding

The coding used for all courses pertaining to this degree program is MMEN, standing for Mechanical and Manufacturing Engineering followed by three (3) digits as set out below;

First digit indicates the year of the course (i.e. 1,2,3,4 and 5)

Second digit indicates the course and level in- group as:

- 0- Introductory
- 1- Basic Engineering
- 2- Engineering and Technology
- 3- Industrial Engineering
- 4- Industrial Systems Engineering
- 5- Energy Engineering and Management
- 6- Research
- 7- Industrial Attachment and Outside Visits
- 8- Service Courses

Third digit indicates the sequencing of courses.

The codes for courses offered to this department by other departments in the University shall apply as described in their respective schedules.

9. Courses/ Units offered for the programme

9.1 Schedule of Courses

a) University Common Courses

CODE	TITLE	L	P	C.F
COMP 111	Computer Science I.	45	15	3.5
COMS 101	Communication Skills.	45	0	3.0
ZOOL 143	HIV/ AIDS and Society.	45	0	3.0
AGED 248	Technical Report Writing	45	0	3.0
ENSC100	Environmental Studies	45	0	3.0
MMEN462	Research Methods	45	0	3.0
AGBM 102	Entrepreneurship	45	0	3.0
TOTALS		315	15	21.5

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
MMEN 100	Introduction to Manufacturing.	30	30	3.0
MMEN 110	Engineering Drawing I.	30	30	3.0
MATH 116	Introduction to Pure Mathematics.	45	0	3.0
MATH 118	Applied Geometry	45	0	3.0
CHEM 102	Chemistry I.	30	30	3.0
PHYS 103	Physics I.	30	30	3.0
COMP 111	Computer Science I.	45	15	3.5
COMS 101	Communication Skill.	45	0	3.0
TOTALS		300	135	24.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F
MMEN111	Engineering Drawing II.	30	30	3.0
MMEN120	Materials	30	30	3.0
MATH 117	Science I	45	0	3.0
	Differential Calculus for Engineering.	45	0	3.0
MATH 222	Integral Calculus for Engineering.	30	30	3.0
	Chemistry II.	30	30	3.0
CHEM 130	Physics II.	45	15	3.5
PHYS 105	Computer Science II.	45	0	3.0
COMP 102	HIV/ AIDS and Society.			
ZOOL 143				
TOTALS		300	135	24.5
TOTALS FOR YEAR I		600	270	49.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
MMEN 210	Workshop Technology.	30	30	3.0
MMEN 215	Fluid Mechanics I.	30	30	3.0
MMEN 220	Computer Aided Drawing.	30	30	3.0
MMEN 222	Machine Elements I.	30	30	3.0
MMEN 224	Engineering Thermodynamics I.	30	30	3.0
MMEN 226	Solid and Structural Mechanics I.	45	0	3.0
MMEN 227	Vector Calculus	45	0	3.0

226	for Engineering. Technical Report Writing.			
MATH 221				
AGED 248				
TOTALS		270	180	24.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
MMEN 217	Fluid Mechanics II	30	30	3.0
MMEN 221	Materials Science II	30	30	3.0
MMEN 223	Machine Elements II	30	30	3.0
MMEN 225	Engineering Thermodynamics II	30	30	3.0
MMEN 227	Solid and Structural Mechanics II.	45	0	3.0
MMEN 230	Manufacturing Engineering I.	30	30	3.0
MATH 223	Multivariable Calculus for Engineering.	0	120	4.0
ECEN 212	Electrical Engineering I Practice (8 weeks)			
MMEN 260				
TOTALS		255	330	28.0
TOTALS FOR YEAR 2		525	510	52.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
MMEN315	Fluid Mechanics III.	30	30	3.0
MMEN322	Planar Mechanisms I.	30	30	3.0
MMEN324	Engineering Thermodynamics III.	30	30	3.0
MMEN326	Solid and Structural Mechanics III.	30	30	3.0
MMEN330	Manufacturing Engineering II.	30	30	3.0
MATH 340	Differential Equations for Engineering.	45	0	3.0
ECEN 312	Electrical Engineering II	30	30	3.0
COMP 202	Scientific Programming	30	30	3.0
TOTALS		255	210	24.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
MMEN 317	Fluid Mechanics IV.	30	30	3.0
MMEN 323	Planar Mechanisms II.	30	30	3.0
MMEN 325	Engineering Thermodynamics IV.	30	30	3.0
MMEN 327	Solid and Structural Mechanics IV.	30	30	3.0
	Metrology and Quality	45	0	3.0

MMEN 335	Control. Analytical Methods for Engineering.	30	30	3.0
MATH 341	Engineering Design Principles	30	30	3.0
AGEN 332	Power Electronics.	0	120	4.0
ECEN 334	Industrial Attachment I (8 weeks)			
MMEN 360				
TOTALS		255	330	28.0
TOTALS FOR YEAR 3		510	540	52.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F
MMEN 422	Spatial Mechanisms I	30	30	3.0
MMEN 430	Manufacturing Engineering III	30	30	3.0
	Machine Design I	30	30	3.0
MMEN 432	Materials Science III	45	0	3.0
MMEN 434	Industrial Management I	45	0	3.0
MMEN 451	Engineering Statistics.	30	30	3.0
	Instrumentation	45	0	3.0
STAT 456	Environmental Studies			
ECEN 421				
ENSC 100				
TOTALS		285	150	24.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F
MMEN 423	Spatial Mechanisms II.	30	30	3.0
MMEN431	Manufacturing Engineering IV.	30	30	3.0
MMEN 433	Machine Design II	30	30	3.0
	Eng. Economics and Finance.	45	0	3.0
MMEN 450	Industrial Management II.	45	0	3.0
MMEN 452	Research Methods	45	0	3.0
MMEN 462	Numerical Methods for Engineering.	30	30	3.0
MATH 439	Control Engineering.	0	120	4.0
ECEN 422	Industrial Attachment II (8 weeks)			
MMEN 460				
TOTALS		300	240	28.0
TOTALS FOR YEAR 4		585	390	52.0

YEAR 5 SEMESTER 1

CODE	TITLE	L	P	C.F
MMEN 522	Machine Vibrations.	30	30	3.0
MMEN 530	Manufacturing Engineering V.	30	30	3.0
	Machine Tool Design.	30	30	3.0
MMEN	Experimental	30	30	3.0

532	Stress Analysis.	45	0	3.0
MMEN	Operations			
542	Research.	15	60	3.0
MMEN	Research	30	30	3.0
550	Project I.	30	30	3.0
MMEN	Elective 1			
561	Elective 2			

TOTALS		240	240	24.0

ELECTIVES ONE

MAINTENANCE GROUP				
CODE	TITLE	L	P	C.F
MMEN	Gear	30	30	3.0
542	Mechanisms.	30	30	3.0
MMEN	Fracture			
544	Mechanics.	30	30	3.0
MMEN	Renewable			
551	Energy.			
MANUFACTURING GROUP				
MMEN	Jig and Fixture	30	30	3.0
533	Design.			
MMEN	Fracture	30	30	3.0
544	Mechanics.			
MMEN	Renewable	30	30	3.0
551	Energy			

ELECTIVES TWO

MAINTENANCE GROUP				
CODE	TITLE	L	P	C.F
MMEN	Tribology.	30	30	3.0
546	Hydraulic	30	30	3.0
MMEN	power and			
555	Control.			
MANUFACTURING GROUP				
MMEN	Design of	30	30	3.0
536	Mechatronic			
MMEN	Systems I.	30	30	3.0
538	Computer			
MMEN	Aided			
538	Design/Manufa			
MMEN	cture			
538	CAD/CAM			

YEAR 5 SEMESTER 2

CODE	TITLE	L	P	C.F
MMEN512	Industrial Law.	45	0	3.0
MMEN513	The Engineer in	45	0	3.0
MMEN531	Society.			
MMEN531	Industrial	30	30	3.0
MMEN534	Robotics	30	30	3.0
MMEN562	Computer			
MMEN562	Numerical	15	60	3.0
AGBM	Control			
103	Research Project	45	0	3.0
-----	II.	30	30	3.0
-----	Entrepreneurship.	30	30	3.0
-----	Elective 3			
-----	Elective 4			
TOTALS		270	180	24.0
TOTAL FOR YEAR 5		510	420	48.0

ELECTIVES THREE

MAINTENANCE GROUP				
CODE	TITLE	L	P	C.F
MMEN553	Refrigeration	30	30	3.0
MMEN554	and Air			
MMEN554	Conditioning.	30	30	3.0
MMEN558	Power Plant			
MMEN558	Engineering.	30	30	3.0
MMEN558	Internal			
MMEN558	Combustion			
MMEN558	Engines.			
MANUFACTURING GROUP				
MMEN535	Engineering	30	30	3.0
MMEN535	Elasticity and			
MMEN535	Plasticity.			
MMEN554	Power Plant	30	30	3.0
MMEN554	Engineering.			

ELECTIVES FOUR

MAINTENANCE GROUP				
CODE	TITLE	L	P	C.F
MMEN556	Boiler	30	30	3.0
MMEN557	Operations and			
MMEN557	Maintenance.	30	30	3.0
MMEN557	Industrial			
MMEN557	Engineering.			
MANUFACTURING GROUP				
MMEN537	Design of	30	30	3.0
MMEN539	Mechatronic			
MMEN539	Systems II.	30	30	3.0
MMEN539	Computer			
MMEN539	Controlled			
MMEN539	Manufacturing .			

(c) Course Descriptions.

MMEN 100-Introduction to Manufacturing Engineering; (L/P-30/30); CF: 3.0; Y1S1

Historical developments: early development, first and second industrial revolutions, the economic role of manufacturing, manufacturing as a technical activity. Manufacturing systems. Problems of conventional manufacturing systems. Strategy in modern manufacturing systems. Computers in manufacturing and control of manufacturing processes. Career prospects in manufacturing industry in the future.

MMEN 110-Engineering Drawing I; (L/P-30/30); CF: 3.0; Y1S1

Introduction: - Concepts, development and types of drawings, drawings equipment and uses, lettering and line work, title block for manufacturing drawings. Geometric constructions:-polygons, arcs, loci, cycloids, involutes, ellipse, parabola, and helices. Orthographic projections 1st and 3rd Angles: - isometric, oblique and perspective drawings. Sectional views, Geometric construction of regular bodies. Auxiliary views, true lengths and true shapes. Intersections and interpenetrations, development of surfaces, prisms, cones and spherical shapes. Freehand sketching: - sketching materials, isometric grid paper, scaling and properties.

MMEN 111-Engineering Drawing II; (L/P-30/30); CF: 3.0; Y1S2

Removed views: - normal, inclined, oblique and parallel edges. Threads and fasteners. Assembly drawing: - Sectioning mechanical drivers, detailed machine parts, interchangeability. Limits and tolerances: - limits and fits, method of indicating tolerances, geometrical and positional tolerances. Line drawing: - Electrical circuits and symbols, pneumatic symbols.

MMEN 120-Material Science I; (L/P-30/30); CF: 3.0; Y1S2

Structure of materials: atoms and molecules, weight of atoms, electron configuration, electron valence, bonding forces, primary bonds: -ionic, covalent and metallic, secondary bonds: - Vander Waal's forces; dispersion, dipole and hydrogen bonds. Macro-structure: amorphous and crystalline structure, lattice planes of metals, cubic lattice structures and hexagonal close packed. Allotropic transformation; lattice planes and directions. Crystallization of metals on solidification, Formation of alloys, thermal equilibrium diagrams and lever rule. Heat treatment of plain carbon steels. Age hardening.

YEAR TWO

MMEN 210-Workshop Technology; (L/P-30/30); CF: 3.0; Y2S1

Industrial safety: Health and safety act, safety at work (general), personal safety, workshops safety, fire safety and First aid. Bench work: tools and measuring instrument and their applications. Bench fitting and operation sequence. Sheet metal processes. Machine tool operations and processes: lathe work, milling, drilling and grinding. Joining processes: mechanical joining, riveting, shrink fitting, welding and adhesive joining. Woodwork: Nature and types of woods, methods of construction, woodworking hand tools. Wood working machines, working principles, applications, maintenance and safety aspects. Joinery and carpentry work.

MMEN 220-Computer Aided Drawing; (L/P-30/30); CF: 3.0; Y2S1

History and evolution of CAD and CAM. Architecture of CAD, CAD hardware systems, CAD software systems, types of such AutoCAD and design CAD, Computer aided design and drafting systems, Auto-CAD and applications in the design machines, part

design and drafting. Drawing office organization. Introduction to a computer aided part programming system.

MMEN 222-Machine Elements I; (L/P-30/30); CF: 3.0; Y2S1

Springs; - leaf, coil and tensional, spring materials, construction, inspection and safe fitting procedures. Belt drives; - construction and characteristics, flat belts, ratio of tensions, power transmission, V- belts, centrifugal tension in a belt. Clutches; - functions, disc and conical clutches, torque transmitted. Power Screws; - torque to raise and lower the load, screw thread efficiency, ACME thread screws. Roller Chains; - chain selection, chain length, fitting, adjustment and inspection.

MMEN 224-Engineering Thermodynamics 1; (L/P-30/30); CF: 3.0; Y2S1

Introduction to First law of Thermodynamics:-heat, work and the system, reversible work, Non-flow equation, steady- flow equation. Working fluid:- liquid, vapour and gas, saturation state properties, wet vapour, properties of superheated vapour, use of steam tables. Perfect gas, heat capacity, Joule's law. Reversible and irreversible processes: Reversible non-flow processes: - constant volume process, constant pressure process, isothermal process, adiabatic, polytropic processes. Irreversible processes:-Free expansion, throttling, adiabatic mixing, and non-steady-flow processes

MMEN 226-Solid and Structural Mechanics I; (L/P-30/30); CF: 3.0; Y2S1

Deformation of materials; direct stress and strain, Hooke's law, Poisson's ratio, volumetric strain, compound bars, thermal stresses and strains and shear stresses and strains. Mechanical properties of materials; mild steel in tension, yield stress, modulus of elasticity, stress-strain curves, Brinell hardness tests, fatigue and creep. Thin-walled pressure vessels; Hoop stress and axial stress in a cylinder, tangential stresses in a

spherical shell, effects of joints and rotating rings. Shear and torsion; shear stress, riveted joints, torsion of a thin tube, twisting of a solid shaft, twisting of hollow shaft, torsion, rigidity and close-coiled helical springs. Strain energy; resilience, impact loads, suddenly applied load and strain energy in pure shear.

MMEN 215-Fluid Mechanics I; (L/P-30/30); CF: 3.0; Y2S1

Density – Viscosity – Surface tension – compressibility – capillarity – Hydrostatic forces on plane – inclined and curved surfaces – buoyancy – centre of buoyancy, meta centre, Control volume – Fluid Kinematics - Types of flows; Steady flow, Unsteady flow, Uniform and Non Uniform flow, Rotational flow, Irrational flow, 1-D, 2-D, 3-D flows– Streamline and Velocity potential lines- Euler and Bernoulli's equations and their applications – moment of momentum – Momentum and Energy correction factors – Impulse – Momentum equation- Navier-Stokes Equations-Applications. Boundary layers – Laminar flow and Turbulent flow – Boundary layer thickness – momentum – Integral equation – Drag and lift-Separation of boundary layer-Methods of separation of boundary layer

MMEN 221-Materials Science II; (L/P-30/30); CF: 3.0 Y2S2

Materials production: extraction, refining, classification, general properties and applications of: iron and carbon steels, copper, aluminium, zinc, magnesium, nickel and titanium alloys and new metals. Cast iron: powder metallurgy. Corrosion- types and prevention. Plastics processing, classification, general properties, application of polymer materials; polymerization mechanism. Copolymers. Elastomers, ceramics and composites and their applications in manufacturing

MMEN 223-Machine Elements II; (L/P-30/30); CF: 3.0; Y2S2

Engine Speed Controls; - types and features of governors, sensitiveness, stability, isochronisms and hunting, governor effort and power, controlling force. Flywheels; - types of flywheels mass of a given coefficient of fluctuation speeds. Gears;-types of gears, conjugate action, interference and the minimum number of teeth, gear trains, compound and planetary trains. Cams; - types of cams, cam profiles and performance diagrams.

MMEN 225-Engineering Thermodynamics II; (L/P-30/30); CF: 3.0; Y2S2

Second Law of Thermodynamics: heat engine, efficiency, process efficiency, statement due to Plank, Kelvin and Classius, Carnot principle, Thermodynamics temperature scale, reversibility and irreversibility, entropy, perfect gas. Air standard cycles: Carnot cycle, Otto cycle, Diesel cycle, Dual cycle, Atkinson cycle, Joule cycle temperature and saturation Pressure- volume diagrams: thermal efficiency, air compressors, and engine trials, mechanical and thermal efficiency. Steam power cycles: Carnot, Rankine, reheat, regenerative, back pressure turbines, steam and reaction turbines stages, efficiency, pressure compounding pressure, volume, temperature- saturation, h-s diagrams; super saturation, degree of super cooling.

MMEN 227-Solid and Structural Mechanics II; (L/P-30/30); CF: 3.0; Y2S2

Beams: types of load, classification, a cantilever, beam and beam reactions. Bending diagrams; shearing force and bending moment diagrams. S.F and B.M diagrams for an applied moment and inclined loading, load intensity, shear force and B.M relationships, maximum shear force and B.M Stresses by equilibrium: Coulomb's theory, the neutral axial, determination of stresses by equilibrium method. The bending theory; the bending formula, composite beams and skew loading. Deflection of beams: the radius of curvature, elastic

curve, differential equation of elastic curve, deflection by integration. Beam analysis by discontinuity functions; Macaulay functions, singularity functions, representation of loads by discontinuity functions, shear stresses owing to bending; shear stress expression, shear stress over a rectangular and I – section beams, horizontal shear in flanges, shear centre.

MMEN 230-Manufacturing Engineering I; (L/P-30/30); CF: 3.0; Y2S2

Machining Processes;- Mechanics of machining operation, mechanism of chip formation, heat generation and cutting tool temperature, failure of cutting tool and tool wear, cutting tool materials, tool life and machining, cutting fluids. Machining processes: shaping and planning, turning, boring, drilling, milling. Abrasive machining and finishing operations: Grinding, surface finish in machining and grinding. Economics of machining operations: optimizing cutting parameters for minimum costs, optimum cutting speed for maximum efficiency.

MMEN 260-Engineering Practice; (L/P-30/30); CF: 4.0; Y2S2

Application of basic theory in workshop practice. Economic use and storage of tools and materials in the workshop. Machining project involving: machine tool application to produce precision and functional assembly work. Advanced machining: project work involving rounded workshop practice, including computer aided design and drafting. Problem solving using computers and high level language in solving scientific problems.

MMEN 217-Fluid Mechanics II; (L/P-30/30); CF: 3.0; Y2S2

Conservation laws for mass - Momentum and energy in steady flow - Velocity of sound - Bulk modulus of elasticity, Coefficient of Compressibility - Stagnation state - Critical state - Various regions of flow -

Physical significance of Mach number - Crocco Number

- Characteristic Mach number - Critical Mach number - Mach cone - Von - Karman's rules for supersonic flow - Differences between Incompressible and Compressible flows. Properties of atmosphere - Effect of Mach number on compressibility: T-S and H-S diagrams showing Nozzle and Diffuser process. Fanno flow - Fanno curves - Equation and its solution - Variation of flow properties with duct length - Applications. Isothermal flow with friction - Variation of flow properties

Isentropic flow through a constant area duct - Absence of any of the factors which can trigger a change in fluid flow behavior like area change - Heat transfer - Friction and work transfer - Non variation of properties.

Isentropic flow through a variable area duct - Mach number variation - Area ratio as a function of Mach number - Impulse function - Mass flow rate through nozzles and diffusers. Phenomenon of choking - subsonic and supersonic designs - Pressure values for nozzles - Diffusers Applications, Rayleigh flow - Rayleigh flow equation - Rayleigh line - Variation of flow properties - Maximum heat transfer - Applications. Non Isothermal flow with heat transfer and friction - Basic formulation - Elementary treatment only

YEAR THREE

MMEN 322-Planar Mechanisms I; (L/P-30/30); CF: 3.0 Y3S1

Mechanism: definition, terminology, degrees of freedom. Links. Kinetic pair, lower and higher pairs, kinematics chain, mechanisms, inversions, degrees of freedom. Velocity diagrams: relative velocity, instantaneous centre method, Arnoldhold-Kennedy's method, quick-return mechanisms. Acceleration diagrams: circular path motion, acceleration of a link,

acceleration image, acceleration centre of a link, Coriolis component. Analysis of mechanisms: Freudenstein's equation, transmission angle, mechanical advantage, four-bar chain, reciprocating engine mechanism. Mechanisms synthesis: function generation, method of least square. Computer simulation case study problem.

MMEN 324-Engineering Thermodynamics III; (L/P-30/30); CF: 3.0; Y3S1

Mixtures and psychrometric: psychrometric and mixtures; psychrometric chart, introduction to air-conditioning, cooling towers. Combustion and combustion processes: definitions, fuel and product analysis, stoichiometric air - fuel ratio, chemical balance reaction. Chemical equilibrium, dissociation, internal energy and enthalpy of reaction, enthalpy of formation, calorific value of fuels, air and fuel-vapour mixtures. Internal combustion engines and fuel: criteria of performance; indicated power, brake power, friction power, volumetric efficiency, factors engines influencing performance. Heat transfer: Conduction, convection, radiation, Fourier's law of conduction, Newton's law of cooling, steady and unsteady conduction, conduction through composite walls, conduction through thick-walled cylinders, condition with internal heat generation, thermal conductivities of materials in common use.

MMEN 326-Solid and Structural Mechanics III; (L/P-30/30); CF: 3.0; Y3S1

Two- dimensional analysis of stress and strain: expressions for 2-D stresses, action of shear stresses on inclined planes, principal stresses, generalized strains, strain transformation and principal strains. Mohr's circle; - stress application, construction of Mohr's circle, strain application. 3-D State of stress and strain: Principal stresses, hydrostatic state of stress, stress-strain relationship and strain measurement. Elastic failure in complex stress systems; Maximum principal

stress, Tresca's Criterion and von - Mises failure theories. Combined loading; - bending and axial, bending and torsion, torsion and axial loads. Inelastic bending and torsion; Plane cross section, equations of inelastic bending, yield moment, plastic moment, shape factor, elasto- elasticity bending, non linear torsion, shear stress distribution, elasto- elastic torsion. Unsymmetrical sections, the neutral axis, principal centroid axes and general theory of bending.

MMEN 330-Manufacturing Engineering II; (L/P-30/30); CF: 3.0; Y3S1

Plastics deformation and yield criteria, relationship between tensile and shear yield stresses. Mechanics and operations of forming processes: Rolling, forging, drawing, deep drawing, Bending, extrusion, punching and blanking. Bulk deformation; hot and cold working of metals, rolling, drawing, extrusion and forging processes. Friction and lubrication in metal forming. Defects in metal forming.

MMEN 315-Fluid Mechanics III; (L/P-30/30); CF: 3.0; Y3S1

Flow with normal shock waves, governing equations- Prandtl-Meyer equation, Impossibility of rarefaction shock, Mach number downstream of shock, Property. Variation across shock - Strength of shock wave, entropy change. Characteristics of flow through a C-D nozzle at various back pressures. Normal shocks in Fanno and Rayleigh flow. Flow with oblique shock waves (Qualitative treatment) Air craft propulsion, Types of jet engines, Energy flow through jet engines, Thrust power and Propulsive efficiency, Turbojet components, Diffuser compressor, Combustion chamber, Turbines, Exhaust system, Performance of jet engines, Thrust augmentation - Pulse jet and Ram jet engines. Rocket propulsion, Rocket engines, Basic theory of equation - Thrust effective jet velocity, Specific impulse, Rocket engine performance - Solid and Liquid propellant rockets, Comparison of various

propulsion systems - Principle and Working of Helicopter.

MMEN 323-Planar Mechanisms II; (L/P-30/30); CF: 3.0; Y3S2

Dynamics of Machines;- Newtonian Mechanics and dynamics forces inertia forces in mechanisms. Compound pendulum, equivalent systems, inertia forces in the reciprocating engine, turning moment diagrams. Kinetostatic analysis. Kinematic synthesis; function generation, path generation, motion generation, graphical and analytical methods. Balancing: static and dynamic balances, masses in one plane, several masses in different planes, forces at bearings, Partial primary balance of a reciprocating engine, direct and reversed cranks. Computer Simulation.

MMEN 325-Engineering Thermodynamics IV; (L/P-30/30); CF: 3.0; Y3S2

Convection heat transfer: boundary layers (laminar and turbulent); heat transfer coefficients; Nusselt, Prandtl, Stanton and Grashoff's numbers; Duct/ pipe flow(fully developed flow); Natural convective (horizontal and vertical layers, Grashoff's and Rayleigh numbers); combined modes of heat transfer: types of heat exchangers; LMTD and NTU analysis and designs for different exchangers flow configurations; Radial heat transfer; Definition, law and surfaces, black body radiation, Stefan, Boltzman and Lamber's laws, shape and geometric factors, radiation exchanger between grey bodies, heat transfer coefficient for radiation, gas radiation.

MMEN 327-Solid and Structural Mechanics IV; (L/P-30/30); CF: 3.0; Y3S2

Thick-walled cylinders: Hoop and axial stresses in thin walled pressure vessel, Lame's equations, Lame lines, thick cylinders with internal and external pressure, end constraints, compound cylinders, shrink-fit. Stresses due to rotation; rotating pulleys, discs of uniform strength, thermal stresses; thermal stresses and strains in thick

cylinders, steady state temperature gradient, constant temperature gradient, constant temperature difference and other temperature distribution. Columns; Elastic stability and critical load, Euler column formula, end conditions eccentric loading and secant formula. Energy methods; Strain energy in beams, Castigliano's theorems, deflection of curved members, unit- load method. Determinate and inter determinate structures; Virtual displacement and forces, reciprocal characteristic of linear-elastic system. Curved beams; beams with small initial curvature, large initial curvature, rectangular section beams.

MMEN 335-Metrology and Quality Control; (L/P-30/30); CF: 3.0; Y3S2

Precision measurements; - length standards, interferometry, slip gauge and applications in linear and angular displacement, indirect measurement, straightness testing, flatness testing, measurement of surface texture. Practical metrology; dimensional control, gauging and inspection. Screw thread measurements, tolerance and gauging. Comparators; - mechanical, electrical, optical and pneumatic comparators. Gear teeth measurements. Machine tool alignment. Statistical Quality Control; - process variability and economic sampling plan. Time and cost estimates in manufacturing.

MMEN 360-Industrial Attachment I; (L/P-0/120); CF: 4.0; Y3S2

Students will be attached to an approved industrial establishment for a period of eight (8) weeks for practical experience. Practical attachment will be assessed through student's logbook summaries, student reports, University appointed examiners and site supervisors.

MMEN 317- Fluid Mechanics IV; (L/P-30/30); CF: 3.0; Y3S2

Hydraulics Vs Pneumatics – Standards- Application – Basic Principle of Hydraulics-Pascal's Law-Transmission and multiplication of force-Basic properties of hydraulic fluids- liquid flow- static head pressure-pressure loss – Power-Basic principle of pneumatics: absolute pressure and Temperature- gas laws- vacuum. Hydraulic Pump- graphic symbol- pump types -pump flow and pressure- pump drive torque and Power- pump efficiency –air compressor- graphic symbol-compressor types- compressor sizing- vacuum pumps, Cylinders-accumulators –FRL-Directional control Valves- Pressure control valves-Flow control Valves-electronic control components- symbols, Introduction, Sealing Devices - Reservoir System - Filters and Strainers - Beta Ratio of Filters - Wear of Moving Parts - Gases in Hydraulic Fluids - Temperature Control - Troubleshooting

MMEN 433-Machine Design II; (L/P-30/30); CF: 3.0; Y4S2

Project planning in design; the Gantt Charts, Network analysis. Basic requirements in design; factors to consider, materials selection manufacturing aspect, standardization and preferred numbers. Applied ergonomics; the human in the workspace and liability. Design Economics; principles of economic design, comparative and economic analysis, value engineering. Criteria of Design Calculations; stress concentration, factor of safety and yielding criteria for ductile metals. Design of machine elements; shafts and axles, couplings, clutches, cams, bearings. Design Reports drawings produced during product design, bills of materials, patent applications, quality assurance, maintenance instructions and design change notes.

YEAR FOUR

MMEN 422-Spatial Mechanisms I; (L/P-30/30); CF: 3.0; Y4S1

Introduction: Possible link connection types allowing for 3-D motion, revolute, prismatic slides, helical pair, cylindrical pair, spherical and plane joints, agitation mechanisms, Hook's joint, universal joint, Degrees of Freedom. Planar Translation, concatenation of finite displacements, rotation about an axis not through the origin. Spatial Transformations: general displacement finite, rotation, direction cosines. Euler Angles: simple rotations, Euler angles and direction cosines. Spatial Translation, the 4x4 translation and rotation matrix with axis through origin. Spatial Displacement Analysis: elementary matrices and application, joint modelling: revolute, cylindrical screw, prismatic and spherical joint. Robot Analysis: kinematics transformations, robot coordinate systems, generic formulas. Computer Simulation- Case Study.

MMEN 430-Manufacturing Engineering III; (L/P-30/30); CF: 3.0; Y4S1

Principles of solid phase welding, principles of fusion welding: Heat source, modes of metal transfer in arc welding, heat flow characteristics, gas metal reaction, cooling fusion welding. Principles of solid/ liquid state joining: Soldering and brazing, adhesive bonding. Various joining processes: Solid phase welding at elevated temperature, arc welding, resistance welding, gas welding, thermite welding, ultrasonic welding, electron beam welding and explosive welding. Weld defects and inspection.

MMEN 432-Machine Design I; (L/P-30/30); CF: 3.0 Y4S1

Design functions in manufacturing organization. Principles of systematic design. Feasibility study, value analysis, value engineering, standardization and design innovation. Product and process design aspects. Design

life cycle; stages in the evolution of product, economic consideration and obsolescence. Dimensioning and fits. Design of gears, fasteners, couplings and selection of fabricated steel structural sections. Advanced design projects.

MMEN 434-Materials Science III; (L/P-30/30); CF: 3.0; Y4S1

Definition of composite, types of composites materials. Theory and characteristics of reinforcements. Wood and wood based composites, natural fibre reinforced materials. Fracture toughness and impact strength of composites. Mechanical, physical, electrical, thermal and dielectric properties of composite materials. Failure mechanisms, failure criteria and the dynamics properties of composites. Semi materials. Methods of producing composite and semi-conductor materials.

MMEN 451-Industrial Management I; (L/P-45/0); CF: 3.0; Y4S1

Work and work method standards, payment and incentives, capacity management; capacity planning and scheduling. Project management. Inventory management, purchasing and supply. Total management (ISO-9000); Reliability. Maintenance and replacement. Performance measurement. Forecasting techniques.

MMEN 423-Spatial Mechanisms II; (L/P-30/30); CF: 3.0; Y4S2

Review of vector and matrix calculus; Vector algebra, application to mechanics, vector calculus, cylindrical and spherical coordinates. Matrix calculus; kinetics of rigid bodies, rotation about a fixed points, moving coordinates. Analysis of Spatial Mechanisms; position, velocity and acceleration analysis, spatial slider crank mechanism. Modelling of Spatial Mechanisms. Dynamics of Spatial Mechanisms; Lagrange's equations, GibbsAppell's equation, dynamics of a robot manipulator. Angular Momentum Analysis; single particle, system of particles and rigid body, angular

momentum analysis, inertia tensor, motion of a rigid body in space, Euler's equations of motion. Computer Simulation. Case Study Problem.

MMEN 431-Manufacturing Engineering IV; (L/P-30/30); CF: 3.0; Y4S2

Pattern and mould: pattern allowances, types of pattern, types of moulds. Melting gases in metal and furnaces. Gating design, cooling and solidification: mechanism of solidification, rate of solidification, solidification of large casting in an insulating mould, solidification with constant casting surface temperature, continuous casting process, riser design and placement, residual stress, effect of friction and distribution of melt. Casting processes: Dry sand mould casting, shell mould casting, investment casting, gravity die casting, centrifugal casting, slush casting CO₂ process. Casting defects and quality inspection.

MMEN 450-Engineering Economy and Finance; (L/P-45/0); CF: 3.0; Y4S2

Modelling of economic factors that affect design and manufacture; cash flow and time value concepts. Evaluation of alternatives; present, future, periodic and annual worth. Rates of returns Internal Rate of Returns (IRR) and External Rate of Return (ERR), comparison of alternative costs. Sensitivity; breakeven analysis; replacement analysis. Depreciation and depletion. Impact of taxes and inflation on investment. Cost measurements in industry. Capital budgeting and risks analysis, expected value Bayesian analysis and decision making. Analysis of public projects and tendering. Project scheduling and management. Critical Path Methods.

MMEN 452-Industrial Management II; (L/P-45/0); CF: 3.0; Y4S2

Industrial organization; Development of management thought and influences. Principles of Management; Planning and Forecasting, Organizing, Directing, Co-

ordination and Controlling; Leadership and motivation; Principles of effective control. Quality control, budgetary control and effective control. Quality control, budgetary control and their significance in manufacturing. Types and applications of advanced control techniques i.e. Linear Programming (L.P) and Project Evaluation and Review Techniques (PERT) in manufacturing. Decision making; Marketing and sales management. Production; Factory location, layout and material handling. Human resources management and incentive schemes. Financial management of manufacturing business; financial statements and analysis. Manufacturing accounts and partnership accounts. Budgeting; Flexible budgets, capital budgets, cost analysis and controls for forward planning.

MMEN 460-Industrial Attachment II L/P-0/120); CF: 4.0; Y4S2

Students will be attached to an approved industrial establishment for a period of eight (8) weeks for practical experience. Practical attachment will be assessed through student's logbook summaries, student reports, University appointed examiners and site supervisors.

MMEN 462-Research Methods; (L/P-45/0); CF: 3.0; Y4S2

Role of research in technology. Problem identification. Situation analysis. Project proposal: objectives, literature review, research area/materials, methodologies, expected results and discussion. Project work: data collection and analysis techniques, information presentation methods. Research organization: planning, budgeting and costing of research projects. Technical report writing. Dissemination and publication of research results.

YEAR FIVE

YEAR FIVE SEMESTER ONE

MMEN 522-Machine Vibrations; (L/P-30/30); CF: 3.0; Y5S1

Un-damped Free Vibrations;-the energy method, stiffness of spring elements. Damped Free Vibrations; equations of motion and solutions, critical damping, damping less than critical, damping greater than critical, logarithmic decrement. Forced Vibrations; types of response, particular integral, rotating unbalance, support motion, vibration isolation, whirling of shafts. Transient Vibration; transient response, impulse excitation, arbitrary excitation, base excitation, indicial response, shock spectrum. Multi Degree of Freedom Systems; matrix review, Eigen values and Eigen vectors, multi degree of freedom systems, flexibility matrix, interactive method, natural frequencies and mode shapes.

MMEN 530-ManufacturingEngineering V; (L/P-30/30); CF: 3.0; Y5S1

Introduction, Abrasive Jet Machining (AJM); mechanics of AJM, process parameters, abrasive Jet machines. Ultrasonic machining (USM); mechanics of USM, process parameters, ultrasonic machining unit, effects of USM on materials. Electrochemical machining (ECM); electrochemistry of ECM process, kinematics and dynamics of ECM, effect of heat and hydrogen bubble generation, surface finish, tool design, electrolytes, electro chemical machining plant, effect of ECM on materials. Electric Discharge Machining (EDM); Mechanics of EDM, EDM circuits and operating principles, surface finish and machining accuracy, tool electrode and dielectric fluids, effects of EDM on metal surface. Electro Beam Machining (EBM); mechanics of EBM, effects of EBM on materials. Laser Beam Machining (LBM); mechanics of LBM. Plasma Arc Machining (PAM). *Prerequisite: MMEN 431*

MMEN 532-Machines Tool Design; (L/P-30/30); CF: 3.0; Y5S1

Elements of Machine Tool:- Definition, Classification-Tools for Cylindrical work, Tools for flat work, General purpose machine tools, Production machine tools, Special purpose machine tools and Flexible manufacturing system.

Structure: - Design requirements of Bed, Distortion due to static and dynamic loads, Stability of the motion of the carriage under load, Wear resistance of guides, Residual stresses, Levelling, Vibrations. Slip-Stick phenomenon.

Slides and slide ways: - Shape of slide ways, Material of Beds and Guides, Roller Guides, Hydrostatic bearings, Work tables.

Spindle and spindle bearings:- Kinematic of Machine Tool drives for rotational movements, Typical layouts of spindle speeds Kinematic advantages of Geometric progression, Evolution of preferred numbers, Saw diagram for machine tool, Spindle speeds design of head stock, Standardization of a machine tool drives.

Vibration of machine tools and dynamic rigidity, Direction of operation of controls for machine tools, Electric drives for machine tools, Chip disposal in machine tools.

Advanced Design Exercises.

MMEN 533-Jig and Fixture Design; (L/P-30/30); CF: 3.0; Y5S1

Introduction: Tool design objectives, classes of jigs and fixtures types of jigs and furniture considerations; principles of location and design features; principles of clamping and design features. Design features of jigs and fixtures; drill jigs, milling fixtures, turning fixtures, welding fixtures. Design study principle.

MMEN 542-Experimental Stress Analysis; (L/P-30/30); CF: 3.0; Y5S1

Electrical resistance strain gauge: Basic characteristics, gauge sensitivity and factor, transverse stress effects. Dataanalysis: 2-D strains, normal and shear stress

gauges. Rosettes; rectangular, three element and deltarosettes. Strain Gauge Circuits; Wheatstone bridge circuit, bridge sensitivity and arrangements, temperature compensation and null balance bridges. Optics; plane polarizers, wave plates and light conditioning. Polariscopes; isochromatic and isoclinic fringe patterns, calibration methods. Coating Methods;- birefringent and brittle coatings, coating stresses crack pattern and relaxation techniques.

MMEN 550-Operation Research; (L/P-45/0); CF: 3.0; Y5S1

Scope and applications of operations research in manufacturing systems, modelling approach. Linear programming and the solution procedures, graphical, simplex and transportation algorithm, sensitivity analysis, duality. Applications of LP transportation and assignment problems, infeasibility, unboundedness, alternative optimal solutions and degeneracy. Dynamic and integer programming. Probability theory and decision models, game theory, inventory models and simulation. Network models and analysis, Program Evaluation and Review Techniques (PERT) method. Queuing theory and models. Computer programs, computer simulation and modelling.

MMEN 561-Research Project I; (L/P-15/60); CF: 3.0; Y5S1

Preparation of a project proposal on the relevant topics of own choice followed by preliminary work on the project under the supervision of an academic staff. The proposal is subsequently assessed on the basis of seminars and continuous assessment. Any acceptable proposal report is submitted to the project supervisor for review and evaluation by the end of semester one of year five.

ELECTIVES

MMEN 536-Design of Mechatronics I; (L/P-0/30); CF: 3.0; Y5S1

Introduction; overview of typical industrial processes, application of control and mechatronics. System elements; integration of electrical and mechanical components. Critical profiles of major CNC machine tool types e.g., machining centres, turning systems, laser cutting machines, grinding machines, electrical machining equipments and metal deformation machines. Mechatronic approach; control, design process, types of design and integrated product design. Traditional versus mechatronic approaches of design. Design of machine elements. Mechanisms; load conditions, flexibility, modelling and simulation; structures. Design projects and case studies.

MMEN 541-Gear Mechanisms; (L/P-30/30); CF: 3.0; Y5S1

Gears: types of gears, terminology and definitions, fundamental laws of toothed gears, involute properties, interchangeable, and standard gears. Gear trains; Kinematics analysis of planetary gear trains; by formula, tabular and instantaneous centre method. Tooth load and load and power flow in branching planetary gear systems. Cams; cam dynamics, displacement diagrams, profile and derivatives of follower motion, high speed and standard cams, polynoid cam design. Effect of friction. Computer Simulation.

MMEN 544-Fracture Mechanics; (L/P-30/30); CF: 3.0; Y5S1

Types of fracture in metals: theoretical cohesive strength of metals, energy variation, Griffiths, criterion for fracture, stress intensity factor. Elastic plastic toughness, plane fracture modes. Yielding fracture: fatigue crack growth, crack tip plasticity, fracture of single crystals, dislocation theories of brittle fracture curves: under combined stresses, high hydrostatic

pressure on fracture, statistical aspects of brittle fracture, brittle fracture and impact testing.

MMEN 546-Tribology; (L/P-30/30); CF: 3.0; Y5S1

Introduction to Tribology: theories of friction, wear, lubricant properties and testing, hydro dynamics lubrication theory, Reynolds equation, Rayleigh bearing, journal bearing, conical bearing, hydrostatic lubrication.

MMEN 538-Computer Aided Design/ Manufacturing (CAD/CAM); (L/P-30/30); CF: 3.0; Y5S1

History and evolutions of CAD and CAM. Architecture of CAD: CAM hardware systems. CAD software systems: types such as Auto CAD and design CAD. 3D computer aided drafting. Mathematical elements of computer graphics: Derivatives, chain rule, curves and fractals, curve generation, interpolation, B splines, Bezier curves, and fractal fractal lines. Computer graphics: transformations, translations and rotations. Geometric modelling: wireframe, surface and solid modelling. Finite element as a CAD tool: Drafting, modelling and analysis. Advantages and disadvantages of CAD. Introduction to the types and applications of numerically controlled machine tools: Structure of numerical controlled programs and programming for numerical control. Introduction to a Computer Aided Part Programming Systems: Structure and elements of program, the creation of a programme for a given component, examination of post processors production of a component from a post processed file.

MMEN 552-Renewable Energy; (L/P-30/30); CF: 3.0; Y5S1

Introduction: energy demand/supply history, impact of energy crisis on the economy and developing countries. Developing world energy options; Fossil fuels and the need for renewable energy resources; Solar Energy; radiation calculations; solar collectors; thermal energy storage; water and space solar heating; solar cooling; photo voltaic; solar ponds; wind energy; metrological

factors: principles of wind power conversion; wind technology; Biomass: types, energy conversion methods, direct conversion, pyrolysis, gasification, biogas production, alcohol production, fuel extraction; Agro forestry and integrated farming; Briquetting of biomass and charcoal stove technologies; small hydro electric plants: application to small scale industries as source of power; Nuclear and geothermal energy: principles of electricity generation; Energy storage and conversion.

MMEN 555-Hydraulic Power and Control; (L/P-30/30); CF: 3.0; Y5S1

Hydraulic fluids: Incompressibility and Pascal's law; types and properties. Hydraulic Pumps: Pump types, performance characteristics; Hydraulic actuators: motors and hydraulic cylinders; different types of actuators and performance characteristics. Filters and strainers. Valves: Pressure control valves-pressure relief valves, check valves; 2 and 3-position directional control valves, different configurations; pilot valves; flow control valves, restrictor valves. Gauges. Accumulators. Coolers and heaters. Pipes and fittings. Seals and packing's. Hydraulic symbology Hydrostatic transmission systems. Design of simple circuits: Sizing of hydraulic components. Fault diagnosis. Service and maintenance.

YEAR FIVE SEMESTER TWO

MMEN 512-Industrial Law; (L/P-45/0); CF: 3.0; Y5S2

Industrial Law: Nature and source of Law an outline of the laws of tort and contract; Factories Act (cap514); occupational health, safety and welfare; penalties and legal proceedings. Trade Union Act (cap233); legal status of trade unions ,registration membership and liabilities, trade disputes Act (Cap234); jurisdiction of the Industrial Court protection of the essential services, life and property; other relevant Acts, patent Act, Environmental protocol.

MMEN 513-The Engineer in Society; (L/P-45/0); CF: 3.0; Y5S2

Technology in Society: Interrelation of social, economic and scientific factors in stimulating technological advance. Engineering in the service of human and gender issues, professional codes and ethics. Industry and Commerce: Contribution of engineering products and services to the generation of wealth and employment. Integration of design, research, development, production, marketing and sales. Management: The role and responsibility of the engineer in society; Education and training of engineers. The role of employer Associations and Trade Unions, Industrial Safety. Effective Communication and Teamwork

MMEN 534-Computer Numerical Control; (L/P-30/30); CF: 3.0; Y5S2

Computer Numerical Control (CNC) technique and its applications. Design features of CNC machines tools, control considerations, speeds, slide motion, position and velocity controls; position transducers. Computer system considerations. CNC code system; data input mediums; data transmission. Component design consideration, planning and documentation. Machining considerations tooling system and management, programming considerations part programming and verification. Consideration of CNC for Flexible Manufacturing System (FMS), Automated Work Transport, Automatic Guided Vehicles (AGV). Consideration of CNC for CAD/CAM systems. Robotics systems.

MMEN 562-Research Project II; (L/P-15/60); CF: 4.0; Y5S2

The students will be allowed a day (8 hours) per week to research, design and fabricate, and consult with the supervisors. Another 2 hours are allowed every week for the students to present their progress reports on rotational basis. Academic staff members will usually attend.

AGBM 103-Entrepreneurship; (L/P-45/0); CF: 3.0; Y5S2

Definition, nature and scope of entrepreneurship; Role of the entrepreneur in society; conditions necessary for entrepreneurship to evolve; Basic requirements for starting, running and expanding a small business, managing and financing of small businesses.

MMEN 535-Engineering Elasticity and Plasticity; (L/P-30/30); CF: 3.0; Y5S2

Introduction: theory of elasticity and plasticity, stress strain, the yield criteria of metals, stress strain relations, determination of work hardening characteristics, elastic plastic bending of beams, rings, plates. Torsion of prismatic bar of circular and noncircular section, elastic-plastic problems with spherical cylindrical

MMEN 554-Power Plant Engineering; (L/P-30/30); CF: 3.0 Y5S2

Introduction definition, energy, power, power loads, power factors, power rates and components; Internal combustion plants: fuel and combustion, chemistry of pollutant formation; steam power plants; review of vapour cycles; Rankine, Carnot, regenerative, reheating, combustion. Energy flow in steam power plants: conduction, convection and radiation; Boilers: types, installations, components; Combustion equipment; stokers, coal burners, gas and oil burners. Gas loop: flue gas cleaning, ash handling, air pre heaters and draft; Feed water loop: water treatment equipment, water pumps, piping systems, fitting, safety valves and pipe sizing. Nuclear Power Plants, Geothermal Power Plants, Hydro electric Power Stations.

MMEN 558-Internal Combustion Engines; (L/P-30/30); CF: 3.0; Y5S2

Basic engines types and their operation; Classifications of engines; Fuel cycles; Combustion thermodynamics, combustion in spark and compression ignition engines; Fuel for Internal Combustion Engines (ICE); Thermal energy balance of the engine, heat supply and removal,

air and water cooling systems; Engine friction and lubrication; Supercharging, objectives, methods and limits; Turbo-charging testing and performance parameters, engine test rig; special designed engines, stratified, Stirling and the Wankel rotary combustion engine; development in IC engines.

**MMEN 537-Design of Mechatronics II;
(L/P-30/30); CF: 3.0 Y5S2**

The design of micro processor interfaces, including a brief survey of common devices used for this purpose. Programming for control using assembly language, combining of machine code with level language, common actuator types and their mode of control, use of data converters, the construction of circuits to monitor and control a mechanical systems, types and application of industrial programmable controllers. Measurement and factors which cause errors; system errors, random error and human error. Statistical treatment of errors in measurements. Mathematical definitions for precision, repeatability, absolute error, relative error and resolution. Instrumentation bus systems, operating rates and communication ranges. Control; design of bus based controllers and PLC devices. Simulation of system performance by computer modelling. The economic justification for the introduction of computer control. Design case study. Computer simulation.

**MMEN 539-Computer Controlled Manufacturing;
(L/P-30/30); CF: 3.0; Y5S2**

Computer numerical controlled systems: Evolution of Computer Numerical Control (CNC) machine tools, principles of operation, classification and hardware

configurations. CNC operational sequence, program formatting and coding, bar coding, methods of programming and interpolation high level languages. Machine tool control; types of controllers, motion converters, machine tool control drives and actuators, linear systems, rotational drives pneumatic and hydraulic motors, motion converters. Emergent control methods: Concepts of linear and non linear adaptive controllers.

MMEN 531-Industrial Robotics; (L/P-30/30); CF: 3.0; Y5S2

Basic robot elements: types of industrial robots, expected qualities in robots, precaution in the use of robots. Robot configuration: structure of assembly robot systems, axis control, end effectors control, sensors systems, robot controllers. Manipulators Kinematics: open and close loop control, linear control schemes, computed force and torque control. Trajectory planning: joint space techniques, use of-degree polynomials, cubic polynomial trajectories. Robot dynamics: Lag range mechanics, velocity of a point on the manipulator, equations of motion and analysis of robotic manipulator. Computer programming: the LE dynamic model algorithms. Computer simulation design case study.

**MMEN 553-Refrigeration and Air Conditioning
(L/P-30/30); CF: 3.0; Y5S2**

Air conditioning: definitions of psychometric terms, properties of humid air, psychometric processes and use of psychometric chart for standard air conditional calculations, comfort and health, heat transmission through building fabric, solar irradiation, cooling and heating load calculations, room air diffusion

(distribution), fan and duct sizing, acoustic treatment of ducts, systems and equipment; Refrigeration: refrigerants, vapour compression cycle, types of compressors, absorption systems, gaseous systems, thermoelectric systems, flash cooling, heat pumps; Solar refrigeration and air-conditioning.

**MMEN 556-Boiler Operation and Maintenance;
(L/P-30/30); CF: 3.0; Y5S2**

Boilers, boiler mountings and accessories, Flue gas and water flow, Causes of heat loss in boilers. Thermal efficiency of boilers, boiler performance, selection of fuel boiler. Equivalent evaporation, boiler maintenance, control and measuring instruments, soot blowers, circulation of water in boilers, feed water regulators. High pressure boilers, Types of high pressure boilers, Modern trends in generating steam, gas fired boilers, selection of the boilers, piping systems, types of piping systems, size and strength of boiler pipes. Insulations; types of insulation material used in boilers, Materials for pipes, expansion bends, pipe fittings, pipe joints, valves, Heat balance sheet for boiler, Boiler Act

MMEN 557-Industrial Engineering and Management; (L/P-45/0); CF: 3.0; Y5S2

Work and work methods, Measurements and work standards, Payment and Incentives, Capacity Management, Capacity planning and scheduling, Project management, Inventory management, Purchasing and Supply, Total Quality Management (ISO 9000), Reliability, Maintenance and Replacement, Forecasting techniques, Performance Measurement.

9.2 Matrix aligning courses to programme learning outcomes

	Year 1		Year 2		Year 3		Year 4		Year 5	
Programme Learning Outcomes (PLOs)										
	Courses	CF	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Prepare student engineers who can accomplish product design, material selection, efficient production planning, evaluation and marketing, in addition to providing needed leadership in the industrial, public or private manufacturing sectors of the economy.	Engineering Drawing I&II.	6.0	Computer Aided Drawing.	3.0	Planar Mechanisms I&II.	6.0	Spatial Mechanisms I&II.	6.0	Machine Vibrations.	3.0
	Materials Science I.	3.0	Machine Elements I&II.	6.0	Engineering Thermodynamics III&IV	6.0	Machine Design I&II.	6.0	Machine Tool Design.	3.0
	Chemistry I&II.	6.0	Engineering Thermodynamics I&II.	6.0	Solid and Structural Mechanics III&IV.	6.0	Materials Science III.	3.0	Experimental Stress Analysis.	3.0
	Physics I&II.	6.0	Solid and structural Mechanics I&II.	6.0	Electrical Engineering I&II	6.0	Instrumentation.	3.0	Manufacturing Engineering V.	3.0
	Introduction to Pure Mathematics	3.0	Fluid Mechanics I&II.	6.0	Power Electronics.	3.0	Control Engineering.	3.0	Renewable Energy.	3.0
	Applied Geometry	3.0	Electrical Engineering I.	3.0	Fluid Mechanics III&IV.	6.0	Jigs and Fixture Design.	3.0	Industrial Robotics.	3.0
	Differential Calculus for Engineering	3.0	Manufacturing Engineering I.	3.0	Metrology and Quality Control.	3.0	Manufacturing Engineering IV.	3.0	Power Plant Engineering.	3.0
	Integral Calculus	3.0	Materials Science II.	3.0	Engineering Mathematics IV.	3.0				
					Engineering Design Principles.	3.0				
PLO 2: Develop student’s ability to solve problems by analytical methods, work effectively with others, communicate effectively and make good commercial judgment and decisions	Communication Skills.	3.0	Workshop Technology.	3.0	Assembly Language Programming.	3.0	Industrial Management I&II.	6.0	Operations Research.	3.0
	HIV/ AIDS and Society	3.0	Technical Report Writing.	3.0	Industrial Attachment I	4.0	Research Methods.	3.0	The Engineer in Society.	3.0
			Engineering Practice	4.0					Industrial Law.	3.0
									Entrepreneurship.	3.0
PLO 3: Help students to develop an understanding of their roles in the society and to be diligent and	Introduction to Manufacturing. Engineering.	3.0	Technical Report Writing.	3.0	Industrial Attachment I.	4.0	Environmental Studies.	3.0	The Engineer in Society.	3.0
	Communication Skills.	3.0					Industrial Management I&II.	6.0	Industrial law.	3.0
									Entrepreneurship.	3.0

competent in the performance of their professional obligations	HIV/ AIDS and Society	3.0								
PLO 4: Enable the graduate of this program to effectively participate and practice in modern mechanical and engineering professions	Introduction to Manufacturing.	3.0	Workshop Technology.	3.0	Engineering Design Principles.	3.0	Research Methods.	3.0	Research Project I&II.	6.0
	Engineering Drawing I&II.	6.0	Technical Report Writing.	3.0	Industrial Attachment I.	4.0	Machine Design I&II.	6.0	Industrial Law.	3.0
			Computer Aided Drawing.	3.0			Industrial Attachment II.	4.0	The Engineer in Society.	3.0
			Manufacturing Engineering I.	3.0					Machine Tool Design.	3.0

FACULTY OF ENVIRONMENT AND RESOURCES DEVELOPMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCE

BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

1. Philosophy of the Programme

The Bachelor of Science programme in Environmental Science philosophy is deeply rooted in the quest for the advancement of humanity through quality environmental education and research. The Environmental Science program philosophy seeks to develop in the student an appreciation of the Earth's fragile ecosystems through education and understanding of the Earth's biosphere. The student learns to critically analyse and evaluate environmental problems and issues, and identify possible solutions compatible with the needs and requirements of all life within the environment.

2. Rationale

For many centuries, man has continued to draw all his support resources from the environment. Rapid human population, industrialization, urbanization and increased agricultural production places enormous demands on land resources, energy, shelter and living space leading to overexploitation of natural resources and environmental degradation. If these problems are not given due attention, they are bound to adversely affect the quality of the environment and lower the people's standards of living. There is need for trained environmental custodians at all levels. This is to provide safety valves to our production, manage the ecological systems that are highly susceptible to stress, monitor environmental quality, and provide advisory services on the overall use, conservation and enhancement of environmental quality.

Student graduating from the Environmental Science programme find employment in government agencies that deal with the protection, management, and regulation of natural resources. Such agencies include the National Environment Management Authority, Kenya Wildlife Service, Kenya Forest Service, Geothermal Development Corporation, Ministries of

Environment, Housing, and Livestock and Fisheries. Graduates may also find employment in private firms and companies involved in environmental consultancy services that include assessment, remediation, and environmental law.

In general, graduates employed in the public or private sector may find themselves working on diverse projects such as surface and ground water pollution, soil contamination from hazardous wastes, disposal of hazardous wastes, urban development and expansion, remediation and environmental clean-up programmes, identification of potential geological hazards, and conservation of biodiversity.

3. Goal of the Programme

This programme provides a broad-based education to students who wish to study environmental issues related to resource use, protection and enhancement of environmental quality. The graduates can critically analyze and evaluate environmental problems and issues, and identify possible solutions compatible with the needs and requirements of all life within the environment.

4. Programme Learning Outcomes

Graduates will be able to:

1. Explain the interactive relationships between humans and the physical, biological and social environments and relate the emanating issues to the enhancement of environmental quality;
2. Carry out environmental impact assessment, audit, inspection and monitoring;
3. Provide advisory services on matters of environmental law and policy;
4. Participate and provide leadership in the formulation of appropriate early warning systems of environmental change;
5. Pursue graduate studies in environmental science and;
6. Provide environmental extension and outreach services.

5. Mode of Delivery

The mode of delivery will be full time/ part time, e-learning/ blended/ or open/ distance learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy the minimum requirements for the entry as stipulated in the Egerton University Statutes of 2013. In addition, the applicant must attain at least grade B- in Biology or Biological Sciences, B- in Chemistry or B in Physical Sciences, and C in Mathematics at K.C.S.E. or equivalent examination. Grade B- in Agriculture or Geography is an added advantage.

Admission may be granted to Diploma holder with distinction or credit in Environmental Science, Range Management, Animal Husbandry and Animal Health, Forestry, Wildlife and other related fields from institutions approved by Senate.

6.2 Regulation on Credit Transfer

Egerton University Statute 36(3) of 2013 shall apply.

6.3 Course Requirements

ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply..

6.4 Student Assessment Criteria

Egerton University statutes of 2013 articles 36 (6) shall apply.

6.5 Grading System

Egerton University statute 36(6) of 2013 shall apply

6.6 Examination Regulations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.7 Moderation of Examinations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.8 Graduation Requirements

The student will be expected to have covered a minimum of 165.5 Credit Factors (CF) that includes 4 CFs of field attachment to graduate.

6.9 Classification of Degrees

Degree classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

The programme will be evaluated using a course evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The programme will be hosted in the Department of Environmental Science, faculty of Environment and Resource Development. The programme academic leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal programme evaluation (self-assessment) at the end of the each academic cycle as per ISO procedure for quality assurance for academic programmes (EU/VC/OP/05).

8.3 Course Coding

Courses in the programme shall be coded based on the senate approved Course Coding policy. The prefix ENSC is for Environmental Science followed by a three digit figure.

The first digit represents the year in which the course is offered and the second digit represents the nature of the course within the department as follows:

- 0 -Introductory courses
- 1 - Ecology,
- 2 - Climate,
- 3 - Applied courses,
- 4 - Management courses,
- 5-Planning and entrepreneurship,
- 6- Research seminars, and projects,
- 7- Policy, law and administration.

The third digit represents the serial number of the course in the sub-discipline.

9. Courses/Units Offered

9.1 Schedule of Courses

(a) University common core courses

CODE	TITLE	L	P	CF
COMP 101	Introduction to computer applications	45	15	3.0
COMS 111	Communications Skills	45	0	3.0
PHIL 108	Ethics, Integrity & National Values	45	0	3.0

(b) Schedule of courses on semester basis

YEAR I SEMESTER I (Y1S1)

Code	Course Title	L	P	C.F.
MATH 100	General Mathematics	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
ENSC 102	Approaches to Environmental Studies	30	30	3.0
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic & Physical	30	30	3.0

	Chemistry			
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
ZOOL 104	General Zoology	30	30	3.0
TOTAL		245	150	21.0

YEAR I SEMESTER II (Y1S2)

Code	Course Title	L	P	C.F.
ENSC 103	Introduction to Physical Environment	45	15	3.5
ENSC 104	Environment & Development	30	30	3.0
PHYS 103	General Physics	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
TOTAL		225	105	18.5

YEAR II SEMESTER I (Y2S1)

Code	Course Title	L	P	C.F.
COMP 101	Introduction to Computer Applications	45	15	3.5
ENSC 201	Environment, Peace & Gender	30	30	3.0
ENSC 202	Energy & Environment	30	30	3.0
ENSC 203	Human Settlement & Population	45	0	3.0
ENSC 211	Biodiversity Conservation	30	30	3.0
GEOG 211	Introduction to Remote Sensing & Environment	30	30	3.0

NARE 212	Principles of Wildlife Management	30	30	3.0
TOTAL		240	135	21.5

YEAR II SEMESTER II (Y2S2)

Code	Course Title	L	P	C.F.
ENSC 204	Statistics for Environmental Science	45	0	3.0
ENSC 205	Technology & Environment	30	30	3.0
ENSC 212	Global Ecosystems & Environment	30	30	3.0
AQUA 221	Introduction to Hydrology	30	30	3.0
BIOC 204	Basic Biochemistry	30	30	3.0
ZOOL 210	Ecology	30	30	3.0
TOTAL		225	180	18.0

YEAR III SEMESTER I (Y3S1)

Code	Course Title	L	P	C.F.
ENSC 331	Environmental Risk Assessment	30	30	3.0
ENSC 332	Environmental Forestry	30	30	3.0
ENSC 341	Industrial Management & Environment	30	30	3.0
ENSC 351	Land Evaluation & Land Use Planning	30	30	3.0
CHEM 341	Analytical Chemistry 1	30	30	3.0
NARE 321	Aquatic Ecology	30	30	3.0
NARE 331	Climatology	30	30	3.0
TOTAL		210	210	21.0

YEAR III SEMESTER II (Y3S2)

Code	Course Title	L	P	C.F.
ENSC 333	Environmental Health	30	30	3.0
ENSC 334	Occupational Health & Safety	30	30	3.0
ENSC 335	Environmental Impact Assessment & Audit	30	45	3.0
ENSC 343	Environmental Pollution & Control	30	30	3.0
ENSC 361	Methods in Environmental Research	30	30	3.0
GEOG 324	Geographical Information System	30	30	3.0
CHEM 351	Environmental Chemistry	45	0	3.0
NARE 352	Ecological Survey and Techniques	30	30	3.0
TOTAL		255	225	24.0
ENSC 362	Field Attachment	0	120	4.0

YEAR IV SEMESTER I (Y4S1)

Code	Course Title	L	P	C.F.
ENSC 421	Climate Change & Environment	30	30	3.0
ENSC 431	Water and Sanitation	30	45	3.5
ENSC 441	Management of Arid and Semi-Arid Lands	30	45	3.5
ENSC 442	Disaster Management	30	30	3.0
ENSC 451	Environmental Resource Economics	45	0	3.0
ENSC	Student Projects	0	90	3.0

461	and Seminars			
TOTAL		165	240	19.0

YEAR IV SEMESTER II (Y4S2)

Code	Course Title	L	P	C.F.
ENSC 432	Environmental Geology	45	15	3.5
ENSC 443	Environmental Degradation & Management	30	30	3.0
ENSC 452	Environmental planning & Project Analysis	45	0	3.0
ENSC 453	Environmental Entrepreneurship	45	0	3.0
ENSC 471	Environment and International Relations	45	0	3.0
ENSC 472	Environmental Law and Policy	45	0	3.0
TOTAL		255	45	18.5

c). Description of courses

ENSC 102: Approaches to Environmental Studies (30/30: CF3.0) Y1S1

Explore the holistic perspectives of the study of environment. Study of environment is introduced through integrative perspectives emphasising socio-environmental problems and solutions, action, actors, ethics. Philosophy and natural resources: physical and biotic, geological factors controlling formations and distribution of mineral resources. Ethnography, human population-environmental interactions. Natural and man-made hazards. The concept of sustainable environmental management: role of government agencies, NGO's and individuals. Environmental Health Management.

ENSC 103: Introduction to The Physical Environment (30/45: CF3.5) Y1S1

Major features of the earth, Geomorphological process and features (vulcanicity, denudation, faulting, folding,

weathering process and glaciation. Atmospheric composition and structure. Hydrological cycle and their estimation. Weather elements and their measurements. Climate and climate classification. Characteristics and factors affecting climate. Global climate changes, causes, effects and control. General circulation between the atmospheric and ocean masses. Laws of atmospheric motion and development of general circulation models (CGPs). Coastal features, Emerging Issues.

ENSC 104: Environment and Development (30/30: CF3.0) Y1S1

Definition of terms. Concept of sustainable development: faces and generic causes of underdevelopment: resources and development: gender and development: development under constraints of investment and social capital. Major rural social institution and social change in rural life. Sociological concepts in rural development. Demographic trends stakeholder participation. Community development, agricultural technology, legal and policy frameworks, MDGs, Agenda 21, EMCA 1999.

ENSC 201: Environment, Peace and Gender (30/30: CF3.0) Y2S1

Definitions: Gender and Sex: From WID to GAP. Framework of gender analysis environment and development; maldevelopment, conceptual understanding of gender analysis. Gender roles in development and Environmental conservation. Feminism V/s Environmentalist in development. Gender mainstreaming, Gender and community based development. Emerging issue in Gender environment and development.

ENSC 202: Energy and Environment (30/30: CF3.0) Y2S1

Introduction to physics underlying the concept of energy. Different forms of energy and units of measurement. Laws of thermodynamics; energy production and conservation technology. Patterns of energy use in Kenya and Industrialised countries. The social, environmental and economic implications of

different energy strategies. Relationships between the social and cultural nature of the society and the resulting patterns of energy production and use. Characteristics of energy and social systems of sustainable future. Discussion seminars. Emerging Issues.

ENSC 203: Human Settlements and Population (45/0: CF3.0) Y2S1

Concepts of Human Settlements and Population. A historical perspective of human settlement and population. Rural-Urban settlement. Human demographic processes, quantitative and qualitative approaches. The historical and cultural factors affecting human settlement, their types and evolution and their emergence into industrialised urban areas (Urbanization). Factors affecting size, growth and pattern. Impact of globalisation on Human Settlement and Population, settlement trends in Kenya.

ENSC 204: Statistics for Environmental Science (45/0: CF3.0) Y2S2

Review of basic statistics as tools for environmental research and management. Scientific methods of environmental data collection. Quantitative and qualitative statistical methods of data analysis. Relationships and variations between populations and samples. Frequency distributions, measures of central tendency and dispersion. Basic concepts in correlation and regression analysis. Hypotheses formulation and testing.

ENSC 205: Technology and Environment (30/30: CF3.0) Y2S2

Definitions of nature, technology and society in sustainable development. History of technology from the industrial revolution to now. Linkage between environment and technology. Nature and society, Gender and technology: technology and politics, food and technology. Media literacy and nature, environmental law and technology, nature technology and the military and environmentally resilient technologies. GMOs, WTO roles in technology. Nature

Science and Technological – globalization. Emerging Issues.

ENSC 211: Biodiversity Conservation (30/30: CF3.0) Y2S1

Introduction to Biodiversity. Significance of biological diversity. Threat to biological diversity. Global concern towards conservation of biodiversity. Conventions of biological diversity. Invasive species, Emerging Issues in Biodiversity(NBSAP – GMOs).

ENSC 212: Global Ecosystems and Environment (30/30: CF3.0) Y2S2

Introduction, definition of terms, Geochemical cycles. Survey of the major global ecological and physical systems. The functions of the ecosystems. The potential of the functioning of ecosystems to disrupt the Natural Cycles of Life, Impact of human activities on the oceans, atmosphere, forests, agricultural lands and wild species. Linkage of livelihood and ecosystems. Ecosystems approach in Management. Transboundary ecosystems Management.

ENSC 331: Environmental Risk Assessment (30/30: CF3.0) Y3S1

Theories and concepts of risk and hazards application to environmental risks of general nature e.g., floods or specific nature e.g., Toxic spills or discharges. Concepts of probability and toxicology and their application to current methods of environmental risks and hazards. Case Studies and Emerging issues in Environmental Risk Assessment.

ENSC 332: Environmental Forestry (30/30: CF3.0) Y3S2

Forestry operationalization in respect to environment. Role of Forestry in environmental conservation. Natural forests versus planted forests. Agro forestry role of multipurposes trees and shrubs in soil and water conservation. Forest ecosystems, functions and their provisional roles. Role of forests in carbon sequestration and carbon trade. Forest Management steps. Forest legislation in Kenya.

ENSC 333: Environmental Health (30/30: CF3.0) Y3S2

Environmental health, principles and issues; basic principles of toxicology; Principles of toxic action of chemical substances; Dose-response relationships; Methods of estimating exposure Toxicokinetics and toxicodynamics; Physiologic health effects of toxicants, Indoor pollution and human health, Carcinogenicity, mutagenicity & teratogenicity; ; food and waterborne related diseases, Radiation and health, legal systems in Environmental health.

ENSC 334: Occupational Health and Safety (30/30: CF 3.0) Y4S1

Introduction to Occupational Safety and Health; Occupational Safety and Health Concepts; Principles of occupational health and safety; basic workers' rights; working conditions affecting health; Common occupational hazards, diseases and accidents; Risk assessment; Prevention, control and protective strategies; Accident investigation and reporting; The legal and institutional framework for the regulation of health and safety; OSHA 2007; ILO Occupational Health and safety strategies in Kenya; Seminar on Occupation health and safety.

ENSC 335: Environmental Impact Assessment and Audit (30/30: CF3.0) Y3S2

Introduction to Environmental Impact Assessment. Impact assessment processes. Impact identification measurement. Evaluation and mitigation. Methods of impact assessment and preparation of environmental impact statements. Methods to identify the human and social consequences of human-made alterations in the natural and physical environment. Environmental Impact Assessment and sustainable development. Environmental Policy Analysis.

ENSC 341: Industrial Management and Environment (30/30: CF3.0) Y3S1

Sustainable industrial development, cleaner production and the scope of environmental management: theory of firms with market power and their implementation of profit maximisation, decisions in view of the firm and

the environment. Nature of organisations and public relations, industrial relations, Legal systems in industrial management, Industrial Ecology. Financing pollution and environmental rehabilitation. Measurement of human performance, job and work place environment. Industrial disasters, accidents, and occupational hazards.

ENSC 343: Environmental Pollution and Control (30/30:CF3.0) Y3S2

The concept of environmental degradation and pollution. Classification of pollutants. Air pollution, sources, effects and control. Nuclear and geothermal pollution. Alternative sources of fuel. Water pollution, types/sources, effects and control Solid waste disposal and land degradation. The State of environmental pollution in Kenya, Market-based instruments for pollution control.

ENSC 351: Land Evaluation and Land Use Planning (30/30: CF 3.0) Y3S1

Fundamental environmental factors affecting productivity of land: geological-soil inter-relationships, soil water relations. Classification of soil, Philosophies of land classification, use of soil survey reports. Soil site studies and environmental approaches for land capability - classification. Multiple use evaluations for various land-uses. Land evaluation. Farming Systems analysis. Land use planning. Land use in Kenya /zoning.

ENSC 361: Methods in Environmental Research (30/30: CF3.0) Y3S2

Principles and Purpose of research; Types & designs of research; Types of ecological research; formulating research objectives; conceptual framework; the concept proposal; research methods; measurement scales; Environmental sampling; sampling unit and frame; sampling procedure, sample size and survey precision; data collection; quality control; data processing and analysis; Report writing and presentation.

ENSC 362: Field Attachment (0/120: CF4.0) Y3S2

Placement of students to relevant government agencies and private organisations where they will apply the knowledge and skills learned in class. Students will work under the supervision of those in charge of the sectors' training and internship programmes. Assessment of students to be done by both the university and field supervisors. Students are required to write and submit a report to the department upon completion of the field attachment.

ENSC 421: Climate Change and Environment (45/0: CF3.0) Y4S1

Operationalization of key terms, concepts and acronyms related to climate change. Climate as an aspect of the a biotic component of the environment. Climate as a global environmental issue of significance. Climate variability and climate change. Causes of climate change. Monitoring of climate change including future scenario prediction of climate change trends. Effects and Impacts of climate change. Technical and policy interventions in addressing the impacts of climate change. Climate change adaptation and mitigation. Emissions reduction strategies.

ENSC 431: Water and Sanitation (30/45: CF3.5) Y4S1

Review of basic physical and chemical characteristics of water, water cycle and global water resources and sanitation. Fresh water use. Competing uses for fresh water, increase in water demands. Reasons and consequences of water scarcity. Water pollution, water treatment and supply. Waste water treatments. The short comings of conventional sanitation. Ecological sanitation as a sustainable alternative. The Bellagio Principles. Ecosan basic projects. Advantages of Ecosan systems.

ENSC 432: Environmental Geology (L/P: 45/15: CF3.5) Y4S2

Basic concepts in environmental geology; environmental systems and feedback mechanisms; earth materials and processes; properties of earth materials and their determination; geologic resources; land use and decision making; landscape evaluation; natural

hazards evaluation to minimise loss of life and property; Waste disposal sites – selection, construction and management; trace elements and health, chronic diseases and geo – environment, radon gas and indoor pollution.

ENSC 441: Management and Conservation of Arid and Semi-Arid Lands (30/45: CF3.5) Y4S1

Description of ASALS and their characteristics. Aridization and desertification processes, Resources and uses of ASALS. Monitoring of ASALS, agrometeorological and water management in ASALS. Global concern on desertification process. Relevant conventions on ASALS and their implementation. Land –use changes and their impacts. Traditional land use practices in ASALS biodiversity and their conservation.

ENSC 442: Disaster Management (30/45: CF3.5) Y3S1

Introduction and Fundamentals of Disaster Management; Types of hazards and Disasters; Disaster Management Cycle; Education and Public Awareness in disaster management; Technology in Disaster Management- Emergency Management Systems; Geographical Information Systems; Global Positioning Systems ; Remote Sensing; Media and Disaster Management; Impacts of Disasters; Emergency Services in Disasters; Infrastructure and Procedure in Emergency Situations; Monitoring and Evaluation of disasters; Vulnerable Groups in Disasters; Institutional and legal framework in disaster management at national and international level.

ENSC 443: Environmental Degradation and Management (L/P 30/30: CF 3.0) Y4S2

Historical perspective of environment and development; Global environmental agenda and Dimensions; The dynamics of environmental degradation; Use of driving forces, pressures, state, impacts and response (DPSIR) tool; Methods and indicators of physical, chemical and biological degradation assessment; Land degradation and desertification in arid and semi arid lands; Poverty and environment; Climate change and environmental

degradation; Principles of sustainable land management; UNCCD and NAP to combat desertification; Policy and institutional framework for environmental management in Kenya.

ENSC 451: Environmental Resource Economics (3.0/30: CF3.0) Y4S1

Micro-economics; elementary theory of supply and demand, market and the theory of market structures. Macro-economics; national accounts; circular flow of income (Consumption, Investment and Savings functions), Theory of exchange. Time value of resources and decision making process.

ENSC 452: National Environmental Planning and Management (L/P 30/0: CF 2.0) Y4S2

Introduction. Institutional frameworks. National Environmental Planning and Management issues in Kenya. Role of government agencies. Role of local authorities, Civil society. National Environment secretariat. National Environmental Action Plan (NEAP). Legislation and enforcement. Public interests and Public participation. Challenges facing Sustainable Development in Kenya.

ENSC 453: Environmental Entrepreneurship (L/P: 45/0: CF 3.0) Y4S2

Basic terms in Environmental management, Planning Framework and Management, methods in Project Planning, Project Appraisal techniques, Project Monitoring, Evaluation, Control and Termination, Role of Environmental Management in Project Planning. Entrepreneurship and Economic Growth, Entrepreneurship Ecosystems, The Political Economy of Environmental Goods and Services. Foundations of Environmental Governance, Public/Private Partnerships and Cooperation, Models of Technology and Innovation. Projects, Seminars, Guest Speakers and Presentations

ENSC 461: Students Projects and Seminars (0/90: CF3.0) Y4S1

Supervised discussions and review of resource use problems, environmental pollution, monitoring and

control. Review of important contributions and current literature in environmental science research. Topics will be assigned for library and field research and presentations made for class discussions. Pre-requisite ENSC 304.

ENSC 471: Environment and International Relations (L/P: 45/0: CF 3.0) Y4S2

Global environmental picture and human development. Relationship between industrial, development and environment. Global commons and their transboundary nature (air, water, soil and biodiversity). Management of the environment in the era of globalization. North - South divide. International conventions and non-binding agreements in respect to the environment. Global, Regional and national responses to global issues of environmental significance.

ENSC 472: Environmental Law and Policy (L/P: 45/0: CF 3.0) Y4S2

Common law, national and international environmental law, Principles of Environmental Law. Legal process governing agricultural and industrial pollution; specific legal environmental acts and statutes in Kenya; environmental policy-making processes; science and environmental law; fundamental principles in environmental law.

9.2 SERVICE COURSES

ENSC 0101: Introduction to Environmental Science 30/30: CF 3.0) Y1S1 & 2

Overview of environmental science. The ecological concepts and principles. Fundamental environmental issues (human population growth, Environmental pollution, biodiversity loss, food security, desertification, Solid Waste management). Environment and human health. Sustainable Development and Environment

ENSC 0231: Occupational Health and Safety

Overview of Occupational Safety and Health; Concepts and Principles of Occupational Safety and Health; Basic workers' rights; working conditions affecting health; Common occupational hazards, diseases and accidents;

Risk assessment; Accident investigation and reporting; The legal and institutional framework for health and safety.

ENSC 0341: Environmental Pollution & Management 30/30: CF 3.0) Y3S1

Introduction to the concept of environmental pollution and its linkage to human developments. Methods of pollution prevention and control. The state of environmental pollution in Kenya.

ENSC 0331: Environmental Impact Assessment

Introduction to Environmental Impact Assessment. Impact assessment process, Impact identification and measurement. Evaluation and mitigation. Methods of impact assessment and preparation of environmental impact statements. Environmental policy analysis.

ENSC 101: Environmental Education

Introduction to environmental education concepts, Ecological principles and ecosystem concepts. Human population and environment. Major environmental issues. Environmental and human health linkage. Sustainable development and environment

2.10.2 Matrix aligning courses/units to Programme learning outcomes

Programme Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Explain the interactive relationships between man and physical, biological and of social environment and relate emanating issues to the enhancement environmental quality	Approaches to Environmental Studies	3.0	Biodiversity Conservation		Industrial Management and Environment		Climate Change & Environment	
	Introduction to Physical Environment & Development	3.5	Energy and Environment	3.0	Environmental Pollution and Control	3.0	Water and Sanitation	3.0
	Introduction to Soil Science		Human Population & Settlement	3.0	Environmental Health Assessment	3.0	Occupational Health & Safety	3.0
	General Botany	3.0	Statistics for Environmental Science	3.0	Environmental Risk Assessment	3.0	Management of Arid and Semi-Arid Lands	3.0
	General Inorganic & Physical Chemistry	3.0	Global Ecosystems Technology and Environment	3.0	Disaster Management	3.0	Environmental Resource Economics	3.0
	General Zoology	3.0	Introduction to Remote Sensing & Environment	3.0	Land Evaluation & Land Use Planning	3.0	Student Projects and Seminars	4.0
	General Physics	3.0	Principles of Wildlife Management	3.0	Analytical Chemistry 1	3.0	Environmental Degradation & Management	3.0
	General Microbiology	3.0	Introduction to Hydrology	3.0	Aquatic Ecology	3.0	Environmental Planning & Project Analysis	4.0
	Introduction to Organic Chemistry	3.0	Basic Biochemistry Ecology	3.0	Climatology	3.0	Environmental Entrepreneurship	3.0
		3.03.0		3.0	Environmental Forestry	3.0	Environmental Geology	3.0
				3.0	Methods in Environmental Research	3.0	Environmental Law and Policy	3.0
				3.0	Geographical Information System	3.0		
				3.0	Ecological Survey and Techniques	3.0		
				3.0	Environmental Chemistry	3.0		
PLO 2. Carry out environmental impact assessment, audit, inspection and monitoring	Approaches to Environmental Studies	3.0	Biodiversity Conservation		Industrial Management and Environment		Water and Sanitation	3.5
	Introduction to Physical Environment & Development	3.5	Energy and Environment	3.0	Environmental Pollution and Control	3.0	Occupational Health & Safety	3.0
	Introduction to Soil Science	3.0	Human Population and Settlement	3.0	Environmental Health Assessment	3.0	Environmental Resource Economics	3.0
	General Botany	3.0	Statistics for Environmental Science	3.0	Environmental Risk Assessment	3.0	Environmental Geology	3.5
	General Zoology	3.0	Technology and Environment	3.0	Disaster Management	3.0	Environmental Law and Policy	3.0
	General Microbiology	3.0	Introduction to Remote Sensing & Environment	3.0	Environmental Impact Assessment & Audit	3.0		
			Introduction to Hydrology Ecology	3.0				
				3.0				
				3.0				
				3.0				
PLO 3. Provide advisory capacity services on matters of environmental law and policy	Approaches to Environmental Studies	3.0	Environment, peace & Gender:	3.0	Environmental Pollution and Control	3.0	Water and Sanitation	3.5
	Introduction to Physical Environment & Development	3.5	Biodiversity Conservation	3.0	Environmental Health Assessment	3.0	Occupational Health & Safety	3.0
			Energy and Environment	3.0	Environmental Risk Assessment	3.0	Environmental Resource Economics	3.0
		3.0	Human Population & Settlement	3.0	Land Evaluation & Land		Environment &	

				3.0	Use Planning Environmental Forestry	3.0 3.0	International Relations Environmental Law and Policy Environmental Planning and Project Analysis Environmental Entrepreneurship	3.0 3.0 3.0 3.0
PLO 4. Participate and provide leadership in the formulation of appropriate early warning systems of environmental change.	Approaches to Environmental Studies Introduction to Physical Environment & Development	3.0 3.5 3.0	Biodiversity Conservation Human Population & Settlement Statistics for Environmental Science Introduction to Remote Sensing & Environment Introduction to Hydrology	3.0 3.0 3.0 3.0 3.0 3.0	Disaster Management Land Evaluation and Land use Planning Geographical Information Systems Ecological Survey and Techniques Environmental Chemistry	3.0 3.0 3.0 3.0 3.0 3.0	Ecological Surveys and Techniques Management and Conservation of ASAL Climate Change and Environment Environmental Geology Environmental Degradation & Mgt	3.0 3.0 3.0 3.0 3.5 3.0
PLO 5. Pursue graduate studies in Environmental Science	Introduction to Physical Environment & Development	3.5 3.0	Energy and Environment Human Population & Settlement Technology and Environment Introduction to Remote Sensing & Environment Principles of Wildlife Management Introduction to Hydrology Ecology	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Industrial Management and Environment Environmental Pollution and Control Environmental Health Environmental Risk Assessment Disaster Management Land Evaluation & Land Use Planning Aquatic Ecology Climatology Environmental Forestry Geographical Information System Ecological Survey and Techniques Environmental Chemistry	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Climate Change & Environment Water and Sanitation Occupational Health & Safety Management of Arid and Semi-Arid Lands Environmental Resource Economics Student Projects and Seminars Environmental Degradation & Management Environmental Planning & Project Analysis Environmental Entrepreneurship Environmental Geology Environment & International Relations Environmental Law and Policy	3.0 3.5 3.0 3.0 3.0 3.0 4.0 3.0 3.0 3.0 3.5 3.0 3.0
PLO 6. Carry out teaching and provide	Approaches to Environmental Studies Introduction to Physical	3.0	Biodiversity Conservation Energy and Environment Human Population &	3.0	Industrial Management and Environment Environmental Pollution	3.0	Climate Change & Environment Water and Sanitation	3.0 3.5

DEPARTMENT OF GEOGRAPHY

BACHELOR OF SCIENCE IN GEOGRAPHY

1. Philosophy of the Programme

The Department of Geography provides equal opportunity in producing competitive and hands-on graduates that contribute to national and global development. The Department of Geography, through the B. Sc. Geography programme, seeks to innovatively influence human development through provision of holistic education, generation and dissemination of knowledge and appropriate skills.

2. Rationale

The subject matter of Geography is concerned with understanding the forces that shape the physical environment upon which humans depend. Knowledge of geography gives students an in-depth understanding of environmental and societal challenges thus preparing them for careers in one of the several environmental and planning related occupations, to mention just a few examples.

B. Sc. Geography is a four-year program that provides students with the knowledge, core competencies, and transferable skills for diverse careers in resource management; urban and regional planning; education; industry; public administration; and development. The programme provides students with a range of theoretical, applied, and field-based courses in Geography and other subjects of study.

The curriculum reflects a balanced combination of theoretical and applied courses in Geography, including specialized courses in geographic information systems (GIS), remote sensing and environmental impact assessment. Moreover, the curriculum is designed to allow students enrol in a variety of courses offered in environmental science, natural resources, biological sciences and social sciences among others.

The review was largely guided by the experience of the past seven years of running the programme – in which there were calls for specialization and improved course description. There was need to broaden the academic background of the students consistent with their

respective preferred professional training and thus facilitate a more profound appreciation of the society and environment of which they are a part. This has been realized through the offer of university core courses and relevant professional courses offered by sister departments in the university.

The curriculum has been designed to ensure that students make the connection between theoretical concepts and real-world events, processes, and situations. The goal of the B. Sc. degree in Geography is to provide students with an opportunity to create awareness and acquire understanding of issues associated with the management of physical and human processes on earth. Application of skills and knowledge acquired should lead to efficient utilization of resources and sustainable development. This mission is congruent with the University's philosophy of innovatively influencing human development through holistic education.

The B. Sc. Geography degree programme prepares its graduates to fit and contribute in many fields in the public and private sectors, international organizations, and Non-Governmental Organizations (NGOs). Geography graduates are employed in a variety of work environments that include; resource planning, hydrology, education, land management, climate change monitoring and environmental and development related fields. The degree programme also provides perfect grounding for training in further education, higher degrees, courses such as Masters and Ph.D studies in the Department of Geography at Egerton University and elsewhere.

3. Goal of the Programme

The programme seeks to provide students with an opportunity to create awareness, and acquire understanding of the nexus between the physical and human environments. It is expected that this should translate into prudent resource management for the well-being of man and environment.

4. Programme Learning Outcomes

Graduates of the programme will be expected to:

- i. Demonstrate the place of Geography in contemporary society
- ii. Apply the skills acquired in resource planning and management in rural and urban contexts
- iii. Use effective communication skills through report writing and power point presentation
- iv. Critique the nexus between society and the physical environment and offer realistic pathways to sustainable development.

5. Mode of Delivery

The programme shall be delivered both on a full-time face-to-face basis and through the e-learning platform.

6. Academic Regulations for the Programme

6.1 Admission Requirements

In addition to satisfying the Egerton University entrance requirements, applicants for admission to the Bachelor of Science in Geography programme will require to have obtained at least mean grade C Plus (C+) in KCSE or its equivalent. The applicant needs to have acquired at least grade B minus (B-) in Geography; a C Plus (C+) in one of the following subjects: Business Studies, Biology, Agriculture or Physical Science; and a C plain (C) in Mathematics. Candidates who apply to study a programme combining Geography with any other subject, must have obtained at least grade B minus (B-) in Geography and a C plain (C) in Mathematics in KCSE or its equivalent. The later admission requirements apply to:

- i. Double major degree programme (a cumulative average of at least 40 points by 2nd year)
- ii. A degree programme with a major and a minor (accumulative average of at least 60 points by 2nd year and at least an average of 60 points (B) in Geography courses in 1st and 2nd year courses)
- iii. Dual/double degree programme (not available currently)
- iv. Alternative requirements for indirect admission including Self – Sponsored students (the same minimum requirements as KUCCPS students)

6.2 Regulation on Credit Transfer

Applicants who request for credit transfer, Egerton University Statutes of 2013 Articles 36 (3) for

undergraduate programmes and Work Instruction for Credit Transfer (EU /AA/WI/04) shall apply.

6.3 Student Assessment Policy /Criteria

Student assessment for the B. Sc.in Geography shall be conducted in accordance with the assessment criteria as stipulated in Egerton University Statute 36 (6) of 2013.

6.4 Grading System

The grading of examination for B. Sc. Geography shall be in accordance with Egerton University Statute 36 (6) of 2013.

6.5 Examination Regulations

All examinations for the B. Sc. Programme in Geography shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36 (5) of 2013.

6.6 Moderation of Examination

Moderation of examinations shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36 (5) of 2013 and ISO Procedure (EU/AA/OP/07). In addition, the examinations shall be subjected to internal and external moderations and shall be guided by the Directorate of Examination and Time Tabling of the Egerton University.

6.7 Course Requirements

The course requirements shall be as stipulated in Egerton University Statute 36 and ISO procedures (EU/AA/OP/06 rev 3).

6.8 Graduation Requirements

In order to be awarded a B.Sc. in Geography degree, a student shall be required to take and pass all required courses with a minimum of 156 Credit Factors (CFs.) within the stipulated time period.

6.9 Classification of Degree

The classification shall be in accordance with Egerton University Statute 36 (17a) of 2013.

7. Course Evaluation

All courses will be evaluated in accordance with the Teaching Effectiveness Evaluation Procedure (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the Department of Geography, Faculty of Environment and Resources Development. The Programme Academic Leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme evaluation (self-assessment) and review at the end of each academic cycle after a cohort as per ISO procedures (EU/AA/OP/01).

8.3 Course coding

The programme course coding shall be based on the senate approved Course Coding policy. The prefix GEOG stands for Geography followed by a three digit figure.

Courses offered to Bachelor of Education (Primary) programme, shall have the prefix GEOP reflecting Geography for Primary courses.

For both programmes, the first digit represents the year in which the course is offered. The second digit represents the semester within which the course is offered, and the third digit represents the serial number of the course.

For diploma courses shall have four digits start with "0" followed:

- 1,2 or 3 denoting year of study
- Third digit denotes semester
- Fourth digit denotes serial number of the course

9. Courses/ Units offered

9.1 Schedule of Courses

a) University Common Core Courses

Code	Course Title	Year	Semester
COMP 101	Introduction to Computer Applications	1	II
COMS 111	Communication skills	1	II
ZOOL 143	HIV and AIDS and Society	2	I
PHIL 108	Ethics, Integrity and National Values	2	I

b) Schedule of Courses

YEAR 1 SEMESTER 1

Code	Course Title	L	P	CF
NARE 101	Introduction to Natural Resources	45	0	3.0
AQUA 100	Introduction to Hydrobiology	30	30	3.0
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
GEOG 113	Regions of the World	45	0	3.0
GEOG 114	Introduction to Rural and Urban Development	45	0	3.0
GEOG 115	Cultural Geography	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
TOTAL		345	30	24.0

YEAR 1 SEMESTER 2

Code	Course Title	L	P	CF
COMS 111	Communications Skills	45	0	3.0

COMP 101	Introduction to Computer Applications	45	0	3.0
ENSC 103	Environment and Development	45	0	3.0
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map work and analysis of spatial Data	30	30	3.0
GEOG 123	Economic Geography	45	0	3.0
GEOG 124	Fundamentals of Meteorology and Climatology	45	0	3.0
TOTAL		300	30	21.0
GEOG 125	Tourism Geography	45	30	3.0

YEAR 2 SEMESTER 1

Code	Course Title	L	P	CF
ZOOL 143	HIV and AIDS and Society	45	0	3.0
NARE 201	Introduction to Geology	45	0	3.0
NARE 221	Natural Resources Ecology	45	0	3.0
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 212	Geography of Kenya	45	0	3.0
GEOG 213	Atmospheric Systems and World Climates	45	0	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
TOTAL		285	60	21.0

YEAR 2 SEMESTER 2

Code	Course Title	L	P	CF
AQUA 221	Introduction to Hydrology	30	30	3.0

GEOG 221	Biogeography	45	0	3.0
GEOG 222	Development of Geographic Thought	45	0	3.0
GEOG 223	Geography of Development	45	0	3.0
GEOG 224	Population Geography	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
FORM 214	Principles of Forest Resource Management	30	30	3.0
TOTAL		285	60	21.0

YEAR 3 SEMESTER 1

Code	Course Title	L	P	CF
GEOG 310	Marine Resources and Coastal Geography	45	0	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 312	Computer-Assisted Cartography	30	30	3.0
GEOG 313	Geography of Settlement	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
GEOG 315	Transport Geography	45	0	3.0
Elective (Choose one)				
GEOG 316	Political Geography	45	0	3.0
GEOG 317	Demography	45	0	3.0
GEOG 318	Soil Geography	45	0	3.0
TOTAL		300	30	21.0
GEOG 319	GIS and Remote Sensing in Natural Resource Management	30	30	3.0

YEAR 3 SEMESTER 2

Code	Course Title	L	P	CF
ENSC 309	Environmental Impact Assessment and Audit	45	0	3.0
GEOG 321	Research Methods in Geography	45	0	3.0
GEOG 322	Climate Change and Development	45	0	3.0
GEOG 324	Geographic Information System	30	30	3.0
GEOG 325	Field Attachment in Geography	0	12 0	4.0
GEOG 327	Geography of Africa	45	0	3.0
Electives (Choose one)				
SOCI 314	Gender Issues and Development	45	0	3.0
GEOG 326	Cartography and Surveying	30	30	3.0
GEOG 323	Geography of Arid and Semi-arid Lands	45	0	3.0
TOTAL		255/ 240	150/ 180	22.0

YEAR 4 SEMESTER 1

Code	Course Title	L	P	CF
NARE 212	Principles of Wildlife Management	30	30	3.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0
GEOG 413	Geography of Energy	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
GEOG 425	Dissertation	15	60	3.0

GEOG 416	Water Resource Management	45	0	3.0
Electives (Choose One)				
GEOG 412	Applied Geomorphology	30	30	3.0
GEOG 415	Disaster Management	45	0	3.0
GEOG 417	Remote Sensing and GIS Project	15	60	3.0
TOTAL		255/ 270/ 240	120/ 135/ 105	21.0

YEAR 4 SEMESTER 2

Code	Course Title	L	P	CF
ENSC 407	Environmental Law and Policy	45	0	3.0
GEOG 421	Urban Planning	45	0	3.0
GEOG 423	Applied Agricultural Geography	45	0	3.0
GEOG 424	Regional Planning and Development	45	0	3.0
GEOG 426	Principles of Sustainable Development	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
Electives (Choose One)				
GEOG 422	Applied Hydrology	45	0	3.0
GEOG 429	Applied Climatology	30	30	3.0
GEOG 427	Medical Geography	45	0	3.0
GEOG 430	Participatory Approaches in Development	45	0	3.0

TOTAL		315/ 300	30/ 0	21.0
GEOG 431	Environmental Degradation and Management	45	0	3.0

(c) Course Descriptions

GEOG 111: Introduction to Physical Geography (45/0: C.F 3.0) Y1S1

Introduction to physical geography, branches of physical geography; biosphere; hydrosphere; survey of the spatial distribution of the earth's physical characteristics, including weather and climate, water, soils, vegetation, and landforms; discussion of environmental processes and interactions creating these physical geographic patterns; ecosystem: components, energy flow and functions. Man and environment: impacts, conservation and eco-development. Field trip.

GEOG 112: Quantitative Techniques in Geography (45/0: C.F 3.0) Y1S1

Quantitative techniques in Geography; meaning and types of statistics; concepts of data and variable; sampling theory and design – probability and non-probability; collection of statistical data: primary and secondary sources; organization of statistical data: classification and frequency distribution; presentation of statistical data: textual, tabular and chart presentation; description and analysis of statistical data: measures of central tendency, measures of dispersion, and measures of relationships.

GEOG 113: Regions of the World (45/0: C.F 3.0) Y1S1

The concept of regions; cornerstones of geographic understanding: location, place, link, region, Physical and human processes that shape the world. Regions of the world, physical, cultural, demographic, political and developmental characteristics in each region.

GEOG 114: Introduction to Rural and Urban Development (45/0: C.F 3.0) Y1S1

Conceptualization of “rural” and “urban” areas; defining characteristics of rural and urban areas, differing perspectives to the development of rural and urban areas; challenges of rural development; urbanization –

history, process and determinants; inequalities between urban and rural settings; challenges of urban areas; rural-urban relations; rural-urban fringe.

GEOG 115: Cultural Geography (45/0: C.F 3.0) Y1S1

Culture: concept, taxonomy and components. Cultural regions: formal, functional and vernacular. Cultural ecology and landscape: environmental determinism and possibilism. Political culture: political innovations, political ecology, Religious, racial, ethnic and cultural regions. Popular culture and folk culture.

GEOG 121: Introduction to Human Geography (45/0: C.F 3.0) Y1S2

Nature and scope of human geography, global change, Branches of human geography. Review of the essential concepts of human geography, philosophy and methods in human geography. Man as an ecological agent; the human environment from simple to complex; spatial processes and patterns; paradigms and theories; concept of resource management and conservation in traditional and modern societies. Dimensions of globalization: economic, cultural, political, etc.

GEOG 122: Map Work and Analysis of Spatial Data (30/30: C.F 3.0) Y1S2

Review and use of maps: types, design content, legends, scale reduction and enlargement, measurement of distance and area. Field work: importance, preparation and report writing on selected geographical problem. Analysis of relief and slopes; methods of depicting relief, delimitation of physiographic regions and relief analysis. Drainage Basin Analysis: Delimitation of catchment areas, linear and Aerial aspect of river basins- stream orders, drainage density, bifurcation ratios, basin magnitude, stream frequency, shape and form. Analysis of settlement and communication patterns: settlement patterns and density. Land use analysis: Types and land use and their coverage, relationship between land use, physical and human features, *Field trips will be required.*

GEOG 123: Economic Geography (45/0: C.F 3.0) Y1S2

Introduction to historical development of economic geography. Resource utilization. Demand and supply of

resources. Types of economic activities. Economic growth and economic development. Human Resource Development. Agriculture, industrialization and Development. Urbanization, Centre-Periphery concept and Development.

GEOG 124: Fundamentals of Meteorology and Climatology (45/0: C.F 3.0) Y1S2

Meteorology and climatology: definition, principles, nature and scope. Origin and development of meteorology and climatology. Components of the earth's climate system. The atmosphere: structure, basic heating and cooling processes of the atmosphere. Micro-climates: effects of vegetation, urbanization, topography, surface material. Global energy system: net radiation balance, latitudinal and seasonal variation of solar radiation, latitudinal distribution of solar energy, vertical variation of temperature. Measurement of climate elements; maintenance of weather instruments. The general circulation of the atmosphere. *Field trips will be required.*

GEOG 125: Tourism Geography (45/0: C.F 3.0) Y1S2 (for NARE-TOHM students)

Definitions and concepts of geography of recreation and tourism. Tourism resources and their spatial distribution. fundamentals of spatial concepts in relation to tourism. Tourism demand and seasonality, Geographic analysis of travel patterns. Analysis of Kenya and world travel destinations; exploring the principal geographic features, population centers and attractions, customs and traditions, habits, festivals, and events. *Field trip.*

GEOG 211: Introduction to Remote Sensing and GIS (30/30: C.F 3.0) Y2S1

Remote Sensing and Geographic Information System defined; GIS: history, components and functionality. Benefits & applications of GIS in resource use and planning. Remote sensing: history of remote sensing technology. Electromagnetic Radiation (EMR) & Spectrum. Remote sensing platforms. Types of sensors: Active & Passive; photographic & non-photographic systems, .Benefits and applications of remote sensing in resource use and planning. Principles and structure of spatial data and cartographic modeling. Spatial data

acquisition, manipulation, translation, aggregation, analysis, and presentation.

GEOG 212: Geography of Kenya (45/0: C.F 3.0) Y2S1

Physical environment of Kenya: topography, climate, soils, biomes. The human environment: demographic characteristics; determinants of population distribution; economic activities, diversity and geographic variation; transport and communication in time and space; devolution and development; emerging issues in the geography of Kenya – global warming, climate change, gender and development, environmental challenges.

GEOG 213: Atmospheric Systems and World Climates (45/0: C.F 3.0) Y2S1

General circulation model: forces governing atmospheric motion, surface winds. Formation of precipitation, airmasses and fronts. Atmospheric disturbances: cyclones, hurricanes, waves, thunderstorms, etc. Climatic elements and their global distribution. Classification approaches of climates, world climates. Climate change and fluctuations; natural climate change, man-made climate change (*Pre-requisite – GEOG 124*).

GEOG 214: Statistical mapping and Spatial Planning (30/30: C.F 3.0) Y2S1

Statistical/Mapping techniques of Geographical data: climate, weather, soil, vegetation and geology. The dot map, choropleth and flow line maps. Population techniques for measurement of location and concentration. Mapping of connectivity and accessibility. Role of statistical/mapping techniques in resource management and planning. Biogeographical field techniques in habitat management: analysis of plants and animal species characteristics, Biomass and productivity, carrying capacity and ecosystem/ habitat management. Fieldwork: Data collection, analysis and report writing on selected geographical problem. Field trips will be required. (*Pre-requisite: GEOG122*)

GEOG 221: Biogeography (45/0: C.F 3.0) Y2S2

History of biogeography; types of biogeography; basic concepts of biogeography; the ecosystem; Structure and functioning of natural ecosystems, components of an ecosystem, energy flow, nutrient cycling, evolution of the biosphere, and ecosystem succession and changes.

Distribution of living organisms; vegetation process – ecological succession, dominance at climax, dispersal mechanism, adaptation. Biodiversity – state of biodiversity, environmental degradation, threats to biodiversity, action to conserve biodiversity, man-environment interaction – a historical perspective.

GEOG 222: Development of Geographic Thought (45/0: C.F 3.0) Y2S2

Definition and scope of geography, themes in geography, Geographical ideas and contribution from Greek, Roman and Arabic scholars, German , French, British and American Schools of Geographic Thought, Impact of Darwin's Theory on Geographic Thought, The Quantitative Revolution in Geography, the environmental movement and the concerns about man's role in changing the face of the earth, Environmental Determinism and Possibilism, Paradigms in Geography: philosophy and methods of human and physical geography. Relevance of Geography to economic development.

GEOG 223: Geography of Development (45/0: C.F 3.0) Y2S2

Development – meaning and scope; modern development – pioneers and theories; conventional conceptualization of development and their concerns; developed and underdeveloped countries; alternative conceptualization of development and moving beyond paradigmatic thinking. Economic development. Key issues in development planning: underdevelopment and poverty; spatial variations in development; populations and development; international trade, foreign and private investments, national debt and development; and eco-development. Policy in Development - Kenya Vision 2030, Millennium Development Goals, Sustainable Development Goals.

GEOG 224: Population Geography (45/0: C.F 3.0) Y2S2

Concepts in population studies, concerns of population geography, evolution and development of population geography, population –development relationships of theories and models in population studies, Demographic transition. Global population distribution: age and sex, contrasts between developed and developing countries.

Determinants of: mortality, fertility and migration trends, urbanization trends. Population policy

GEOG 225: Applied Statistics in Geography (45/0: C.F 3.0) Y2S2.

Introduction to applied statistics. probability theory: types and distributions; estimation: types and methods of estimation of large samples, small samples and proportions; hypothesis testing – concepts, procedures and hypotheses testing of population mean and proportions; ANOVA: one-way and two-way ANOVA; correlation and regression: scattergram Pearson's Correlation Coefficient, Spearman's Rank Correlation, regression methods and hypothesis testing; Chi-Square: meaning, steps in applying and measures of association; and time series analysis: time series analysis, time series graphs and estimation of trends and fluctuations. Computer applications – SPSS and *Msc Excel*. (**Pre-requisite: GEOG 112**).

GEOG 310: Marine Resources and Coastal Geography (45/0: C.F 3.0) Y3S1

Physical biological resources of marine and coastal zones. The distribution and concentration of marine animals; distribution of land, plants and animals in coastal zones, coastal wetlands and swamps; coastal mangroves and swamp forests in the tropics. Ecological factors determining the location of marine resource and of land based (coastal) natural resources. Climates of coastal zones and its impact on marine productivity; climates of oceans and their influence on oceanic productivity. Ocean currents and energy exchange in coastal zones. Coastal fisheries and trade in fisheries resources. All resources in coastal areas and their impacts on the development of coastal zones. The exploration of marine environments and changing of coastal and marine resources. Marine pollution. **Field trips will be required.**

GEOG 311: Geomorphology (45/0: C.F 3.0) Y3S1

Geomorphology: basic terms and concepts; nature and scope of geomorphology; fundamental principles in geomorphology and study approaches. Evolution of geomorphology as a subject of study and current trends. Theories of land formation; continental drift, Plate tectonics and landforms; relief features of continents and oceans. Weathering; physical and chemical

processes. Mass wasting; forms and processes, development of slopes. Aeolian, fluvial and peri-glacial environments. Coastal geomorphology; processes and coastal landforms. Drainage basins analysis. Models in geomorphology. Morphological mapping. **Field trip**

GEOG 312: Computer-Assisted Cartography (30/30: C.F 3.0) Y3S2

Survey of computer cartography terms, concepts, and equipment, with emphasis on the conceptual and developmental aspects of computer-produced maps. Topics include: digitizing, coordinate data structures, spatial data bases, computer map design, turnkey cartographic systems, and computerized map production. Principles and concepts essential to thoughtful, informative and aesthetic map composition and layout. Topics include color theory, typography, data classification and symbology, cartographic design and production, and the relationship between cartography and GIS mapping.

GEOG 313: Geography of Settlement (45/0: C.F 3.0) Y3S1

Introduction to settlement geography: Meaning, types and basis of settlement; people, habitat and development; population, ruralization and urbanization; national development: programmes affecting settlements, settlement management and institutions; infrastructural facilities and their effect on settlements; building materials and construction technology; and the role of human settlements in development.

GEOG 314: Geography of Agriculture (45/0: C.F 3.0) Y3S1

Nature and scope of agricultural geography. Approaches to the study of agricultural geography. Origins of agricultural geography; domestication of plants and animals. Major agricultural regions of the world; agricultural systems; determinants of agricultural patterns. Agricultural development of Agriculture in East Africa; opportunities and challenges. Environmental impacts of agriculture; Current issues in agriculture; technology and sustainable development. Case studies. **Field trips.**

GEOG 315: Transport Geography (45/0: C.F 3.0) Y3S1

Introduction to transportation. Theoretical bases of transportation and communication. Traditional and modern transportation. Basic factors relating to transportation and communication systems. Geographical change in transport patterns. Future developments in transportation and communication geography. **Field trip**

GEOG 316: Political Geography (45/0: C.F 3.0) Y3S1 (Elective)

Introduction to the field of political geography; nature and scope of political geography. Approaches to the study of political geography. The concept of state, nation and nation-state. The geography of imperialism, colonization, decolonization and neo-colonialism. Key issues in geopolitics: international law, conflict resolution, United Nations, trade and environment, politics and welfare, electoral process in developing countries. Contemporary issues in international relations. The nature and future of political geography.

GEOG 317: Demography (45/0: C.F 3.0) Y3S1 (Elective)

Introduction to nature and scope of demography. Demography as a social and policy science, demographic transition. National and international sources of population data. Evaluation and adjustment of age data; use of age data, concepts and types of age error, age ratio analysis, age-sex accuracy index. Population growth and decline; concept of growth, analyzing growth, geometric growth. Comparing populations; rates, standardization. Fertility studies; measurement, determinants, world trends. Mortality studies and migration. (**Pre-requisite: GEOG 215**)

GEOG 318: Soil Geography (45/0: C.F 3.0) Y3S1 (Elective)

Origin, nature and classification of soils; soil formation: factors and processes; physical and chemical processes of soil; biology of soils: soil-microbe-plant interactions, biogeochemistry; Laboratory and field methods of studying soil; soil distribution of the landscape; soil conservation; with emphasize on sub-tropical Africa; soil degradation, desertification, deforestation, sustainability of soils. **Field trip**

GEOG 319: GIS and Remote Sensing in Natural Resource Management (30/30: C.F 3.0) Y3S1

GIS: history, components and functionality. Benefits & applications of GIS in resource use and planning. Introduction to Remote Sensing and Satellite Technology; Significance in resource management; Sensors and Resolution; Electromagnetic Spectrum and its interactions; Satellite image processing, analysis and interpretation; Satellite imagery and factors for detection and identification of resource condition; Image processing and classifications; Image characteristics. Remote Sensing data sources and applications: Data for various regions; Applications. Integration of Geo-Spatial technologies in Resource Management; GIS applications in natural resources management: Laboratory of GIS- practicals and demonstrations; Data creation and manipulation, Geodatabase, attribute and data conversion. Demonstration of ArcGIS Software: ArcGIS interface, Arc Catalogue/Demonstration of QGIS software; Demonstration and laboratory practical's on standard analysis toolbox (buffer, overlay, and selection); Map output and visualization of geographic data. Geographic Information System overlays of thematic maps; Modelling

GEOG 321: Research Methods in Geography (45/0: C.F 3.0) Y3S2

Nature and scope research, Introduction to geographic research, type of research, research design, research process, methods and approaches: sampling, data collection, data analysis and presentations literature review and bibliographic materials, research ethics proposal writing, report writing

GEOG 322: Climate Change and Development (45/0: C.F 3.0) Y3S2

Climate variability and Climate. Global environmental change: ozone depletion, greenhouse effect, global warming. Understanding the nature of past climates and the potential future climates. Determinants and predictors of climate change and variability. Biodiversity, climate change and ecosystem services. Impacts of climate change on economic and ecosystems. Mitigation and adaptation; carbon trade, early warning systems, policy and governance issues at local and international levels.

GEOG 323: Geography of Arid and Semi-Arid Lands (45/0: C.F 3.0) Y3S2

Introduction to the arid and semi-arid lands. Dry regions of the world – causes. Physical attributes of ASALs; dry climate of the world, vegetation topology, plant resources, soils of arid zones. Development of rangelands; agriculture, pastoralism, wildlife, forestry. Issues in ASALs; food and population problem, desertification, water resources. Erosional processes and soil conservation methods; Science and technology in the development of ASAL; application issues. *Field trip*.

GEOG 324: Geographic Information Systems (30/30: C.F 3.0) Y3S2

Intermediate geographic information systems GIS. techniques: integration of raster- and vector-based systems, interface of remote sensor digital data with GIS software, application models, database structures, feature geometry, GIS standards, GIS Data analysis functions ; GIS applications; GIS implementation issues and requirements. *Field trip (Pre-requisite: GEOG 211)*

GEOG 325: Field Attachment in Geography (0/120: C.F 4.0) Y3S2

Supervised training program in geography in cooperation with public or private agencies.

GEOG 326: Cartography and Surveying (30/30: C.F 3.0) Y3S2

Aerial photography: scale and distortion, interpretation, photo mosaics and their uses. Satellite imageries: types, interpretation and their use. Surveying: types, principles, techniques and methods, instruments, booking measurements and errors in surveying. Map projections: Introduction to computer assisted cartography, types and importance of map projections in analysis and understanding earth-shape characteristics (*Pre-requisites: GEOG 122 and 214*).

GEOG 327: Geography of Africa (45/0: C.F 3.0) Y3S2)

Overview of the physical and human environment in Africa, resources potential and development challenges; climate, pedology, and ecological regions and their implications to development. Interrelationships between infrastructure and development. The population factor in Africa's development; agriculture and rural

development; industrialization and its role in national and regional development. Urbanization in Africa; Wildlife and tourism; Regional blocks in Africa - the potential and challenges; future political and economic outlook for Africa.

GEOG 411: Environmental Management: Principles and Practices (45/0: C.F 3.0) Y4S1

Highlight some major aspects in environmental decision making and to provide means for better environmental management. Introduction of a range of concepts and methods in studying environmental impact assessment EIA and management. The major environmental components, processes, and attributes. The market and government regulation failures associated with environmental management. An in-depth investigation of EIA. Consideration of the complex and dynamic nature of the environmental management process. Applications of environmental, social, and economic methods in impact assessment are discussed in detail. Integrated approaches for identifying desirable policy options in environmental decision making. *Field trips*.

GEOG 412: Applied Geomorphology (45/0: C.F 3.0) Y4S1

Nature, scope and significance of applied geomorphology. Concepts and modern techniques in applied geomorphology. Systematic physical geography on the principles and applications of geomorphology, with particular attention given to terrain analysis. A dynamic systems/ earth surface systems approach. Landforms and processes and their spatial patterns. Human activities, landscapes modification, government policy and planning with respect to landscape change. Floods and flood controls. Dams and reservoirs; geomorphic considerations and environmental impacts. The role of the geomorphologist in landscape rehabilitation; coastal management, derelicts lands, ASALs. Humans as geomorphic agents. Remote sensing and computer mapping in geomorphology (*Pre-requisite GEOG 311*)

GEOG 413: Geography of Energy (45/0: C.F 3.0) Y4S1

Introduction of geography of energy; definition and content, renewable and non-renewable sources of energy. Disparity in energy consumption; trends in

energy supply and demands. The potential of resources: geothermal energy, environmental impacts of geothermal energy. Solar energy systems and technologies. Global repercussions of intensive solar energy use. Environmental impact of energy production and utilization. Development of new renewable energy systems and their limitations.

GEOG 414: Industrial Geography (45/0: C.F 3.0) Y4S1

Analysis of changes in spatial patterns of manufacturing activities. Emphasis on location and locational changes in manufacturing activities and their implications for regional development. Analysis of retail and service activities from a spatial perspective. Topics include location strategies of retail and service firms, site selection, trade area analysis, store and office assessment methods and local economic development. *Field trip.*

GEOG 415: Disaster Management (45/0: C.F 3.0) Y4S1

Disaster management terminologies/concepts; Environmental Hazards Studies: Disaster & Development nexus (SDGs); Disaster risk and vulnerability; Disaster management process (preparedness, response, recovery & Mitigation); Disaster management policy and Institution framework; Role of government and other non-governmental organizations in disaster management; Role of technology in disaster management (GIS & Remote Sensing). *Field trips*

GEOG 416: Water Resource Management (45/0: C.F 3.0) Y4S1

Introduction; the hydrosphere; global distribution of water resources. Water resources in Kenya. Integrated aspects of water; food security, health, settlement, agriculture, energy, etc. Water and sustainable development; Management of global water resources. Management and governance issues globally and locally. Trans-boundary issues in water use and management. Legislations in the water resource sector in Kenya. Current issues in the water sector. Approaches to Sustainable Water Resource Management. *Field trip.*

GEOG 417: Remote Sensing and GIS Project (15/45: C.F 2.5) Y4S1

Design, management of a GIS/remote sensing project. Projects must include a substantive analytical component of remote sensing and GIS: organizational design, the application of appropriate RS and GIS techniques, and proper reporting of the results. The RS and GIS component is accomplished through independent work. *(Pre-requisite GEOG 211 and GEOG 324)*

GEOG 421: Urban Planning (45/0: C.F 3.0) Y4S2

Understanding urban planning in Kenya with a historical context. The themes examined include the role of the Government of Kenya in dealing with national problems or urban settlement, the involvement of the municipal land use planning, legislations and regulation. The planning process; top down techno-centric, bottom-up. Strategic structure planning process, social planning. Plan evaluation and monitoring. Urban politics and planning. A case study review of the planning process within the Municipalities on the country. Field trips will be required. *(Pre-requisite GEOG 114)*

GEOG 422: Applied Hydrology (45/0: C.F 3.0) Y4S2

Systematic and practical approach to the study of watershed hydrology, measurements and analysis of hydrologic and human elements interacting in drainage basins: Measurement of hydrologic cycle elements; snow pack and snow melt; Ice in Lakes and rivers; glaciers and glaciations; avalanches; anthropogenic impacts on global water budget and applications of hydrology in remote sensing.

GEOG 423: Applied Agricultural Geography (45/0: C.F 3.0) Y4S2

Agriculture development and economic growth. Models of agricultural behavior. Agricultural sustainability. Ecological approach to food production. Population growth, urbanization, climate change and global food production and consumption. Transportation approaches to agricultural development in selected Countries. Intensification of agriculture, genetic considerations, increased energy use and implications for non-renewable fossil fuels, value addition. Food imports and subsidies. Government and agriculture.

GEOG 424: Regional Planning and Development (45/0: C.F 3.0) Y4S2

Systematic examination of the goals and objectives of regional planning and the strategies employed to assign the uses of natural resources. Application of planning approaches to resource use at the regional and national levels are analyzed. Historical development, conflict resolution, partnerships and public participation are examined in the planning and allocation of resources. Native land claims and Native approaches to resource management are also included.

GEOG 425: Dissertation (15/60: C.F 3.0) Y4S1/S2

A Dissertation on a geographical problem including the results of field work, cartographic presentation, and a study of the relevant literature for Final Year students. Students shall start working on the dissertation in the First Semester of Year 4 of study, and submit it in the course of Semester Two of their Fourth Year. *An academic proposal (Sem 1) and report (sem 2).*

GEOG 426: Principles of Sustainable Development (45/0: C.F 3.0) Y4S2

Practical issues regarding the implementation of sustainability in resource management. Emphasis on skills development, entrepreneurship, leadership and the facilitation of change. The use of small groups, workshops and active learning techniques allow for enhanced problem-based learning and personal awareness related to individual, corporate, and government roles and responsibilities.

GEOG 427: Medical Geography (45/0: C.F 3.0) Y4S2

Major health issues in world. Causes of death in advanced and developing countries Epidemiological transition and Demographic transition. Risk factors for infectious diseases. Demographic patterns in disease prevalence. Emerging global health problems like HIV/AIDS. Degenerative diseases. Life-style oriented morbidity. Health care provision in developing countries. Health care development in developing countries Gender issues in Health care. Health transition and implication for health policy in developing countries. Health care facilities utilization in developing countries. Financing health care services.

GEOG 428: Geography of Tourism (45/0: C.F 3.0) Y4S2

Definitions and concepts of geography of recreation and tourism. Tourism resources and their spatial distribution. Issues and approaches in the contemporary geography of tourism; relationship between tourism, recreation and leisure, problems in the study of tourism, tourist motivations, tourism typologies, patterns of tourism in Kenya since 1963, emerging tourist areas, The role of planning in tourism; tourism planning at national, regional and local levels including circuit tours. socio-cultural relations between hosts and visitors; tourism, society and culture, effects of tourism upon host communities with emphasis on Kenya. New tourism directions; cultural and heritage tourism, theme parks. The structure of tourism industry in Kenya.. origins of international tourism , changing spatial patterns of international tourism;. The growth of international tourism, the spatial spread of international tourism. Cost benefit analysis of tourism; the physical and economic development; physical patterns, factors shaping the development of tourism, forms of tourism development, tourism and economic development. The environmental consequences of tourism development; environmental impact of tourism, sustainable tourism, adventure and ecotourism *Field Trips*.

GEOG 429: Applied Climatology (30/30: C.F 3.0) Y4S2

Maintenance of weather instruments; Surface weather observation; surface weather map analysis. Sources, tools and analysis of climate data. Variables of analysis and methods in climatology: rainfall amount, onset, cessation, trends. Management and challenges of climatic data: collection and maintenance. Advanced topics in radiation and energy balances, micro-climatology, and hydro-climatology. Climate change modeling –methods. Two hours lectures and two hours laboratory per week. (*Pre-requisite: GEOG213 & GEOG 224*).

GEOG 430: Participatory Approaches in Development (45/0: C.F 3.0) Y4S2

Conceptualization of development and participatory research: development and research in development; community development: community, community development - characteristic and principles;

participation and participatory development: community participation – characteristics, principles and strategies, participatory development, capacity building and empowerment; effective participation and participatory development; stakeholder analysis: meaning and methods; community needs assessment: meaning, types and techniques; participatory approaches: rapid rural appraisals, participatory rural appraisal, participatory poverty assessment, participatory action research and appreciative inquiry; participatory monitoring and impact assessment. *Field Trips (Pre-requisite: GEOG 223)*

GEOG 431: Environmental Degradation and Management (45/0: C.F 3.0) Y4S2

Natural resources: vegetation topology, plant resources, soils. The atmosphere – structure. Degradation of the environment: agriculture, pastoralism, wildlife, forestry, desertification, climate change, pollution of water, soil and air; Conservation of the environment: soil and water conservation, afforestation and re-afforestation, energy conservation, climate change mitigation. Science and technology in environmental conservation; application issues. *Field trips*

9.2 SERVICE COURSE OFFERED TO OTHER DEPARTMENTS**Department of Natural Resources (NARE)**

- GEOG 125: Tourism of Geography (45/0: CF 3.0) Y1S2
- GEOG 319: GIS and Remote Sensing in Natural Resource Management (45/0: CF 3.0) Y3S1

Department of Environmental Science

- (d) GEOG 431: Environmental Degradation and Management (45/0: CF 3.0) Y4S2

Department of Curriculum, Instruction and Education Management

- Bachelor of Education (Primary Option) (School-based)

GEOG 131: Introduction to Human Geography(45/0: C.F 3.0) L1B3

Nature and scope of human geography, global change, Branches of human geography. Review of the essential concepts of human geography, philosophy and methods in human geography. Man as an ecological agent; the human environment from simple to complex; spatial processes and patterns; paradigms and theories; concept of resource management and conservation in traditional and modern societies. Dimensions of globalization: economic, cultural, political, etc.

GEOG 231: Introduction to Physical Geography (45/0: C.F 3.0) L2B3

Introduction to physical geography, branches of physical geography; biosphere; hydrosphere; survey of the spatial distribution of the earth's physical characteristics, including weather and climate, water, soils, vegetation, and landforms; discussion of environmental processes and interactions creating these physical geographic patterns; ecosystem: components, energy flow and functions. Man and environment: impacts, conservation and eco-development.

GEOP311: Economic Geography: (45/0: C.F 3.0) L3B1

Introduction to historical development of economic geography. Resource utilization. Demand and supply of resources. Types of economic activities. Economic growth and economic development. Human Resource Development. Agriculture, industrialization and Development. Urbanization, Centre-Periphery concept and Development.

GEOP 331: Maps and field work (30/30: C.F 3.0) L3B3

Review and use of maps: types, design content, legends, scale reduction and enlargement, measurement of distance and area. Field work: importance, preparation and report writing on selected geographical problem.

GEOP 411: Industrial Geography (45/0: C.F 3.0) L4B2

Analysis of changes in spatial patterns of manufacturing activities. Emphasis on location and locational changes in manufacturing activities and their implications for regional development. Analysis of retail and service activities from a spatial perspective. Topics include location strategies of retail and service firms, site selection, trade area analysis, store and office assessment methods and local economic development. *Field trips will be required.*

GEOP 421: Geography of Kenya (45/0: C.F 3.0) L4B3

Physical environment of Kenya: topography, climate, soils, biomes. The human environment: demographic characteristics; determinants of population distribution; economic activities, diversity and geographic variation; transport and communication in time and space; devolution and development; emerging issues in the geography of Kenya – global warming, climate change, gender and development, environmental challenges.

1. Diploma in Education (Primary Option)

GEOP 0162: Introduction to Human Geography (45/0: C.F 3.0) L1B1

Nature and scope of human geography, global change, Branches of human geography. Review of the essential

concepts of human geography, philosophy and methods in human geography. Man as an ecological agent; the human environment from simple to complex; spatial processes and patterns; paradigms and theories; concept of resource management and conservation in traditional and modern societies. Dimensions of globalization: economic, cultural, political, etc.

GEOP 0166: Introduction to Physical Geography (45/0: C.F 3.0) L1B3

Introduction to physical geography, branches of physical geography; biosphere; hydrosphere; survey of the spatial distribution of the earth's physical characteristics, including weather and climate, water, soils, vegetation, and landforms; discussion of environmental processes and interactions creating these physical geographic patterns; ecosystem: components, energy flow and functions. Man and environment: impacts, conservation and eco-development.

GEOP 0261: Maps and field work (30/30: C.F 3.0) L2B1

Review and use of maps: types, design content, legends, scale reduction and enlargement, measurement of distance and area. Field work: importance, preparation and report writing on selected geographical problem.

GEOP 0264: Economic Geography (45/0: C.F 3.0) L2B2

Introduction to historical development of economic geography. Resource utilization. Demand and supply of resources. Types of economic activities. Economic growth and economic development. Human Resource Development. Agriculture, industrialization and Development. Urbanization, Centre-Periphery concept and Development.

GEOP 0267: Geography of Kenya (45/0: C.F 3.0) L2B3

Physical environment of Kenya: topography, climate, soils, biomes. The human environment: demographic characteristics; determinants of population distribution; economic activities, diversity and geographic variation; transport and communication in time and space; devolution and development; emerging issues in the

geography of Kenya – global warming, climate change, gender and development, environmental challenges.

2. Diploma in Education (Arts) – (Secondary Option)

GEOG 0111: Introduction to Physical Geography (45/0: C.F 3.0) Y1S1

Introduction to physical geography, branches of physical geography; biosphere; hydrosphere; survey of the spatial distribution of the earth's physical characteristics, including weather and climate, water, soils, vegetation, and landforms; discussion of environmental processes and interactions creating these physical geographic patterns; ecosystem: components, energy flow and functions. Man and environment: impacts, conservation and eco-development. *Field trips.*

GEOG 0112: Quantitative Techniques in Geography (45/0: C.F 3.0) Y1S1

Quantitative techniques in Geography; meaning and types of statistics; concepts of data and variable; sampling theory and design – probability and non-probability; collection of statistical data: primary and secondary sources; organization of statistical data: classification and frequency distribution; presentation of statistical data: textual, tabular and chart presentation; description and analysis of statistical data: measures of central tendency, measures of dispersion, and measures of relationships

GEOG 0121: Introduction to Human Geography (45/0: C.F 3.0) Y1S2

Nature and scope of human geography, global change, Branches of human geography. Review of the essential concepts of human geography, philosophy and methods in human geography. Man as an ecological agent; the human environment from simple to complex; spatial processes and patterns; paradigms and theories; concept of resource management and conservation in traditional and modern societies. Dimensions of globalization: economic, cultural, political, etc

GEOG 0122: Map Work and Analysis of Spatial Data (30/30: C.F 3.0) Y1S2

Review and use of maps: types, design content, legends, scale reduction and enlargement, measurement of distance and area. Field work: importance, preparation and report writing on selected geographical

problem. Analysis of relief and slopes; methods of depicting relief, delimitation of physiographic regions and relief analysis. Drainage Basin Analysis: Delimitation of catchment areas, linear and Aerial aspect of river basins- stream orders, drainage density, bifurcation ratios, basin magnitude, stream frequency, shape and form. Analysis of settlement and communication patterns: settlement patterns and density. Land use analysis: Types and land use and their coverage, relationship between land use, physical and human features, *Field trips*.

GEOG 0211: Introduction to Remote Sensing and GIS (30/30: C.F 3.0) Y2S1

Remote Sensing and Geographic Information System defined; GIS: history, components and functionality. Benefits & applications of GIS in resource use and planning. Remote sensing: history of remote sensing technology. Electromagnetic Radiation (EMR) & Spectrum. Remote sensing platforms. Types of sensors: Active & Passive; photographic & non-photographic systems, .Benefits and applications of remote sensing in resource use and planning. Principles and structure of spatial data and cartographic modeling. Spatial data acquisition, manipulation, translation, aggregation, analysis, and presentation.

GEOG 0212: Geography of Agriculture (45/0: C.F 3.0) Y2S1

Nature and scope of agricultural geography. Approaches to the study of agricultural geography. Origins of agricultural geography; domestication of plants and animals. Major agricultural regions of the world; agricultural systems; determinants of agricultural patterns. Agricultural development of Agriculture in East Africa; opportunities and challenges. Environmental impacts of agriculture; Current issues in agriculture; technology and sustainable development. Case studies. *Field trips*.

GEOG 0221: Population Geography (45/0: C.F 3.0) Y2S2

Concepts in population studies, concerns of population geography, evolution and development of population geography, population –development relationships of

theories and models in population studies, Demographic transition. Global population distribution: age and sex, contrasts between developed and developing countries. Determinants of: mortality, fertility and migration trends, urbanization trends. Population policy

GEOG 0222: Biogeography (45/0: C.F 3.0) Y2S2

History of biogeography; types of biogeography; basic concepts of biogeography; the ecosystem; Structure and functioning of natural ecosystems, components of an ecosystem, energy flow, nutrient cycling, evolution of the biosphere, and ecosystem succession and changes. Distribution of living organisms; vegetation process – ecological succession, dominance at climax, dispersal mechanism, adaptation. Biodiversity – state of biodiversity, environmental degradation, threats to biodiversity, action to conserve biodiversity, man-environment interaction – a historical perspective.

GEOG 0311: Fundamental of Meteorology and Climatology (45/0: C.F 3.0) Y3S1

Meteorology and climatology: definition, principles, nature and scope. Origin and development of meteorology and climatology. Components of the earth's climate system. The atmosphere: structure, basic heating and cooling processes of the atmosphere. Micro-climates: effects of vegetation, urbanization, topography, surface material. Global energy system: net radiation balance, latitudinal and seasonal variation of solar radiation, latitudinal distribution of solar energy, vertical variation of temperature. Measurement of climate elements; maintenance of weather instruments. The general circulation of the atmosphere. *Field trips*.

GEOG 0312: Geography of Development (45/0: C.F 3.0) Y3S1

Development – meaning and scope; modern development – pioneers and theories; conventional conceptualization of development and their concerns; developed and underdeveloped countries; alternative conceptualization of development and moving beyond paradigmatic thinking. Economic development. Key issues in development planning; underdevelopment and poverty; spatial variations in development; populations and development; international trade, foreign and

private investments, national debt and development; and eco-development. Policy in Development - Kenya Vision 2030, Millennium Development Goals, Sustainable Development Goals.

GEOG 0321: Geomorphology (45/0: C.F 3.0) Y3S2

Geomorphology: basic terms and concepts; nature and scope of geomorphology; fundamental principles in geomorphology and study approaches. Evolution of geomorphology as a subject of study and current trends. Theories of land formation; continental drift, Plate tectonics and landforms; relief features of continents and oceans. Weathering; physical and chemical processes. Mass wasting; forms and processes, development of slopes. Aeolian, fluvial and peri-glacial environments. Coastal geomorphology; processes and coastal landforms. Drainage basins analysis. Models in geomorphology. Morphological mapping. *Field trips*.

GEOG 0322: Research Methods in Geography (45/0: C.F 3.0) Y3S2

Introduction to geographic concepts, methods and approaches, geographic literature and bibliographic materials, proposal writing, spatial analysis, field methods, surveys and questionnaires, problem and hypothesis formulation, synthesis and presentation of geographic

9.3 Matrix Aligning Courses to Programme Learning Outcomes

Programme Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
	Courses	C.F	Courses	C.F	Courses	C.F	Courses	C.F
i. Demonstrate the place of Geography in contemporary society	Introduction to Physical Geography	3.0	Development of Geographic Thought	3.0				
	Introduction to Human Geography	3.0						
	Regions of the World	3.0						
ii. Apply the skills and knowledge acquired in resource planning and management in a rural and urban context	Quantitative Techniques in Geography	3.0	Introduction to Remote Sensing and GIS	3.0	Computer-Assisted Cartography	3.0	Environmental Management: Principles & Practices	3.0
	Map work and analysis of spatial Data	3.0	Statistical Mapping and Spatial Planning	3.0	Environmental Impact Assessment and Audit	3.0	Water Resource Management	3.0
			Applied Statistics in Geography	3.0	Geographic Information System Cartography and Surveying	3.0	Applied Geomorphology	3.0
							Disaster Management	3.0
							Remote Sensing and GIS Project	3.0
							Principles of Forest Resource Management	3.0
							Environmental Law and Policy	3.0
							Urban Planning	3.0
							Applied Agricultural Geography	3.0
							Regional Planning and Development	3.0
							Applied Hydrology	3.0

							Applied Climatology	3.0	
							Participatory Approaches in Development		
iii.	Apply effective communication skills through report writing and power point presentation	Introduction to Academic Communications	3.0			Field Attachment in Geography	4.0	Dissertation	3.0
		Introduction to Computer Applications	3.0			Research Methods in Geography	3.0		
iv.	Critique the nexus between society and the physical environment and offer realistic pathways to sustainable development.	Introduction to Rural and Urban Development	3.0	Geography of Kenya	3.0	Marine Resources and Coastal Geography	3.0	Geography of Energy	3.0
		Cultural Geography	3.0	Atmospheric Systems and World Climates		Geomorphology	3.0	Industrial Geography	3.0
		Economic Geography	3.0	Biogeography	3.0	Geography of Settlement	3.0	Principles of Sustainable Development	3.0
		Fundamentals of Meteorology and Climatology	3.0	Geography of Development	3.0	Geography of Agriculture	3.0	Geography of Tourism	3.0
		Introduction to Hydrobiology	3.0	Population Geography	3.0	Transport Geography	3.0	Medical Geography	
		Environment and Development	3.0	Introduction to Hydrology	3.0	Political Geography	3.0		
		Introduction to Natural Resources	3.0	Introduction to Geology	3.0	Demography	3.0		
				Natural Resources Ecology	3.0	Soil Geography	3.0		
				Principles of Forest Resource Management	3.0	Climate Change and Development	3.0		
				Ethics, Integrity and National Values	3.0	Geography of Arid and Semi-arid Lands	3.0		
				HIV and AIDS and Society	3.0	Geography of Africa	3.0		
						Gender Issues and Development			

DEPARTMENT OF NATURAL RESOURCES

DIPLOMA IN DRYLAND RESOURCES MANAGEMENT

1. Philosophy of the Programme

The Diploma programme in Dryland Resources Management is consistent with Egerton University's mission of transforming lives through quality education. The programme aims to impart skills and knowledge to prepare students to effectively contribute towards addressing some of the current and emerging problems facing biodiversity in the 21st Century so as to reduce species extinctions while achieving national (e.g. Vision 2030), regional and global (e.g. Sustainable Development Goals) conservation and development targets in the drylands

2. Rationale

The Diploma programme in Dry land Resources Management seeks to train middle level human resource capacity to address the ever increasing need to realize sustainable dry lands production. The frontiers of these ecologically fragile regions are expanding due to increasing demand on livelihood resources for supporting increasing human needs and welfare. The training of diploma holders has an advantage of imparting knowledge and skills to graduates who will deal with grassroots development issues in the areas that target improved human welfare. This curriculum has been enriched with courses that will enable graduates to offer services that will facilitate participatory approaches in dealing with issues of dry lands resource management. Graduates will have technical skills and knowledge that will enable them work in dry lands and among the communities therein.

Dry lands cover over 80 % of Kenya's landmass. These lands embrace a rich diversity of flora and fauna that constitute an important economic resource base. They are an important resource that supports the tourism and livestock based industries. In the past, utilizations of dry lands have emphasized livestock production and wildlife at the expense of other possible production enterprises. The reason given for this attitude was that the dry lands lacked capacity to sustain arable

agriculture with use of existing technologies developed for use in high potential areas. Worldwide, the dry lands are a source of irrigated food crops and other products. The diploma programme in dry lands management is geared to the production of middle level graduates with the capacity to diagnose the needs of the dry lands and provide appropriate advisory services on the management of these resources.

3. Goal of the Programme

The programme intends to equip learners with relevant knowledge, skills, competencies and attitudes relevant for wildlife enterprise management

4. Programme Learning Outcomes

The graduates will be able them to:

1. Disseminate technologies appropriate for sound management of dry lands,
2. Provide advisory services to the clientele dealing with the management of the dry lands
3. Work as field officers capable of diagnosing pastoralists and farmers needs and
4. Provide linkage between the pastoralists, farmers and researchers in designing appropriate development technologies.

5. Mode of delivery

The mode of delivery will be either full time/ part time.

6. Academic Regulations for the Programme

6.1 Admission Requirements

All applicants must satisfy the minimum entrance requirements stipulated in the common university entrance regulations. In addition, they MUST have passed the Kenya Certificate of Secondary Education KCSE with at least a C grade in each of the following: Biology or Biological sciences, Chemistry or Physical Science, Geography, English or Kiswahili

Those holding other qualifications from institutions recognized by Egerton University Senate may also be admitted. An added advantage will be given to candidates who have passed with at least a C grade in Agriculture or Business Studies at KCSE.

6.2 Regulation on Credit Transfer

Egerton University statute 36(3) of 2013 shall apply,

6.3 Student Assessment Criteria

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply

6.4 Grading System

Egerton University statute 36(6) of 2013 shall apply.

6.5 Examination Regulations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply

6.6 Moderation of Examinations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.7 Graduation Requirements

To graduate, a student will be required to take and pass a minimum of 118 Credit Factors which includes the University common core courses approved by the Senate.

6.8 Course Requirements

ISO procedures for teaching (EU/AA/OP/06 rev 3) shall apply.

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host Department and Programme Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of the program's academic cycle as per ISO procedure for quality assurance for academic programmes EU/VC/OP/05.

8.3 Course Coding

Coding of the courses offered under the Diploma in Dryland Resources Management course is represented by DLRM followed by a four digit figure:

The first digit represents the level of the degree programme followed the year in which the course is offered to undergraduate students. The third digit represents the nature of the course within the department:

- 0 - Introductory courses,
- 1 - Principle courses,
- 2 - Ecology,
- 3 - Climate,
- 4 - Management courses,
- 5 - Applied courses,
- 6 - Planning,
- 7 - Research seminars, and projects,
- 8 - Policy, law and administration.

The fourth digit represents the serial number of the course e.g. DLRM 0212, taught in the second year is a Diploma course principle course and second in the series.

9.0 Courses offered for the Programme

9.1 Schedule of Courses

(a) University common core courses

CODE	TITLE	L	P	CF
AGED 0111	Agriculture Communication Skills	30	0	2.0
ENSC 0100	Introduction Environmental Science	30	30	3.0

b) Schedule of courses

Year One Semester One (Y1S1)

CODE	TITLE	L	P	CF
AGRO 0101	Principles of Crop production	45	0	3.0
BOTA 0111	General Botany	30	30	3.0

CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
DLRM 0101	Introduction to Dryland Resources Management	30	30	3.0
MATH 0121	General Mathematics	45	0	3.0
SOIL 0111	Soil Genesis and Classification	30	30	3.0
ZOOL 0111	Animal Anatomy and Physiology	30	30	3.0
TOTAL		240	150	21.0

Year One Semester Two (Y1S2)

CODE	TITLE	L	P	CF
AGED 0111	Agriculture Communication Skills	30	0	2.0
BOTA 0222	General Genetics	30	30	3.0
CHEM 0112	Basic Organic Chemistry	30	30	3.0
DLRM 0111	Principles of Range Management	30	30	3.0
DLRM 0121	Dryland Plants and Ecology	30	30	3.0
ENSC 0100	Introduction to Environmental Science	30	30	3.0
NARE 0111	Principles of Wildlife Management	30	30	3.0
TOTAL		225	150	20.0

Year Two Semester One (Y2S1)

CODE	TITLE	L	P	CF
AGEC 0241	Production Economics	45	0	3.0
AGEN 0266	Water Resources Development	30	45	3.0
AGRO 0231	Pasture and Forage Management	30	0	2.0
ANSC	Principles of	30	0	3.0

0230	Animal Nutrition			
DLRM 0231	Climatology	30	30	3.0
MATH 0322	Basic Statistics	45	0	3.0
ZOOL 0224	Parasitology	30	30	3.0
TOTAL		240	105	20.0

Year Two Semester Two (Y2S2)

CODE	TITLE	L	P	CF
AGEN 0252	Soil and Water Management	30	30	3.0
ANSC 0240	Animal Breeding	30	0	2.0
DLRM 0241	Pastoral Development	30	0	2.0
DLRM 0251	Ecological Surveys and Techniques	30	30	3.0
DLRM 0271	Dryland Research Methods	30	30	3.0
DLRM 0273	Student Project Design	0	60	2.0
DLRM 0331	Bush Control and Grazing Management	30	30	3.0
TOTAL		180	210	19.0
DLRM 0272	Field Attachment	0	120	4.0

Year Three Semester One (Y3S1)

CODE	TITLE	L	P	CF
AGEC 0231	Agricultural Marketing	30	0	2.0
AGEC 0243	Farm Management and Accounts	45	0	3.0
ANHE 0310	Introduction to Animal Diseases	30	30	3.0
ANHE 0321	Toxicology	45	0	3.0
ANSC 0250	Ruminant Husbandry	30	30	3.0
DLRM 0341	Watershed Management	30	30	3.0

DLRM 0351	Dryland Reclamation	30	30	3.0
TOTAL		240	120	20.0

Year Three Semester Two (Y3S2)

CODE	TITLE	L	P	CF
AGED 0252	Extension Education	45	0	3.0
ANSC 0353	Apiculture and Sericulture	30	15	2.5
DLRM 0311	Wildlife Utilization and Management	30	30	3.0
DLRM 0342	Risk Management	30	0	2.0
DLRM 0361	Resource Analysis, Planning and Management	30	30	3.0
DLRM 0373	Student Projects and Seminars	15	30	2.0
NARE 0351	Agroforestry	30	30	3.0
TOHM 0321	Ecotourism Management	30	0	2.0
TOTAL		225	105	20.5

c) COURSE DESCRIPTION

DLRM 0101: Introduction to Dryland Resources (30/30: CF 3.0) Y1S1

Terms and concepts used in Dryland Management; significance of the course in relation to ASAL resource development; opportunities and challenges; the climatic, edaphic, biotic, physiographic and soil characteristics of East African drylands; multiple resource use .

DLRM 0111: Principles of Range Management (30/30: CF 3.0) Y1S2

Range Management as applied ecology. Range resources of the World with emphasis on East Africa. Ecological zones. Range sites, range use in relation to climate; biological influence on grazing in relation to plant physiology and ecology. Range condition indicators.

DLRM 0121: Dryland Plants and their Ecology (30/30 CF 3.0)

Plant taxonomy; nomenclature, classification, review of major families found in drylands. Plant ecology; ecological regions and associated flora, mechanism of adaptation to dryland environment, plant communities of East Africa. Autecology of dryland plants; seed dissemination, germination, physiology, individual plant values, response to animal grazing. Field practical in a dryland area; Plant identification using keys and floral attributes, Plant collection and herbarium development.

DLRM 0231 Climatology (30/30 CF 3.0)

Physical and applied climatology, concepts and principles of sensible heat flux, surface and air temperature, soil heat flux and soil temperature, wind and atmospheric humidity; energy and water budgets. Relationships between climatological elements and natural resources systems, measurement and methods of estimation of climatological parameters, analysis and interpretation of climatological data; modification of the climate near the ground (micro-climate).

DLRM 0241: Pastoral Development (30/0: CF 2.0) Y3S2

Description of pastoral societies with emphasis on East African societies; characteristics of pastoralism; effects of pastoralism on development; sociological versus economic and environmental factors related to pastoral

production systems; technological and sociological problems facing extension programmes in pastoral areas; discussion of applicable approaches to pastoral extension and development.

DLRM 0251: Ecological Surveys and Techniques (30/30: CF 3.0) Y2S2

Ecological measurements; attributes and processes, scale, primary and secondary data. Sampling; intensity, optimum sample allocation, techniques, designs, units. Vegetation assessment and monitoring; diversity indices, techniques for cover, frequency, density, biomass and utilization. Wildlife monitoring techniques; census, trends, habitat assessment for both terrestrial and aquatic. Physical attributes; climatic data, soil erosion, soil seed bank. Socio-ecological techniques; surveys and participatory approaches. Remote sensing in ecological measurement. Management of ecological data; data integration, storage and retrieval systems, presentation.

DLRM 0271 Dryland Research Methods (30/30: C.F 3.0) Y2S1

Review of basic statistics as related to dryland resources management research; Principles and procedures of field experimentation; Common experimental designs; sampling procedures, data analysis, interpretation and reporting.

DLRM 0272 Field Attachment (0/120: CF 4.0) end of Y2S2

Student attachment to suitable organization in drylands where they will have the opportunity to apply the knowledge learnt in class in solving practical problems. At the end of the attachment students will be expected to prepare field reports on topics related to their field experiences.

DLRM 0273 Student Projects Design (15/30: CF 2.0) Y2S2

Introduction to project identification, design, literature review, proposal writing. Development of individual research project proposals in dryland resource management topics approved by the supervisor.

DLRM 0311 Wildlife Utilization and Management (30/30: CF 3.0) Y3S2

Values of game in East African drylands, wildlife biology; wildlife in East African drylands with emphasis on big game; habitat factors; population characteristics and dynamics; utilization and management of wildlife; wildlife laws and policies.

DLRM 0331 Bush Control and Grazing Management (30/30: CF 3.0) Y2S2

Principles of bush control and grazing management; bush problem in East Africa, bush types, bush control methods, concepts in grazing management, plant-herbivore interactions, grazing management for proper range use grazing systems.

DLRM 0341 Watershed Management (30/30: CF 3.0) Y3S1

Principles and objectives of watershed management. Description of watersheds. The watershed as a unit of resource-oriented planning and development. Land use influence on water catchment and water delivery. Watershed analysis.

DLRM 0342: Risk Management in Drylands (30/0: CF 3.0) Y3S2

Risk modes in dryland environments. Indigenous knowledge and modern innovations in risk management. Conflict types, causes and resolution among the pastoral communities.

DLRM 0351: Dryland Reclamation (30/30: CF 3.0) Y3S1

Introduction to dryland ecosystems. Evaluation of potential and status of drylands. Processes of ecological degradation. Assessment of water and water requirements of crops, salinity problems and their management. Reversal of desertification: revegetation, reseeding. Soil and water conservation techniques.

DLRM 0361: Resource Analysis, Planning and Management (30/30: CF 3.0) Y3S2

Principles of planning; formulation of relevant planning instruments; Use of the instruments to elicit information on resource use. Planning for infrastructural developments, livestock projections, cost and benefits analysis. Development of resource management plans.

DLRM 0373: Student Projects and Seminars (15/ 45 CF 3.0)

Data collection in the field using scientific methods. Analysis of data using appropriate software. Presentation of data using APA format. Presentation of report in a seminar setting; both oral and poster presentation. *Prerequisite DLRM 0273*

NARE 0351: Agroforestry (30/30: CF 3.0) Y3S2

Concepts and objectives of agroforestry, identification of multipurpose trees and shrubs; land use systems related to agroforestry; specific agroforestry potentials in various ecological zones of Kenya. Diagnosis and design methods. Socio-economic evaluation of agroforestry systems. Case studies on agroforestry.

9.3 Matrix aligning courses/ units to Programme learning outcomes

	Year 1		Year 2		Year 3	
	Courses	CF	Courses	CF	Courses	CF
PLO 1. Disseminate technologies appropriate for sound management of dry lands	Principles of Crop production General Botany Basic Inorganic and Physical Chemistry Introduction to Dryland Resources Management General Mathematics Soil Genesis and Classification Animal Anatomy and Physiology Agriculture Communication Skills Basic Organic Chemistry Dryland Plants and Ecology Introduction to Environmental Science Principles of Wildlife Management Principles of Range Management General Genetics	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Production Economics Pasture and Forage Management Principles of Animal Nutrition Basic Statistics Climatology Parasitology Water Resources Development Soil and Water Management Animal Breeding Ecological Surveys and Techniques Pastoral Development Dryland Research Methods Student Projects Design Bush Control and Grazing Management Field Attachment	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Agricultural Marketing Farm Management and Accounts Introduction to Animal Diseases Toxicology Ruminant Husbandry Watershed Management Dryland Reclamation Extension Education Apiculture and Sericulture Student Projects and Seminars Wildlife Utilization and Management Resource Analysis, Planning and Management Risk Management Agroforestry Ecotourism Management	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0
PLO 2. provide advisory services to the clientele dealing with the management of the dry lands	Principles of Crop production General Botany Basic Inorganic and Physical Chemistry Introduction to Dryland Resources Management General Mathematics Soil Genesis and Classification Animal Anatomy and Physiology Agriculture Communication Skills Basic Organic Chemistry Dryland Plants and Ecology Introduction to Environmental Science Principles of Wildlife Management Principles of Range Management General Genetics	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Production Economics Pasture and Forage Management Principles of Animal Nutrition Basic Statistics Climatology Parasitology Water Resources Development Soil and Water Management Animal Breeding Ecological Surveys and Techniques Pastoral Development Dryland Research Methods Student Projects Design Bush Control and Grazing Management Field Attachment	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Agricultural Marketing Farm Management and Accounts Introduction to Animal Diseases Toxicology Ruminant Husbandry Watershed Management Dryland Reclamation Extension Education Apiculture and Sericulture Student Projects and Seminars Wildlife Utilization and Management Resource Analysis, Planning and Management Risk Management Agroforestry Ecotourism Management	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.5 3.0 3.0 3.0 3.0 3.0 3.0

		3.0				
		3.0				
PLO 3. work as field officers capable of diagnosing pastoralists and farmers needs	Principles of Crop production		Production Economics	3.0	Agricultural Marketing	3.0
	General Botany	3.0	Pasture and Forage Management	3.0	Farm Management and Accounts	3.0
	Basic Inorganic and Physical Chemistry	3.0	Principles of Animal Nutrition	3.0	Introduction to Animal Diseases	3.0
	Introduction to Dryland Resources Management	3.0	Basic Statistics	3.0	Toxicology	3.0
	General Mathematics	3.0	Climatology	3.0	Ruminant Husbandry	3.0
	Soil Genesis and Classification	3.0	Parasitology	3.0	Watershed Management	3.0
	Animal Anatomy and Physiology	3.0	Water Resources Development	3.0	Dryland Reclamation	3.0
	Agriculture Communication Skills	3.0	Soil and Water Management	3.0	Extension Education	3.0
	Basic Organic Chemistry	3.0	Animal Breeding	3.0	Apiculture and Sericulture	2.5
	Dryland Plants and Ecology	3.0	Ecological Surveys and Techniques		Student Projects and Seminars	3.0
	Introduction to Environmental Science	3.0	Pastoral Development	3.0	Wildlife Utilization and Management	
	Principles of Wildlife Management	3.0	Dryland Research Methods	3.0	Resource Analysis, Planning and Management	3.0
	Principles of Range Management	3.0	Student Projects Design	3.0	Risk Management	3.0
	General Genetics	3.0	Bush Control and Grazing Management	3.0	Agroforestry	3.0
		3.0	Field Attachment	3.0	Ecotourism Management	3.0
		3.0		3.0		3.0
PLO 4 provide linkage between the pastoralists, farmers and researchers in designing appropriate development technologies	Principles of Crop production		Production Economics	3.0	Agricultural Marketing	3.0
	General Botany	3.0	Pasture and Forage Management	3.0	Farm Management and Accounts	3.0
	Basic Inorganic and Physical Chemistry	3.0	Principles of Animal Nutrition	3.0	Introduction to Animal Diseases	3.0
	Introduction to Dryland Resources Management	3.0	Basic Statistics	3.0	Toxicology	3.0
	General Mathematics	3.0	Climatology	3.0	Ruminant Husbandry	3.0
	Soil Genesis and Classification	3.0	Parasitology	3.0	Watershed Management	3.0
	Animal Anatomy and Physiology	3.0	Water Resources Development	3.0	Dryland Reclamation	3.0
	Agriculture Communication Skills	3.0	Soil and Water Management	3.0	Extension Education	3.0
	Basic Organic Chemistry	3.0	Animal Breeding	3.0	Apiculture and Sericulture	2.5
	Dryland Plants and Ecology	3.0	Ecological Surveys and Techniques		Student Projects and Seminars	3.0
	Introduction to Environmental Science	3.0	Pastoral Development	3.0	Wildlife Utilization and Management	
	Principles of Wildlife Management	3.0	Dryland Research Methods	3.0	Resource Analysis, Planning and Management	3.0
	Principles of Range Management	3.0	Student Projects Design	3.0	Risk Management	3.0
	General Genetics	3.0	Bush Control and Grazing Management	3.0	Agroforestry	3.0
			Field Attachment	3.0	Ecotourism Management	3.0
				3.0		3.0

DIPLOMA IN ECOTOURISM AND HOSPITALITY MANAGEMENT

1. Philosophy of the Programme

Diploma in Eco-tourism and Hospitality Management is deeply rooted in the quest for the advancement of humanity through quality Ecotourism and Hospitality education and research. The programs philosophy seeks to develop the student an appreciation of the eco-tourism and hospitality management through education and understanding of natural resources and our cultural heritage. The programme will provide graduates with the requisite technical and managerial skills required in the development of ecotourism and hospitality industry, critically analyse and evaluate problems and issues and identify possible solutions compatible with the needs and requirements of all life within the sector.

2. Rationale

Kenya is endowed with a rich biodiversity characterized by a broad range of flora, fauna and geomorphologic formations in addition to a growing cultural heritage. In the face of increasing human populations, diminishing wild habitats and increased demand for agricultural land, there is need to shift overdependence upon agriculture as the main engine of economic growth. The opportunities for economic development in the ecotourism industry and associated hospitality service sectors have hitherto not been realized because of the dominance of mass tourism (conventional tourism) in the tourism sector. There is need to develop human technical capacity to run, re-orientate planning of ecotourism and hospitality industries in order to enhance economic growth in Kenya.

A student graduating from Eco-tourism and Hospitality Management programme may find employment in government agencies that deal with the ecotourism and hospitality outlets, management, and regulation of natural resources. In general, graduates employed in the public or private sector may find themselves working on diverse projects within the hospitality and ecotourism sector.

3. Goal of the Programme

To provide knowledge and skills to students in eco-tourism and hospitality industry who can critically

analyse and evaluate ecological and hospitality problems and issues, and to provide solutions compatible with the needs and requirements of the eco-tourism and hospitality industry.

4. Programme Learning Outcomes

At the end of the programme the graduates will be able to:

1. Provide quality services to customers in Ecotourism and Hospitality Management.
2. Apply theory and practical skills needed in the ecotourism and hospitality industry.
3. Develop and use ideas, concepts and skills to enable them venture in the ecotourism and hospitality business for self-employment (entrepreneurship).
4. Pursue higher levels of academic and professional training.

5. Mode of Delivery

The mode of delivery will be full time, part time distance and e-learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates must satisfy the minimum requirements for the university entry of mean grade of C and in addition attain at least grade C+ in History or Geography, C+ English or Kiswahili, C+ English or Kiswahili, C- in Chemistry or C in Physical Science, C in Biology or C+ in Biological Science and D+ in Mathematics. Foreign language will be an added advantage. Admission may be granted to qualified Certificate holders from colleges recognized by Egerton University Senate will be considered with credit and above.

6.2 Regulation on Credit Transfer

The Egerton University Statutes Article 36(3) of 2013 shall apply.

6.3 Course Requirements

ISO procedure for teaching (EU/AA/OP/06 rev 3) will be followed.

6.4 Student Assessment Criteria

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply

6.5 Grading System

The Egerton University Statutes Article 36(3) of 2013 shall apply.

6.6 Examination Regulations

The Egerton University Statutes Article 36(3) of 2013 shall apply.

6.7 Moderation of Examinations

The Egerton University Statutes Article 36(3) of 2013 shall apply.

6.8 Graduation Requirements

In order to graduate, students will be required to pass a minimum of 135 credit factors, including field attachment.

6.9 Classification of Diploma certificate.

The classification for Diploma in Eco-Tourism and Hospitality Management shall be in accordance with Egerton University statute 36 of 2013.

7. Course Evaluation

Diploma in Eco-tourism and Hospitality Management courses will be evaluated using a course evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will be reviewed and evaluated as per university rules and regulations.

8.3 Course Coding

The programme course coding is based on the senate approved course coding policy. The program code used

is **TOHM** denoting **Tourism and Hospitality Management** followed by four digits, where the first digit denotes diploma level of training, second digit the year of study, The third digit represents the type of course based on the following categorization:-

- 0 Indicates introductory courses,
- 1 Principle courses,
- 2 Ecology,
- 3 Climate,
- 4 Management courses,
- 5 Applied courses,
- 6 Planning,
- 7 Research seminars, and students projects, and
- 8 Policy, law and administration.

9. Courses Offered for the Programme

9.1 Schedule of Courses

(a) University Common Core Courses

CODE	TITLE	L	P	CF
TOHM 0111	Communication Skills in Eco-tourism and Hospitality	30	30	3.0
COMP 0190	Introduction to Information & Technology and Society	45	15	3.5
ENSC 0100	Introduction to Environmental Science	30	30	3.0
TOHM 0101	Introduction to Foreign Language (French/German)	30	0	2.0
TOHM 0102	Tourism	30	30	3.0
TOHM 0103	Introduction to Community Development	45	0	3.0
TOHM 0104	Introduction to Natural Resources	30	15	2.5
TOHM 0121	Plant Communities of East Africa	30	30	3.0
TOTAL		285	65	23.0

(b) Schedule of courses per year and semester

Year I Semester II				
FOND 0121	Introduction to Human Nutrition	45	0	3.0
TOHM 0122	Basic Statistics in tourism industry	45	0	3.0
TOHM 0105	Introduction to Hospitality Management	30	30	3.0

TOHM 0106	Introduction to Wildlife Conservation and Management	30	30	3.0
TOHM 0107	Introduction to Ecotourism Management	30	0	2.5
TOHM 0123	Fauna of East Africa	30	30	3.0
TOHM 0151	Field Survival Techniques and First Aid	15	60	3.0
TOHM 0152	Financial Accounting	45	0	3.0
TOTAL		225	150	23.5
TOHM 0221	Human Ecology and Behaviour	30	30	3.0
TOHM 0241	Hospitality Operational Systems Management	30	30	3.0
TOHM 0251	Human Wildlife Interactions	30	30	3.0
TOHM 0252	Tour Guiding Management	30	30	3.0
TOHM 0253	Food Selection, and Preparation	15	30	2.0
TOHM 0254	Catering and Cuisines	15	60	3.0
TOHM 0255	Cultural Tourism	30	30	3.0
TOHM 0271	Research Methods	30	30	3.0
TOTAL		180	240	23.0
TOHM 0257	Food and beverage service	30	30	3.0
ENSC 0231	Occupational health and safety	30	30	3.0
TOHM 0222	Ecological surveys and techniques	30	30	3.0
TOHM 0242	Housekeeping and Property Management	30	30	3.0
TOHM 0243	International Business and Hospitality Environment.	45	0	3.0
TOHM 0256	Front Office Operations	30	0	2.0
TOHM 0273	Ecotourism and Hospitality Project Development.	30	30	3.0
TOTAL		240	90	20.0

TOHM 0272	Industrial Attachment	0	120	4.0
ENSC 0341	Environmental Pollution and Management	30	30	3.0
TOHM 0341	Dryland Ecology and Management	30	30	3.0
TOHM 0342	Protected Area Management	30	30	3.0
TOHM 0343	Human Resource Management	45	0	3.0
TOHM 0347	Food Safety Management	30	0	2.0
TOHM 0348	Hospitality Marketing	45	0	3.0
TOHM 0351	Language Translation and Interpretation	45	0	3.0
TOHM 0361	Quantity Food Production and Service	30	30	3.0
TOTAL		240	150	23.0
TOHM 0321	Avitourism	30	30	3.0
TOHM 0344	Recreation Management	30	30	3.0
TOHM 0345	Integrated Management of Aquatic Ecosystems	30	30	3.0
TOHM 0346	Natural Resource utilization and Management	45	0	3.0
TOHM 0352	Entrepreneurship in Ecotourism and Hospitality Industry	45	0	3.0
TOHM 0362	Land Use Planning and Management	30	30	3.0
TOHM 0381	Policy and Law in Tourism Industry	45	0	3.0
TOTAL		225	90	21

(c) COURSE DESCRIPTION

TOHM 0101: Foreign Language for Beginners (French/German) Y1S1

Introduction to pronunciations of French/German alphabet. Who is who? What is what? Getting to know someone. Negation. Asking for more details, what is available and where it is, its prices. Getting what you want: saying what you would like to do. Localization.

Destination: provenance, imperative, adverbs-Comparative and superlative. Transport Seasons and time telling. Useful expressions for requesting, giving or refusing an appointment. Dialogue. Writing language laboratory drills.

TOHM 0102: Introduction to Ecotourism Management (Y1S1)

Survey of nature based tourism activities in Kenya. Identification of different tourist group needs. Types of itineraries and tour circuits. The concept of tourist carrying capacity in identifying destinations. Participation of local communities and private landowners in ecotourism planning and development. Role of the Government in management of tourism.

TOHM 0103: Introduction to Community Development (Y1S1)

Concepts of community and community development. Interdisciplinary approach to the study of community development, community unifying factors; fragmentation and functionalism. Types of communities in Kenya and their development needs. Roles and responsibilities of a community development worker. Identification of factors that influence design choices for tourist facilities, aesthetics for designers and management. Development of interior layouts and housing theory practice. Development of interior renovation plans, cost estimates and making financial projections.

TOHM 0104: Introduction to Natural Resources (Y1S1)

Definition of natural resource components. Classification and role of natural resources in national development. Factors governing the distribution pattern of the biological and physical resources in different environments sustainable utilisation of natural resources.

TOHM 0105: Introduction to Hospitality Management (Y1S2)

Survey of hospitality services available in Kenya. Objectives underlying establishment of ecotourism and hospitality services, profits, sales, guest satisfaction, enhancing the image of Accommodation facilities - front and back of the house; service standards and

classification criteria for hotels and lodges. Hospitality services: - Food, accommodation and recreation. Creativity in planning and development of above facilities and practicing of services, evolution of visitor satisfaction.

TOHM 0106: Introduction to Wildlife Conservation and Management (Y1S2)

Natural history of major E. African mammals, birds, reptiles and amphibians. Classification and field identification of major taxa using morphological features. Sexing and aging methods. Reproductive social organization. Potential dangers from wildlife. . Conservation organizations protected areas. Practical work will involve field identification of animals in the National Parks.

TOHM 0111: Communication Skills and Ecotourism and Hospitality (Y1S1)

The course introduces students with communication in soft and hard skills Definition of hard and soft skills, relevance of soft skills in the ecotourism and tourism industry, types of communication, elements of verbal and non-verbal communication, barriers of communication, stages of communication process and effective communication (rules of listening).

TOHM 0121: Plant Communities of East Africa (Y1S1)

Introduction to plant community concepts and plant systematics. Flowering plants and their morphology. Taxonomic Classification of selected flowering plants of Kenyan landscapes with emphasis to national parks. Ecological regions of East Africa and their associated floral communities. The cultural and economic value of plants. Impacts of over utilization on plants by man. Plant conservation measures in Kenya. Practical work will involve field identification of flowering plants and herbarium development.

TOHM 0122: Basic Statistics in Tourism Industry (Y1S2)

Data; levels of measurements, distribution, processing and coding and entry into computer. Descriptive statistics: means, median, mode, measures of dispersion, z-scores, cross-tabulations, frequencies, percentages. Mean comparisons: t-test, analysis of variance.

Inferential statistics; correlation, regression, factor analysis, Chi-square tests. Use of computer packages for statistical analysis (SPSS, EXCEL). Data presentation and reporting.

TOHM 0123: Fauna of East Africa (Y1S2)

Natural history of important East Africa mammals, birds, reptiles and amphibians. Identification and classification of major taxa. Species Diversity in East Africa and causes for high diversity, reproduction, social and feeding behaviour. Dangers caused by mammals, poisonous and non-poisonous snakes. Handling emergencies in the field. Field trip to a national park or reserve.

TOHM 0151: Field Survival Techniques (Y1S2)

Basic survival techniques in the bush. Care of tents and other camping equipment. Camping and cooking. Complete First Aid course. Snake venoms. Animal tracking techniques, Map reading and orientation. Physical fitness exercises, expeditions. Rock climbing. Leadership skills. Teamwork and wilderness ethics. Tourism promotion using photographs; Role of photography in conveying information; Aesthetics in photographs; photographic equipment and their use; photograph processing including dark room procedures; Ethics and law governing photography. (All students must undertake driving lessons from reputable driving schools selected by the university).

TOHM 0152: Financial Accounting (Y1S2)

Types of record books and accounts: cash analysis book depreciation methods and stock taking; financial statements: balance sheet. Income statement. Analysis and interpretation of financial statements. Hotel records and accounts for internal control and external appraisal

TOHM 0221: Human Ecology and Behaviour (Y2S1)

Interaction between people and their environment; The role of culture in techniques of resources conservation and use; Environmental cognition and planning; Ethnoscience and change; Tourism in human-ecological perspective. Human personality: basic concepts, determinants, and theories of personality development; Human behaviours at the workplace; Motivation, motivation theory, reward and punishment; motivation and job satisfaction; Socialization and goal directed

behaviour, social learning and control; Social systems, the working environment as a social system, interpersonal relations in groups; The individual in the organization; groups norms and the individual, organized labour; Work ethics and professionalism,

TOHM 0222: Ecological Surveys and Techniques (Y2S2)

Ecological measurements; attributes and processes, scale, primary and secondary data. Sampling; intensity, optimum sample allocation, techniques, designs, units. Vegetation assessment and monitoring; diversity indices, techniques for cover, frequency, density, biomass and utilization. Wildlife monitoring techniques; census, trends, habitat assessment for both terrestrial and aquatic. Physical attributes; climatic data, soil erosion, soil seed bank. Socio-ecological techniques; surveys and participatory approaches. Remote sensing in ecological measurement. Management of ecological data; data integration, storage and retrieval systems, presentation

TOHM 0241: Hospitality Operational Systems Management (Y2S1)

Different food service systems and their development, organization, classification and management; Food production systems; Accounting practices for hotels, motels and restaurants; Departmental worksheet, reports to management. Personnel management; Technology in hotels Hospitality management packages applicable to front and back of the house operations, menu code systems accounting. Marketing concepts and principles. Marketing functions and policies. Standardization of products, Creation of market demand to serve the customers needs

TOHM 0242: Housekeeping and Property Management (Y2S2)

Housekeeper functions. Housekeeping materials and equipment room facilities and Interior decoration. Types of furniture, equipment and their comfort in rooms. Indoor and outdoor entertainments. Room communication services, room hygiene. Development of outdoor entertainment and games. General maintenance of rooms and outdoors facilities.

TOHM 0243: International Business and Hospitality Environment (Y2S2)

In-depth analysis of international hospitality business in relation to growth; history and international trade theories such as Foreign Direct Investments; international purchasing and marketing, international regimes - World Bank, IDA, IMF, GATT, OPEC and WTO, IATA etc. Business culture; multinational corporations. Introduction to International Relations; functions of the UN and other intergovernmental organizations (IGADD, COMESA, EA Co-operation).

TOHM 0251: Human Wildlife Interaction (Y2S1)

The evolution of man; Hunter gatherer strategies, shifting cultivation, nomadic, pastoralism subsistence farming. Development of agriculture systems; Human demography and its impacts on natural resources; Environmental damage and species extinction; Human-wildlife interaction. Land tenure systems in Kenya and its impacts on wildlife; wildlife. Human population growth and its role in wildlife population. Wildlife conservation versus other rangeland land uses. Human benefits from wildlife utilization.

TOHM 0252: Tour Guiding Management (Y2S1)

Location of tourist's circuits in East Africa. Detailed studies of these circuits and available facilities. Conducting reservations for tours and accommodation payment of services, budgeting and writing tour reports. Briefings and preparation of itineraries, office management and linkages between tours and hotels.

TOHM 0253: Food Selection, Preparation and Processing (Y2S1)

Principles involved in selecting and preparing different types of foods to preserve quality and nutritive value, cooking methods and their application to different foods, kitchen equipment. Handling of raw food material, processing techniques including quality assessment.

TOHM 0254: Catering and Cuisines (Y2S1)

Develop conceptual framework for quality management, social and traditional approaches to catering and cuisine and their historical influence on development of Kenyan cuisine. Production and service of quality meals and beverages for special functions. Traditional dishes with

appropriate accompaniments for various occasions. Assessment of external influence on the modern Kenyan cuisines. Different types of food service and table etiquette.

TOHM 0255: Cultural Ecotourism (Y2S2)

Detailed survey of the different tribes in Kenya, people and culture, settlement history, composition and structure, land use practices rural development and urbanization. Oriental and western culture and its influence on Africa culture. Industrialization and urbanization; identification of visitors preferences. Tourism diversification.

TOHM 0256: Front Office Operations (Y2S2)

Introduction to hospitality industry, classification of hotels, Front office department and functions and guest cycle ,Personal traits, Guest types and expectations, Guest reservation, Registration, Cash handling, credit card handling, night audit, Check- out and account-settlement, Complaint handling

TOHM 0257: Food And Beverage Services (Y2S2)

The course introduces food and beverage service via industry and service area, describes and explain menu knowledge and accompaniments, waiter duties, non-alcoholic and alcoholic, specialized forms of service; health, safety and security.

TOHM 0271: Research Methods (Y2S2)

Introduction to the values and significance of research. The research methodology(essentials of Scientific processes, experimental designs, sampling strategies, and ethics in research), research proposal writing, publication of research findings.

TOHM 0272: Industrial Attachment (Y2S2)

The students will be posted to suitable organizations where they will be expected to apply the knowledge learnt in class in real field situations. Practical experience will be gained by participating in the day to day activities of the organizations. At the end of the attachment the student will be expected to write a report on his/her experience during the period, which will be assessed (40%) together with supervisors report (40%)

and confidential evaluation report (20%) from the head of organization where the student will be posted.

TOHM 0273: Ecotourism and Hospitality Project Development (Y2S2)

Types of ecotourism and hospitality projects and programmes, project planning, project development, project evaluation, implementation, monitoring and assessment, an overview and critique of procedures and methods used in planning, economic and social development projects in developing countries. The general "project cycle" including the various stages. Identification, preparation and formation, design, feasibility, analysis, financial and technique appraisal. Selection, evaluation and management of both economic investments project relevant to promoting social changes and economic growth.

TOHM 0316: Waste and Pollution Management (Y3S1)

Definition of terms. Principles of waste management; types and sources of waste in the tourism and hospitality industry. Waste collection and disposal. Methods of storage, handling and transportation of waste. Designs of waste treatment structures,

TOHM 0321: Avi-Tourism (Y3S2)

Introduction to ornithology, habitats, diversity and distribution of birds, bird endemism in Africa and Kenya, Bird migration bird classification and principles of bird identification, Sexing and ageing methods field identification guides and equipment and how to use it, field crafts, birding ethics, bird migration (Palaeartic and afrotropical) , economic, ecological, sociocultural importance of birds, bird watching and avitourism, growth and global trends in avitourism and foreign exchange, bird checklists, bird guiding and avitourism, birding routes; bird watching infrastructure; bird watching destinations in Kenya, Important Bird Areas. Threats to birds, conservation efforts

TOHM 0341: Dryland Ecology and Management (Y3S1)

Science and art of range management; Relationship of climate, soils and biotic factors in range management; Major Ecological zones of East Africa; Identification of important range plants of east Africa, Common range

management techniques, bush control, reseeding, fertilization, water points and salt licks, fencing, use of fire for management.

TOHM 0342: Protected Area Management (Y3S1)

Acquisition and gazettelement of land; boundary. Protected area policies, planning, development, construction and management of park infrastructure,. Assessment of visitors capacity and environmental impact. Control of finance and revenue collections; personnel management, supervision and job training. Public relations. Nature aims and methods of environmental and wildlife education for different audiences. Interpretation of personal services and non-attended facilities. Law enforcement Education and information dissemination. Role of community in wildlife conservation.

TOHM 0343: Personnel and Organisation Resource Management (Y3S1)

Principles of personnel management and administration, recruitment, training; Worker motivation, incentives and conditions of employment; Labour law management of occupational hazards; manpower planning and development. Trade Unionism.

TOHM 0344: Recreational Facility Management (Y3S2)

Studies on recreation facilities in the East Africa region game viewing, fishing bird hunting, snorkeling, mountain climbing, trekking, cultural tours, community centres, various games and sports. Management and administration of sports in Kenya

TOHM 0345: Integrated Management of Aquatic Ecosystems (Y3S2)

Physical and chemical characteristic of water. Distribution and abundance. Water as a habitat:- Lotic, Lentic and Marine environments. Survey of major aquatic plants and animals:- history, morphology and classification. Environmental pollution and its effects on aquatic/marine life. Flora and fauna of economic value. Conservation and sustainable exploitation in aquatic systems.

TOHM Natural Resource Utilization and Management 0346: (Y3S2)

Multiple resource use concept. Conflicts and resolutions. Ownership, land acquisition and development. Habitat management and population dynamics: species diversity, distribution and community structure. Measures and services directed to customers user information. Multiple use and environmental impacts. Social values and policies.

TOHM 0347: Food Safety Management (Y3S1)

Importance of food safety, General principle of good personal hygiene, Cross -contamination, cleaning and disinfection, Waste disposal, Pest control, Food spoilage and preservation; Purchasing points, receiving and storing control points; preparing, cooking, holding control points, control points during service

TOHM 0348 Hospitality Marketing (Y3S1)

Hospitality service transactions, analysis market opportunities, segmenting and targeting. Product concepts and branding:- marketing distribution, pricing, advertising, sales promotion, public relations and personal selling; Marketing techniques and strategies.

TOHM 0351: Language Translation and Interpretation (Y3S1)

Introduction to the theory of translation and interpretation; Language and culture; equivalence and its problems; formal agreement in culture, grammatical and lexical values, approach to the type of material to be translated/interpreted; role of semantics and conceptualization. Limits of translatability/interpretability, comparative treatment of grammatical structures and forms of Languages, role played by language.

TOHM 0352: Entrepreneurship in Ecotourism and Hospitality Industry (Y3S2)

Definition of entrepreneur. Early development of entrepreneurship, application of knowledge, abilities and skills. Starting a small business, building an entrepreneurial team, planning and financing the business, managing and leading the small enterprise, cost benefit analysis, planning establishing and managing a small business. Entrepreneur Associations of value to small business in the tourism and hospitality.

TOHM 0361: Quantity Food Production and Service (Y3S1)

Preparing and serving food in large quantities, menu planning, purchasing, storage and service. Menu preparation and costing. Production and service of local and International dishes with special attention to quality, originality, aesthetic and generation of profit. Types of service and factors determining them. Control of waste and food recycling.

TOHM 0362: Land Use Planning and Management (Y3S2)

Land capability assessment; Land use policy and law in Kenya; agricultural and non- agricultural land; Land registration and land use control in both rural and urban areas; The role of government in land transactions; control of land development related to natural resource management in Kenya.

TOHM 0381: Policy and Law in Tourism Industry (Y3S2)

Study of the tourism policy and other laws governing tourism in Kenya. Court and legal obligations. How the law is used and applied in the tourism industry. Major legal problems and issues confronting the tourism industry, action against professionals, employees and customers; action on occupational safety procedures collective bargaining risk management, discrimination. National Labour Relation Act.

9.3 Matrix aligning courses/ units to Programme Learning Outcomes

Programme Learning Outcomes	Year 1		Year 2		Year 3	
	Courses	CF	Courses	CF	Courses	CF
PLO 1. Provide quality services to customers in Ecotourism and Hospitality Management. 5.	Introduction to Ecotourism Management, Introduction to hospitality management	3.0	Front office operations, Hospitality operational systems management, Cultural ecotourism	3.0	Hospitality Marketing	3.0
PLO 2. Apply theory and practical skills needed in the ecotourism and hospitality industry.	Introduction to Foreign Language (French/German Communication skills in ecotourism and hospitality	3.0	Food Selection, and Preparation, Catering and cuisines	3.0	Food and beverage service	3.0
PLO 3. Develop and use ideas, concepts and skills to enable them venture in the ecotourism and hospitality business for self-employment (entrepreneurship).	Introduction to information & Technology and society	3.0	Tour guiding management	3.0	Recreation Facility Management, Hospitality marketing	3.0
PLO 4. Pursue under graduate studies in eco-tourism and hospitality management						

BACHELOR OF CATERING AND HOTEL MANAGEMENT

1. Philosophy of the programme

The Bachelor of Catering and Hotel Management is in line with Egerton University mission of transforming lives through quality education. The programme aims to prepare students for successful hospitality careers and productive citizenship. This is accomplished by providing a curriculum that is responsive to the needs of Kenya's growing hospitality industry and the conditions of the twenty-first century.

2. Rationale

Hotel sector is one of the fastest growing sectors of the Kenya's economy. It now requires an astute business mind, creative management and stunning interests to fully explore and appropriate its socio- economic prospects. The Bachelor of Catering and Hotel Management degree brings to aspirants opportunity to be part of the global leadership in Hotel and Catering sector. Currently Hotel and catering courses are mainly offered by tertiary colleges at certificate and diploma levels. This degree programme will therefore provide an immediate opportunity to those students who graduate from these colleges. This programme is unique in that it covers all areas of hospitality that is an important component in the tourism industry, the fastest growing sector.

The Kenyan Hotel industry is a dynamic sector that is growing fast and this programme targets to train those interested in a career in the Hotel industry. Trainees will be expected to specialize in either Hotel management or Catering. The stake holders recommended that there is need to include courses in marketing and course emphasizing on human morals. Further it was evident that there was need to introduce more foreign languages other than French. The career opportunities include:- Food and Beverage management, Catering management, Hotel or Resort management, Front Office management, Resident management, Property Management and Meetings Consultant or Resort Supervisor.

3. Goal of the Programme

The programme will produce professionals with firm academic and practical orientation in the Hotel industry.

4. Programme Learning Outcomes

The graduate will be able to:

1. Apply customer-oriented and profitable operation within the various sectors of hospitality, tourism and management.
2. Employ practical skills to boost business within the hotel, restaurant, tourism and other related areas or industry.
3. Provide supervisory and managerial responsibilities.
4. Be employed or develop career in management, entrepreneurs, specialists, sales, Research & Development in the hotel and related industry.

5. Mode of Delivery

The mode of delivery will be either full time/ part time, e-learning/ blended/ or open/ distance learning

6. Academic Regulations for the programme

6.1 Admission Requirements

All candidates must satisfy the minimum common entrance requirements as stipulated by the Egerton University statutes. Either KCSE certificate with a minimum aggregate of C+ and a minimum of C in both Mathematics and English/Kiswahili or

KACE certificate with a minimum of two principal passes and subsidiary pass with a minimum of credit pass in Mathematics at KCE

Diplomas in relevant disciplines with a credit pass from an institution recognized by the university senate.

Any equivalent qualification recognized by the university senate.

6.2 Regulation on Credit transfer

Egerton University statute 36(3) of 2013 shall apply,

6.3 Student Assessment

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply

6.4 Grading System

The grading of examination for B Sc. in Catering and Hotel management shall be in accordance with Egerton University Statute 36 of 2013.

6.5 Examination Regulations

All examinations for the B Sc. in Catering and Hotel management shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36 of 2013.

6.6 Moderation of Examination

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.7 Graduation Requirements

To graduate, a student should have covered a minimum of 169.0 Credit Factors (CFs) including field attachment.

6.8 Classification of Degree

The classification shall be in accordance with Egerton University statute 36 of 2013.

7. Course Evaluation

The programme will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014)

8.2 Programme Evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of the program's academic cycle as per ISO procedure for quality assurance for academic programmes EU/VC/OP/05.

8.3 Course Coding

The coding for the courses offered in this programme is represented by BCHM followed by a three digit figure:

The first digit represents the year in which the course is offered to undergraduate students.

The second digit represents the nature of the course within the department:

0 - Introductory courses,

1 - Principle courses,

2 - Ecology,

3 - Climate,

4 - Management courses,

5 - Applied courses,

6 - Planning,

7- Research seminars, and students projects, and

8- Policy, law and administration.

9.0 Courses offered for the programme

9.1 Schedule of course

(a) University common Core Courses

(b) Schedule of courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
BACT 110	Principles of Accounting I	45	0	3.0
BCHM 100	Introduction to Catering and Hotel management	45	0	3.0
BECO 101	Fundamentals of Micro-Economics	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
TOHM 104	Food and Beverage Service I	30	30	3.0
TOHM 241	Kitchen Organization & Food Knowledge.	30	30	3.0
Total		285	60	21.0

YEAR1 SEMESTER 2

CODE	TITLE	L	P	CF
BCHM	Business Computing	45	0	3.0

101				
BACT 111	Principles of Accounting II	45	0	3.0
BCHM 130	House- Keeping and Laundry Management I	30	30	3.0
BECO 102	Fundamentals of Macro-economics	45	0	3.0
BMGT 102	Principles of Management	45	0	3.0
TOHM 102	Basic Foreign Language (French/ Germany)	30	30	3.0
ZOOL 143	Biology of HIV/ AIDS and society.	45	0	3.0
Total		285	60	21.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
BCHM 230	Health and safety	30	30	3.0
BCHM 231	House- Keeping & Laundry Management II	30	30	3.0
BCHM 240	Quantitative Foods	30	30	3.0
BMKT 250	Principles of Marketing	45	0	3.0
TOHM 201	Foreign Language II (French / German	45	0	3.0
TOHM 243	Food and Beverage Service II	30	30	3.0
Total		255	120	18.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
BACT 210	Introductions to Managerial Accounting.	45	0	3.0
TOHM 345	Front Office Operations	30	30	3.0
BCHM 243	Catering & Special Events Management.	45	0	3.0
BINS 241	Risk & Insurance.	45	0	3.0

BMGT 301	Business Law	45	0	3.0
TOHM 201	Intermediate Foreign Language:	30	30	3.0
TOHM 251	Culinary Arts	15	30	2.0
Total		255	90	20.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
BBISM 357	E-Commerce	45	0	3.0
BCHM 300	Research Methods	45	0	3.0
BCHM 301	Business French/German	45	0	3.0
BCHM 330	House Keeping and Laundry III	30	30	3.0
TOHM 351	Food and Beverage Service Management	30	30	3.0
Elective	(one course)	45	0	3.0
Total		185	120	18.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
BCHM 302	Environmental Management for Hotels	45	0	3.0
BCHM 303	Travel Reservations Systems	45	0	3.0
BCHM 331	Hotel Marketing Management.	45	0	3.0
BCHM 342	Hotel Information Systems	30	30	3.0
BCHM 343	Hotel and Catering Law	45	0	3.0
BHRM 333	Human Resource Management.	45	0	3.0
Elective 1.		45	0	3.0
Total		270	30	21.0
BCHM 304	Industrial Attachment I	0	120	4.0

ELECTIVES OFFERED IN THIRD YEAR

CODE	TITLE	L	P	CF
BCHM 305	Brand Management	45	0	3.0
BCHM 306	Dining Room Management	45	0	3.0
BCHM 332	Physical Plant Development & Maintenance	45	0	3.0
BCHM 344	Conventions & Meetings Management	45	0	3.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
BCHM 400	Hotel Economics	45	0	3.0
BCHM 401	Club Management	30	30	3.0
BCHM 402	Hotel & Restaurant Project	0	90	3.0
BCHM 430	Hotel Facilities and Operations Management.	30	30	3.0
BCHM 440	Food & Beverage IV	30	30	3.0
BCHM 441	Quality Brewing & Fine beer	30	30	3.0
Elective 1.		45	0	3.0
Total		210	210	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
BCHM 403	Techniques of Supervision	45	0	3.0
BCHM 404	Entrepreneurship in Hospitality & Tourism.	45	0	3.0
BCHM 405	Tourism Transportation Systems	45	0	3.0
BCHM 431	Principles of Hospitality Franchise Management	45	0	3.0
BCHM	Tourism and the	45	0	3.0

432	Environment			
BMGT 400	Strategic Management	45	0	3.0
Elective 1.		45	0	3.0
Total		315	0	21.0
BCHM 406	Industrial Attachment II	0	120	4.0

ELECTIVES OFFERED IN FOURTH YEAR

BCHM 433	Wine & Food Promotion.	45	0	.0
BCHM 434	Banquet Management and Operations	45	0	3.0
BCHM 435	Restaurant Entrepreneurship	45	0	3.0
BCHM 442	Hotel Quantitative Analysis	45	0	3.0

(c) Course Descriptions**BCHM 100: Introduction to Catering and Hotel Management (45/0 CF 3.0) Y1S1**

An overview of the Hotel, restaurant, and tourism industries; their historical development, scope and present-day structures. Treatment of strangers; foods, drinks & safety. Serving food and beverages. Understanding of the different types of cookery setting of cutlery, glassware and silverware on the table given sample menus. Service styles and functions.

BCHM 101: Business Computing (45/0 CF 3.0) Y1S2

Fundamental IT concepts; proficiency in Microsoft Office; understanding the issues of tool selection, standardization, and efficiency; integration of applications; and recognizing the importance of good computer management. Application and benefits of the computer to the hospitality executive. Word processing and spread sheet programs currently being used in the industry

BCHM 130: House Keeping and Laundry and Management I (30/30 CF 3.0) Y1S2

Introduction to Housekeeping, Housekeeper, House Keeping Equipment, Material & Cleaning agents. Introduction to laundry procedure, identification and removal of different types of stains.

BCHM 230: Health and Safety (30/30 CF 3.0) Y2S1

Introduction to Hygiene and Nutrition, Personal hygiene, food hygiene, and sanitation. Handling and storage of foodstuffs, processing of foodstuffs, the nutritional values of foods and related diseases. Environmental safety.

BCHM 231: House Keeping and Laundry Management II (30/30 CF 3.0) Y2S1

Routine methods of cleaning work, cleaning the room, cleaning the walls, doors and wooden surfaces in the room. Laundry equipment & cleaning agents, safety security needs of Hospitality operators, security in the House keeping department. **Pre-requisite BCHM 130.**

BCHM 240: Quantitative Foods (30/30 CF 3.0) Y2S1

Quality and quantity cooking. Proper plating techniques. Service techniques for banquets. Planned menus: Appetizers, salads, entrees, desserts and beverages. The proper use of kitchen equipment. Practices and compliance laws and ordinances of the Ministry of Health.

BCHM 243: Catering and Special Events Management (45/0 CF 3.0) Y2S2

Off-premise and on-premise catering for social and business functions and the management of large-scale independent events, such as sporting events, artistic performances, and product launches. Organizational structure; legal aspects of Catering and special events management; product and service development; marketing and sales; catered function and special event planning and execution; staff recruitment and training; post-event analysis; financial success of Catering; and special events businesses.

BCHM 300: Research Methods (45/0 CF 3.0) Y3S1

Purpose of doing research in Catering and Hotels. Scientific and other methods of conducting research. The research process: formulating a research problem, data collection procedures, data processing and analysis, report writing. Different kinds of research designs such as survey, participant observation, experimentation and quasi-experimentation.

BCHM 301: Business French/German (45/0 CF 3.0) Y3S1

Basic business communication: using the telephone; oral business communication; correspondences and memos; documents used for business transactions; records minutes of meetings; drafting and correcting business documents; registered trademark; industrial relations; accountancy, banking, marketing, publicity; presenting information in graphs and tables; French used in interpersonal relations in human management; writing business reports; French used in strategic planning, monitoring and evaluation.

BCHM 302: Environmental Management for Hotels (45/0 CF 3.0) Y3S2

Hotel environmental systems, material and waste management, and energy and water conservation in Hotels. Indoor environmental management, pesticides and herbicides, and how to deal with hazardous materials.

BCHM 303: Travel Reservations Systems (45/0 CF 3.0) Y3S2

Learning and application of skills and knowledge used in airline, Hotel, restaurants and car hire and travel agency operations. Use of First Class-Galileo Computer Reservation System CRS., e-ticketing, Abacus, Amadeus, Apollo, Marsha and Sabre reservations systems.

BCHM 304: Industrial Attachment (0/120 CF 4.0) After Y3S2

Guided internship in a relevant organization such as private firm, NGO, Parastatals or government department for eight weeks. Goals include application of knowledge acquired, experience of real life situations and stimulation of ideas for the special project component. Students to write a report.

BCHM 305: Brand Management (45/0 CF 3.0) Y3S1

Impact of brands on consumer behaviour, product management, and value creation. The theories behind branding, the challenges of implementation, and current trends in branding. The traditional brand management system, consumer packaged goods industry. Evaluate its applicability to the service industry. Evolving responsibilities of brand managers in organizations—

Brand introduction, brand extension, brand repositioning.

BCHM 306: Dining Room Management (45/0 CF 3.0) Y3S1

Operation of a restaurant dining room; Types of table service, Dining room organization and Table settings, Staffing, Responsibilities of dining room personnel, Customer sales and service, and the Design and usage of menus.

BCHM 330: House Keeping and Laundry III

Cleaning of public area, sanitary areas, supervision & inspections of the room, Introduction to fibres& Fabrics, controlling operations, linen room, budgeting, purchasing, security & inventory control..

BCHM 331: Hotel Marketing Management

Marketing principles employed in the hospitality industry. Demand variables and marketing strategies to capture market share. Marketing basics, distribution channels, communications, promotions, research, packaging, collateral materials, pricing strategies, the marketing plan, and enhancing internal sales.

BCHM 332: Physical Plant Development and Maintenance.

Importance of knowing the physical layout of Catering units, management of sewer systems and plumbing systems, utilities and other equipment. Hotel/Catering operations in relation to the environment and preventive maintenance practices.

BCHM 340: Food and Beverage Service III

Food And Beverage Service & Sales: Principles and techniques, variety of operations in the hospitality industry. Principles of dining room supervision and management. Food Beverage & equipment purchasing: Standards, quality. Purchase specifications; client relationships, Catering and banquet operations, technology, food production, primary and auxiliary services, post event activities, Garde Manger: Proper techniques and procedures utilized in pantry, and basic garde manger production. The preparation of a variety of salads and dressings, hot and cold sandwiches, and canapés. Charcuterie and other buffet items. Classical Cuisine- Advanced culinary preparation and service.

Menu terminology, cooking techniques and presentation of classical French cuisine,

BCHM 341: Beverage Management

Classification, production, identification, and service of beers, wines, and distilled spirits in the Hotel industry. The historical, legal, and social implications of alcoholic beverages. Beverage purchasing, bar setup, and beverage operation management. Alcohol's affects on the body and responsible service..

BCHM 342: Hotel Information Systems

Reservation procedures, guest check-in and checkout, posting of charges, settlement Management, and room status management in a Hotel, end of the day auditing, guest history, ledger management, credit accounts and generation of Management reports.

BCHM 343: Hotel and Catering Law

Introduction to the laws of Kenya, Hotel and Catering Law, consumer protection, law of contract, labour laws and industrial relations. The rights of the hospitality organizations, the rights of the consumers, the rights of the employees in the organization and the rights of the owners of the organization.

BCHM 344: Conventions and Meeting Management.

The convention market, needs of guests who are part of the group function, and ways to service groups effectively while on the property. The management of conventions and meetings, clients and meeting planners'. The operations of conventions and meetings from the sale to post-convention review.

BCHM 400: Hotel Economics.

Concepts and methods useful in the application of economic principles to the Hotel industry. Review of the economic aspects of Hotel, including Hotel demand and supply, pricing, equilibrium in Hotel markets. Effects of Hotel growth on national economies, the multiplier effects and the effects of Hotel on the balance of payments.

BCHM 401: Club Management

Tournament, facility, and recreation management; legal, financial, and legislative issues; human relations and human resource considerations; and marketing, pricing policies, and quality standards.

BCHM 402: Hotel and Restaurant project

Independent study under the direction of a faculty advisor. Projects may include library or empirical research, analysis and written report or oral presentation on tourism aspects of an appropriate organization Hotel, airline, restaurant or a healthcare institution.

BCHM 403: Techniques of Supervision

Principles of effective human relations required by hospitality industry supervisory personnel. Practical skills for effective supervision including decision making, leadership roles, motivating personnel, recruiting and training employees, conflict resolution, delegation and effective communications.

BCHM 404: Entrepreneurship in Hospitality and Tourism

Entrepreneurial characteristics, assessing the viability of small hospitality and tourism business ventures, risks, the business planning process, feasibility studies, formation of business plans, the management of small enterprises, record keeping, and personnel management.

BCHM 405: Tourism Transportation Systems

Management of land, sea, and air transportation systems that support travel; examines airlines, cruise ships, buses, rail, and travel packages.

BCHM 406: Industrial Attachment II

Guided internship in a relevant organization such as private firm, Non-governmental organizations (NGO), Parastatals or government department for eight weeks. Goals include application of knowledge acquired, experience of real life situations and stimulation of ideas for the special project component. Students to write a report.

BCHM 430: Hotel Facilities and Operations Management

Introduction to the environments and functions in the housekeeping, maintenance and engineering departments of today's Hotels. Role of managers of the operations physical plant and the interrelationships to other departments. Includes the organization of the facilities, budgeting, selection and purchase of equipment and supplies, standards, safety and security, maintenance exterior and interior., energy conservation,

Heating, Ventilation, Air Conditioning HVAC. systems, overview of the electrical and mechanical systems, and principles that affect the Hotel operations and profits.

BCHM 431: Principles of Hospitality Franchise Management

Franchising in the hospitality industry from both the franchiser and franchisee's point of view. Examine start-up, organization, franchiser/franchisee relations, cooperative marketing, legal issues, and daily operations, with an orientation toward the small business franchisee in a variety of hospitality and tourism businesses

BCHM 432: Tourism and the Environment.

Relationship between tourism and the environment. Benefits and the costs of tourism development upon the environment. Relationships between tourism and sustainable development and how to achieve sustainable development of tourism.

BCHM 433: Wine and Food Promotion.

Regional and varietal wine styles, how food flavours can change a wine's flavour, and the promotion of wine and food. Wine and food pairing principles, cuisines and their flavour components, food trends in restaurants and in the home, special event planning, and wine-list development.

BCHM 434: Banquet Management and Operations.

Application of banquet and Catering principles. Serving and managing banquets. American, Russian and Buffet services. Banquet sanitation, Proper dish room operation. Managing, serving and washing dishes for on-premise banquets. Sanitary practices and compliance with laws and ordinances of the Department of Health are enforced.

BCHM 435: Restaurant Entrepreneurship

Student-developed case studies, but is not limited to the restaurant's concept market., organization, ownership, management, physical structure, staff, front-of-the-house operations, back-of-the-house operations, and fiscal integrity. Field trips, seminars/case presentations recommended.

BCHM 440: Food and Beverage Service IV.

Wines of the world; Survey of the world's leading wines classified by type, suitability for particular use, methods and techniques employed in purchasing, storing and merchandising. International cuisine; Survey of selected cuisines from around the world. Research, plan and prepare menus representative of a variety of different cultures. Culture, history and terminology of various international cuisines and their traditional and contemporary cooking techniques. Asian cuisine-Research, planning and preparation of several menus based on authentic Asian recipes and commercial styles of preparation. Skills used for Asian hand tools and cooking equipment. The Chinese and Japan regional cuisines; Canton, Peking, Szechwan, Hunan.

BCHM 441: Quality Brewing and Fine Beer

The brewing process; sensory aspects of beer; international beer types and styles; marketing malt products; purchasing and distribution; storage and service; beer and food pairings; staff training and education; cost controls; and third-party liability issues.

BCHM 442: Hotel Quantitative Analysis

Introduction of statistics of solving problems, decision making within the hotel industry. Introduction to probability, data collection; Quality of data evaluation; graphical representation of data; Data collection methodology. Statistical methods covered hypothesis testing relating to one- and two-sample problems of means, simple linear regression, and multiple regression. Problems involving multiple means one-way ANOVA., multiple regression, time series. Statistical computing software.

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes	Courses	CF	Courses	CF	Courses	CF	Courses	CF
1) Students to develop a solid understanding of customer-oriented and profitable operation within the various sectors of hospitality, tourism and experience management.	1. Principles of Accounting I 2. Introduction to Catering and Hotel management 3. Fundamentals of Micro-Economics 4. Communication Skills 5. Philosophy and Society 6. Food and Beverage Service I 7. Kitchen Organization & Food Knowledge. 8. Business Computing 9. Fundamentals of Macro-economics 10. Principles of Management	11. .0 12. .0 13. .0 14. .0 15. .0 16. .0 17. .0 18. .0 19. .0	• Quantitative Foods • Principles of Marketing • Food and Beverage Service II • Introductions to Managerial Accounting. • Front Office Operations • Catering & Special Events Management. • Risk & Insurance. • Business Law • Culinary Arts	• 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0	• E-Commerce • Research Methods • Business French/German • Food and Beverage Service Management • Travel Reservations Systems • Hotel Marketing Management. • Hotel Information Systems • Hotel and Catering Law	• 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0	20. Hotel Economics 21. Club Management 22. Hotel & Restaurant Project 23. Hotel Facilities and Operations Management. 24. Techniques of Supervision 25. Entrepreneurship in Hospitality & Tourism. 26. Tourism Transportation Systems 27. Principles of Hospitality Franchise Management 28. Strategic Management 29. Banquet Management and Operations 30. Restaurant Entrepreneurship 31. Hotel Quantitative Analysis	32. .0 33. .0 34. .0 35. .0 36. .0 37. .0 38. .0 39. .0 40. .0
2) Students to learn how to put skills into practical use to boost business within the hotel, restaurant, tourism and experience industry and other areas.	41. Introduction to Catering and Hotel management 42. Communication Skills 43. Food and Beverage Service I 44. Kitchen Organization & Food Knowledge. 45. House-Keeping and Laundry Management I 46. Foreign	48. .0 49. .0 50. .0 51. .0 52. .0	• Health and safety • House- Keeping & Laundry Management II • Quantitative Foods • Foreign Language II (French / German) • Food and Beverage Service II • Introductions to Managerial Accounting. • Front Office Operations • Catering & Special	• 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0	• E-Commerce • Research Methods • Business French/German • House Keeping and Laundry III • Food and Beverage Service Management • Environmental Management for Hotels • Travel	• 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0	58. Hotel Economics 59. Club Management 60. Hotel & Restaurant Project 61. Hotel Facilities and Operations Management. 62. Food & Beverage IV 63. Quality Brewing & Fine beer	74. .0 75. .0 76. .0 77. .0

	Language: French I 47.	53. .0 54. .0 55. .0 56. .0 57. .0 3.0	Events Management. • Culinary Arts	• 3.0 • 3.0	Reservations Systems • Hotel Marketing Management. • Hotel Information Systems • Hotel and Catering Law	• 3. 0 • 3. 0 • 3. 0 • 3. 0 • 3. 0	64. Techniques of Supervision 65. Entrepreneurs hip in Hospitality & Tourism. 66. Tourism Transportation Systems 67. Principles of Hospitality Franchise Management 68. Tourism and the Environment 69. Strategic Management 70. Wine & Food Promotion. 71. Banquet Management and Operations 72. Restaurant Entrepreneurship 73. Hotel Quantitative Analysis	78. .0 79. .0 80. .0 81. .0 82. .0 83. .0
3) Equip the student with grounds for supervisory and managerial responsibilities.	84. Principles of Accounting I 85. Introduction to Catering and Hotel management 86. Fundamentals of Micro-Economics 87. Communicati on Skills 88. Kitchen Organization & Food Knowledge. 89. Business Computing 90. Principles of Accounting II 91. House- Keeping and Laundry Management I 92. Fundamentals of Macro-economics 93. Principles of Management 94. Foreign	96. .0 97. .0 98. .0 99. .0 100. .0 101. .0 102. .0 103.	• Health and safety • Quantitative Foods • Principles of Marketing • Foreign Language II (French / German • Introductions to Managerial Accounting. • Front Office Operations • Catering & Special Events Management. • Risk & Insurance. • Business Law	• 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0 • 3.0	• E-Commerce • Research Methods • Business French/German • House Keeping and Laundry III • Food and Beverage Service Management • Environmental Management for Hotels • Travel Reservations Systems • Hotel Marketing Management. • Hotel Information Systems • Hotel and Catering Law Human Resource Management.	• 3. 0 • 3. 0 • 3. 0 • 3. 0 • 3. 0 • 3. 0 • 3. 0	108. Hotel Economics 109. Club Management 110. Hotel & Restaurant Project 111. Hotel Facilities and Operations Management. 112. Food & Beverage IV 113. Quality Brewing & Fine beer 114. Techniques of Supervision 115. Entrepreneurs hip in Hospitality & Tourism. 116. Tourism Transportation Systems 117. Principles of Hospitality Franchise Management	124. .0 125. .0 126. .0 127. .0 128. .0 129. .0 130. .0 131.

	Language: French I 95. Biology of HIV/ AIDS and society	.0 104. .0 105. .0 106. .0 107. .0				• 3.0 • 3.0	118. Tourism and the Environment 119. Strategic Management 120. Wine & Food Promotion. 121. Banquet Management and Operations 122. Restaurant Entrepreneurship 123. Hotel Quantitative Analysis	.0 132. .0 133. .0

BACHELOR OF SCIENCE IN DRYLAND RESOURCES MANAGEMENT

1. Philosophy of the Programme

The Bachelor of Science in Dryland Resources Management programme is consistent with Egerton University's mission of transforming lives through quality education. The programme aims to impart skills and knowledge to prepare students to effectively contribute towards addressing some of the current and emerging problems facing dryland areas in the 21st Century so as to address emerging challenges and issues while maximising utilization of dryland resources

2. Rationale

Arid and semi-arid lands (ASALs) occupy 80% of Kenya's total land surface. Despite its fragile nature, ASALs serve as important biodiversity reservoirs, wildlife habitat, and a resource for livestock production, various minerals, renewable energy and landscape of great attraction. Sustained productivity from these ASAL ecosystems is needed for economic and social development of the country in line with vision 2030. The programme is intended to produce specialists in range resource management and dryland farming

3. Goals of the Programme

The programme intends to equip learners with relevant knowledge, skills, competencies and attitudes relevant for wildlife enterprise management

4. Programme Learning Outcomes

By the end of the programme, graduates should be able to:

- (i) Explain the philosophy behind the conservation and management of drylands
- (ii) Provide advisory services to clientele on the management of drylands.
- (iii) Evaluate impacts of resource use on sustainability of dryland ecosystems.
- (iv) Formulate appropriate early warning systems in respect of dryland ecosystem change.
- (v) Analyze interactive relationships between humans and environment

(vi) Design and implement enterprises in the drylands

(vii) Develop positive attitudes towards dryland conservation, management and entrepreneurship.

5. Mode of delivery

The mode of delivery will be full-time, part-time, evening school, school based programme and e-learning

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission into this programme, candidates must have attained the minimum University entry requirement of C+ at Kenya Certificate of Secondary Education (KCSE) level or other equivalent examination or qualification recognized by the Egerton University Senate.

In addition, the candidates must meet the cluster combinations of at least grade C in Mathematics, C+ in Biology or B- in Biological Sciences, C in Chemistry, B- in Geography or History and Government, and at least C+ in English or Kiswahili at K.C.S.E.

Candidates with Diploma from institutions recognized by Egerton University Senate will also be considered as per the Egerton University Statutes 36 (1) and 36 (2) of 2013.

6.2 Regulation on Credit Transfer

Egerton University Statutes of 2013 articles 36 (3) shall apply.

6.3 Student Assessment Policy/Criteria

Egerton University Statutes of 2013 articles 36 (6) on undergraduate assessment shall apply.

6.4 Grading System

Egerton University statutes of 2013 articles 36 (6) shall apply.

6.5 Examination Regulations

Egerton University statutes of 2013 article 36 (5) regarding examinations and ISO procedures (EU/AA/OP/07) will be followed.

6.6 Moderation of Examinations

Egerton University statutes of 2013 article 36 (5) regarding moderation of examinations and ISO procedures (EU/AA/OP/07) will be followed.

6.7 Graduation Requirements

To graduate, a student should have covered a minimum of 192.0 Credit Factors (CFs) including field attachment.

6.8 Course Requirements

The programme shall follow ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.9 Classification of Degrees

The classification shall be in accordance with Egerton University statute of 2013 articles 36 (14).

7. Course Evaluation

The programme will be evaluated using a course evaluation tool developed by the University that captures all aspects of the course.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will be reviewed and evaluated as per ISO procedures for quality assurance of academic programmes (EU/VC/OP/05).

8.3 Course Coding

The code prefix shall be DLRM as reflective of Dryland Resources Management followed by a three digit figure.

The first digit represents the year in which the course is offered.

The second digit represents the nature of the course within the department:

- 0 - indicates introductory courses,
 1- Principle courses,
 2- Ecology,
 3- Climate,
 4- Management courses,
 5- Applied courses,
 6- Planning,
 7- Research seminars, and projects,
 8- Policy, law and administration.

The third digit represents the serial number of the course
 e.g. DLRM 211: Dryland Livelihoods taught in the second
 year is a principles course and first in the series.

9. Schedule of Courses offered for the Programme

a) Common University Core Courses

CODE	TITLE	L	P	C.F
MATH 100	General Mathematics	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0

b) Schedule of courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
AGRO 102	Introduction to Crop Production	45	15	3.5
BOTA 101	General Botany	30	30	3.0
CHEM 111	Inorganic and Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
DLRM 101	Introduction to Dryland Resource Management	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
NARE 101	Introduction to Natural Resources Management	30	0	2.0
ZOOL 100	General Zoology	30	30	3.0

TOTAL		270	165	23.5
YEAR 1 SEMESTER 2				
CODE	TITLE	L	P	C.F
BOTA 111	General Genetics	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
DLRM 111	Principles of Dryland Farming	30	30	3.0
DLRM 121	Ecology and Physiology of Dryland Flora	30	30	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
TOTAL		285	165	21.0

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F
DLRM 201	Renewable Energy for ASALS Development	30	30	3.0
DLRM 211	Hydrology of ASALS	30	30	3.0
DLRM 221	Human Ecology	30	30	3.0
DLRM 241	Dendrology and Taxonomy of Dryland Plants	30	30	3.0
NARE 201	Introductory Geology	30	30	3.0
DLRM 213	Principles of Dryland Resources Management	30	30	3.0
NARE 211	Principles of Wildlife Management	30	30	3.0
NARE 221	Natural Resource Ecology	30	15	2.5
TOTAL		240	225	23.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F
AGRO 271	Pasture and Fodder Crops	30	15	2.5
DLRM 212	Dryland Livelihoods	30	30	3.0
DLRM 242	Pastoralism and Pastoral Development	30	30	3.0
DLRM 251	Sociology of Dryland Development	30	30	3.0
DLRM 252	Entrepreneurship in Dryland Resources	30	30	3.0
DLRM 253	Dryland Resource Marketing	30	30	3.0
NARE 271	Introduction to Research	30	0	2.0
SOIL 241	Soil Genesis, Classification & Mapping	30	30	3.0
TOTAL		270	195	24.5

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
ANSC 366	Apiculture and Sericulture	30	30	3.0
NARE 331	Climatology	30	30	3.0
DLRM 351	Land Use Planning in Drylands	30	30	3.0
GEOG 319	GIS and R.S. in Natural Resource Management	30	30	3.0
NARE 341	Scientific Report writing in Natural Resource Disciplines	30	30	3.0
NARE 343	Conservation of Nature	30	30	3.0
NARE 352	Ecological Surveys and Techniques	30	30	3.0
NARE 371	Applied Research in Natural Resources	30	30	3.0
TOTAL		270	225	24.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F
AGED 331	Principles of Agricultural Extension	30	0	2.0
DLRM 304	ASALs Vulnerability and Resilience	30	0	2.0
DLRM 341	Climate Change & Dryland Resource Management	30	30	3.0
DLRM 333	Drought Management	30	0	1.0
DLRM 334	Dryland Forestry	30	15	2.5
NARE 373	Student Proposal Development	0	30	2.0
DLRM 374	Social Research Methods	30	15	2.5
ENSC 335	Environmental Impact Assessment & Audit	30	30	3.0
NARE 351	Watershed Management	30	15	3.0
TOHM 341	Ecotourism Management	30	30	3.0
TOTAL		285	255	24.0
NARE 372	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F
ANSC 450	Ruminant Production	45	30	4.0
DLRM 421	Dryland Resources Utilization and Conflict Management	30	15	2.5
DLRM 422	Range Improvements	30	30	3.0
DLRM 423	Dryland Ecosystem Management	30	30	3.0
DLRM 452	Ground Water Resources	30	30	3.0
DLRM	Seminars	0	30	2.0

473				
NARE 444	Grazing Management	30	30	3.0
NARE 481	Natural Resource Policy & Law	30	30	3.0
TOTAL		225	180	23.5

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F
AGED 433	Extension, Programme, Planning & Implementation	45	0	3.0
DLRM 451	Dryland Degradation and Rehabilitation	30	15	2.5
DLRM 461	Water Resources Planning & Development	30	30	3.0
DLRM 462	Project Management in Dryland Resources	30	30	3.0
DLRM 482	Contemporary Issues in Dryland Resources Management	45	0	3.0
NARE 422	Geology & Mineral Resources of Kenya	45	30	3.0
WIEM 443	Wildlife Management & Utilization	30	30	3.0
NARE 454	Agroforestry	45	0	3.0
TOTAL		225	120	23.5

(c) COURSE DESCRIPTIONS**DLRM 101: Introduction to Dryland Resource Management (30/30: CF 3.0) Y1S2**

Dryland environments of the world; the climatic, edaphic, biotic and physiographic characteristics of East Africa drylands, survey of dryland resource developments, opportunities and challenges. Characteristics of communities living in drylands. Land tenure systems and their effects on dryland management, Institutions managing drylands. Multiple use of drylands, dryland biodiversity conservation and management. Field visit to a dryland area.

DLRM 111: Principles of Dryland Farming (30/30: CF 3.0) Y1S2

Drought risks and risk management strategies, response farming, plant populations, planting patterns, tillage methods. Cropping systems, crop establishment, soil moisture management, crop cultivar selection, agro forestry. Early warning systems. Field visit to an irrigated area.

DLRM 121: Ecology and Physiology of Dryland Flora (30/30: C.F. 3.0) Y1S2

Syncology; dryland plant communities. Characteristics of the dryland plants and their environment. Dryland plant physiology; Seed casting and planting, factors affecting viability, germination and establishment, factors affecting growth and reproduction. Physiological functions; Photosynthesis, Transpiration, and Respiration. Autecology of important dryland plants; morphology and development of invasive species, life forms, ecological amplitude, parts of a grass plant, nutritional characteristics of plants in relation to animal physiology and diets. Field visit to identify dryland plants and natural plant communities.

DLRM 201: Renewable Energy for ASALS Development (30/30: C.F 3.0) Y2S1

Definition of renewable energy: Introduction to energy for rural energy. Global relevance of renewable energy in agriculture, environmental impacts of bioenergy production. Solar radiation energy, wind energy, geothermal energy, hydro electric energy, biomass and plant oil production techniques, biogas. Types of solar heaters and their

uses. Solar thermal conversion and materials. Field visit to areas with windmills, geothermal, and hydropower.

DLRM 211: Hydrology (30/30: CF3.0) Y2S1

Water occurrence in nature. The hydrologic cycle. Meteorology: the mechanism of rain generation, condensation, types of clouds, convection, effects of cold and warm fronts, aspects of rain storms, instrument for weather/climate measurement. Methods of hydrologic processes measurements. Analysis of rainfall data. Stream flow: Sources of streamflow. Measurement of stream flow. Hydrograph analysis and synthesis. Introduction to groundwater: confined and unconfined aquifers. Physical and chemical properties of groundwater. Well hydraulics. Groundwater management and contamination. Seawater intrusion.

DLRM 212: Dryland Livelihoods (30/30: CF 3.0) Y2S2

Defining characteristics of dryland livelihoods, concept of livelihood assets: human, natural, capital, social, physical, financial; pastoralism and agro-pastoralism, transhumance, hunters and gatherers, social organization, indigenous technical knowledge, vulnerability and adaptability, interaction with national, regional and global economies, SMEs, resource governance, poverty and food security, livelihoods analysis and planning, community based natural management, management of common property resources, indigenous technologies, climate change and dryland livelihoods, historical trends in livelihoods, impacts of development policy, challenges and prospects. Field visit required.

DLRM 213: Principles of Dryland Resources Management Y2S2 (30/45: CF 3.5)

Dryland environments of the world, with emphasis to East Africa. Systems of Dryland classification. Autecology of important dryland plants. Assessment of the production potential and current condition of drylands. Rangeland ecology as a foundation to managing drylands. Basic ecological principles applicable to proper dryland management. Multiple use concepts. Management of dryland resources: revegetation, plant control, grazing management, soil and water management, use of fire, developments.

DLRM 221: Human Ecology (30/30: C.F 3.0) Y2S1

Interaction between people and their environment; the role of culture in techniques of resources conservation and use; Environmental cognition and planning; Ethnoscience and change; Tourism in human-ecological perspective. Human personality: basic concepts, determinants, and theories of personality development; Human behaviours at the workplace; Motivation, motivation theory, reward and punishment; motivation and job satisfaction; Socialization and goal directed behaviour, social learning and control; Social systems, the working environment as a social system, interpersonal relations in groups; The individual in the organization; groups norms and the individual, organized labour; Work ethics and professionalism.

DLRM 241: Dendrology and Taxonomy of Dryland Plants (30/30: CF3.0) Y2S1

The principles of plant taxonomy. Introduction to plant biosystematics, evolutionary plants of the Gymnosperm and Angiosperm. Identification of dryland plants using distribution, vegetative and floral characters and keys. Utility of each dryland plant species. Practicals in dryland plant identification. Field visit.

DLRM 242: Pastoralism and Pastoral Development(30/30: CF 3.0) Y2S2

Description of pastoral societies with emphasis on East Africa Societies; characteristics of pastoral/nomadism; effects of pastoral/nomadism on range management development, sociological versus economic and environmental factors related to pastoral production; problems sociological and technical. Facing extension programmes in pastoral sociological; Discussion of possible solutions or approaches to better extension work and pastoral development. Field visit to a pastoral community.

DLRM 251: Sociology of Dryland Development (30/30: CF 3.0) Y2S2

Modernization of agriculture, based on structural differentiation, traditional-modernity dichotomy, rural-urban continuum, and concepts of structural and cultural factors affecting rural development. Social system analysis and social aspects of planned social change, based on policies and decisions relating to social and

economic change. Approaches to planning rural development programmes.

DLRM 252: Entrepreneurship in Dryland Resources (45/0: CF 3.0) Y2S2

Nature and scope of entrepreneurship; Types of entrepreneurship and entrepreneurship systems Role of the entrepreneur in society; conditions necessary for entrepreneurship to evolve; The business plan; Basic requirements for starting, running and expanding a small business; The stages of business growth; Managing and financing of small business in drylands. Field visit to observe enterprises in drylands.

DLRM 253: Dryland Resource Marketing (30/30: CF 3.0) Y2S2

The marketing concept in relation to dryland resources, the marketing mix, Dryland products planning and development; advertising and public relations; personal selling; channels of and physical distribution; marketing of primary produce; problems and opportunities in commodity marketing; future markets; stock exchange and commodity exchange; commodity marketing.

DLRM 304: ASALs Vulnerability and Resilience(30/0: CF 2.0) Y3S2

Introduction to the concept of vulnerability, adaptation in the context of adaptive capacity and vulnerability of ASAL systems to global changes. ASAL greatest vulnerabilities in the social, environmental, economic and technical sectors. How vulnerability and poverty emerge in the ASALs areas. Review of policies for aimed at reducing vulnerability and enhancing resilience of ASALs societies to climate related disasters and trends.

DLRM 341: Climate Change & Dryland Resource Management (30/30: CF 3.0) Y3S2

Climate change definition and concepts . Relationship between climatological elements and dryland resources systems, Climate change scenarios, its impacts and mitigation strategies. Coping and adaption strategies. Field visit to a Climate change mitigation project in ASAL areas.

DLRM 333: Drought Management (30/30: CF 3.0) Y3S2

Types of drought. Cycles of drought and drought forecasting techniques. Plant stress physiology; effects of drought on plants, drought resistance, mechanisms of drought resistance, Stocker's and Henkel's theories. Management; institutions involved in drought forecasting, planning for drought, drought mitigation techniques, revegetation, soil and water conservation techniques, restoration and protection of degraded lands. Visit an ASAL area.

DLRM 334: Dryland Forestry(30/30: CF 3.0) Y3S2

Systems of classifying bioclimatic aridity; Koppen, Thornthwaite, de Martonne, U.N.E.S.C.O and plant indicator systems. Ecoregions of East Africa. Soil characteristics of arid zones. Technology of artificial regeneration of plants in drylands; choice of species, seed collection and handling, nursery techniques and plantation tending. Shade and nursery trees. Use of exotic trees in land rehabilitation. Water harvesting techniques. Dryland Agro-forestry. Social factors affecting forestry. Case studies of dryland afforestation methods used in other parts of the world. Field visit to a forested area in drylands.

DLRM 351: Land Use Planning in Drylands (30/30: CF 3.0) Y3S1

Land and land use. Land tenure system in the drylands. Land use policy and law in Kenya; registration Acts and land use control in both rural and urban areas, the role of government in land transactions; control of land development related to natural resource. Land capability assessment. Land use planning; goals, inventory of resources, problem analysis, identify opportunities and alternatives (environmental, economic, and social). Field visit to projects in dry areas. after completion of the field attachment period.

DLRM 374: Social Research Methods (30/30: CF 3.0) Y3S2

Principles and applications of socio-ecological research methods, including survey research, Key Informant technique, Focus Group Discussion, participant observation, case studies, historical investigation, Participatory Rural Appraisal (PRA), and others. Questionnaire construction and interviewing. Research

design, Sampling, Data processing and statistical analysis; application of statistical software (SPSS, NVIVO, QDA Miner), reporting research findings, research project evaluation and publication, problems inherent in research.

DLRM 421: Dryland Resources Utilization and Conflict Management (30/15: CF 2.5) Y4S1

Sociological perspective applied to natural resource management. Relationship between natural resource and human social systems. Rural social systems. Land tenure; Social change and development in relation to the natural resource base wildlife, forest/res, watersheds, livestock, fauna and flora. Integration of indigenous knowledge in natural resource utilization, conservation and management. Community social action. Natural resource utilization conflicts; conflict resolution strategies. Field visit to a conflict area.

DLRM 422: Range Improvements (30/30: CF 3.0) Y4S1

Range rehabilitation; water development and distribution, water spreading; artificial revegetation; bush control; burning; range fencing and herding; bomas and other aspects related to physical improvements. Field visit to see range improvements.

DLRM 423: Dryland Ecosystem Management (30/30: CF 3.0) Y4S1

The dryland ecosystem concept; identification and quantification of components, their structure and functions. Trends in classification; ecological succession and exploitation by man; management stability and diversity; monitoring response and implications of various degrees of exploitation on vegetation, soil, water and animals. Field visit to a dryland ecosystem.

DLRM 451: Dryland Degradation and Rehabilitation (30/15: CF 2.5) Y4S1

Land degradation; causes, process. Assessment; soil erosion, biodiversity loss, salinity. Rehabilitation; measures to minimise land deterioration, restoration. Case studies of rehabilitated sites in drylands. Field visit to dryland to see cases of degradation and rehabilitation.

DLRM 452: Groundwater Resources (30/30: CF3.0) Y4S1

Groundwater occurrence and flow:- Darcy's law, general flow equations, unsaturated flow. Groundwater and well hydraulics: - Steady unidirectional flow, steady radial flow to a well, unsteady radial flow in confined and unconfined aquifers, characteristic well losses, specific capacity. Groundwater investigations: Geophysical exploration techniques. Water wells:- test holes and well logs, construction of shallow and deep wells, well completion, well development, testing for yield, pumping equipment, protection of wells, well rehabilitation. Groundwater pollution; saline water intrusion, management of groundwater, groundwater modelling techniques. Field visit to a water drilling company.

DLRM 460: Water Resources Planning and Development (30/30: CF3.0) Y4S2

Concepts of water demand, water availability, water quality. Planning for water-resources development; levels of planning, phases, objectives, data requirements, project formulation, environmental considerations. Planning, design and management of multicomponent water resource systems: drought management, river navigation, drainage systems, Irrigation use of water, water resources planning and management in arid and semi-arid areas. Water resource systems planning and analysis; linear programming, dynamic programming, stochastic systems. Water resources development; surface water development: dams, reservoirs, ponds; groundwater development: wells, boreholes, springs. Water harvesting. Field visit to dryland water resources.

DLRM 462: Project Management in Dryland Resources (30/30: CF3.0) Y4S2

Project types. Project life cycle, CPM and PERT, Stakeholder analysis. Project identification /initiation; SWOT, Needs assessment. Resource allocation. Planning; inventories, cost estimation, budgets. Project performance and evaluation. Risks; identification, sources, analysis and mitigation.

DLRM 482: Contemporary Issues in Dryland Resource Management (45/0: CF 3.0) Y4S2

Introduction to current issues and topics in dryland resources management. History and trends in the development of dryland areas in Kenya. Assessment of institutions involved in dryland management. Global environmental changes and their impacts on dryland resources, management and adaptation strategies to mitigate impacts, role of UN in tackling dryland issues. Human dimensions in dryland management. Evaluations of issues, discussions on possible solutions from all perspectives (social, political, cultural, economic and ecological). The course will be conducted as class discussion topics and student presentations.

9.3 Matrix aligning courses/ units to Programme learning outcomes

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1 - Explain the philosophy behind the conservation and management of drylands	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment 0	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Drought Management	3.0	Wildlife Management & Utilization	3.0
	Renewable Energy for ASALS Development	3.0	Pasture and Fodder Crops	3.0	Mineralogy	3.0	Agroforestry	3.0
	Dendrology and Taxonomy of Dryland	3.0	Entrepreneurship in Dryland Resources	3.0	Watershed Management	3.0	Contemporary Issues in Dryland Resources Management	3.0
			Marketing in Dryland Resources	3.0	Principles of Agricultural Extension	3.0		
					Student Projects	3.0		

	Plants	3.0					Water Resources Planning & Development	3.0
	Natural Resource Ecology	3.0					Project Management in Drylands Resources	3.0
PLO 2. Provide advisory services to clientele on the management of drylands.	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment 0	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Drought Management	3.0	Wildlife Management & Utilization	3.0
	Renewable Energy for ASALS Development	3.0	Pasture and Fodder Crops	3.0	Mineralogy	3.0	Agroforestry	3.0
	Dendrology and	3.0	Entrepreneurship in Dryland Resources	3.0	Watershed Management	3.0	Contemporary Issues in Dryland Resources Management	3.0
			Marketing in Dryland Resources	3.0	Principles of Agricultural Extension	3.0		
					Student Projects	3.0		

	Taxonomy of Dryland Plants	3.0					Water Resources Planning & Development	3.0
	Natural Resource Ecology	3.0					Project Management in Drylands Resources	3.0
PLO 3. Evaluate impacts of resource use on sustainability of dryland ecosystems.	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment 0	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Drought Management	3.0	Wildlife Management & Utilization	3.0
	Renewable Energy for ASALS Development	3.0	Pasture and Fodder Crops	3.0	Mineralogy	3.0	Agroforestry	3.0
			Entrepreneurship in Dryland Resources	3.0	Watershed Management	3.0	Contemporary Issues in Dryland Resources	3.0
			Marketing in Dryland Resources	3.0	Principles of Agricultural Extension	3.0		
					Student Projects			

	Dendrology and Taxonomy of Dryland Plants	3.0				3.0	Management	
	Natural Resource Ecology	3.0					Water Resources Planning & Development	3.0
							Project Management in Drylands Resources	3.0
PLO 4. Formulate appropriate early warning systems in respect of dryland ecosystem change.	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment 0	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Drought Management	3.0	Wildlife Management & Utilization	3.0
	Renewable Energy for ASALS Development	3.0	Pasture and Fodder Crops	3.0	Mineralogy	3.0	Agroforestry	3.0
			Entrepreneurship in Dryland Resources	3.0	Watershed Management	3.0	Contemporary Issues in	
			Marketing in Dryland	3.0	Principles of Agricultural Extension	3.0		

	Dendrology and Taxonomy of Dryland Plants	3.0	Resources		Student Projects	3.0	Dryland Resources Management	3.0
		3.0					Water Resources Planning & Development	3.0
	Natural Resource Ecology	3.0					Project Management in Drylands Resources	3.0
PLO 5: Analyze interactive relationships between humans and environment	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Drought Management	3.0	Wildlife Management & Utilization	3.0
			Pasture and Fodder Crops	3.0	Mineralogy	3.0	Agroforestry	3.0
			Entrepreneurship in Dryland Resources	3.0	Watershed Management	3.0		
	Renewable Energy for	3.0			Principles of Agricultural Extension	3.0		

	ASALS Development	3.0	Marketing in Dryland Resources	3.0	Student Projects	3.0	Contemporary Issues in Dryland Resources Management	3.0
	Dendrology and Taxonomy of Dryland Plants	3.0					Water Resources Planning & Development	3.0
	Natural Resource Ecology	3.0					Project Management in Drylands Resources	3.0
PLO 6. Design and implement enterprises in the drylands	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Introduction to Academic Communication	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment 0	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Mineralogy	3.0	Wildlife Management & Utilization	3.0
			Pasture and Fodder Crops	3.0	Watershed Management	3.0	Agroforestry	3.0
			Entrepreneurship in Dryland Resources	3.0	Principles of Agricultural	3.0		

	Renewable Energy for ASALS Development	3.0	Marketing in Dryland Resources	3.0	Extension		Contemporary Issues in Dryland Resources Management	3.0
	Dendrology and Taxonomy of Dryland Plants	3.0			Student Projects	3.0	Water Resources Planning & Development	3.0
	Natural Resource Ecology	3.0					Project Management in Drylands Resources	3.0
PLO 7: Develop positive attitudes towards dryland conservation, management and entrepreneurship.	General Botany	3.0	Human Ecology	3.0	GIS and R.S. in Natural Resource Management	3.0	Seminars	3.0
	Inorganic and Physical Chemistry	3.0	Hydrology	3.0	Apiculture and Sericulture	3.0	Drylands Ecosystem Management	3.0
	Communication Skills	3.0	Introductory Geology	3.0	Nature Conservation	3.0	Ruminant Production	3.0
	General Mathematics	3.0	Principles of Dryland Resources Management	3.0	Agro-meteorology and Climate Change	3.0	Drylands Resources Utilization and Conflict Management	3.0
	Introduction to Natural Resources Management	3.0	Principles of Wildlife Management	3.0	Land Use Planning in Drylands	3.0	Range Improvements	3.0
	Introduction to Dryland Resource Management	3.0	Renewable Energy for ASALS Development	3.0	Report Writing in Natural Resource Disciplines	3.0	Ground Water Resources	3.0
	Introduction to Crop Production	3.0	Dendrology and Taxonomy of Dryland Plants	3.0	Ecological Surveys and Techniques	3.5	Natural Resource Policy & Law	3.0
	General Zoology	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Grazing Management	3.0
	Human Ecology	3.0	Sociology of Drylands Development	3.0	ASALs Vulnerability and Resilience	3.0	Field Attachment	3.0
	Hydrology	3.0	Pastoralism and Pastoral Development	3.0	Social Research Methods	3.0	Dryland Degradation and Rehabilitation	3.0
	Introductory Geology	3.0	Dryland Livelihoods	3.0	Drylands Forestry	3.0	Extension, Programme, Planning & Implementation	3.0
	Principles of Dryland Resources Management	3.0	Introduction to Research	3.0	Ecotourism Management	3.0	Environmental Impact Assessment & Environmental Audit	3.0
	Principles of Wildlife Management	3.0	Soil Genesis, Classification & Mapping	3.0	Mineralogy	3.0	Wildlife Management & Utilization	3.0
	Renewable Energy for ASALS Development	3.0	Pasture and Fodder Crops	3.0	Watershed Management	3.0	Agroforestry	3.0
			Entrepreneurship in Dryland Resources	3.0	Principles of Agricultural	3.0		

	Dendrology and Taxonomy of Dryland Plants	3.0	Marketing in Dryland Resources	3.0	Extension Student Projects	3.0	Contemporary Issues in Dryland Resources Management	3.0
	Natural Resource Ecology	3.0					Water Resources Planning & Development	3.0
		3.0					Project Management in Drylands Resources	3.0

BACHELOR OF SCIENCE IN INTEGRATED FOREST RESOURCES MANAGEMENT

1. Philosophy of the programme

The Bachelor of Science in Integrated Forest Resource Management is in consistent with Egerton University's mission of transforming lives through quality education. The programmes aims to impart skills and knowledge to prepare students to effectively contribute towards addressing some of the current and emerging problems facing forestry sector at national and global levels such as global warming

2. Rationale

Land cover under forestry in Kenya has continued to diminish and currently stands at about 2% of the total land area, which falls far below the internationally accepted minimum of 10%. This has compromised ecological integrity and denied millions of people access to trees and tree products. Rampant deforestation and tree cutting on individual farms continue unabated. This puts further stress on the already fragile forest ecosystem. Despite the various break-throughs in conventional agriculture and forestry, malnutrition, poverty and deterioration of the natural environment are rampant. Humankind has a moral responsibility to reverse these negative trends. It is therefore, imperative to have qualified personnel to take up these challenges. The Bachelor of Science programme in Integrated Forest Resource Management is interdisciplinary in approach and is tailored to provide skills and knowledge relevant in problem analysis, development of research modules, project implementation and pedagogic assignments on aspects of macro-scale and micro-scale forest resources management. The basic components of the programme embrace forest biodiversity, including invasive species, human dimensions in relation to capacity building options, conservation of genetic resources of wild relatives, and management of water catchment areas.

Integrated Forest Resources Management is one of the key pathways of mitigating poverty, hunger, malnutrition, and environmental deterioration. Integration of trees on the landscape, and intensive

forest resources management will diversify and sustain production for increased socio-economic and environmental benefits at all levels. Integrated Forest Resources Management can enhance supply of wood and non-wood forest products, soil fertility, soil conservation, biodiversity conservation, carbon sequestration and reduction of greenhouse gases. The integrated approach will ease the pressure on the already over-utilized national forests by producing competent graduates to address these challenges. Such persons would find ready market in diverse professions such as forestry, agriculture, environment and natural resources and related areas.

3. Goal of the Programme

The aim of the programme is to train personnel with skills and professional knowledge to carry out integrated forestry research, provide advisory services and disseminate appropriate innovations for purposes of sustainable forest resources management.

4. Programme Learning Outcomes

On completion of the programme, the graduate should be able to;

- i) Provide technical and professional services in forest resources management.
- ii) Carry out appropriate research to generate interventions for implementation in areas of forest resources management
- iii) Analyze and evaluate critical issues in forest resources management, biodiversity
- iv) Conservation and related policy issues.
- v) Take up forestry as a business.

5. Mode of delivery

The mode of delivery will be either full time/ part time, e-learning/ blended/ or open/ distance learning

6. Academic Regulations for the Programme

6.1 Admission Requirements

Applicants must satisfy the minimum University entrance requirements. In addition, they MUST have attained the following minimum grades for subjects namely:

Biology B- or Biological Sciences B, Geography B- , Chemistry C+ or Physical Science B- and Mathematics C +.

Diploma holders with credit and above in the following fields: Range Science, Environmental Science, Forestry, Wildlife Management and other relevant diplomas from institutions recognized by Egerton University Senate may be admitted.

6.2 Regulation on Credit Transfer

Egerton University statute 36(3) of 2013 shall apply.

6.3 Course Requirements

ISO procedures for teaching (EU/AA/OP/06 rev 3) shall apply.

6.4 Student Assessment

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply.

6.5 Grading System

Egerton University statute 36(6) of 2013 shall apply.

6.6 Examination Regulations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.7 Moderation of Examination

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.8 Graduation Requirements

To graduate, a student must have completed a minimum of hundred fifty nine (159) credit factors and also participated in field attachment.

6.9 Classification of Degrees

The classification shall be in accordance with Egerton University statute 36 of 2013 for undergraduate students

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Programme shall be hosted in the Department of Natural Resources, Faculty of Environment and Resources Development. The programme Academic leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of each academic cycle as per ISO procedure for quality assurance for academic programmes (EU/VC/OP/05).

8.3 Course coding

The course code used is **FORM** which stands for "Integrated Forest Resources Management" followed by 3 digits. Where: Digit 1 indicates the year the course is offered, digit 2 indicates the discipline according to the following levels:

Level 0 – Introductory courses

Level 1 - Principles courses

Level 2 - Ecology

Level 3 - Climate

Level 4 - Management courses

Level 5 - Applied courses

Level 6 - Planning

Level 7- Research, Seminars, and Projects, and

Level 8 - Policy, Law and Administration.

Digit 3 indicates the serial number of individual courses within a particular discipline.

9. Courses/ Units offered for the Programme

9.1 Schedule of Courses

a) Common University Core Courses

CODE	TITLE	L	P	C.F
MATH 100	General Mathematics	45	0	3.0
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
COMS 111	Communication Skills	45	0	3.0

Common Programme Core Courses

CODE	TITLE	L	P	C.F
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic &	30	30	3.0

	Physical Chemistry			
CHEM 130	Introduction to Organic Chemistry	30	30	3.0

(b) Summary of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
PHIL 108	Ethics, Integrity and National Values	45	0	3.0
BOTA 111	General Botany	30	30	3.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
NARE 101	Introduction to Natural Resource Management	30	30	3.0
Total		270	105	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
BOTA 111	General Genetics	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
FORM 101	Introduction to Integrated Forest Resource Management	30	30	3.0
FORM 141	Introduction to Forest Enterprise Management	30	15	2.5
SOIL 100	Introduction to Soil Science	30	30	3.0
Total		180	165	17.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
FORM 211	Tree Nursery Management	30	30	3.0
FORM 222	Forest Soils	30	30	3.0

FORM 223	Plant Morphology and Development	30	30	3.0
NARE 211	Principles of Wildlife Management	30	30	3.0
NARE 221	Natural Resource Ecology	30	30	3.0
NARE 271	Introduction to Research	45	0	3.0
BIOC 204	Basic Biochemistry	30	30	3.0
Total		225	180	21.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
FORM 221	Forest Ecology	30	30	3.0
FORM 241	Forest Enterprises	30	30	3.0
BOTA 271	Plant Physiology 1	30	30	3.0
DLRM 213	Principles of Dryland Resource Management	30	45	3.0
NARE 213	Principles of Forest Resource Management	30	30	3.0
FORM 251	Forest Inventory	30	45	3.5
Total		225	180	21.5

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
FORM 351	Forest Mensuration	30	45	3.5
NARE 321	Aquatic Ecology	30	30	3.0
NARE 341	Scientific Report writing in Natural Resource Disciplines	30	30	3.0
NARE 343	Conservation of Nature	30	30	3.0
NARE 371	Applied Research Methods in Natural Resources	30	30	3.0
GEOG 319	GIS and Remote Sensing in Natural Resource Management	30	30	3.0

NARE 351	Watershed Management	30	30	3.0
Total		210	225	21.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGED 334	Extension Education	45	0	2.0
ENSC 335	Environmental Impact Assessment and Audit	30	30	3.0
FORM 352	Social Forestry and Rural Development	30	0	2.0
FORM 353	Forest Genetics & Tree Breeding	30	30	3.0
FORM 354	Wood Properties and Forest Products	30	30	3.0
FORM 355	Silviculture	30	30	3.0
NARE 331	Climatology	30	30	3.0
NARE 373	Student Proposal Development	15	60	3.0
Total		225	210	22.0
NARE 372	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
FORM 441	Forestry and National Development	30	30	3.0
FORM 442	Renewable Energy Utilization and Management	30	30	3.0
FORM 452	Forest Entomology	30	30	3.0
FORM 481	Forest Economics	45	0	3.0
NARE 451	Agroforestry	45	15	3.5
NARE 482	Contemporary Issues in Natural Resources Management	30	30	3.0
NARE 473	Student Seminars and Reports	0	90	3.0
Total		255	210	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
NARE 461	Natural Resources Planning and Management	30	15	2.5
FORM 453	Forest Engineering	30	30	3.0
FORM 451	Forest Pathology	30	30	3.0
NARE 443	Project Management in Natural Resources	30	30	3.0
NARE 451	Dryland Rehabilitation	30	15	2.5
NARE 481	Natural Resource Policy and Law	45	0	3.0
WIEM 444	Wildlife Management and Utilization	30	30	3.0
Total		225	165	20.5

(c) Course Descriptions

FORM 101: Introduction to Integrated Forest Resources Management

The concept of integrated forest resources management. Definitions and classification of forest resources and their role locally, regional and globally. Factors governing the distribution and patterns of forests: Biophysical and socioeconomic. Forest ecosystem services. The forest environment.

FORM 141 Introduction to Forest Enterprise Management

Introduction to concepts and theories of businesses. Nature and organisation of the forest sector. Business planning and management issues. Types and ownership of forest based enterprises. Business Ethics. Financing forest based industries. Small and large scale forest enterprises/projects. Forest (natural enterprise) business / management plans. Budgeting and financial forecasting. Marketing forest based products. Value addition strategies, Technology development and transfer. Certification and eco-labelling. Policy and institutional framework issues.

FORM 211: Tree Nursery Management

Classification of nurseries, site selection, design and layout; establishment and structures. Nursery operations, routine practices, soils, seed sources, collection, extraction and storage; nursery records and stock inventory. Propagation techniques and biotechnology. One field visit to a successful commercial nursery.

FORM 221: Forest Ecology

Forest plant communities, the ecosystem concept, the concepts of autecology and synecology. Population and community relationships. Ecological succession. Patterns of distribution, quantitative measurements of species diversity, gradient analysis, energy flow within ecosystems, nutrient cycling, regeneration studies recruitment, potential energy partitions, above and below ground phytomass. Water relations in plants, plant water stress physiology. Unique characteristics of tropical forests.

FORM 222: Forest Soils

Introduction to forest soils, forest floor and soil biology, nature and properties of forest soils, mapping forest soils. Biogeochemical cycles in forest ecosystems, management of problem soils. Nutrient intake and deficiencies in forest soils.

FORM 223: Plant Morphology and Development

Meristems of roots and shoots, shoot growth patterns and crown IFRM. Primary stem development, cortical and vascular tissues. Secondary stem development. Leaf structure and growth. Vegetative versus reproductive phase, Gymnosperm and angiosperm reproductive structures. Flower, seed and fruit development. Secondary stem development. Bulk formation and the structure of peridermis.

FORM 241: Forest Enterprises

Forest-related enterprises in developing countries. Principles of business management. Theory of the firm. Markets. Financing a forest enterprise. Managing the special characteristics of natural-resources-related businesses. The commercial banking system. Risk management & decision making. Theories of investment in natural resources in developing countries

and practices of investment. Monitoring and evaluation of progress against objectives at the enterprise level.

FORM 251: Forest Inventory

Purpose and planning of forest inventory. Inventory design. Concepts in forest inventory. Data recording and processing.

FORM 351: Forest Mensuration

Introduction to methods of forest mensuration. Measurement of timber and wood products. Measurement of growing trees and stands. Mensuration parameters. Structures of an even-aged stands and of even-aged monocultures or pure stands. Yield estimation by felling model trees. Bitterlich's methods of basal area determination. Measurement of mean annual and current annual increments. Use of surveying instruments; graphical methods in preparation of topographic and planimetric maps.

FORM 352: Social Forestry and Rural Development

Introduction to Social forestry. Definition of development. Land use planning. Land use and rural development. Community/social forestry production systems. Social forestry in public learning institutions. Gender equity and conflicts in rural forestry.

FORM 353: Forest Genetics and Tree Breeding

Forest tree improvement and genetics. Interaction between breeding and silviculture activities. Breeding methods. Plus tree selection, seedling and clonal seed orchards, design and establishment. Breeding zones. Flowering and seed production in orchards

FORM 354: Wood Properties and Forest Products

Formation of wood in forest trees. Macro and micro characteristics of wood. Defects in wood. Wood is affected by moisture, heat, sound, light and electricity. Mechanical properties of wood. Broad classification of forest products: human food and fodder, poles, rails and road ties, veneers and plywood, wood furniture and shingles, containers; secondary wood products; chemically derived products from wood; pulp and paper, distillation products; wood hydrolysis. Chemical seasoning of timber and other forest product.

FORM 355: Silviculture

Tree establishment practices, species selection, planting and spacing; silvicultural operations. Tree improvement concepts. Wood properties, primary and secondary wood products. General principles of forest entomology and pathology.

FORM 441: Forestry and National Development

Forestry in rural, urban and regional development as a tool for poverty reduction. Anthropogenic dimensions and political economy. Techniques of survey, analysis and classification of physical resources in relation to forest development. Management plans, administration, budgeting and personnel.

FORM 442: Renewable Energy Utilization and Management

Definition of bioenergy. Role and relevancy of bioenergy in industrial and rural development. Sources of bioenergy and utilization. Renewable sources of energy. Alternative sources of energy solar, wind, hydro, geothermal. and energy saving technologies.

FORM 451: Forest Pathology

The concept of disease; biotic and abiotic causes of tree diseases. The ecological importance of diseases in forest ecosystems. The major classes of fungi and their importance as forest pathogens. Introduction to plant pathogenic bacterial, viral and mycoplasma like diseases. Principles of infection, disease establishment and spread including epidemiology. Major forest nursery, plantation and conversion diseases in East Africa: their identification, control and management. The importance of mycorrhizae and other growth promoting organisms in forestry. Plant quarantine procedures.

FORM 452: Forest Entomology

Place of insects in the animal kingdom. Taxonomy of major insect groups and the characteristic features of those important to forestry. Biology, ecology and control of fruit/seed, root pests, bark pest, defoliators and stem/wood borers. Useful forest insects.

FORM 453: Forest Engineering

Introduction to forestry tools and machines. Man-tool-machine relationships; ergonomics. work study and job

analysis; health and safety. Logging and log transportation; logging systems, methods of felling trees and other operations. Terrain transport methods. Minor roads and wooden bridge construction; general planning of a forest road network. Hand tools and machinery for road and bridges and their maintenance.

FORM 481: Forest Economics

Concepts and definitions in forest economics, the nature of economics, economic methods. Decision making, goal formulation. Technical production possibilities. Costs and their analysis. Costs of labour, capital and land. Investment criteria costs effectiveness and benefit/cost ratio. Concept of macro-economics criteria. Risk and uncertainty. Adaptation of economics in forestry practice spacing, thinning, pruning etc. Financial rotation, forest valuation, market economics. Forecasting in timber economy.

9.3 *Matrix aligning courses/ units to Programme learning outcomes*

Programme Learning Outcomes	Year of study	Courses	CF
PLO 1. Provide technical and professional services in forest resources management.	Year 2	FORM 211: Tree Nursery Management	3.0
		FORM 221: Forest Ecology	3.0
		FORM 222: Forest Soils	3.0
		FORM 251: Forest Inventor	3.0
	Year 3	FORM 351: Forest Mensuration	3.0
		FORM 352: Social Forestry and Rural Development	2.0
		FORM 353: Forest Genetics and Tree Breeding	3.0
		FORM 354: Wood Properties and Forest Product	3.0
	Year 4	FORM 440: Forest Resource Management	3.0
		FORM 441: Forestry and National development	3.0
FORM 452: Forest Entomology		3.0	
FORM 453: Forest Engineering		3.0	
FORM 481: Forest Economics	3.0		
PLO 2. Carry out appropriate research to generate interventions for implementation in areas of forest resources management	Year 2	NARE 271: Research Methods	3.0
	Year 3	NARE 371: Applied Research Methods in Natural Resources	3.0
		NARE 373: Student Proposal Development	3.0
	Year 4	NARE 461: Natural Resources Planning and Management	2.5
		NARE 473: Student Seminars and Reports	3.0
PLO 3. Analyse and evaluate critical issues in forest resources management, biodiversity	Year 3	FORM 352: Social Forestry and Rural Development	2.0
	Year 4	FORM 440: Forest Resource Management	3.0
		FORM 460: Inventory, Remote, Sensing and GIS	3.0
PLO 4. Understand and formulate conservation and related policy issues	Year 3	FORM 352: Social Forestry and Rural Development	2.0
	Year 4	FORM 440: Forest Resource Management	3.0
		FORM 441: Forestry and National development	3.0
		FORM 481: Forest Economics	3.0
		NARE 481: Natural Resource Policy and Law	3.0
PLO 5. Take up forestry as a business.	Year 1	COMS 100: Introduction to Communication Skills	3.0
		AGBM 103: Principles of Entrepreneurship	3.0
		FORM 141: Introduction to Forest Enterprise Management	3.0
	Year 2	FORM 241: Forest Enterprises	3.0
	Year 3	FORM 352: Social Forestry and Rural Development	3.0
	Year 4	FORM 441: Forestry and National development	2.0
		FORM 481: Forest Economics	3.0

BACHELOR OF SCIENCE IN NATURAL RESOURCE MANAGEMENT

1. Philosophy of the Programme

The Bachelor of Science programme in Natural Resource Management is in tandem with Egerton University's mission of transforming lives through quality education. The programme aims to empower students with knowledge, awareness, understanding, skills and concern for the natural environment, so as to incorporate natural resources management and conservation in all personal, community and national development strategies and plans towards promotion of sustainable development.

2. Rationale

Kenya being a small "niche" on the global environmental complex system needs to produce competent natural resource conservationists /managers who will make effort to facilitate utilization and conservation of her natural resources without upsetting the environmental equilibrium.

The approach to education and training must accordingly be re-oriented. The emphasis needs to shift from a narrow base to a broad base so as to effect integration. The main objective is to produce resource conservationists and managers who are multi-disciplinary in approach and can view the management of natural resources holistically.

The purpose of this degree programme is to offer educational opportunities to students who desire a broad knowledge in the management of renewable and non-renewable natural resources. Emphasis is placed on an ecological approach relative to the conservation and management of natural resources. Increasing opportunities for employment of graduates with background in the management of Forestry and Watershed Resources, Arid and Semi-Arid Lands Resources, Wildlife and Fisheries Resources and Non-Renewable Resources are available in public and private sections. The graduates will be deployed in areas such as resources use planning, environmental monitoring and impact studies, natural resource development, conservation information and education, and regulatory activities.

3. Goal of the Programme

To equip the trainees with relevant technical and professional knowledge that will enable them to manage and conserve natural resources effectively.

4. Programme Learning Outcomes

The graduates of the programme are expected to:

- 1) Apply the acquired knowledge and skills to ensure sustainable natural resource conservation, utilization and management.
- 2) Develop and implement natural resources projects.
- 3) Communicate this knowledge and management techniques to the relevant members of the society at large.
- 4) Evaluate critical issues in natural resource policy, conservation, utilization and management.

5. Mode of delivery

The mode of delivery will be full time/ part time, e-learning/ blended/ or open/ distance learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates must have achieved the minimum entry requirements for the university, at least grade B- in Biology or B in Biological sciences, B- in Geography, C+ in Chemistry or B- in physical science and C+ in mathematics at K.C.S.E. or equivalent examination. An added advantage will be given to candidates who have passed with at least a C grade in Agriculture or Economics at K.C.S.E. or equivalent examination.

Admission will be granted to outstanding Diploma holders in Range Management, Animal Husbandry, Animal Health, Forestry, Wildlife and other related fields from other Universities recognized by Egerton University as per University admission statute of 2013 articles 36(1) and (2).

6.2 Regulation on Credit Transfer

Egerton University statute 36(3) of 2013 shall apply.

6.3 Student Assessment Policy/Criteria

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply.

6.4 Grading System

Egerton University statute 36(6) of 2013 shall apply.

6.5 Examination Regulations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.6 Moderation of Examinations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply.

6.7 Graduation Requirements

To graduate, a student should have covered a total of 175.0 Credit Factors (CFs) including field attachment.

6.8 Course Requirements

ISO procedures for teaching (EU/AA/OP/06 rev 3) shall apply.

6.9 Classification of Degrees

The classification of the degree shall be in accordance with Egerton University statute of 2013 articles 36 (14).

7. Course Evaluation

All courses will be evaluated using a course evaluation tool that captures all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management and Administration of the Programme

8.1. Host Department and Programme Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of the program's academic cycle as per ISO procedure for quality assurance for academic programmes EU/VC/OP/05.

8.3 Course Coding

Coding of the courses offered in this programme is represented by NARE followed by a three digit figure:

The first digit represents the year in which the course is offered to undergraduate students. The second digit represents the nature of the course within the department:

- 0 - indicates introductory courses,
- 1 - principle courses,
- 2 - ecology,
- 3 - climate,
- 4 - management courses,
- 5 - applied courses,
- 6 - planning,
- 7- research seminars, and students projects, and
- 8- Policy, law and administration.

The third digit represents the serial number of the course e.g. NARE 211: Principles of Wildlife Management, taught in the second year is a principle course and first in the series.

9. Courses offered for the Programme

9.1 Schedule of Courses

(a) University common core courses

CODE	TITLE	L	P	CF
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
COMS 111	Communications Skills	45	0	3.0
MATH 100	General Mathematics	45	0	3.0

b) Schedule of courses on semester basis

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 104	General Zoology	30	30	3.0

NARE 101	Introduction to Natural Resources	30	30	3.0
NARE 102	Introduction to East Africa Flora	30	30	3.0
TOTAL		240	140	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHYL 108	Ethics, Integrity & National Values	45	0	3.0
SOIL 100	Introduction to Soil Science	30	30	3.0
NARE 103	Introduction to East African Fauna	30	30	3.0
NARE 111	Philosophy of Conservation	30	30	3.0
NARE 121	Arthropod Ecology in Natural Resources	30	30	3.0
TOTAL		225	195	21.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGRO 102	Introduction to Crop Production	45	15	3.5
BOTA 111	General Genetics	30	30	3.0
BOTA 271	Plant Physiology	30	30	3.0
NARE 271	Introduction to Research	30	0	2.0
NARE 201	Introductory Geology	30	30	3.0
NARE 211	Principles of Wildlife Management	30	30	3.0
NARE 221	Natural Resources Ecology	30	30	3.0
TOTAL		225	195	21.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
ECON 100	Introductory Economics	45	0	3.0
DLRM 213	Principles of Dryland Resources Management	30	45	3.5
NARE 213	Principles of Forestry	30	30	3.0
NARE 212	Principles of Mineral Resources Management	30	30	3.0
NARE 222	Wildlife Ecology	30	30	3.0
NARE 241	Natural Resources Utilisation & Conflicts	30	15	2.5
NARE 251	Dendrology & Plant Taxonomy	30	30	3.0
TOTAL		225	180	22.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
GEOG 319	GIS & Remote Sensing in Natural Resources Management	30	30	3.0
NARE 321	Aquatic Ecology	30	30	3.0
NARE 331	Climatology	30	30	3.0
NARE 332	Mineralogy	30	30	3.0
NARE 342	Fire Control & Use	30	15	2.5
NARE 343	Conservation of Nature	45	0	3.0
NARE 341	Scientific Report Writing in Natural Resources Disciplines	30	30	3.0
NARE 351	Watershed Management	30	15	2.5

TOTAL	255	180	23.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
ANSC 359	General Animal Production	45	30	4.0
ENSC 335	Environmental Impact Assessment & Environmental Audit	30	30	3.0
NARE 344	Petrology	30	30	3.0
NARE 352	Ecological Surveys and Techniques	30	45	3.5
NARE 371	Applied Research Methods in Natural Resources	30	0	2.0
NARE 373	Student Proposal Development	15	30	2.0
NARE 374	Social Research Methods in Natural Resources	30	30	3.0
TOHM 341	Ecotourism Management	30	30	3.0
TOTAL		240	225	23.5
NARE 372	Field Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
ENSC 451	Environmental Resource Economics	30	30	3.0
NARE 421	Range Plant Ecophysiology	30	30	3.0
NARE 422	Geology & Mineral Resources of Kenya	45	30	3.5
NARE 441	Renewable Energy Utilization & Management	30	30	3.0
NARE 454	Agroforestry	45	15	3.5

NARE 473	Student Seminars and Reports	15	30	2.0
NARE 482	Contemporary issues in Natural Resources Management	45	0	3.0
TOTAL		195	165	19.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
NARE 443	Project Management in Natural Resources	30	30	3.0
NARE 442	Management of Aquatic Resources	30	30	3.0
NARE 444	Grazing Management	30	30	3.0
NARE 451	Dryland Rehabilitation	30	15	2.5
WIEM 454	Wildlife Farming and Utilization	30	30	3.0
NARE 453	Mining and the Environment	30	30	3.0
NARE 452	Fisheries Production & Utilization	30	15	2.5
NARE 461	Natural Resources Planning and Management	30	30	3.0
NARE 481	Natural Resource Policy and Law	30	0	2.0
TOTAL		240		19.5

SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

CODE	TITLE	L	P	CF
NARE 231	Ecology and Environmental Management (for BSc ANHE)	30	15	2.5

NARE 214	Principles of Range Management (For BSc Animal Science and BSc ANHE)	30	30	3.0
TOTAL		60	45	5.5

(c) COURSE DESCRIPTION

NARE 101: Introduction to Natural Resources (30/30 CF 3.0) Y1S1

Definition of natural resources components. Classification and role in national development. Principles, concepts and philosophies applicable to the management of both biological and physical resources. Factors influencing production growth and depletion. Management principles for productivity, sustainability, adaptability and resilience. The multiple and proper use concept.

NARE 102: Introduction to East African Flora (30/30 CF 3.0) Y1S1

Introduction to plant taxonomy. Classification of selected flowering plants in Kenya with emphasis on national parks. Ecological regions of Kenya and their associated flora. Vegetation communities of East Africa. The cultural and economic values of plants. Impacts of over utilization of plants by man and conservation measures in Kenya. Practical work will involve field identification of flowering plants and herbarium development.

NARE 103: Introduction to East African Fauna (30/30 CF 3.0) Y1S2

Natural history of important East Africa mammals, reptiles and amphibians. Identification and classification of major taxa. Species diversity, reproduction, social and feeding behaviour. Dangers caused by mammals, poisonous and non-poisonous snakes. Handling emergencies in the field.

NARE 104: Introduction to Conservation of Nature (30/30/ CF 3.0) Y1S1

Concepts in Conservation, Man and nature, biological diversity and hierarchy, ecosystem services; nature and tourism. threats to biological systems, conservation interventions.

NARE 111: Philosophy of Conservation (30/30 CF 3.0) Y1S2

History of conservation in Kenya, conservation versus preservation, significance of conserving natural systems. Concepts of conservation, classification and selection, policy, law and administration. Land use systems and social dimensions in planning conservation areas. Communication and public relations, management, monitoring and planning of natural resources. Attitudes of communities around conservation areas towards conservation.

NARE 121: Arthropod Ecology in Natural Resources Management (30/30 CF 3.0) Y1S2

The ecology of members of the Phylum Arthropoda and with emphasis on the Class Insecta. This will include content on the different habitats on terrestrial, fresh water and marine ecosystems of insects. Their natural history, growth and body functions, communication and defence mechanisms, population ecology, reproduction and social organisation, feeding modes, feeding guilds and systems. Role of Arthropods-insecta in the ecosystem provisioning of goods and services. The role of insect in support of diverse food webs and nutrient cycling as well as pollination. Selective coverage of Arthropods that are important to natural resource management. The course will include insects of economic importance in East Africa e.g. bees, termites etc. Undertake fieldwork and field practicals on ecological experimental designs of different techniques for studying insects. The unit will include a field visit to an arthropod rich landscape.

NARE 201: Introductory Geology (30/30 CF 3.0) Y2S1

History of the development of human knowledge in the Earth Sciences. The abundance and terrestrial distribution of elements and their behaviour during various geological processes; geological analysis and interpretation of sediments. Principles of ground water hydrology. Field trip to functioning mine/quarry.

NARE 211: Principles of Wildlife Management (30/30 CF 3.0) Y2S1

Wildlife and man: Historical highlights in African wildlife conservation; wildlife laws and the land owner, role of social sciences in wildlife management, and effects of

environmental pollution on fish and wildlife management. Wildlife management; Ecological background; wildlife populations; habitat factors; management techniques; natural areas and natural heritage areas. Field trip to selected area of wildlife interest.

NARE 212: Principles of Mineral Resources Management (30/30 CF 3.0) Y2S2

Mineral resource availability, distribution and exhaustion. World mineral exploration, production and consumption. Geology and environment. Trip to mines and geological department, museum and Bamburi Portland Cement.

NARE 213: Principles of Forestry (30/30 CF 3.0) Y2S2

Forestry as an art, science and practice. Historical background. Forestry philosophies, values and uses. Forestry biology; the multiple use concept in forest utilization; the impact of silvicultural operations. Forest conservation in Kenya. Trip to forested areas.

NARE 214: Principles of Range Management (30/45 CF 3.5) Y2S1

Science and art of range management; Range management as an applied ecology. Rangeland resources of the world with emphasis to East Africa. Rangeland classification, range sites, range condition and degradation. Important range plants of E. Africa. Principles of proper range use, multiple use of rangelands. Management of rangeland resources: grazing management, bush control, seeding, fertilization, water development and saltlicks, fencing, use of fire in management.

NARE 221: Natural Resource Ecology (30/30 CF 3.0) Y2S1

Scope of ecology, Concepts of ecosystems, Energy flow and Nutrient cycling. Production ecology, structural and functional aspects of ecosystems. Dynamics of plant and animal populations. Linkage of terrestrial and aquatic ecosystems, wetlands ecology, animal behavioural ecology, paleoecology. The concept of habitats and their limited resources. The effects of human activities on the environment. Past, present and future population growth and food supply. A field visit to a rich ecosystem.

NARE 222: Wildlife Ecology (30/30 CF 3.0) Y2S2

Natural history of important East Africa mammals, reptiles and amphibians. Identification and classification of major taxa. Species diversity, reproduction, social and feeding behaviour. Dangers caused by mammals, poisonous and non-poisonous snakes. Handling emergencies in the field. Field trip to selected areas of wildlife interest.

NARE 231: Ecology and Environmental Management (30/45 CF 3.5) Y2S1

Concepts in Ecology and Environment, Scope of Ecology, Plant and animal ecology. The concept of the habitat and the limited resources. The effect of human activities on the environment. Emerging issues (climate change, desertification, GMOs, environmental degradation). Effects of emerging issues on livestock sector. Environmental conservation and management.

NARE 241: Natural Resources Utilization and Conflicts (30/15 CF 2.5) Y2S2

Sociological perspectives applied to natural resources management. Relationships between natural resources and human social systems. Rural social systems, land tenure social change and development in relation to the natural resources base (wildlife, forests/trees, livestock, fauna and flora). Integration of indigenous knowledge in natural resources utilization, conservation and management. Community social action. Natural resources utilization conflicts; conflict resolution strategies.

NARE 251: Dendrology and Plant Taxonomy (30/30 CF 3.0) Y2S2

The principles of plant taxonomy. Introduction to plant biosystematics, evolutionary trees of the Gymnospermae and Angiospermae. Identification of forest trees using distribution, vegetative and floral characters. Utility of each forest tree species. Trip to natural forest for tree identification.

NARE 271: Introduction to Research Methods (30/0 CF 2.0) Y2S1

Introduction to research – The role of research, research process overview. Philosophies and the language of research theory building: Research approaches – qualitative vs quantitative, basic vs applied, deductive

vs inductive: Research methodologies – Postivistic approaches - Surveys; Experimental Studies; Longitudinal Studies; Cross-sectional Studies; and phenomenological approaches- Case Studies; Action Research; Ethnography (participant observation); Participative Enquiry; Grounded Theory; Research process. Formulating the research problem; Development of working hypotheses; Preparing the research design; Determining sample design; Collecting the data; Analysis of data; Hypothesis-testing; Generalizations and interpretation research. Ethical issues in research and publication of research findings

NARE 321: Aquatic Ecology (30/30 CF 3.0) Y3S1

Distribution of water. Physical and chemical properties of fresh and saline water. Classification of rivers, lakes, estuaries and oceans. Horizontal and vertical stratification of fresh water and marine ecosystems. Primary and secondary production with focus on ecological dynamic of population growth. Adaptations of fauna and flora to characteristics of the aquatic environment. Energy flow through aquatic ecosystems.

NARE 331: Climatology (30/30 CF 3.0) Y3S1

Physical and applied climatology, concepts and principles of sensible heat flux, surface and air temperature, soil heat flux and soil temperature, wind and atmospheric humidity; energy and water budgets. Relationships between climatological elements and natural resources systems, measurement and methods of estimation of climatological parameters, analysis and interpretation of climatological data; modification of the climate near the ground (micro-climate).

NARE 335: Mineralogy (30/30 CF 3.0) Y3S1

Geological processes of mineral formation, Mineral's chemical composition and main properties - physical, chemical, thermal, electrical, optical. Crystals- their structure, symmetry and systems. Occurrence of common ore minerals and rock forming minerals. Identification of main minerals. Laboratory identification using optical microscopes.

NARE 341: Scientific Report Writing in Natural Resources Disciplines (30/30 CF 3.0) Y3S1

Techniques of scientific report writing in Natural Resources disciplines. Thematic synthesis of scientific thought; systematic coherence. Structure of a scientific

report: Title, Introduction, Methodology/Materials and Results, Conclusions, Summary, References and Acknowledgments!

NARE 342: Fire Control and Use (30/30 CF 3.0) Y3S1

The principles of fire control and use; prevention, fire danger rating, detection and suppression of wild fires. Role of fires in vegetation management; prescribed burning, planning and burning programmes. Trips to fire control sites.

NARE 343: Conservation of Nature (45/0 CF 3.0) Y3S1

Introduction to Biodiversity and concepts in conservation of nature. ; Understanding global patterns of biodiversity; Biogeography; impact of humans on natural systems and diversity, Threat to biological diversity. Global concern towards conservation of biodiversity. Conventions; Invasive species, In-situ and ex-situ conservation; use of scientific principles to protect and restore diversity.

NARE 344: Petrology (30/30 CF 3.0) Y3S2

Nature, occurrence, distribution and genesis of rocks. Major rock groups/classes. The petrogenetic cycle. Micro and macro-scopic identification of rocks in study and sampling of rocks in the field.

NARE 351: Watershed Management (30/30/ CF 3.0) Y3S1

The watershed as a unit of resource oriented planning and development. Principles and objectives of watershed management. Physical description of watershed. Relationships between land use conditions and water delivery character of watersheds. Watershed analysis, including techniques, collection of field data and sources of information. Water policy.

NARE 352: Ecological Surveys and Techniques (30/45 CF 3.5) Y3S2

Ecological measurements; attributes and processes, scale, primary and secondary data. Sampling; intensity, optimum sample allocation, techniques, designs, units. Vegetation assessment and monitoring; diversity indices, techniques for cover, frequency, density, biomass and utilization. Wildlife monitoring techniques; census, trends, habitat assessment for both terrestrial

and aquatic. Physical attributes; climatic data, soil erosion, soil seed bank. Socio-ecological techniques; surveys and participatory approaches. Remote sensing in ecological measurement. Management of ecological data; data integration, storage and retrieval systems, presentation.

NARE 355: Outside Visits (0/90/0 C.F 3.0) Y3S1

Field education trip to research stations, wildlife and forest conservancies and to other areas experiencing land use/ utilization challenges

NARE 371: Applied Research Methods in Natural Resources (30/30/0 CF 3.0) Y3S2

Principles and procedures of field experimentation. Planning, layout, execution and reporting of an experiment. Types of Variables, Selecting Dependent and Independent Variables, Sampling Error and Biases. Research design – Experimental and Non-experimental research design. Review of basic statistics as they relate to natural resources management research. Data analysis: descriptive statistics- measures of central tendency, measures of variability, inferential statistics- Hypothesis testing, tests of comparison, correlation and regression tests, tests of association and independence, Making conclusions from outputs of statistics. *Pre-requisite* NARE 271

NARE 372: Field Attachment (0/120/0 CF 4.0) Y3S2

Students are attached to selected districts in the country. They will work with government ministries and non-governmental organizations and authorities in-charge of rangelands development, wildlife conservation, forestry, water catchment, geological survey and mining enterprises and fisheries. Students will write and submit a report in the department after the completion of the field attachment

NARE 373: Student Proposal Development (15/30 CF 2.0) Y3S2

Development of research proposals as instruments of scientific research; academic/grant seeking proposal steps, development of a concept paper, structure of a proposal; preliminary section, introduction, literature review, methodology, secondary and primary data, workplan, budget and referencing. Development of Individual proposal

NARE 374 Social Research Methods in Natural Resource Management (30/0 CF 2.0) Y3S2

Principles and applications of socio-ecological research methods, including survey research, Key Informant technique, Focus Group Discussion, participant observation, case studies, historical investigation, Participatory Rural Appraisal (PRA), and others. Questionnaire construction and interviewing. Research design, Sampling, Data processing and statistical analysis; application of statistical software (SPSS, NVIVO, QDA Miner), reporting research findings, research project evaluation and publication, problems inherent in research

NARE 421: Range Plant Ecophysiology (30/30 CF 3.0) Y4S1

Survey of environmental effects upon plant growth and function, morphological and physiological responses of plants to environmental conditions in range terrestrial ecosystems; radiation budgets, carbon assimilation, water relations, temperature and plant nutrition. Visits to Rangelands.

NARE 422: Geology and Mineral Resources of Kenya (30/30 CF 3.0) Y4S1

Earth's internal structure; geological processes: Precambrian, Palaeozoic, Mesozoic, Tertiary, Pleistocene, Recent Deposits, Tectonic Events. Mineral resources associated with the geological formations; Limestone, gypsum, fluorite, trona, gold, silver, diatomite, carbon dioxide, copper, gemstones, graphite, kyanite, arsenic, titanium, asbestos, barytes. Mineral production statistics; place of production statistics; place of minerals in Kenya's economy.

NARE 441: Renewable Energy Utilization and Management (30/30 CF 3.0) Y4S1

Introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The course will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro. Energy conservation methods

will be emphasized.

NARE 442: Management of Aquatic Resources (30/30 CF 3.0) Y4S2

Aquatic ecosystems (Lakes, Streams, Groundwater, Wetlands, Estuaries and lagoons, Marine ecosystems) Decision making, Decision support system tools (Monitoring, modelling, databases and Geographical Information Systems), Integrated water resources management, Contribution of water resources to natural capital and ecosystem goods

NARE 443: Project Management in Natural Resources (30/30 CF 3.0) Y4S2

This course focuses on planning and implementation of natural resources related projects. The students will be trained on effective allocation of resources to different activities while planning a project; Prioritizing certain project activities to speed up a project; How to identify, quantify and mitigate risks; Project performance evaluation ; Developing working competence in financial resources mobilization.

NARE 444: Grazing Management (30/30/0 CF 3.0) Y4S2

Concepts, practices, theories of grazing management. Design and application of grazing management systems, plant and animal responses to different management practices; factors in diet selection and intake with particular reference to ungulates.

NARE 451: Dryland Rehabilitation (30/15 CF 2.5) Y4S2

Systems of classifying bioclimatic aridity; Koppen, Thonothwaite, de Martonne, UNESCO and Plan indicator systems. Adaptive strategies of arid plants. Technology of artificial revegetation of plants in arid and semi-arid areas of East Africa; Choice of species, nursery techniques and plantation tending. Visits to arid/semi-arid projects.

NARE 452: Fisheries Production and Utilization (30/15 CF 2.5)

Biological products from the aquatic environment, Fishery resources in Kenya; capture of fisheries in marine and inland waters, emphasis in ecology and economics of various fish population. Introduction to conservation and management of fishery resources, aquaculture systems.

Fish farming in Kenya. Conflicts in the utilization of aquatic resources

NARE 453: Mining and the Environment (30/30 CF 3.0) Y4S2

Mining methods and systems. Mineral processing principles and techniques; extractive metallurgy and other processes. Rehabilitation of affected lands. Trips to mining and rehabilitated environments.

NARE 454: Agroforestry (30/30/0 CF 3.0) Y4S1

Introduction to Agroforestry concepts, historical background, role and relevance in national development. Agroforestry land use systems and applicability in food, livestock production, -bio-energy, soil and water management. High Value/ Multi-Purpose Trees, Shrubs and their management; tree-crop interfaces and socio-economic evaluation. Diagnosis/Characterization and Design. Case studies in Agroforestry. Tutorials to supplement Practicals. Field trip recommended to emphasize both traditional and scientific agroforestry packages.

NARE 461: Natural Resources Planning and Management (30/30 CF 3.0) Y4S1

Concepts in natural resource planning and management; Land use plans, Development of national, regional and local management plans. Decision making processes. Management of private and government forest enterprises, human capital management, Finance management, infrastructure management, law enforcement. Community based natural resource management. Marketing of natural resources.

NARE 473: Student Seminars and Reports (15/30 CF 2.0)

Data compilation and analysis. Presentation of supervised individual research projects. *pre-requisite NARE 373*

NARE 481: Natural Resource Policy and Law (30/30 CF 3.0) Y4S2

Basic natural resource policy, formation, implementation and administration. Natural resource laws enactment and enforcement. Constraints in natural resource policy implementation and law enforcement.

NARE 482: Contemporary Issues in Natural Resources (45/0 CF 3.0) Y4S1

Contemporary Issues introduces students to various natural resources issues facing the world today. Students are expected to explore history, current conditions, and trends of sustainability from ecological, economic, and social perspectives. Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts. The role of the United Nations in a changing world. Students will evaluate the issues and propose solutions from a variety of perspectives i.e. Social, political, cultural, and economic considerations in natural resource management

9.3 *Matrix aligning courses/ units to Programme learning outcomes*

Programme Learning Outcomes	Year of Study	Courses Code	Course Title	CF
PLO 1 To produce graduates who can apply the acquired knowledge in sustainable natural resource conservation, utilization and management.	Year One	NARE 101	Introduction to Natural Resources	3.0
		NARE 102	Introduction to East African Flora	3.0
		NARE 103	Introduction to East African Fauna	3.0
		NARE 111	Arthropod Ecology in Natural Resources	3.0
		NARE 121	Philosophy of Conservation	3.0
	Year Two	NARE 211	Principles of Dryland Resources Management	3.5
		NARE 214	Principles of Forestry	3.0
		NARE 213	Principles of Mineral Resources Management	3.0
		NARE 241	Natural Resources Utilisation & Conflicts	3.0
		NARE 222	Wildlife Ecology	2.5
		NARE 251	Dendrology & Plant Taxonomy	3.0
		NARE 201	Introductory Geology	3.0
		NARE 212	Principles of Wildlife Management	3.0
		NARE 221	Natural Resources Ecology	3.0
		NARE 343	Conservation of Nature	3.0
	Year Three	NARE 321	Aquatic Ecology	3.0
		NARE 331	Climatology	3.0
		NARE 335	Mineralogy	3.0
		NARE 342	Fire Control & Use	2.5
		NARE 345	Petrology	3.0
		NARE 352	Watershed Management	3.0
		GEOG 319	GIS & Remote Sensing in Natural Resources Management	3.0
		NARE 345	Petrology	3.0
		NARE 359	Ecological Surveys & Techniques	3.0
		NARE 446	Forest Management	3.5
	Year Four	NARE 448	Grazing Management	3.0
		NARE 451	Dryland Rehabilitation	2.5
		NARE 453	Wildlife Management and Utilization	3.0
		NARE 457	Mining and the Environment	3.0
		NARE 425	Geology & Mineral Resources of Kenya	3.0
		NARE 440	Renewable Resources Management	3.0
		NARE 445	Management of Aquatic Resources	3.0
		NARE 450	Agroforestry	3.5
		NARE 421	Range Plant Ecophysiology	3.0
Programme Learning Outcomes	Year of Study	Courses Code	Course Title	CF
PLO 2 To produce graduates with knowledge and skills for development and implementation of natural resources projects	Year Two	NARE 271	Introduction to Research	2.0
	Year Three	GEOG 319	GIS & Remote Sensing in Natural Resources Management	3.0
		NARE 344	Report Writing in Natural Resources Disciplines	3.0
		NARE 359	Ecological Surveys & Techniques	3.0
		NARE 371	Applied Research Methods in Natural Resources	3.0
		NARE 373	Student Projects	2.0
		NARE 372	Field Attachment	4.0

		NARE 374	Social Research Methods in Natural Resources	3.0
	Year Four	NARE 444	Project Management in Natural Resources	3.0
PLO 3 To produce graduates who can communicate this knowledge and management techniques to the relevant members of the society at large.	Year Three	NARE 373	Student Projects	2.0
		NARE 372	Field Attachment	4.0
		NARE 473	Student Seminars	2.0
		NARE 374	Social Research Methods in Natural Resources	3.0
		NARE 444	Project Management in Natural Resources	3.0
	Year Four	NARE 444	Project Management in Natural Resources	3.0
PLO 4 To produce graduates who can analyse and evaluate critical issues in natural resource policy, conservation, utilization and management.	Year Two	NARE 271	Introduction to Research	3.0
	Year Three	NARE 359	Ecological Surveys & Techniques	3.5
		NARE 371	Applied Research Methods in Natural Resources	3.0
		NARE 373	Student Projects	2.0
		NARE 372	Field Attachment	4.0
		NARE 374	Social Research Methods in Natural Resources	3.0
	Year Four	NARE 481	Natural Resource Policy and Law	2.0
		NARE 482	Contemporary issues in Natural Resources Management	3.0
		NARE 443	Natural Resources Planning	3.0

BACHELOR OF SCIENCE IN ECOTOURISM AND HOSPITALITY MANAGEMENT

1. Philosophy of the programme

The Bachelor of Ecotourism and Hospitality Management is in line with Egerton University mission of transforming lives through quality education. The programme aims to harness Knowledge, skills and ability in relation to Hospitality and Ecotourism.

2. Rationale

Development of ecotourism offers opportunities for diversification in tourism and has potential to transform economies, conserve the environment and culture. This can be realized through increased involvement of all stakeholders in decision making and sharing of benefits. In order to actualize the above positive attributes of ecotourism, an expanded hospitality service network should be established. The degree programme in Ecotourism and Hospitality Management will provide competence to service providers in this industry by training students or upgrading skills of those who are already in the industry.

3. Goal of the Programme

To provide knowledge and skills to students in Ecotourism and Hospitality industry

4. Programme Learning Outcomes

The graduates should be able to:

1. Provide quality services to customers in Ecotourism and hospitality industry.
2. Apply theory and practical skills needed in the ecotourism and hospitality industry.
3. Develop ideas, concepts and skills, to enable them venture in the ecotourism and hospitality business for self-employment
4. Market and brand ecotourism and hospitality industry.
5. Offer consultancy in hospitality and ecotourism.
6. Have knowledge and Theories and practices relevant to the efficient and effective technical operation and management of hospitality organization.

7. Gain Practical (professional or subject) skills in the field of hospitality management.

5. Mode of Delivery

The mode of delivery will be either full time/ part time, e-learning/ blended/ or open/ distance learning

6. Academic Regulations for the programme

6.1 Admission Requirements

In addition to satisfying the minimum admission requirement for Egerton University, the candidates should obtain at least grade C in mathematics, C+ in Biology or Biological Sciences, C in Chemistry, B- in Geography or History and Government, and at least C+ in English or Kiswahili at K.S.C.E. Admission will be granted to Diploma holders in Hotel or Tourism management from a recognized institution. Degree holders from other institutions interested in this program will be considered on individual merits.

6.2 Regulation on Credit transfer

Egerton University statute 36(3) of 2013 shall apply.

6.3 Course Requirements

ISO procedures for teaching (EU/AA/OP/06 rev 3) shall apply.

6.4 Student Assessment Policy

Egerton University statute 36(6) of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3) shall apply

6.5 Grading System

Egerton University statute 36(6) of 2013 shall apply.

6.6 Examination Regulations

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply

6.7 Moderation of Examination

Egerton University statute of 2013 articles 36(5) regarding examinations and ISO procedures (EU/AA/OP/07) shall apply

6.8 Graduation Requirements

To graduate, a student should have covered a minimum of 177.5 Credit Factors (CFs) including industrial attachment.

6.9 Classification of Degree

The classification for BSc in Ecotourism and Hospitality Management shall be in accordance with Egerton University statute 36 of 2013 for undergraduate students.

7.0 Course Evaluation

The programme will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8.0 Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal program evaluation (self-assessment) at the end of the program's academic cycle as per ISO procedure for quality assurance for academic programmes EU/VC/OP/05.

8.3 Course coding

The coding for the courses offered in this program is represented by TOHM followed by a three digit figure:

The first digit represents the year in which the course is offered to undergraduate students. The second digit represents the nature of the course within the department:

- 0 - indicates introductory courses,
- 1 - principle courses,
- 2 - ecology,
- 3 - climate,
- 4 - management courses,

- 5 - applied courses,
- 6 - planning,
- 7- research seminars, and students projects, and
- 8- Policy, law and administration.

The third digit represents the serial number of the course e.g. TOHM 101: Introduction to Tourism, taught in the first year is an introductory course and first in the series.

9.0 Courses/ Units offered for the programme

9.1 Schedule of course

(a) University common core courses

CODE	TITLE	L	P	CF
COMS 111	Communications Skills	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	3.0

(b) Schedule of courses on semester basis

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
BOTA 101	General Biology	30	45	3.5
COMS 111	Communications Skills	45	0	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
NARE 104	Introduction to Conservation of Nature	30	15	2.5
NARE 121	Introduction to East African Flora	30	30	3.0
TOHM 101	Introduction to Tourism	30	30	3.0
ZOOL 104	General Zoology	30	30	3.0
TOTAL		240	150	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
BOTA 131	General Microbiology	30	45	3.5

PHIL 108	Ethics, Integrity and National Values	45	0	3.0
GEOG 125	Tourism Geography	45	0	3.0
NARE 103	Introduction to East African Fauna	30	30	3.0
TOHM 102	Basic Foreign Language (French /Germany)	30	30	3.0
TOHM 103	Introduction to Hospitality	30	0	2.0
TOHM 104	Introduction to Ecotourism	30	0	2.0
TOTAL		240	135	19.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
NARE 201	Introduction to Geology	30	30	3.0
NARE 221	Natural Resources Ecology	30	30	3.0
NARE 271	Introduction to Research	30	0	2.0
TOHM 201	Intermediate Foreign Language	30	30	3.0
TOHM 202	Basic Food and Beverage Service	30	15	2.5
TOHM 203	Introduction to Accommodation Operations	15	60	3.0
TOHM 241	Kitchen Organization and Food Knowledge	30	30	3.0
TOHM 261	Tour Circuit Planning and Management	30	30	3.0
TOTAL		225	225	22.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
FOND 212	Meal Planning and Management	15	60	3.0
TOHM 242	Financial Management in	45	0	3.0

	Hospitality Industry			
TOHM 256	Food , purchasing, preparation and production	15	60	3.0
TOHM 251	Culinary Arts	45	0	3.0
TOHM 252	Bush craft techniques	15	60	3.0
TOHM 253	Museology and Photography	30	30	3.0
TOHM 254	Travel and Tours Operations	30	30	3.0
TOHM 255	Applied Ornithology	30	30	3.0
TOTAL		255	270	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
GEOG 319	GIS and Remote sensing in Natural Resources Management	30	30	3.0
NARE 341	Scientific Report Writing in Natural Resources Disciplines	30	30	3.0
TOHM 341	Ecotourism Management	30	30	3.0
TOHM 351	Advanced Food and Beverage Service	30	30	3.0
TOHM 345	Front Office Operations	45	0	3.0
TOHM 352	Advanced Foreign Language	15	60	3.0
TOHM 353	Applied Ornithology	30	30	3.0
TOHM 354	Interior Design and Decoration	30	30	3.0
TOTAL		240	240	24.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
ENSC 334	Occupational Health and Safety	30	45	3.5
FOND 315	Quantity Food Production and Service	15	60	3.0
NARE 352	Ecological Surveys and Techniques	30	45	3.5
NARE 373	Student Proposal Development	15	60	3.0
TOHM 343	Accommodation Operations Management	30	30	3.0
TOHM 344	Public relations in Tourism and Hospitality	30	0	2.0
TOHM 371	Applied Research in Tourism and hospitality	30	30	3.0
ENSC 335	Environmental Impact Assessment and Environmental Audits	30	30	3.0
TOTAL		210	300	24.0
TOHM 372	Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
TOHM 441	Recreation Management	30	30	3.0
TOHM 442	Cultural Tourism Management	30	30	3.0
TOHM 445	Food Safety Management	45	0	3.0
TOHM 482	Contemporary Issues in Tourism and Hospitality industry	45	0	3.0
TOHM 452	Technical Foreign Language	15	60	3.0
WIEM	Protected Area	30	30	3.0

341	Management			
TOHM 473	Student Reports & Seminars	15	60	2.0
TOTAL		210	210	20.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
NARE 442	Management of Aquatic Resources	30	30	3.0
TOHM 443	Human Resource Organization and Management	45	0	3.0
TOHM 444	Ecotourism and Hospitality Promotion	30	30	3.0
TOHM 451	Tourism and Hospitality Information System	45	0	3.0
TOHM 453	Entrepreneurship in Ecotourism and Hospitality Industry	30	30	3.0
TOHM 481	Legal Aspects in Hospitality and Ecotourism Industry	45	0	3.0
TOTAL		225	190	18.0

(c) COURSE DESCRIPTION**TOHM 101: Introduction to Tourism (30/30 CF 3.0) Y1S1**

Definitions and concepts of tourism, history and growth of tourism; structure, organisation and interdependence of the various sectors of the tourism industry. Tourism products; types of tourist, Impacts of tourism, planning and development of tourism facilities.

TOHM 102: Basic Foreign Language (French / German) (30/30 CF 3.0) Y1S2

Introduction to pronunciations of French / German alphabet, who is who? What is what? Getting to know someone. Negation. Asking for more details, what is available and where it is, its price. Getting what you want, saying what you would like to do. Localization, Destination: province, imperative, adverbs, comparative and superlative. Transport, seasons and time telling. Useful expressions for requesting, giving or refusing and appointment. Dialogue, writing language laboratory drills.

TOHM: 103 Introduction to Hospitality (30 / 30 CF 3.0) Y1S2

Definition and nature of Hospitality industry. Accommodation Sector, Front office operations, Housekeeping operations Food and beverage section, Food Safety. Role of technology in hospitality industry.

TOHM 104: Introduction to Ecotourism (30/0 CF 2.0)

Introduction, definitions, history, growth and rationale of ecotourism. Ecotourism demand and supply factors. Ecotourism verses other types of tourism. Ecotourism principles and concepts; ecotourism continuum and types of ecotourists, ecotourism environment and venues. Ecotourism stakeholders. The course will include a field trip to an ecotourism destination.

TOHM 201: Intermediate Foreign Language (French / German) (30/30 CF 3.0) Y2S1

Development of skills in speaking, understanding, reading, and writing through an extensive study of grammar, selected readings, conversational practice, vocabulary development, and the writing of simple compositions.

TOHM 202: Basic Food and Beverage Service (30/0 CF 2.5) Y2S1

Introduction to food and beverage service; staff and duties. The Waiter status and attributes. Restaurant operating equipment. Ancillary departments; Service preparation. Styles and techniques of service; Breakfast. Beverages; Order taking procedures. Health, safety and security.

TOHM 203: Introduction to Accommodation Operations

Definition of housekeeping, cleaning equipment and cleaning agents, Hotel bed making, daily cleaning of a guest room, types of keys, Floor panty, Daily routine system of housekeeping department, composition, care and cleaning of different surfaces, Linen room management

TOHM 241: Kitchen Organization and Food Knowledge (30/30 CF 3.0) Y2S1

Effective kitchen organization; Equipment and their uses; Knowledge of various foods and their quality specifications; Food handling & storage

TOHM 242: Financial Management in Hospitality Industry (45/0 CF 3.0) Y2S2

Accounting principles, Financial statements analysis for hospitality enterprises, Use of accounting information for the purpose of decision making, Hotel accounting, Principles of valuation and financial management, Investment appraisal in the hospitality industry, Valuation of hospitality enterprises

TOHM 256: Food Purchase, Preparation and Production (15/60 CF 3.0) Y2S1

Principles of selecting and preparing different types of food to preserve quality and nutritive value. Cooking methods and their application to different foods. Handling of raw food materials, processing technologies including product quality assessment

TOHM 251: Culinary Art (15/30 CF 2.0) Y2S1

Culinary history ; African, Oriental and Western food traditions - ; Culinary values regarding nutrition, beauty, tradition and culture. Advanced culinary preparation and service.

TOHM 252: Bush craft Techniques (15/60 CF 3.0) SY2S2

Basic survival techniques, swimming, pitching and care of tents, identification of suitable camping site. Planning and organization of camping safaris, cooking and storage of food in the field. Maintaining physical fitness. Mapreading and campus orientation, leadership skills, and team work and wilderness ethics. First aid skills.

TOHM 253: Museology and Photography (30/30 CF 3.0) Y2S2

Survey of museums, national archives and historical sites in Kenya. Knowledge on: palaeontology, mammology, ornithology, entomology, herpetology, and herbarium departments. Specimen collection and preservation; Taxidermy. Photography equipment, and their use. Photograph processing including dark room procedures. Aesthetics in photographs. Role of photography in conveying information. Tourism promotion using photographs and videocassettes.

TOHM 254: Travels and Tours Operations (30/30 CF 3.0) Y2S2

Mode of travel, factors influencing tour operating industry, tour motivation and vacation decision, tour and travel intermediaries, task and responsibility of a tour operator, travel, transfer and accommodation planning, itinerary planning, pricing, travel management, tour schedule and information, tour administration, travel facility management

TOHM 255: Applied Ornithology (30/30 CF 3.0) Y2S2

Introduction to ornithology, bird classification and principles of bird identification, field identification guides and equipment, habitats, diversity and distribution of birds, bird endemism in Africa and Kenya, Important Bird Areas, bird migration (Palaeartic and afrotropical), economic, ecological, sociocultural importance of birds, bird watching and avitourism, growth and global trends in avitourism and foreign exchange, bird checklists, tour guiding and avitourism, bird watching destinations in Kenya, threats to birds, ecotourism and bird conservation.

TOHM 261: Tour Circuit Planning and Management (30/30: CF 3.0) Y3S1

Tourist's circuits in East Africa and available attractions (unique landforms, flora, fauna, cultural activities) and facilities. Planning and drawing of tourist itineraries. Conducting reservations for tours and accommodation payment, budgeting and writing tour reports, linkages between tours and hotels. Fundamentals of tour operation, package holidays, coach transportation services, cheques, credit cards and other financial services, car hire services. Computer appreciation and reservation systems. Passport, health visa and insurance.

TOHM 341: Ecotourism Management (30/30 CF 3.0) Y3S1

Definition, concepts, Mass tourism vs ecotourism. Growth and economics of tourism, ecotourism Infrastructure. Political, social, cultural and ecological impacts of tourism. Participation of local communities in Ecotourism planning development; role of government in management of ecotourism.

TOHM 351: Advanced Food and Beverage Services (30/30 CF 3.0) Y3S1

Customer's meal experience and customer satisfaction. Food and beverage process; Introduction to alcoholic beverages. Spirits and Wines, Cider and Perry and non alcoholic beverages. Beverage menus; purchasing of beverages. Receiving and storing beverages Issuing beverages; managing resources .

TOHM: 343 Accommodation Operations (30/30 CF 3.0) Y3S2

Definition and functions of Housekeeping ; Cleaning agents and equipment. Cleaning a guest room (occupied and unoccupied). Linen and uniformed rooms. Laundry(process and cleaning agents) and pest control. Key and key control; Housekeeping organization structure Introduction to hotels; Safety and security.

TOHM 344: Public Relations in Tourism and Hospitality (30/0 CF 2.0) Y3S2

Principles of public relations. Forms of intercultural communication and language, altitudes of local communities and tourists; communication techniques in hospitality and ecotourism management. History of

public relations, individual in public relation, public relations and technology.

TOHM 345: Front Office Operations (45/0 CF 3.0) Y3S1

Basic reservation activities, reservation systems and documents; check in of new arrivals, front office accounting, night audit: functions and process; check out procedures and settlement; sundry guest services; handling corporate and group sales; the electronic front office, front office equipment; managing human resources, planning and evaluating; management functions, establishing room rates, budgeting for operations; concierge services management; the concept of yield management.

TOHM 353: Applied Ornithology (30/30 CF 3.0) Y3S1

Introduction to ornithology, bird classification and principles of bird identification, field identification guides and equipment, habitats, diversity and distribution of birds, bird endemism in Africa and Kenya, Important Bird Areas, bird migration (Palearctic and afrotropical) , economic, ecological, sociocultural importance of birds, bird watching and avitourism, growth and global trends in avitourism and foreign exchange, bird checklists, tour guiding and avitourism, bird watching destinations in Kenya, threats to birds, ecotourism and bird conservation.

TOHM 354: Interior Design and Decoration (30/30 CF 3.0) Y3S1

Principles of interior design and decoration in a prospective tourist facility, traditional western and oriental social functional and technical aspects of interior design and decoration. Appreciation of costume and furnishing design processes and their products.

TOHM 371: Applied Research in Tourism & Hospitality Y3S2 (30/30/0 CF 3.0)

Knowledge of the trends in the local and international marketplace, consumer perspectives, and competition, developmental endeavors, and customer solicitation and retention efforts. Qualitative and quantitative research methodologies, identifying key sources for information acquisition. Defining the marketing research problem,

designing a research approach in hospitality and tourism management strategic decision making process

TOHM 372: Industrial Attachment (0/120: CF 4.0) Y3S2

The students will be posted to suitable organizations where they will be expected to apply the knowledge learnt in class in real field situation. Practical experience will be gained by participating in the day-to-day activities of the organization. At end of attachment the student will be expected to make a report of his/her experience during the period, which will be assessed (40%), together with supervisor's report (40%) and confidential evaluation report (20%) from the head of the organization where the student will be posted.

TOHM 441: Recreation Management (30/30: CF 3.0) Y4S1

Detailed studies on recreation facilities and management in the East African region, Game viewing and bird hunting. Photography, fishing and snorkeling. Mountain climbing and trekking tours, community centres, site seeing and bird watching. Urban parks and gardens. Historical sites. Various games and sports. Management and administration of sports in Kenya

TOHM 442: Cultural Tourism Management (30/30 CF 3.0) Y4S1

Detailed survey of the different tribes in Kenya; people and culture, settlement history, population composition and structure. Land use practices, rural development and urbanization. Oriental culture and its influence on African culture. Industrialization and urbanization; identification of visitors preferences. Tourism diversification.

TOHM 443: Human Resource Organization and Management (45/0: CF 3.0) Y4S2

Principles of Human Management. Theories related to personnel management. Time management. Delegation of duties. Communications; horizontal and vertical, meetings, recruitment, training, motivation, morale and terms of employment; labour laws. Manpower planning and development, organization structure, process and functioning.

TOHM 444: Ecotourism and Hospitality Promotion (30/30 CF 3.0) Y3S2

Consumer and customer motivation; market systems, origin, development and change. Market research, forecasting and strategies. Marketing plans; principles and theories on ecotourism and hospitality marketing. Marketing as the key business. Function of meeting customer needs and competition threats; key marketing policy decisions. Products pricing, promotion and advertising. The distribution of hospitality and ecotourism services in domestic and international markets. Marketing research and information; its acquisition and analysis as the basics for marketing strategies and decision-making. Case studies from different industries and markets to give course participants the opportunity to apply concept studies.

TOHM 445: Food Safety Management (45/0: CF 3.0) Y4S1

Introduction to food safety, food contamination, food born micro organism and their role . Significance in quality and safety of foods. Factors affecting life and death of microorganism in food. Prevention of contamination through good hygiene practices, safe temperatures and storage. Control of food safety hazards at control points using a HACCP based food safety management.

TOHM 451: Tourism and Hospitality Information Systems (30/30 CF. 3.0) Y4 S2

Definition of Information system and information technology, Hospitality industry technology (components and types); different types of hospitality management and technology systems Choosing information technology system; hotel property management system (definition) Functions of property management; information technology and food and beverage Information technology in security and labour management; hotel reservation and rooms. Information technology in inventory control and food costing.

TOHM 453: Entrepreneurship in Ecotourism and Hospitality Industry (30/30: CF 3.0) Y4S2

Definition of an entrepreneur. Early development of entrepreneurship, application of knowledge, abilities and skills in entrepreneurship. Starting a small business, building an entrepreneurial team, planning and

financing the business, managing and leading the small enterprise, preparing for failure. Planning, establishing and managing a small business related to hospitality and Ecotourism as an entrepreneur. Associations of value to small business in ecotourism and hospitality.

TOHM 473: Student Reports and Seminars (15/60:CF 2.0)Y4S1)

Data compilation and analysis. Presentation of supervised individual research projects. *pre-requisite TOHM 373*

TOHM 481: Legal Aspects in Hospitality and Tourism Industry (45/0: CF 3.0) Y4S2

Study of court and legal obligations that a manager may be called upon to fulfill in Kenya. How the law is used and applied in the tourism and hospitality industry. Major legal problems and issues confronting the industry. Action against professionals, employees and customers; action on occupational safety procedures. Collective bargaining risk management, discrimination; national labour relation act. Franchise regulation and product liability laws

TOHM 482: Contemporary issues in Tourism and Hospitality (45/0: CF 3.0) Y4S1

Understanding international tourism themes, concepts and issues. Key tourism and Hospitality trends, top ten global issues and challenges in the hospitality industry, trends in politics, consumer behaviour and marketing in tourism, Economic crises and tourism management, pricing in tourism and Hospitality, climate change, Heritage cultural tourism, sustainable tourism, ecotourism, wild life tourism. Health tourism, medical tourism, MICE tourism, Agri tourism, the future of tourism and hospitality industry

9.2 Matrix aligning courses to Programme Learning Outcomes

Programme Learning Outcomes (PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1:Provide quality services to customers in Ecotourism and Hospitality industry	Communication Skills Basic Foreign Language Introduction to Computers Applications	3.0 3.0 3.5	Intermediate Foreign language Field survival techniques and first aid	3.0 3.0	Advanced Foreign Languages	3.0	Technical Foreign Language	3.0
PLO 2: Apply theory and practical skills needed in the ecotourism and hospitality industry.	General Botany General Zoology Introduction to East African Flora Introduction to East African Fauna Introduction to Natural Resources Nature Conservation	3.5 3.0 3.0 3.0 3.0	Natural Resources Ecology	3.0	Applied Ornithology		Management of Aquatic Ecosystems	3.0
PLO 3: Develop ideas, concepts and skills, to enable them venture in the ecotourism and hospitality business	Introduction to Tourism Introduction to Ecotourism Tourism Geography	3.0 3.0 3.0	Introduction to Geology Travel and tours operations	3.0 3.0	Tour Circuit Planning and Management	3.0	Recreation Management Cultural Tourism Management	3.0 3.0
PLO 4: Market and brand ecotourism and hospitality industry					Public Relations in Tourism and Hospitality	3.0	Tourism and Hospitality information System Ecotourism and Hospitality Promotion	3.0 3.0
PLO 5: Offer consultancy in hospitality and ecotourism.					Ecotourism Management GIS &Remote sensing in natural resource management Ecological Surveys and Techniques	3.0 3.0 3.0	Protected area Management	3.0

PLO 6: Have knowledge and Theories and practices relevant to the efficient and effective technical operation and management of hospitality organization. • Management of the workforce in Hospitality organizations. • Interaction between Hospitality organization and customers and their environments	Principals of Human Nutrition	3.0	Kitchen Organization and Food Knowledge	3.0	Interior design and decoration	3.0	Legal aspects in Hospitality and Tourism Industry	3.0
	Introduction to Hospitality	2.0	Introduction to Accommodation Operations Financial Management in the Hospitality industry	3.0 3.0	Accommodations Operations Management Industrial Attachment	3.0 4.0	Human Resource Organization and Management Seminars	3.0 2.0
PLO 7: Gain Practical (professional or subject) skills in the field of hospitality management.	General Microbiology	3.0	Basic Food and Beverage service Meal planning and management Culinary Arts Food purchasing preparation and Production	2.5	Advanced Food and Beverage Service	3.0	Food Safety Management	3.0
				3.0 3.0	Quantity Production Operations Report Writing in tourism and hospitality Applied Research in Tourism and Hospitality industry Social Research in in Tourism industry Front Office Operations Occupational Health & Safety	3.0 3.0 3.0 3.0 3.0 3.0		

BACHELOR OF SCIENCE IN WILDLIFE ENTERPRISE MANAGEMENT

1. Philosophy of the Programme

The Bachelor of Science programme in Wildlife Enterprise Management is in consistent with Egerton University's mission of transforming lives through quality education. The programmes aims to impart skills and knowledge to prepare students to effectively contribute towards addressing some of the current and emerging problems facing wildlife resources in the 21st Century so as to reduce species extinctions while achieving national (e.g. Vision 2030), regional and global conservation and development targets (e.g. Sustainable Development Goals) through entrepreneurial skills and job creation in sustainable wildlife utilization

2. Rationale

The arid and semi-arid fragile ecosystems constitute approximately 80 % land surface of marginal productivity. These fragile ecosystems are rich in biodiversity and characterized by a myriad of terrestrial and marine wildlife, natural and physical scenic features and a rich diversity in the social cultural heritage of the people. Wildlife resources form important natural resource of a nation in terms of the diverse ecosystem goods and services in the form of ecological value, nutritional and medicinal value, socio-cultural value, aesthetic information, spiritual and religious information, historical information (heritage value), cultural and artistic inspiration, and scientific and educational information. However, with all these benefits emanating from wildlife notwithstanding, species are facing a lot of threats ranging from habitat loss and degradation, fragmentation, overexploitation, threats from invasive species, pollution, agricultural expansion and intensification, and the pervasive trade in wildlife.

This calls for need to develop the much need capacity for management and conservation of wildlife for posterity while also promoting the sustainable utilization of wildlife resources for optimal socio-economic benefits. Skilled manpower will be needed to implement new wildlife consumptive and non-

consumptive policies and provide key resource management, advisory and research capacity to meet the needs of current and future challenges. Trained wildlife resource persons are considered critical in the management of biodiversity based wildlife resources. Professional capacity in integrated wildlife enterprise management is vital in the provision of advisory services and overall conservation and enhancement of wildlife based resources.

3. Goal of the Programme

The programme intends to equip learners with relevant knowledge, skills, competencies and attitudes relevant for wildlife enterprise management

4. Programme Learning Outcomes

By the end of the study programme, graduates should be able to:

- i) Explain the philosophy behind wildlife conservation and management
- ii) Provide advisory services on matters of wildlife resource use law and policy.
- iii) Evaluate impacts of resource use on sustainability of wildlife ecosystems.
- iv) Participate and provide leadership in the formulation of appropriate early warning systems in respect of wildlife ecosystem change.
- v) Analyse interactive relationships between humans and environment Design and implement wildlife enterprises
- vi) Develop positive attitudes towards wildlife conservation, management and entrepreneurship

5. Mode of delivery

The mode of delivery will be full-time face to face instruction, part-time, weekend and e-learning.

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission into this programme, candidates must have attained a minimum University entry requirement of C+ at Kenya Certificate of Secondary Education (KCSE) level or other equivalent examination or qualification recognized by the Egerton University Senate. In addition, the candidates must meet the KUCCPS cluster combinations of at least grade C in Mathematics, C+ in Biology or B- in Biological

Sciences, C in Chemistry, B- in Geography or History and Government, and at least C+ in English or Kiswahili at K.C.S.E. Candidates with Diploma from institutions recognized by Egerton University Senate will also be considered as per the University admission statute of 2013 articles 36 (1) and 36 (2).

6.2 Regulation on Credit Transfer

Egerton University Statutes of 2013 articles 36 (3) on credit transfer will apply.

6.3 Course Requirements

ISO procedure for teaching (EU/AA/OP/06 rev 3) will apply.

6.4 Student Assessment Policy/Criteria

University Statutes of 2013 articles 36 (6) shall apply.

6.5 Grading System

Grading will be guided by the EU statutes of 2013 articles 36 (6).

6.6 Examination Regulations

Egerton University statutes of 2013 article 36 (5) regarding examinations and ISO procedures (EU/AA/OP/07) will apply.

6.7 Moderation of Examinations

Egerton University statutes of 2013 article 36 (5) regarding moderation of examinations and ISO procedures (EU/AA/OP/07) will apply.

6.8 Graduation Requirements

To graduate, a student should have covered a minimum total of 181.5 Credit Factors (CFs) including field attachment.

6.9 Classification of Degree

The degree shall be classified in accordance with Egerton University statute of 2013 articles 36 (14).

7. Course Evaluation

Course Evaluation shall follow ISO procedure (EU/VC/OP/05).

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the department of Natural Resources, Faculty of Environment and Resources Development. The programme leader shall be appointed according to University Standards and Guidelines (2014)

8.2 Programme Evaluation

The programme will be reviewed and evaluated as per ISO procedures (EU/VC/OP/05).for quality assurance of academic programme.

8.3 Course Coding

The letters in the codes shall be WIEM as reflective of Wildlife Enterprise Management.

Coding of the courses adopt a three digit figure: The first digit represents the year in which the course is offered to undergraduate students, the second digit represents the nature of the course within the department:

- 0 - indicates introductory courses,
- 1 - Principle courses,
- 2 - Ecology,
- 3 - Climate,
- 4 - Management courses,
- 5 - Applied courses,
- 6 - Planning,
- 7 - Research seminars, and projects,
- 8 - Policy, law and administration.

The third digit represents the serial number of the course e.g. WIEM 222: Human Wildlife Interactions taught in the second year is an ecology course and second in the series.

9. Courses offered for the Programme.

a. Schedule of Courses

a) University Common Core Courses

- i. **COMS 111:** Communication Skills
- ii. **MATH 100:** General Mathematics
- iii. **PHIL 108:** Ethics, Integrity and National Values

b) Schedule of courses

Year 1 Semester 1

CODE	Title	L	P	CF
BOTA	General Botany	30	30	3.0

101				
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
NARE 101	Introduction to Natural Resources	30	15	2.5
NARE 102	Introduction to East Africa Flora	30	30	3.0
WIEM 101	Introduction to Wildlife Enterprises Management	30	15	2.5
ZOOL 104	General Zoology	30	30	3.0
Total		225	150	20.0

Year 1 Semester 2

CODE	Title	L	P	CF
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHIL 108	Ethics, Integrity & National Values	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
NARE 103	Introduction to East Africa Fauna	30	30	3.0
NARE 121	Arthropod Ecology in Natural Resources	30	30	3.0
Total		210	135	18.0

Year 2 Semester 1

CODE	Title	L	P	CF
BOTA 111	General Genetics	30	30	3.0
ECON 100	Introductory Economics	45	0	3.0
NARE 211	Principles of Wildlife Management	30	30	3.0
NARE 221	Natural Resource Ecology	30	30	3.0
NARE 271	Introduction to Research Methods	30	0	2.0

WIEM 222	Human Wildlife Interactions	30	30	3.0
WIEM 224	Wildlife Based Tourism	30	30	3.0
Total		225	180	20.0

Year 2 Semester 2

CODE	Title	L	P	CF
BOTA 271	Plant Physiology	30	30	3.0
NARE 211	Principles of Dryland Resources Management	30	30	3.0
NARE 213	Principles of Forestry	30	30	3.0
NARE 222	Wildlife Ecology	30	30	3.0
TOHM 252	Bush Craft Techniques and First Aid	15	60	3.0
TOHM 253	Museology and Photography	30	30	3.0
WIEM 241	Management Accounting for Wildlife Enterprises	45	0	3.0
WIEM 242	Wildlife Management	30	30	3.0
Total		240	240	24.0

YEAR THREE SEMESTER ONE

CODE	Title	L	P	CF
GEOG 319	GIS & R.S. in Natural Resources Management	30	30	3.0
NARE 321	Aquatic Ecology	30	30	3.0
NARE 322	Ecotourism	30	30	3.0
NARE 341	Scientific Report Writing in Natural Resources Disciplines	30	30	3.0
NARE 343	Conservation of Nature	45	0	3.0

TOHM 261	Tour Circuit Planning and Management	30	30	3.0
WIEM 311	Vertebrate population dynamics	30	30	3.0
WIEM 312	Vertebrate physiology	30	30	3.0
WIEM 341	Protected Area Management	30	30	3.0
Total		285	240	27.0

YEAR THREE SEMESTER TWO

CODE	Title	L	P	CF
ENSC 335	Environmental Impact Assessment and Environmental Audits	30	30	3.0
NARE 371	Applied Research in Natural Resources	30	30	3.0
WIEM 351	Field Mammalogy	0	90	3.0
WIEM 352	Field Ornithology	0	90	3.0
WIEM 353	Field Herpetology	0	90	3.0
WIEM 354	Animal Handling Techniques	0	90	3.0
WIEM 361	Protected Area Planning	0	90	3.0
NARE 373	Student Proposal Development	15	60	3.0
Total		75	600	24.0
NARE 372	Field Attachment	0	120	4.0

YEAR FOUR SEMESTER ONE

CODE	Title	L	P	CF
NARE 473	Student Seminars and Reports	15	60	3.0
WIEM 451	Wildlife Resources Entrepreneurship	30	30	3.0
WIEM 452	Public Relations in WIEM	45	0	3.0
WIEM 453	Wildlife Enterprise Marketing	30	30	3.0

WIEM 454	Wildlife Farming and Utilization	30	30	3.0
WIEM 455	Wildlife Infrastructure Development & Management	30	30	3.0
WIEM 456	Wildlife Nutrition	30	30	3.0
Total		210	210	21.0

YEAR FOUR SEMESTER TWO

Code	Title	L	P	CF
NARE 442	Management of Aquatic Resources	30	30	3.0
NARE 452	Fisheries Production & Utilization	30	15	2.5
NARE 482	Contemporary issues in Natural Resources	45	0	3.0
WIEM 421	Wildlife Disease and Pathology	30	30	3.0
WIEM 422	Environmental Physiology	30	30	3.0
WIEM 441	Human Resource Management	45	0	3.0
WIEM 442	Wildlife Stock Assessment & Management	30	15	2.5
WIEM 481	Wildlife Policy, Administration and Law	30	30	3.0
Total		270	150	23.0

(c) Course Descriptions

WIEM 101: Introduction to Wildlife Enterprise Management (30/15/0: CF 2.5) Y1S1

Key concepts in wildlife enterprise management. Definition of wildlife resources, Values of wildlife; aesthetic, cultural, economic, educational and ecological. Wildlife as an enterprise. History of Wildlife management and utilization. Wildlife utilization; Consumptive vs. Non-consumptive use. Wildlife ownership and benefit sharing, legislation on wildlife for economic and recreational uses Wildlife protection, conservation and management versus

agriculture as land use practices. Field Trip to a protected area.

WIEM 222: Human Wildlife Interactions (30/30/0, C.F. 3.0) Y2S1

The evolution of Man; Hunter-gatherer strategies; Domestication and pastoralism; Evolution of Agriculture; Human demography and its impacts on natural resources; Environmental damage and species extinction; Man and Wildlife interactions; History of conservation; Living resources conservation for sustainable development; Dangers of Human Wildlife Interactions, Field sociology, Public participation in Wildlife conservation and sharing of its proceeds; Community based Wildlife management and sustainable utilization of wildlife resources. Field Trip to a wildlife conservation area

WIEM 224: Wildlife-based Tourism (30/30/0: CF 3.0) Y2S1

Concepts in Wildlife-based Tourism, Wildlife/Nature based tourism vs. other form of Tourism. Evolution of wildlife based tourism. Wildlife based tourism and new environmental paradigm, promotion of tourism to protected areas. Economic value of wildlife based tourism. Tourism and environment. Tourism impacts on soils water resources, vegetation. Wildlife and ecosystems, aesthetic impacts on the landscapes, carrying capacity of visitors. Tourist carrying capacity. Management – ecotourism training and planning physical facilities. Development of wildlife based tourism in Kenya.

WIEM 241: Management Accounting for Wildlife Enterprises (45/0/0: CF 3.0) Y2S2

Introduction of Management Accounting, classification of costs, labour costing, cost estimation, inventory costing, accounting for overheads. Introduction to Financial management: Concepts in Financial management, objectives of financial management, sources of finance, financial sustainability. Income model for the protected area, cost model for the protected area, Forecast cash flow; Control of finance and revenue collections; Types of fees for protected areas. Resource mobilization for protected area management. Emerging issues.

WIEM 242: Wildlife Management ((30/30/0: CF 3.0) Y2S2

Habitat management: the wildlife range, carrying capacity, habitat requirements of East African animals; Habitat improvements; Vegetation control; Impacts of land use practices e.g. Forestry, agriculture, urbanisation, tourism.; Population management: factors limiting vertebrate population; Effects of predation, predator management and exploitation on population dynamics; Overpopulation and control methods; People management and community-based conservation, : human surveys, multiple use, forestry and agriculture, pesticides; Urban wildlife resources; Buffer zones and dispersal areas; Causes of threats and extinctions. Translocation and exotic wildlife; Management of endangered species and ecosystems; Field Trip to conservation area

WIEM 311: Vertebrate population dynamics (30/30 CF 3.0) Y3S1

Concepts of population; Birth and death rates, life-tables; Population characteristics; Population structure; Dispersal; Immigrations and emigrations, Population growth models and dynamics; Rate of fluctuations; Population size, change, density and distribution; Density dependent population regulation; Survival and mortality, predator-prey interactions; Survivorship curves and k-factor analysis. Field trip to a protected area. Students participate in wildlife census

WIEM 312: Vertebrate physiology (30/30/0: CF 3.0) Y3S1)

Cell structure, physiology and variations; Metabolism and Energy Supply, Respiration, Circulation of nutrients and blood function;; Basic endocrinology; Heat-water balance; Comparative physiology of body systems; Physical factors and functioning of living organisms; Thermodynamics and energetic principles; Locomotion principles.

WIEM 341: Protected Area Management (30/30/0: C.F3.0) Y1S2

Concepts in Protected area management; Acquisition and gazettelement of land; degazettelement of protected areas; boundary, categories of protected areas; Park Infrastructure: Construction and management; Protected Area Administration and management: Functions of a park manager, Law enforcement, Environmental and wildlife education, information dissemination, Interpretation of

personal services and non-attended facilities. Entrance and camping permits, maintenance tasks; Monitoring of wildlife populations, habitats, encroachments and poaching. Assessment of visitors' capacity and environmental impact. Community, private land owners; civil society and wildlife conservation. Field trip to a protected area

WIEM 351: Field Mammalogy (0/90/0: CF 3.0) Y3S2

East African mammal communities in montane, forest, bush, wetland/marsh and savannah habitats; Behaviour, social organization, distribution and habitat use of common mammals in Kenya; Identification of common mammals in Kenya visually, from skulls, faeces/droppings and spoor; Capturing and marking; Estimation of population abundance and density; Ageing and sexing species from skulls; Post-mortem examination. Field trip for field identification and survey techniques

WIEM 352: Field Ornithology (0/90/0: CF 3.0) Y3S2

East African bird communities in montane, forest, bush, wetland/marshland and savannah habitats; Behaviour, social organisations, distribution abundance, migration; Classification of birds; Field Identification techniques (visually, by songs and calls); field craft, birdwatching, Ageing and sexing; Collection and preservation of museum specimens; field survey techniques (transects, point counts, mist netting, sound recording and playback; estimating density and abundance, data collection, analysis, presentation, Citizen Science. Field trip for field identification and survey techniques

WIEM 353: Field Herpetology (0/90/0: CF 3.0) Y3S2

Diversity of East African herps. Distribution, classification of reptiles and amphibians. Field identification techniques. Ageing and sexing. Collection and preservation of museum specimens; field survey techniques, estimating density and abundance, data collection, analysis, presentation, Citizen Science. Field trip for field identification and survey techniques

WIEM 354: Animal Handling Techniques (0/90/0: CF 3.0) Y3S2

Mechanical and chemical capture and collecting of animals: handling and care of captured and collected animals; Criteria for selecting capture and collecting methods, Preparing for surgery Euthanasia/secondary

methods, Aseptic preparation, biosafety, Health assessments, handling, restraint, sexing, bio-ethics and policy/regulations in animal handling. Field trip for field identification and survey techniques

WIEM 361: Protected Area Planning (0/90/0: CF 3.0) Y3S2

Size and design of protected areas; Geographical, biological, sociological, tourist and political inventories and considerations; Buffer zoning, network and corridor planning; Conservation planning at hierarchical scales; Management of rare, threatened, and endangered flora and fauna; Management planning, National and international strategies and planning, research planning, evaluation if implementation of management decisions. Field trip for conservation planning practicals

WIEM 421: Wildlife Disease and Pathology (30/30/0 CF: 3.0) Y4S2

Interspecific associations; Survey. Life history and control of important wildlife parasites; Animal parasites and diseases in relation to wildlife. Historical survey of rinderpest, anthrax, trypanosomiasis, theileriosis in relation to domestic and wild animals; Other important viral and bacterial diseases of wild animals; Basic pathological techniques; Diseases as a factor in population dynamics. Policy and disease control in conservation areas, wildlife diseases communicable to man; Basic game meat inspection.

WIEM 422: Environmental Physiology (30/30/0 CF: 3.0) Y4S2

Introduction to Environmental Physiology: Definitions and concepts; , Environment biogeography Species adaptation, Energy metabolism, Digestive and Nutritional Physiology; activity patterns; Reproduction in herbivores, omnivores and carnivores; birth synchrony; Chemical pollutants and organism physiology; Changes in organ systems with emphasis on adaptation to aquatic and terrestrial habitats; Field Trip to Kerio Valley bird migration flyway

WIEM 441: Human Resource Management (45/0/0: CF 3.0) Y4S2

Concepts in human resource management, principles and objectives of human resource management. Theories related to personnel management Human relations,

personnel management and manpower development; Principles of organization and delegation of duties, Time management communication, horizontal and vertical, meetings, recruitment, Training, motivation, morale and terms of employment; labour laws, manpower planning and development, organization structure, process and functioning.

WIEM 442: Wildlife Stock assessment and management (30/15/0: CF2.5) Y4S2

Ecological principles relevant to management of wildlife populations; Assessment of wildlife populations and their dynamics; Assessment and management of predation; Quantification and management of resource competition; Evaluation and management of wildlife habitats; Wildlife harvesting and control.

WIEM 443: Wildlife Management and Utilisation Y4S2 (30/30/0 CF 3.0) (for DLRM group)

Wildlife and aquatic resources in East Africa. Habitat management and productivity assessment. Sustainable utilisation, game farming/ranching and aquaculture systems production. Conservation versus preservation. Preservation of endangered species. Legislations and policies. Economic values. Consumptive and non-consumptive utilisation. Conflicts in the utilisation of both aquatic and wildlife resources. Integrated management. Cost benefit analysis.

WIEM 451: Wildlife Resources Entrepreneurship (30/30/0: CF 3.0) Y4S1

Introduction to entrepreneurship- definitions, characteristics and types of entrepreneurs and contexts of entrepreneurial practice, Environment for entrepreneurship and SME development, Forms of business ownership in Kenya, New product development and legal protection, Business entry and expansion, Development of business plans, Designing business capabilities that build performance objectives- visions, missions, goals and objectives, Marketing new products and services, Operation and management of entrepreneurial organizations. Field to wildlife farms/ranch

WIEM 452: Public Relations in Wildlife Enterprises and Management (45/0/0: CF 3.0) Y4S1

Definitions in Public Relations and publicity. Foundation of Public relations Wildlife management and Public

relations, Attitudes, Audience, Campaign, Attitude, Public Relations Effectiveness, Functions of Public Relations. Advantage and disadvantages of public relations, Channels of Communications. Reporting and Writing for Print Media, Factors Critical to Change accomplishment. Public relations, Communication(s) Audit Ethics in Public Relations and publicity

WIEM 453: Wildlife Enterprise Marketing (30/30/0: CF 3.0) Y4S1

Introduction to marketing process and concepts, The business environment, Consumer behaviour and the purchase decision, Market segmentation, targeting and positioning, Product design and management, Integrated marketing communications, Distribution channels, Pricing strategies, Marketing ethics and social responsibilities. Promotion

WIEM 454: Wildlife Farming and Utilization (30/30/0: CF 3.0) Y4S1

Concepts of wildlife resource economics and utilization; Forms of wildlife utilization; Local costs and management of wildlife; Contributions of wildlife utilization to rural development: cost/benefit analysis; Game ranching and farming; Determination of optimum harvesting rate/sustained yield; Hunting ethics and traditions; Processing, preservation, documentation and marketing of wildlife products; Trophy measurements; Live animal capture; Use of wild animals in zoos and as pets; International trade in wildlife products. Visit to a conservancy/ranch

WIEM 455: Wildlife Infrastructure Development and Management (30/30/0: CF 3.0) Y4S1

Concepts in Wildlife Infrastructure Development and Management, Types of infrastructure; Management, design, development and construction of infrastructure and physical facilities, Basic maintenance of infrastructure, vehicles and communication equipment; Impacts of infrastructure on environment and conservation area. Standards and guidelines, EIA New and low impact technologies, Green practices. Visit to a protected area

WIEM 456: Wildlife Nutrition (30/30/0 CF: 3.0) Y4S1

Nutritional requirements of wild animals; Nutrient metabolism in wild animals; Comparative digestive systems of wild animals including digestive morphology,

physiology and strategies; Wildlife food quality and quantity; Secondary metabolites, Wildlife feeding habits, Supplemental feeding; Physiological indicators of body condition in wild animals.

WIEM 481: Wildlife Policy Administration and Law (30/30/0: CF 3.0) Y4S2

Definitions, Basics concepts in policy and law. Diminishing wildlife resources, threats. Threatened species. IUCN Red Listing, History of Environmental Policy and Law. National goals and criteria of developing wildlife policies and laws. Formulation, implementation and administration. Law enactment procedures, types of laws and Types of wildlife/habitat conservation policies and laws; Soft and hard law. Current institutional and legal framework at hierarchical levels (county, national, regional and global), Conventions/treaties (CITES, CBD, CMS, AEWa etc). Law enforcement procedures. Advocacy. Implementation Challenges. Visit to county/national assembly to familiarise with the legislation process.

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Explain the philosophy behind wildlife conservation and management	Introduction to Natural Resources	2.5	Wildlife Management	3.0	Aquatic Ecology	3.0	Wildlife Resources Economics & Utilization	3.0
	Introduction to Wildlife Enterprises Management	3.0	Plant Physiology I	3.0	Vertebrate Population Dynamics	3.0	Management of Aquatic Ecosystems	3.0
	General Botany	3.0	Principles of Dryland Resources Management	3.0	Vertebrate Physiology	3.0	Wildlife Nutrition	3.0
	General Microbiology	3.0	Principles of Wildlife Management	3.0	Field Mammalogy	3.0		3.0
	General Inorganic and Physical Chemistry	3.0	Principles of Forestry	3.0	Field Ornithology	3.0		
	Introduction to Organic Chemistry	3.0	Natural Resource Ecology	3.0	Field Herpetology	3.0		
	Introduction to East African Flora	3.0	Wildlife Ecology	3.0	Animal Handling Techniques	3.0		
	Introduction to East African Fauna	3.0			Conservation of Nature	3.0		
	Arthropod Ecology in Natural Resources	3.0						
	General Zoology	3.0						
PLO 2. Provide advisory services on matters of wildlife resource use, law and policy.	Introduction to Wildlife Enterprises Management	2.5	Museology and Photography	3.0	EIA & EA	3.0	Fisheries Production & Utilization	2.5
			Wildlife-based Tourism	3.0	Ecotourism	3.0	Wildlife Stock & Harvest Management	2.0
			Wildlife Management	3.0	Tour Circuit Planning and Management	3.0	Wildlife Resources Economics & Utilization	3.0
			Management Accounting for Wildlife Enterprises	3.0	Wildlife Population Dynamics	3.0	Wildlife Policy & Law	3.0
					Protected Area Management	3.0	Wildlife Disease and Pathology	3.0
					Animal Handling Techniques	3.0		
					Conservation of Nature	3.0		
PLO 3. Evaluate impacts of resource use on sustainability of wildlife ecosystems	General Botany	3.0	Plant Physiology I	3.0	Vertebrate Physiology	3.0	Management of Aquatic Ecosystems	3.0
	General genetics	3.0	Natural Resource Ecology	3.0	Applied Research in Natural Resources	3.0	Seminars	3.0
	General Microbiology	3.0	Wildlife Ecology	3.0	Vertebrate population dynamics	3.0	Wildlife Policy and Law	3.0
	General Inorganic and Physical Chemistry	3.0		3.0	Field Mammalogy	3.0		

	Organic Chemistry I	3.0	NARE 271: Introduction to Research		Field Ornithology	3.0		
	Introduction to Computer Applications	3.5	Bushcraft Techniques and First Aid	2.0	Field Herpetology	3.0		
	Introduction to Academic Communication	3.0	Museology and Photography	3.0	Animal Handling Techniques	3.0		
	General Maths	3.0			Report writing in natural resources	3.0		
	Introduction to Natural Resources	3.0		3.0	Field Attachment	4.0		
	Introduction to East Africa Flora	3.0						
	Arthropod Ecology in Natural Resources	2.5						
	General Zoology	3.0						
PLO 4. Participate and provide leadership in the formulation of appropriate early warning systems in respect of wildlife ecosystem change.	Introduction to Computer Applications	3.5	Natural Resource Ecology	3.0	EIA and EA	3.0	Wildlife disease and Pathology	3.0
	Introduction to Academic Communication	3.0	Wildlife Ecology	3.0	GIS and Remote Sensing in Natural Resource Management	3.0	Environmental Physiology	3.0
	Introduction to Natural Resources	2.5	Introduction to Research		Vertebrate population dynamics	3.0	Human Resource Management	
			Museology and Photography	2.0	Protected Area Management	3.0	Wildlife Stock Assessment and Harvest Management	3.0
			Human Wildlife Interactions	3.0	Protected Area Planning	3.0	Contemporary issues in Natural Resources	2.5
				3.0	Applied Research in Natural Resources	3.0		3.0
PLO 5. Analyze interactive relationships between humans and environment	Introduction to Computer Applications	3.5	Natural Resource Ecology	3.0	EIA and EA	3.0	Wildlife Disease and Pathology	3.0
	Introduction to East Africa Flora	3.0	Human Wildlife Interactions	3.0	GIS and Remote Sensing in Natural Resource Management	3.0	Wildlife Infrastructure Development and Management	
	Introduction to East Africa Fauna	3.0	Wildlife Ecology	3.0	Vertebrate population dynamics	3.0	Wildlife Nutrition	3.0
	Arthropod Ecology in Natural Resources	3.0			Applied Research in Natural Resources	3.0	Contemporary issues in Natural Resources	
	Introductory Economics	3.0			Field Mammalogy	3.0		
					Field Ornithology	3.0		3.0

					Field Herpetology	3.0		
					Conservation of Nature	3.0		3.0
PLO 6. Design and implement wildlife enterprises	Introduction to Computer Applications	3.5	Wildlife Based Tourism Management Accounting for Wildlife Enterprises		Ecotourism	3.0	Wildlife Resources Economics & Utilization	3.0
	Introductory Economics	3.0			Tour Circuit Planning and Management	3.0	Wildlife Stock Assessment and Harvest Management	2.5
	Introduction to Wildlife Enterprises Management	2.5			Vertebrate population dynamics	3.0	Wildlife Resources Entrepreneurship	3.0
					Protected Area Management	3.0	Public Relations in WIEM	3.0
							Wildlife Enterprise Marketing	3.0
							Wildlife Infrastructure Development and Management	3.0
							Wildlife Nutrition	
							Fisheries Production and Utilization	3.0
							Human Resource Management	2.5
								3.0
PLO 7: Develop positive attitudes towards wildlife conservation, management and entrepreneurship	Introduction to Natural Resources	2.5	Wildlife Management	3.0	Aquatic Ecology	3.0	Wildlife Resources Economics & Utilization	3.0
	Nature Conservation	3.0	Plant Physiology I	3.0	Vertebrate Population Dynamics	3.0	Management of Aquatic Ecosystems	
	Introduction to Wildlife Enterprises Management	3.0	Principles of Dryland Resources Management	3.0	Vertebrate Physiology		Wildlife Nutrition	3.0
	General Botany	3.0	Principles of Wildlife Management		Field Mammalogy	3.0	Wildlife Stock assessment and Management	
	General Microbiology	3.0	Principles of Forestry	3.0	Field Ornithology	3.0		3.0
	General Inorganic and Physical Chemistry	3.0	Natural Resource Ecology		Field Herpetology			
	Introduction to Organic Chemistry	3.0	Wildlife Ecology	3.0	Animal Handling Techniques	3.0		2.5
	Introduction to East African Flora	3.0		3.0		3.0		

	Introduction to East African Fauna	3.0		3.0				
	Arthropod Ecology in Natural Resources	3.0						
	General Zoology	3.0						
		3.0						

FACULTY OF HEALTH SCIENCES



DEPARTMENT OF CLINICAL MEDICINE AND SURGERY

DIPLOMA IN CLINICAL MEDICINE & SURGERY

1. Philosophy of the Programme

Diploma in Clinical Medicine and Surgery programme (DIP CMED) innovatively influences diploma clinicians' professional development through holistic education and generation, acquisition, preservation and dissemination of knowledge and skills, with emphasis on health and related disciplines. The programme provides equal opportunity in producing competitive and hands-on graduates that contribute to health professions training for national and global development.

2. Rationale

There is an ever increasing demand for health care services in Kenyans. Health care for all Kenyans is a relevant and highly regarded axiom which needs to be achieved in the nearest of times. Nevertheless, health care for all has not been achieved in this country due to acute shortage of highly trained staff. Most of the sick hail from the countryside where an even acute shortage of medical staff exists due to staff preference to work in urban and peri-urban areas. The shortage of health service providers in this country necessitates increased training of a cadre who will provide health care in different regions of this country and especially in the community level. There is a need for training of a cadre of health professionals who are well trained in the preclinical sciences, and have adequate practical exposure to clinical skills and possess basic training in management and leadership to satisfactorily serve the diverse communities in Kenya. Graduates of this program will therefore play vital roles in the provision of health care and efficient management of health facilities as properly trained personnel. The demand for holders of diploma in clinical medicine and surgery has continued to rise. The diploma in Clinical Medicine and surgery course of Egerton University will provide opportunities to qualified post-secondary level students to train under the guidance of well qualified lecturers and obtain better skills in patient care and institutions

management. This programme therefore contributes immensely to the satisfaction of the health needs of the population. Clinical Officers have continued to play vital roles as clinicians and managers not only in rural facilities but also in the running of special clinics, in the district, provincial and national hospitals.

Clinical Officers provide about 80% of health services in Kenya and especially in the rural areas of the country. There is need therefore to constantly train more clinical officers in order to improve health care delivery in the country. Training Clinical Officers at a diploma level is one way of raising the standards of primary health care delivery to Kenyans. Graduates of diploma in Clinical Medicine and Surgery are the first contact of patients. Patients will obtain proper and adequate care if their first contact are professional capable of applying critical thinking and use analytical skill to come up with practical solutions to solve the various patients or clients' health problems and needs. The improvement in the services will be achieved through incorporation of the knowledge, skills and attitude acquired.

The programme has been designed to empower students with adequate training in basic and clinical sciences as well as in community health in order to build their capacity for proper integration of curative and preventive health care. This program will also give an opportunity for the graduates to advance in post-basic training in specialised areas. Clinicians graduating from this programme will be capable of providing general medical care, preventive, rehabilitation and management of health facilities. Whilst it takes six years to make a doctor, it takes only three years to produce a well-trained clinical officer who is capable of providing lifesaving services to the needy populace. The professional practice of Clinical Officers is regulated by an Act of parliament (Cap. 260 of the Laws of Kenya) which is charged with training, registration and licensing. This ensures that high standards are maintained during training and practice while observing professional ethics of conduct. The ultimate goal of this programme therefore, is to develop, innovate and improve standards of health care services in the country.

3. Goal of the Programme

The aim of this programme is to equip the learners with suitable knowledge on preclinical sciences, clinical proficiency and management skills as well as with the right attitudes to implement the knowledge to advance and improve the health of the population by delivering health care at the community and national levels.

4. Programme Learning Outcomes

At the end of this programme, graduates are expected to be able to:

- i. Describe the normal physiological functions and anatomical structure of the human body to differentiate normal from abnormal health states
- ii. Explain the patho-physiology of diseases
- iii. Improve population health by critically analysing prevailing and emerging health problems by conducting community diagnosis and research for purposes of solving such problems.
- iv. Provide curative, preventive, promotive, and rehabilitative services to the community in an ethical manner.
- v. Manage health facilities and provide leadership and supervision of staff in health care delivery system.

5. Mode of Delivery

The programme shall be delivered full time, face to face.

6. Academic Regulations

6.1 Admission Requirements

The eligible candidates must satisfy the following requirements:

- (i) Minimum university admission requirements for diploma students.
- (ii) In addition the candidate must have a grade of at least C (plain) in each of the following subject clusters acquired from the Kenya Certificate of Secondary Education (KCSE) namely:- English or Kiswahili, Mathematics, or Physics, Chemistry or Physical Sciences and Biology or Biological Sciences.

- (iii) Applicants without the above requirements would have to be evaluated by the Faculty and recommended to the Senate for admission.
- OR
- vi. Advanced A-level or its equivalent with a minimum of one principal pass in Biology and Chemistry and a subsidiary pass in Mathematics or Physics.

6.2 Regulation on Credit Transfer

Where applicable, credit transfer shall be approved by Senate as stipulated in article 36 of the Egerton University Statutes of 2013. The Clinical Officers' Council shall be concurrently notified of the credit transfers

6.3 Course Requirements

Course requirements shall be guided by the University Statutes of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Students Assessment Criteria

6.4.1 Examination

All students shall be assessed in accordance with the Egerton University's Statute 36(6) of 2013. There will be two Continuous Assessment Tests (CATs) every term, one end of year or end of course exam administered every end of year or course respectively. The examinations in this program will be conducted in a combination of any of the following modes, depending on the year of study and according to the examination schedule

- i. Written examination
- ii. Viva voce (oral examination)
- iii. Practical examination
- iv. Clinical examination (OSCEs, Short and Long cases)

6.4.2 Continuous Assessment Tests:

- i. Continuous assessment tests will comprise 40% (both for pre-clinical and clinical courses) of the end of year/course examination, except for courses offered by other departments in the University where the 70% and 30% rule will apply.
- ii. Continuous assessment shall comprise of assignments, group discussions, presentations, practicum, written assessments and/or logbook presentations.

6.4.3 End of Years/Course Examinations

End of Year or Course Examination will account for 60% of the total marks and;

- i. Written Examination that will account for 25% (or 30% where the viva voce is not applicable) of the marks and may comprise of essay, multiple choice questions, and short answer questions.
- ii. Clinical or Practical Examination that will account for 30 % of the marks.
- iii. Structured oral (Viva Voce) examination (where applicable) that will account for 5% of the marks.
- iv. There will be a final qualifying examination (FQE) at the end of third year which will be marked out of 100%
- v. Any candidate who fails the final qualifying clinical examination will have failed to satisfy the examiners in the overall discipline examination even if the final mark is 50% or higher

FQE shall comprise both written exam and clinical (practical) exam of all the units taught within the following disciplines.

- a. Internal Medicine
- b. Reproductive Health
- c. Surgery
- d. Child Health
- e. Community Health.

The pass mark shall be 50% except for University core courses whose pass mark will depend on the department under which these courses fall.

6.5 Grading System

The total marks scored for each course shall be translated into letter grades as follows:-

75% and above-	A (Distinction)
65 – 74% -	B (Credit)
50 – 64% -	C (Pass)
Less than 50% -	D (Fail)

6.6. Examination Regulations

The University rules and regulations shall apply for the Diploma in Clinical Medicine & Surgery programme as stipulated in the University Statutes 36 of 2013.

6.7 Moderation of Examinations

The moderation of examinations shall be as stipulated in the Egerton University Statutes article 36 (5) of 2013.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated period. The student shall complete a total of 258 credit factors, participated in a mandatory field attachment and presented a written research project.

6.9 Classification of the degree

The Diploma in Clinical Medicine & Surgery shall not be classified.

7. Course Evaluation

The course will be evaluated according to the Quality Assessment provisions of Egerton University (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

Diploma in Clinical Medicine & Surgery will be hosted in the Clinical Medicine and Surgery department in the Faculty of Health Sciences and the programme academic leader shall be appointed in accordance to University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme evaluation (self-assessment) at the end of each program's academic cycle. Each program cycle will be benchmarked with at least one such programme in a highly ranked University.

8.3 Course coding

The course code for Diploma in Clinical Medicine & Surgery will depend on area of specialty e.g. ANAT for Anatomy followed by 3 numerical numbers e.g. ANAT 101. All the courses have been categorized into eight (8) broad areas as follows:

- 1 - Basic Sciences
- 2 - Pathological Sciences
- 3 - Internal Medicine
- 4 - Child Health

- 5 - Reproductive Health
6 - Surgery
7 - Community Based
8 - Clinical Sciences

Each course has been coded using an acronym and a series of digits, numbers and letters whose interpretation is as follows:

CIMS Clinical Medicine and Surgery

- a) 1st digit – Indicates a Diploma Programme
b) 2nd digit – Indicates the year the course is offered
c) 3rd digit – Indicates the broad category of the course (1-8 as above)
d) 4th digit – Indicates the sequence of the course in the category

The third numeral represents the order of the specific courses in the particular category.

9. Courses/ Units Offered for the Programme

9.1 Schedule of Courses

a) Common core courses- N/A

YEAR 1 TERM 1

CODE	COURSE TITLE	L	P	C	CF
CIMS 0111	Human Anatomy 1	45	15	0	3.5
CIMS 0112	Human Physiology 1	45	15	0	3.5
CIMS 0113	Biochemistry	30	30	0	3.0
CIMS 0121	Microbiology	30	15	0	2.5
CIMS 0181	Nursing Skills	30	30	0	3.0
FOND 0121	Introduction to human nutrition	30	30	0	3.0
	TOTALS	210	135	0	18.5

YEAR 1 TERM 2

CODE	COURSE TITLE	L	P	C	CF
CIMS 0113	Human Anatomy II	45	15	0	3.5
CIMS 0114	Human Physiology II	45	15	0	3.5
CIMS 0122	General Pathology	45	15	0	3.5
CIMS 0123	Human Parasitology	45	0	0	3.0
CIMS 0124	Immunology	30	45	0	3.5
CIMS	Information	30	30	0	3.0

0190	Technology & National Development				
CIMS 0171	Human Behaviour	45	0	0	3.0
	TOTALS	210	120	0	23.0

YEAR 1 TERM 3

CODE	COURSE TITLE	L	P	C	CF
CIMS 0115	Human Anatomy III	45	15	0	4.5
CIMS 0116	Human Physiology III	45	15	0	4.5
CIMS 0125	Clinical Pathology	30	30	0	3.0
CIMS 0172	Primary Health Care	30	0	0	2.0
CIMS 0173	Environmental & Occupational Health	45	0	0	3.0
CIMS 0182	Pharmacology & Therapeutics I	45	0	0	3.0
CIMS 0183	Clinical Methods 1	30	30	0	3.0
	TOTALS	270	90	0	23.0

YEAR 2 TERM 1

CODE	COURSE TITLE	L	P	C	CF
CIMS 0231	Medicine I	60	30	0	5.0
CIMS 0241	Child Health I	45	30	0	4.0
CIMS 0251	Reproductive Health I	45	30	0	4.0
CIMS 0261	Surgery I	45	30	0	4.0
CIMS 0274	Epidemiology & Biostatistics	60	0	0	4.0
CIMS 0284	Pharmacology & Therapeutics II	45	0	0	3.0
CIMS 0285	Clinical Methods II	45	30	0	4.0
	TOTALS	345	150	0	28.0

YEAR 2 TERM 2

CODE	COURSE TITLE	L	P	C	CF
CIMS 0232	Medicine II	45	60	0	5.0
CIMS 0242	Child Health II	45	60	0	5.0
CIMS 0252	Reproductive Health II	45	60	0	5.0
CIMS	Surgery II	45	60	0	5.0

0262					
CIMS 0275	Community Diagnosis	30	0	0	2.0
CIMS 0276	Research Methodology	30	0	0	2.0
	TOTALS	240	240	0	24.0

YEAR 2 TERM 3

CODE	COURSE TITLE	L	P	C	CF
CIMS 0278	Field Attachment	0	120	0	4.0
	TOTALS	0	120	0	4.0

YEAR 3 TERM 1

CODE	COURSE TITLE	L	P	C	CF
CIMS 0333	Medicine III	45	60	0	5.0
CIMS 0334	Medicine IV	45	0	0	3.0
CIMS 0343	Child Health III	45	60	0	5.0
CIMS 0353	Reproductive Health III	45	60	0	5.0
CIMS 0363	Surgery III	45	60	0	5.0
CIMS 0377	Health Service Management	45	0	0	3.0
	TOTALS	270	240	0	26.0

YEAR 3 TERM 2

CODE	COURSE TITLE	L	P	C	CF
CIMS 0335	Medicine IV	45	90	0	6.0
CIMS 0344	Child Health IV	45	90	0	6.0
CIMS 0354	Reproductive Health IV	45	90	0	6.0
CIMS 0364	Surgery IV	45	90	0	6.0
CIMS 0378	Communicable Diseases I	45	0	0	3.0
	TOTALS	225	360	0	27.0

YEAR 3 TERM 3

CODE	COURSE TITLE	L	P	C	CF
CIMS 0336	Medicine VI	30	90	0	5.0
CIMS 0345	Child Health V	30	90	0	5.0
CIMS 0355	Reproductive Health V	30	90	0	5.0

CIMS 0365	Surgery V	30	90	0	5.0
CIMS 0379	Communicable Diseases II	45	0	0	3.0
	TOTALS	165	450	0	23.0
GROSS HOURS		1935	1905	0	196.5

(c) Course descriptions

BIOC 0113: Biochemistry (30/30: CF 3.0) Y1 T1

Introduction; definition; uses of biochemistry; structure and functions of proteins, lipids, carbohydrates; structure and uses of vitamins, enzymes, co-enzymes, co-enzymes and micronutrients; basic intermediary metabolism of biomolecules; clinical tests and applications – liver, renal, adrenal and other function tests.

CIMS 0111: Human Anatomy I (45/15: CF 3.5) Y1T1

Introduction: Definitions; overview of human body: anatomical positions; anatomical names; plans and sections; cell structure; organization of cells into tissues; developmental anatomy; body tissues; types of tissues and their origins; body systems; skeletal system; structure of bones and joints. Digestive system; structure of organs. Muscular system: structure of muscles; names; origins; insertions; nerves supply; skin structure.

CIMS 0112: Human Physiology I (45/15:CF3.5) Y1T1

General body overview; internal environment and homeostasis; cell biology – structure and organelles, replication and functions; muscular system – muscle types and functions; and respiratory systems. Systemic physiology/ gastrointestinal tract – mastication, deglutition, digestion, absorption and metabolism; regulation of gastrointestinal function; skin-functions and wound healing.

CIMS 0113: Human Anatomy II (30/30: CF 3.0) Y1T2

Cardiovascular system – the heart; blood vessels; blood circulation; lymphatic system; lymphoid tissues; circulation of the lymph; reproductive system – structure of organs. Respiratory system – structure of

the organs involved in external respiration (*PREREQUISITE – CIMS 0111*).

CIMS 0114: Human Physiology II (30/30: CF 3.0) Y1T2

Genitourinary system-formation and excretion of urine; menstrual and spermatogenic cycles. Blood composition and functions. Cardiovascular system – functions of the heart and blood vessels blood pressure; functions of the lymphatic system. The respiratory system-(*PREREQUISITE – CIMS 0112*).

CIMS 0115: Human Anatomy III (45/15: CF 3.5) Y1T2

Central nervous system; peripheral nervous system; urinary system – structure of organs; special senses – eye; ear and nose; endocrine system; structure of various organs such as the pituitary, thyroid, parathyroid, adrenal and thymus; other scattered endocrine tissue (*PREREQUISITE-CIMS 0113*)

CIMS 0116: Human Physiology III (45/15: CF 3.5) Y1T3

Central nervous system – nerve and muscle cells; synaptic and junction transmission; reflexes; autonomic nervous system; special senses; endocrine system-functions of pituitary, thyroid, parathyroid, adrenal and thymus glands. Functions of other none defined endocrine tissue (*PREREQUISITE – CIMS 0114*).

CIMS 0121: Microbiology (45/12: CF 3.5) Y1T1

Introduction; history, definition, morphology and metabolism, classification; growth and cultivation of bacteria; methods of study; stains and staining procedures; pathogenic micro-organisms – isolation, characterization, antimicrobial sensitivity, antigenicity; sterilization and disinfection; pathogenic importance of each of the micro-organisms.

CIMS 0122: General Pathology (45/0: CF 3.0) Y1T2

Introduction to pathology, basic terms and concepts; disease causation and development; pathological processes – necrosis, atrophy, ischaemic; benign and malignant tumours; oedema; water and electrolyte imbalance; haemodynamic derangements and pathological complications.

CIMS 0123: Human Parasitology (15/30: CF 2.0) Y1 T2

Introduction: history, definitions and classification; characteristics and life cycles: important parasitic infections and their modes of transmission; epidemiology of parasitic infections; factors influencing spread and distribution of parasites: zoonotic parasites with associated preventive, control and managerial measures.

CIMS 0124: Immunology (45/15: CF 3.5) Y1 T2

Immunological history and terminologies, principles and concepts; mechanisms of the immune system; classification, developmental factors of specific and non-specific immunity, immune evasion mechanisms; mechanisms of antibody-antigen reactions; grafts, immunodeficiency, hypersensitivity, immunotherapy techniques; vaccines and disease control.

CIMS 0125: Clinical Pathology (30/30: CF 3.0) Y1 T3

An overview study of aetiology and morbid alterations induced by the major types of diseases of the major body systems. These include the cardiovascular, the respiratory, the genitourinary, the gastrointestinal, the nervous, the endocrine and the musculoskeletal systems. Pathological basis for these changes.

CIMS 0171: Human Behaviour (45/0: CF 3.0) Y1 T1

Definition of common terms and concepts. Growth and development – the life cycle of the human organism. Social institutions – family, educational, religious, economic, political, and legal. Motivation and human behaviour, culture and health; community and society; leadership organizations in the community; health seeking behaviour; the sick role; traditional medical practice and the transition into modern health care systems. Planned social change and health; social groups – formation, dynamics peer pressure and health. Deviant behaviour – truancy, crime, psychopathy, substance abuse, negative ethnicity. The holistic view of medical practice.

CIMS 0172: Primary Health Care (30/0: CF2.) Y1 T3

Definition of common terminologies; historical background; international conferences – Alma Ata

declaration; Bamako initiative (1987), world summit for children (1990), millennium development goals (200). Principles and elements for practice. Community based health care: key players such as opinion leaders and shapers. Community needs assessment and tools. Training of public health workers. Health education; definitions, principles, strategies and methodologies. Family health care including maternal child health and family planning (MCH/FP). School health; strategies and practice.

CIMS 0173: Environmental and Occupational Health (45/0: CF 3.0) Y1T3

Definition; water sources, protection, treatment and storage; water borne diseases; waste disposal methods; solid and liquid waste; diseases related to improper waste disposal; occupational hazards; safety at work place; characteristics of good food; methods of food handling, preservation and storage; food spoilage; food borne and food associated storage diseases. Vectors and vermin; control, associated diseases. Public Health Act (Cap 242); characteristics of good housing; principles of occupational health and safety; types, causes and prevention of occupational hazards. Workmen's compensation Act (Cap 236), pharmacy and poisons Act (Cap 244).

CIMS 0181: Nursing Skills (30/0: CF 2.0) Y1 T1

Short history of nursing; identifying and meeting patient needs; monitoring and evaluating patient condition; aseptic techniques; barrier nursing; collection, storage and transportation of specimens; admission and discharge procedures; care of equipment and the dead; assessment of accident situation and safe provision of appropriate first aid; clinical conditions – respiratory failure, cardiac arrest bleeding, circulatory failure, shock, injuries of musculoskeletal system, unconscious patient; wounds poisoning; mass accidents and disaster management.

CIMS 0182: Pharmacology and Therapeutics 1 (45/0 : CF 3.0) Y1 T3

Definition of terms and concepts used in pharmacology; general principles of therapeutics, pharmacokinetic and pharmacodynamics; prescription writing, classification of drugs; indications and routes of administration; dosages; precautions; interactions and side effects;

toxicity; contraindications; pharmacy and poisons act and dangerous drugs act (DDA).

CIMS 0183: Clinical Methods 1 (30/30 CF 3.0) Y1 T3

History taking – systemic and regional; physical examination – systemic and regional and interpretation of findings by synthesizing them; recording of the findings; working diagnosis and differential diagnoses; diagnostic procedures; appropriate investigations; procedures of collecting of specimens and interpretation of results.

CIMS 0231: Medicine 1 (60/30: CF 5.0) Y2 T1

Tropical/infectious diseases; basic considerations in infectious diseases; bacterial, viral fungal and parasitic infections; various presentations and approach to management especially investigations and drug therapy. Respiratory system: infectious and non-infectious pulmonary diseases and disorders and management.

CIMS 0232: Medicine11 (45/60: CF 5.0) Y2 T2

Gastrointestinal system disorders: the alimentary tract – benign and malignant tumours, haemoptysis, frank per rectal bleeding or melaena stool, constipation and intestinal obstruction; liver – tumours, cirrhosis; biliary tract and pancreatic disorders. Cardiovascular system; congenital disorders and their management; acquired diseases of the heart – causes, prevention, management and prognosis; various disorders of the vascular system and management (*PRE-REQUISITE – CIMS 0231*)

CIMS 0241: Child Health 1 (45/30: CF 4.0) Y2 T1

Introduction to child health; paediatric definitions. Paediatric history taking, physical examination and investigation; overview of common paediatric conditions; growth and development and variation. Normal and abnormal nutrition; growth failure; short stature. Common childhood infections arising from viral, bacterial, protozoan and fungal causes.

CIMS 0242: Child Health 11 (45/60: CF 5.0) Y2 T2

The normal neonate; common problems of the neonatal period including sepsis and jaundice; low birth weight; preterm and small for dates infants. Breastfeeding and weaning; special feeding needs. Endocrine disorders especially those related to growth hormone, thyroid hormone and insulin. Central nervous systems

especially malformations and infections. Worm infestation – Diagnosis and management. (*PRE-REQUISITE – CIMS 0241*)

CIMS 0251: Reproductive Health 1 (45/30: CF 4.0) Y2 T1

Anatomy and physiology of human reproductive system. Obstetric and gynaecological history, examination and investigations. Menstruation and menstrual disorders; amenorrhea and abnormal uterine bleeding; Embryology – fertilization, implantation and embryogenesis up to beginning of organogenesis. Maternal – Placental – foetal unit. Gynaecological emergencies –abortion, ectopic pregnancy and acute abdomen; pelvic infections including STI and HIV.

CIMS 0252: Reproductive Health 11 (45/60: CF 5.0)

Management of pregnancy from the antenatal period to early puerperium: maternal physiology; normal pregnancy and antenatal care; intercurrent disorders during pregnancy; assessment of foetal well-being; the course and conduct of normal labor and delivery; conditions associated with pregnancy such as anaemia, ABO and Rhesus incompatibility, ante partum bleeding, diabetes, deep venous thrombosis(DVT) and hypertension, labor and delivery, postpartum; emergency obstetrics cephalopelvic disproportion (CPD), obstructed labour foetal distress, intrauterine foetal death (IUFD) retained placenta and ruptured uterus. (*PRE-REQUISITE – CIMS 0251*)

CIMS 0261: Surgery 1 (45/30/ CF 4.0) Y2 T1

Introduction to surgery; divisions of surgery. Infective conditions; preoperative management, post-operative management. Wounds and ulcers – causes and management. Blood transfusion causes and side effects. Haemorrhagic shock-causes and management. Surgical conditions of the gastrointestinal tract. Examination in orthopaedic; fractures – classification, complications, management and healing; orthopaedic appliances.

CIMS 0262: Surgery 11 (45/60/ CF 5.0) Y2 T2

Hernia – types and management. Surgical conditions of the urinary system such as prostatectomy and urethroplasty. Thoracic surgery for various conditions; chest injuries and their management. Burns- types, complications and management. The breast disorders

and their management. Specific fractures and dislocations- management and complications. Congenital anomalies in orthopaedics (*PRE-REQUISITE CIMS 0261*)

CIMS 0274: Epidemiology and Biostatistics (60/0: CF 4.0) Y2 T1

Definition of terms and concepts; scope, uses, methods, foundations of epidemiology; roots of epidemiology; historical background; types of epidemiology- descriptive and analytical. The dichotomy principle. Natural evolution of infectious disease, contact tracing and screening. Properties of disease agent: infectivity, pathogenicity and virulence; the environment; definition and types. Social/economic impact on human health. Demography: definition, structure, processes, population trends. Various types of statistics; accuracy and approximation; various types of error; probability- definition and formula; data: collection types and presentation; various types of graphs; frequency distribution; population and sample: types, role, from sample to population, tests of significance; averages; types; computation and characteristics.

CIMS 0276: Research Methodology (30/0: CF 2.0) Y2T2

Definitions; types of research; identification of research problems; design and design methods; instruments; data collection, analysis, interpretation, and presentation.

CIMS 0275: Community Diagnosis (30/0: CF 2.0) Y2 T2

Definition of common terminologies; health care delivery models; curative versus preventive; needs and demands analysis; survey of key elements – demographic profile and social stratification; health seeking behaviour; nutritional status analysis; environment assessment – physical, biological and social; principles and practice of community diagnosis: organization resources, tools participatory rural appraisal (PRA), questionnaire design; sampling: - random, stratified random, multistage random, cluster sampling technique; primary and secondary data – collection, analysis, interpretation, report writing and intervention.

CIMS 0278: Field Attachment (0/120: CF 4.0) Y2 T3

Attachment to designated rural health facilities; purpose: to acquaint students with real life working environment, observe and report on facility organization and administration, disease pattern, catchments population profile, top twenty causes of daily attendances and top ten causes of admission: perform a project based on literature review or original research/community survey. (*PRE-REQUISITES – CIMS 0171, 0172, 0173, 0274, 0275 and 0276*)

CIMS 0284: Pharmacology and Therapeutics 11 (45/0: CF 3.0) Y2 T1

Autonomic drugs: cholinoreceptor and adrenoreceptor sites acting drugs; cardiovascular-renal drugs: antihypertensive agents, vasodilators, drugs used in treatment of congestive cardiac failure and arrhythmias, diuretics; drugs acting on smooth muscles; drugs working in central nervous system; endocrine drugs; drugs used to treat diseases of blood, inflammation and gout; drugs used in dermatology and gastro-intestinal diseases; special aspects of perinatal, paediatric and geriatric pharmacology. (*PREREQUISITE – CIMS 0182*)

CIMS 0285: Clinical Methods 11 (30/30: CF 3.0) Y2 T1

Introduction to physical examination of a patient – preparation of both the patient and the examination room. General examination and vital signs: systemic and special examination procedures; paediatric history and examination; obstetric and gynaecological history and examination. Laboratory techniques. (*PREREQUISITE – CIMS 0183*)

CIMS 0333: Medicine 111 (45/60: CF 5.0) Y2 T3

Urinary system: congenital disorders such as polycystic kidney, glomerular diseases, tubule-interstitial diseases, renal failure; diagnosis, investigation and management. Nervous system: central and peripheral nervous system disorders; presentation, investigation and therapeutic management. Overview of muscular disorders – presentation, investigation and approach to therapeutic management. (*PREREQUISITE – CIMS 0232*)

CIMS 0334: Medicine IV (45/0: CF 3.0) Y3

Definition; medical ethics and medico-legal issues; informed consent; confidentiality; rape; termination of pregnancy; euthanasia; patient–doctor relationship; advertising; medical certification; National and International codes and relevant Acts of Parliament; Clinical Officers Act (Cap 260); The Helsinki Declaration; the Nuremberg convention; Hippocratic Oath; Geneva convention; the role of research and ethics committee; factors influencing ethical practice – political, socio-economic and cultural; organ transplantation; death; use of medico – legal forms. (*PRE-REQUISITE – CIMS 0333*)

CIMS 0335: Medicine V (45/90: CF 6.0) Y3 T2

Psychiatry – symptomatology; contributory factors; history taking, examination, management and referral procedures; Mental Health Act; dermatovenereology – aetiology, classification, presentation, mode of transmission, diagnosis, management, prevention and follow up of sexuality transmitted infections. Haematology and oncology; disorders of the haemopoietic system. Clotting disorders. (*PREREQUISITE CIMS 0334*)

CIMS 0336: Medicine VI (30/90: CF 5.0) Y3 T3

Musculoskeletal system: immune complex diseases; diagnosis, management and prognosis of specific conditions such as systemic lupus erythromatosis, rheumatoid arthritis, scleroderma, osteoarthritis and mixed connective tissue disorders. Endocrine metabolic disorders: overview of endocrinology. Diagnosis and management of various disorders of intermediary metabolism; bone and mineral metabolism. (*PRE-REQUISITE – CIMS 0335*)

CIMS 0343: Child Health 111 (45/60: CF 5.0) Y3 T1

Gastrointestinal disorders including congenital malformations, infections, acute and chronic childhood diarrhoea and malabsorption. Disorders of the respiratory tract including congenital malformations, acute inflections, pulmonary tuberculosis and bronchial asthma. Disorders of the adrenal gland involving corticosteroids, adrenaline and noradrenaline. (*PREREQUISITE – CIMS 0242*)

CIMS 0344: Child Health IV (45/90: CF 6.0) Y3 T2

Disorders of the renal system: congenital malformation, acute glomerulonephritis, nephritic syndrome, pyelonephritis, cystitis ad renal failure. Cardiovascular system disorders: congenital heart disease- acquired heart disease especially rheumatic heart disease: congestive cardiac failure; pulmonary oedema. Management of both renal and cardiac disorders – diagnosis, investigation and therapeutics (*PRE-REQUISITE – CIMS 0343*)

CIMS 0345: Child Health V (30/90: CF 5.0) Y3 T3

Haematological disorders including various types of anaemias, leukaemias and lymphomas. Tropical medical disorders including leishmaniasis, trypanosomiasis, yellow fever and rift valley fever. Muscle, bone and joint diseases. Accidents and poisoning. Child abuse and consequences especially to the child. Integrated Management of Childhood Illnesses (IMCI). (*PREREQUISITE – CIMS 0344*)

CIMS 0353: Reproductive Health III (45/60: CF 5.0) Y3 T1

Anaesthesia and analgesia; types and causes of operative deliveries; - normal and abnormal puerperium; breast feeding; family planning – concepts, importance, methods information education and communication (IEC); counselling; benign, premalignant and malignant disorders with special reference to the cervix, uterus and varies; trophoblastic diseases. (*PREREQUISITE – CIMS 0252*)

CIMS 0354: Reproductive Health IV (45/90: CF 6.0) Y3 S2

Organization and management of MCH/FP services. Overview of obstetric disorders requiring critical care with special reference to obstetric shock and disseminated coagulation (DIC). Benign and malignant disorders of the breast. Genital injuries, fistulae and prolapse and challenges in their management. (*PREREQUISITE – CIMS 0353*)

CIMS 0355: Reproductive Health V (30/90: CF 5.0) Y3 S3

Infertility – definition; associated causes, diagnosis; management challenges and management failure

options. Advances in reproductive technology in the area of infertility such as in vitro fertilization. Rape and its sequelae and the role of the health team. Menopause and post menopause challenges and various aspects of management including hormonal replacement therapy (HRT). (*PREREQUISITE – CIMS 0262*)

CIMS 0363: Surgery 111(45/60: CF 5.0) Y3 T31

Dental health; dental carries; periodontal diseases; congenital, traumatic, infectious, inflammatory and neoplastic disorders; anaesthetic procedures: extraction of teeth; preventive dentistry. ENT. Congenital infectious, traumatic and neoplastic disorders; epistaxis, hearing impairment and simple tests for hearing foreign bodies and their removal; ear syringing. Ophthalmology; congenital infective, traumatic and neoplastic disorders of the eyeball, external ocular muscles, eye socket and visual pathways; foreign bodies and removal; loss of sight; tests for visual acuity and colour blindness. (*PREREQUISITE – CIMS 0262*)

CIMS 0364: Surgery IV (45/60: CF 5.0) Y3 T2

Orthopaedics. Metabolic bone disease: osteoporosis-causes, risk factors and management; osteomalacia – causes and management; Paget's disease especially complications; generalized developmental abnormalities. Osteonecrosis; effects of radiation on bones; infection of bones and joint-acute osteomyelitis, septic arthritis. Tuberculosis and other infections: tumours both primary and secondary including osteosarcoma, chondrosarcoma and Ewing's sarcoma (*PREREQUISITE – CIMS 0363*)

CIMS 0365: Surgery V (30/90: CF 4.0) Y3 T3

Head injuries: skull fracture; brain damage in head injury – primary including contusions, secondary including intracranial haemorrhage various types of haematomas; raised intracranial pressure; ischaemic brain damage; clinical aspects of head injuries and management. Various aspects of endocrine surgery including thyroidectomy. Spinal injury- clinical presentation, investigations and specific approach to management. (*PREREQUISITE – CIMS 0364*)

CIMS 0377: Health Services Management (45/0: CF 3.0) Y3 T1

Definition of terms. Leadership; types/styles and management principles. Formal organization styles such line, staff and functional aspects. Decision a\making, communication, planning and implantation. Management resources such as manpower, money and materials. Public finance management. Health information systems. Early warning response. Vertical programmes – such as essential drugs programme (EDP), AND Kenya Expanded Programme on Immunization (KEPI). Aims, objectives and strategies.

CIMS 0378: Communicable Diseases 1 (45/0: CF 3.0) Y3 T2

Definition of terminologies; aetiology and classification; host – agent - environment relationship; person-place-time model; socio- cultural and economic determinants; surveillance and contact tracing; prevention, control and eradication programmes/strategies; emerging and re-emerging diseases; investigation and control measures of disease outbreaks.

CIMS 0379: Communicable Diseases II (45/0: CF 3.0) Y3 T3

Epidemiology, management and control of common infectious diseases; malaria, cholera, typhoid and paratyphoid fever, viral haemorrhagic fevers such as yellow fever, dengue fever, Rift Valley fever; tuberculosis, sexually transmitted infections including HIV/AIDS; child hood diseases such as measles, poliomyelitis, scarlet fever, hepatitis A, B, C, D and E; control measures; isolation, quarantine and screening; international rules and regulations; diseases under WHO surveillance. (*PREREQUISITE - CIMS 0378*)

ii. Examination Schedule for Diploma in Clinical Medicine & Surgery

S/No.	EXAM CODE	COURSES EXAMINED	Total CFs	SUBJECT TITLE	EXAMINATIONS TYPE AND DURATION		
	YEAR ONE				Written	Practical/Clinical	Oral paper
1	BIOC 0113	BIOC 0113	3.0	Biochemistry	Combined Essay + MCQ = 2 hrs	-	-
2	HMA 0101	CIMS 0111,0113,0115	11.5	Anatomy	Combined Essay + MCQ = 2 hrs	-	-
3	HPH 0102	CIMS 0112,0114,0116	11.5	Physiology	Combined Essay + MCQ = 2 hrs	-	-
4	HMP 0103	CIMS 0121,0122,0123,0124,0125	16	Pathology	Combined Essay + MCQ = 2 hrs	-	-
6	HNS 0104	CIMS 0181	3.0	Nursing	Combined Essay + MCQ = 2 hrs	-	-
7	HCM 0105	CIMS 0183, CIMS 0285	7.0	Clinical Methods	Combined Essay + MCQ = 2 hrs	-	-
8	FOND 0121	FOND 0121	3.0	Human Nutrition	Combined Essay + MCQ = 2 hrs	-	-
9	CIMS 0171	CIMS 0171	3.5	Human Behaviour	Combined Essay + MCQ = 2 hrs	-	-
13	FOND 121	FOND 121	3.0	Human Nutrition	1x2hrs	-	-
	YEAR TWO						
1	HPT 0201	CIMS 0182, 0284	6.0	Pharmacology	Combined Essay + MCQ = 2 hrs	-	-
2	HME 0202	CIMS 0231,0232	10.0	Medicine	Combined Essay + MCQ = 2 hrs	-	-
3.	HPD 0203	CIMS 0241,0242	9.0	Child Health	Combined Essay + MCQ = 2 hrs	-	-
4	HOG 0204	CIMS 0251,0252	9.0	Reproductive Health	Combined Essay + MCQ = 2 hrs	-	-
5.	HSU 0205	CIMS 0261, 0262	9.0	Surgery	Combined Essay + MCQ = 2 hrs	-	-
6	HCH 0206	CIMS 0172, 0173, 0274, 0275, 0276	13	Community Health	Combined Essay + MCQ = 2 hrs	-	-
	YEAR THREE						
1	HME 0301	CIMS 0333, 0335, 0336	19.0	Medicine	Combined Essay + MCQ = 2 hrs	-	-
2	HPD 0302	CIMS 0343, 0344, 0345	16.0	Pharmacology II	Combined Essay + MCQ = 2 hrs	-	-
3	HOG 0303	CIMS 0353, 0354, 0355	16.0	Reproductive Health	Combined Essay + MCQ = 2 hrs	-	-
	HSU 0304	CIMS 0363, 0364, 0365	16.0	Surgery	Combined Essay + MCQ = 2 hrs		
4	HCH 0305	CIMS 0377, 0378, 0379	9.0	Community health	Combined Essay + MCQ = 2 hrs	-	1x 0.25hrs

FINAL QUALIFYING EXAM							
1	FQE "M"	CIMS 0231,0232, 0333, 0335, 0336	29.0	Medicine	Combined Essay + MCQ = 3 hrs	Long case 1 x 0.75hrs Short case 1 x 0.25hrs	1x 0.25hrs
2	FQE "C"	CIMS 0241,0242, 0343, 0344, 0345	25.0	Child Health	Combined Essay + MCQ = 3 hrs	Long case 1 x 0.75hrs Short case 1 x 0.25hrs	1x 0.25hrs
3	FQE "S"	CIMS 0261, 0262, 0377, 0378, 0379,	25.0	Surgery	Combined Essay + MCQ = 3 hrs	Long case 1 x 0.75hrs Short case 1 x 0.25hrs	1x 0.25hrs
4	FQE "R"	CIMS 0251,0252, 0363, 0364, 0365,	25.0	Reproductive Health II	Combined Essay + MCQ = 3 hrs	Long case 1 x 0.75hrs Short case 1 x 0.25hrs	1x 0.25hrs
5	FQE "H"	CIMS 0172, 0173, 0274, 0275, 0276, 0377, 0378, 0379,	25.0	Community health	Combined Essay + MCQ = 3 hrs	Viva voce 1 x 0,25	1x 0.25hrs

9.2 Matrix aligning courses/units to programme learning outcomes

Programme Learning Outcomes (PLO)	Year 1		Year 2		Year 3	
	Courses	CF	Courses	CF	Courses	CF
PLO 1 Describe the normal physiological functions and anatomical structure of the human body to differentiate normal from abnormal health states	Human Anatomy I Human Anatomy II Human Anatomy III Human Physiology I Human Physiology II Human Physiology III Biochemistry	3.5 3.5 4.5 3.5 3.5 4.5 3.0	Medicine 1 Child health I Reproductive Health I Surgery I	5.0 4.0 4.0 4.0	Medicine III Medicine V Medicine VI	5.0 6.0 6.0
PLO 2 Explain the pathophysiology of diseases	Human Physiology I Human Physiology II Human Physiology III Biochemistry Principles of Human Nutrition	3.5 3.5 4.0 3.0 3.0	Medicine II Child Health II	5.0 5.0	Medicine III Medicine V Medicine VI Surgery III Surgery IV Surgery V Reproductive Health III Reproductive Health IV Reproductive Health V	5.0 6.0 6.0 5.0 6.0 5.0 5.0 6.0 5.0
PLO 3 Improve population health by critically analysing prevailing and emerging health problems by conducting community diagnosis and research for purposes of solving such problems.	Introduction to Human Nutrition Nursing Skills Information technology and National Development Clinical Methods I Clinical Pathology Primary Health Care	3.0 3.0 3.0 3.0 2.0	Epidemiology & Biostatistics Community Diagnosis Field Attachment Research Methodology	4.0 3.0 4.0 2.0	Medicine III Medicine V Medicine VI Surgery III Surgery IV Surgery V Reproductive Health III Reproductive Health IV Reproductive Health V	5.0 6.0 6.0 5.0 6.0 5.0 5.0 6.0 5.0
PLO 4 Provide curative, preventive promotive, and rehabilitative services to the community in an ethical manner.	Human Behaviour Clinical Methods I Microbiology Pharmacology and Therapeutics I	3.0 3.0 3.0 3.0	Clinical Methods II Epidemiology & Biostatistics Community Diagnosis Field Attachment Research Methodology Pharmacology and Therapeutics II	4.0 4.0 3.0 4.0 2.0 3.0	Medicine III Medicine V Medicine VI Surgery III Surgery IV Surgery V Reproductive Health III Reproductive Health IV Reproductive Health V Communicable Diseases I Communicable Disease II	5.0 6.0 6.0 5.0 6.0 5.0 5.0 6.0 5.0 3.0 3.0

PLO 5 Manage health facilities and provide leadership and supervision of staff in health care delivery system.	Information technology and	3.0	Epidemiology & Biostatistics	4.0	Health Service Management	4.0
	National		Community Diagnosis	3.0		
	Primary Health Care	3.0	Field Attachment	4.0		
		2.0	Research Methodology	2.0		

BACHELOR OF SCIENCE IN CLINICAL MEDICINE

1. Philosophy of the Programme

Bachelor of Science in Clinical Medicine programme (BSc. MED) innovatively influences graduate clinicians' professional development through holistic education and generation, acquisition, preservation and dissemination of knowledge and skills, with emphasis on health and related disciplines. The programme provides equal opportunity in producing competitive and hands-on graduates that contribute to health professions training for national and global development.

2. Rationale

2.1 Needs assessment

There is an ever increasing demand for health care services in Kenyans. Health care for all Kenyans is a relevant and highly regarded axiom which needs to be achieved in the nearest of times. Nevertheless, health care for all has not been achieved in this country due to acute shortage of highly trained staff. Most of the sick hail from the countryside where an even acute shortage of medical staff exists due to staff preference to work in urban and peri-urban areas. The shortage of health service providers in this country necessitates increased training of a cadre who will provide health care in different regions of this country and especially in the community level. There is a need for graduates who have in-depth understanding of the preclinical sciences, adequate practical exposure to clinical skills and basic training in management and leadership to satisfactorily serve the diverse communities in Kenya. Graduates of this program will therefore play vital roles in the provision of health care and efficient management of health facilities as highly skilled personnel. The demand to upgrade holders of diploma in clinical medicine to degree levels has recently risen. The Bachelor of Science in Clinical Medicine course of Egerton University will offer opportunities to diploma Clinical Officers to further their studies to degree level. This programme therefore contributes immensely to the health needs of the population and to the academic needs of a vital cadre of health workers who have stagnated in one academic level for eons. Clinical Officers have continued to play vital roles as clinicians

and managers not only in rural facilities but also in the running of district, provincial and national hospitals.

2.2 Justification

Clinical Officers provide about 80% of health services in Kenya and especially in the rural areas of the country. There is need therefore to constantly upgrade their training to improve health care delivery in the country. Training Clinical Officers at a degree or higher level is one way of raising the standards of health care delivery to Kenyans. It is envisaged that the BSc graduate in Clinical Medicine will apply critical thinking and come up with practical solutions to solve the various patients or clients' health problems and needs. The improvement in the services will be achieved through incorporation of the knowledge, skills and attitude acquired.

The programme has been designed to recognize that its graduates will have an advanced training in basic sciences, clinical and community health in order to provide health care that will integrate curative and preventive health care. This program will also give an opportunity for the practicing Clinical Officers to upgrade their education and skills while opening avenues for the graduates to advance in postgraduate and research areas. Unlike the graduates of Bachelor of Medicine and Bachelor of Surgery, the Bachelor of Science in Clinical Medicine will operate as clinicians capable of providing general medical and community preventive care. To become doctors, they will require more training in surgical skills. The professional practice of Clinical Officers is regulated by an Act of parliament (Cap. 260 of the Laws of Kenya) which is charged with training, registration and licensing. This ensures that high standards are maintained during training and practice while observing professional ethics of conduct. The ultimate goal of this programme therefore, is to develop, innovate and improve standards of health care services in the country.

3. Goal of the Programme

The aim of this program is to equip the learners with suitable knowledge on preclinical sciences, clinical proficiency and management skills as well as with the right attitudes to implement the knowledge to advance and improve the health of the population by delivering

health care at the community, national and international levels.

4. Programme Learning Outcomes

At the end of the programme, the graduate will be expected to be able to:

- (i) Describe the normal physiological functions and anatomical structure of the human body to differentiate normal from abnormal health states
- (ii) Explain the patho-physiology of diseases
- (iii) Improve population health by critically analysing prevailing and emerging health problems by conducting community diagnosis and research for purposes of solving such problems.
- (iv) Provide curative, preventive, promotive, and rehabilitative services to the community in an ethical manner.
- (v) Manage health facilities and provide leadership and supervision of staff in health care delivery system.

5. MODE OF DELIVERY

The programme shall be offered in two modules:

- i. Face to face full time taught course for the direct entry (Pre-service) students
- ii. Face to face part time (3 days in a week) taught course for the mature entry (In-service) students

6. ACADEMIC REGULATIONS

6.1 Admission Requirements

Candidates wishing to study for the Bachelor of Science degree in Clinical Medicine shall have met the minimum University entry requirements as stipulated in the Egerton University statutes.

In addition they should meet the following Faculty requirements;

- i. Applicants must have attained a Kenya Certificate of Secondary Education (KCSE) mean grade of B (Minus) or its equivalent and passed in the subject cluster as indicted here below:

Biology	B (Minus)
Chemistry	B (Minus)
Mathematics or Physics	B (Minus)
English or Kiswahili	B (Minus)

OR

- ii. Advanced level or equivalent with a minimum of two principal passes in Biology and Chemistry and a subsidiary pass in Mathematics or Physics.

OR

- iii. Diploma in Clinical Medicine and Surgery candidates who have passed with at least a “credit” and above plus mean grade of C (Plain) in KCSE or equivalent or relevant health related medical course from an institution recognized by Egerton University Senate. Clinical Officers with a Higher National Diploma in a related discipline who will need to enroll in this program will have an added advantage. All applicants for the in-service programme must be dully registered with the regulatory board of the Clinical Officers’ Council.

6.2 Regulation on Credit Transfer

Credit transfer shall be in accordance to Egerton University Statutes of 2013 article 3 (d).

6.3 Course Requirements

All students shall fully attend all classes, practical, and clinical sessions as well as participate totally in field trips and attachments while under the supervision of a qualified lecturer as guided by the University’s ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Students Assessment Criteria

6.4.1 Examination

All students shall be assessed in accordance with the University’s statutes on for undergraduate examinations (Statute 36(6)). There will be two Continuous Assessment Tests (CATs) every term, one end of year or end of course exam administered every end of year or course respectively. The examinations in this program will be conducted in a combination of any of the following modes, depending on the year of study and according to the examination schedule

- i. Written examination
- ii. Viva voce (oral examination)
- iii. Practical examination
- iv. Clinical examination (OSCEs, Short and Long cases)

6.4.2 Continuous Assessment Tests:

- i. Continuous assessment tests will comprise 40% (both for pre-clinical and clinical courses) of the end of year/course examination, except for courses offered by other departments in the University where the 70% and 30% rule will apply.
- ii. Continuous assessment shall comprise of assignments, group discussions, presentations, practicum, written assessments and/or logbook presentations.

6.4.3 End of Years/Course Examinations

End of Year or Course Examination will account for 60% of the total marks and;

- i. Written Examination that will account for 25% (or 30% where the viva voce is not applicable) of the marks and may comprise of essay, multiple choice questions, and short answer questions.
- ii. Clinical or Practical Examination that will account for 30 % of the marks.
- iii. Structured oral (Viva Voce) examination (where applicable) that will account for 5% of the marks.
- iv. Any candidate who fails the clinical examination will have failed to satisfy the examiners in the overall discipline examination even if the final mark is 50% or higher

The fourth Year Examination which is the end of course examination shall comprise both written exam and clinical (practical) exam of all the units taught within the following disciplines.

- i. Internal Medicine
- ii. Reproductive Health
- iii. Surgery
- iv. Child Health
- v. Community Health.

The pass mark shall be 50% except for University core courses whose pass mark will depend on the department under which these courses fall. Any candidate who fails the clinical examination will have failed to satisfy the examiners in the overall discipline examination even if the final mark is 50% or higher

6.5 Grading System

The total marks scored for each course shall be translated into letter grades as follows:-

75% and above-A (Distinction)	
65 – 74%	- B (Credit)
50 – 64%	- C (Pass)
Less than 50%	- D (Fail)

6.6 Examination Regulations

The University rules and regulations shall apply as stipulated in the University Statutes 36 of 2013.

6.7 Moderation of Examinations

Moderation of examinations in programme shall be as stipulated in the University Statutes 36 of 2013.

6.8 Graduation Requirements

To graduate, a student shall cover a total of 258 credit factors that includes a total of 1785 hours of clinical practice and 930 practical hours (pre-service) and 175 credit factors, 1305 hours of clinical practice and 750 practical hours (In-service).

6.9 Classification of the degree

The Bachelor’s degree in Clinical Medicine shall not be classified.

7. Course Evaluation

The course will be evaluated according to the Quality Assessment provisions of Egerton University (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the Clinical Medicine and Surgery department in the Faculty of Health Sciences and the programme academic leader shall be appointed in accordance to the University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal evaluation (self-assessment) at the end of each academic cycle and shall be benchmarked with at least one such programme in a highly ranked University.

8.3 Course coding

The course code for Bachelor of Science in Clinical Medicine will depend on area of specialty e.g. ANAT for Anatomy followed by 3 numerical numbers e.g. ANAT 101.

- a) The first numeral represents the year of study,
b) The second numeral represents course category, i.e.

1. ANAT=Anatomy
0= general anatomy
 2. HPHY=Physiology
0=General physiology
1=Pathophysiology
 3. COMH=Community Health
0=Environmental health and Occupational health
1=Epidemiology
2=Management
3=Education
 4. PATH= Pathology
0=Microbiology
1= Pathology
2 = Ethics and Medical legal issues
 5. PHAM=Pharmacology
0= General pharmacology
1=Clinical pharmacology
 6. IMED=Internal Medicine
0=General Medicine
1=Psychiatry
2=Dermatology
 7. SURG=Surgery
0=General Surgery
1=Orthopedic Surgery
2=Anesthesia
3=Ophthalmology
4=Ear, Nose and Throat
5=Dentistry
6=Radiology
 8. PAED=Pediatrics and Child Health
0 = General pediatrics
 9. REPH=Reproductive health
0=Obstetrics and Gynecology
- c) the third numeral represents the order of the specific courses in the particular category

9. Courses Offered for the Programme

9.1 Schedule of Courses

a) Common core courses

CODE	DESCRIPTION	YEAR	L	P	C.F
COMS 111	Communication Skills	Y1T1	45	0	3.0
COMP 101	Introduction to Computer Applications	Y1T2	45	0	3.0
PHIL 106	Law & Society	Y1T3	45	0	3.0

b) Schedule of Courses (Pre-Service)

CODE	TITLE	CREDIT HOURS			
YEAR 1 TERM 1		L	P	C	CF
ANAT 100	Anatomy of Upper and Lower Limb	45	30	0	4.0
HPHY 100	Cell Biology, Body Fluids, Genetics, and Excitable Tissues	45	30	0	4.0
COMS 111	Communication Skills	45	0	0	3.0
NURS 101	Nursing Skills and First Aid	30	15	0	2.5
PHIL 106	Law and Society	45	0	0	3.0
TOTALS		210	75	0	16.5
YEAR 1 TERM 2		L	P	C	CF
COMH 100	Behavioural Sciences	45	0	0	3.0
ANAT 101	Anatomy of Head and Neck	45	60	0	5.0
COMP 101	Introduction to Computing	45	15	0	3.5
HPHY 101	Physiology of Blood and Cardiovascular System	45	15	0	3.5
BIOC 111	Cell Structure & Biomolecules	45	45	0	3.5
TOTALS		225	135	0	18.5
YEAR 1 TERM 3		L	P	C	CF
ANAT 102	Anatomy of Thorax, Abdomen and Perineum	45	60	0	5.0
HPHY 102	Physiology of Endocrine and Respiratory System	45	15	0	3.5
PATH 110	Immunology	30	15	0	2.5
BIOC	Carbohydrate	45	30	0	4.0

112	metabolism				
FOND 121	Principles of Human Nutrition	45	0	0	3.0
TOTALS		210	150	0	18.0
YEAR 2 TERM 1					
COMH 200	Primary Health Care & Community Based Health Care	45	0	0	3.0
HPHY 200	Physiology of Nervous System and Special Senses	45	15	0	3.5
PATH 220	Medical Ethics and Medico Legal Issues	30	0	0	2.0
PATH 200	Bacteriology and Mycology	30	30	0	3.0
PATH 201	Medical Virology	30	15	0	2.5
PHAM 200	Introduction to Pharmacology & Therapeutics	45	0	0	3.0
BIOC 211	Lipid Metabolism	60	0	0	4.0
TOTALS		285	60	0	21.0
YEAR 2 TERM 2					
COMH 201	Environmental & Occupational Health	30	15	0	2.5
HPHY 201	Physiology of Digestive Systems	30	30	0	3.0
PHAM 201	Pharmacology of Autonomic, Renal and Cardiovascular Drugs	45	0	0	3.0
COMH 210	Epidemiology & Medical Statistics	45	0	0	3.0
PATH 210	Introduction to General Pathology	30	15	0	3.0
PATH 211	Pathology of Circulatory, Respiratory, and Genito-Urinary Systems	45	30	0	4.0
BIOC 212	Biochemical Endocrinology	45	30	0	4.0
TOTALS		270	120	0	22.5
YEAR 2 TERM 3					
HPHY 202	Physiology of Genito-Urinary System	30	30	0	3.0
PATH 202	Hematology and Oncology	30	0	45	3.0
PATH	Medical	45	30	0	4.0

203	Parasitology				
PHAM 202	Pharmacology of central Nervous and Endocrine Drugs	45	0		3.0
PATH 212	Clinical Chemistry	30	30	0	3.0
PATH 213	Pathology of Endocrine, Neuromuscular, and Gastrointestinal Systems	45	30	0	4.0
BIOC 214	Proteins & Nucleotide Metabolism	45	30	0	4.0
COMH 220	Communicable Diseases.	30	0	0	2.0
	TOTALS	300	150	45	26.0
YEAR 3 TERM 1					
IMED 303	Clinical Methods	30	0	30	3.0
IMED 300	Respiratory and Cardiovascular Medical Disorders	30	0	45	3.0
PAED 300	Child Growth, Nutrition and Infectious Diseases	45	0	90	5.0
PHAM 300	Haemopoetic, Anti-inflammatory and Chemotherapeutics Agents	45	0	0	3.0
REPH 300	Female System Development, and Gynecologic Emergencies	45	0	90	5.0
SURG 300	Minor Surgical Conditions and Emergency Management	30	0	45	3.0
COMH 310	Research Methodology	45	0	0	3.0
SURG 310	Common Fractures and Management	30	0	45	3.0
	TOTALS	300	0	345	28.0
YEAR 3 TERM 2					
IMED 301	Tropical Medicine	30	0	45	3.0
PAED 301	Neonatology, Cardiovascular, and Emergency Childhood Conditions	45	0	90	5.0
REPH	Pregnancy, Labor	45	0	90	5.0

301	and Obstetric Emergencies				
SURG 301	Gastrointestinal and Respiratory Surgical Conditions	45	0	90	5.0
IMED 302	Genitourinary and Gastrointestinal Medical Disorders	30	0	45	3.0
COMH 321	Health Service Management	45	15	0	3.5
	TOTALS	240	15	360	24.5
YEAR 3 TERM 3					
COMH 322	Community Attachment and Research Project	0	150	0	5.0
YEAR 4 TERM 1					
IMED 400	Medical Disorders of the Central Nervous System	30	0	45	3.0
PAED 400	Gastrointestinal, Endocrine, Neuromuscular Childhood Diseases.	45	0	90	5.0
REPH 400	Infertility, Tumors and Medical Diseases in Pregnancy	45	0	90	5.0
SURG 400	Cardiovascular, Endocrine and Breast Surgical Disorders	30	0	45	3.0
IMED 410	Mental Health and Substance Abuse	30	0	45	3.0
SURG 410	Metabolic and Pediatric Orthopedic Disorders	30	0	45	3.0
COMH 420	Disaster Management	30	0	0	2.0
	TOTALS	240	0	360	24.0
YEAR 4 TERM 2					
IMED 401	Medical Oncology and Palliative Medicine	30	0	45	3.0
IMED 420	Dermatovenereology	30	0	45	3.0
SURG 420	Anesthesia	30	0	45	3.0
COMH 421	Health Economics and	45	30	0	4.0

	Entrepreneurship				
SURG 430	Ophthalmology	30	0	45	3.0
SURG 440	Ear, Nose and Throat	30	0	45	3.0
SURG 450	Dental Health	30	0	45	3.0
SURG 460	Imaging Sciences	30	0	45	3.0
	TOTALS	225	30	315	25.0
YEAR 4 TERM 3					
PAED 401	Musculo-skeletal, Teratology & Pediatric Forensic Medicine	30	0	90	4.0
REPH 401	Family Planning, Menopause Breast and Pelvic Relaxation Disorders	30	0	90	4.0
SURG 401	Head Injuries, Transplantation and Oncological Surgical Conditions	30	0	90	4.0
IMED 402	Diseases of the Endocrine System	30	0	90	4.0
IMED 403	Forensic Medicine, Toxicology and Medical Legal Issues	30	0	0	2.0
COMH 422	Health Service Delivery Systems	30	15	0	2.5
	TOTALS	180	15	360	20.5
	GROSS HOURS	2685	900	1785	249.5

(c) Course Descriptions

ANAT 100: Anatomy of Upper and Lower Limb (45/3/0:4.0 C.F)

Definitions of anatomical terminology; Human posture; Anatomical landmarks: structural organization, location of human organs and their relationships. Skin and appendages; introduction to regional anatomy: gross anatomy of lower limb and upper limb including blood, nerve and lymphatic supply.; Histology: introduction to methods of study of histology and instrumentation; cell and various cell types; organization of epithelial tissue and glands, the skin and its appendages and connective

tissue: organization of cartilage, bone, blood; the muscle tissue – skeletal, cardiac and smooth, myoepithelial cells. Fertilisation, implantation, embryogenesis and organogenesis. Teratogenesis and congenital disorders; Stages of limb development of bone, cartilage, joints and skeleton. Development of skeletal, smooth and cardiac muscles; development of skin, hair, nails, mammary glands and teeth. **(Y1T1)**

COMH 100: Behavioral Sciences (45/0: 3.0 C.F)

Introduction to community health- terminologies, concepts, principles and practice; human behavior - psychology, ecology, anthropology and sociology; health seeking behavior; socio-economic factors and health; group dynamics, applications of behavioral sciences in health; nutrition; food - energy requirements; food chain; nutritional diseases; nutritional assessment for individuals and community. **(Y2T1)**

HPHY 100: Cell Biology, Body Fluids, Genetics and Excitable Tissues (45/30/0:4.0 C.F)

Homeostasis; body fluids and electrolytes; cellular communication; cell structure; Cell biology-various types of organelles, their replication & functions, skin functions; cell division-mitosis, cell replication, translation and meiosis ; genetic basis of inheritance- genetic code, chromosomes, gene expression; population genetics-inheritance patterns; chromosomal abnormalities; ethical issues in genetics; gene therapy; excitable tissues and basics of electrical communication; nerve cell action potentials; chemical communication;. Types of muscles, muscle contractions and their functions. **(Y1T1)**

IMED 100: Clinical Methods (30/30/0:3.0 C.F)

History taking: the art of history taking- creation of rapport; communicating with patient; chief complaint; history of presenting illness; review of systems; menstrual and obstetric history where applicable; past medical and surgical history; personal social and economic history; family history; physical examination- general approach; clinical parameters; vital signs ; systemic examination; prescription writing; case presentation; data interpretation; and diagnosis making. **(Y1T3)**

ANAT 101: Anatomy of Head and Neck (45/60/0:5.0 C.F)

Head, neck and spine: gross anatomy – general topography; neck triangles; paravertebral region; root of the neck; face; nose and paranasal region; mouth and palate; larynx; vertebral column and canal; cranial cavity and meninges; central nervous system: brain, spinal cord, peripheral nerves, motor, sensory and autonomic nerves. Sensory systems; anatomy of special sense organs and systems eye; ear; Histology – organization of neurons; spinal cord and peripheral nerves; organization of receptors, brain and eyeball; endocrine gland

Embryology: pharyngeal arches, pouches, grooves and membranes; development of thyroid and salivary glands, tongue, face, nasal cavities and palate; development of spinal cord, brain, peripheral nervous system and autonomic nervous system, Special senses: eyes, ears, nose. **(Y1T2)**

COMP 101: Introduction to Computing (45/15/0:3.5 C.F)

Computer organization and operation. Impact of computers on society. Hands on experience with word processing, graphics, numerical computation, data storage and retrieval, networking and other micro-computer applications. **(Y1T1)**

HPHY 101: Physiology of Blood and Cardio-vascular System (45/15: 3.5 C.F)

Functions of blood, plasma and its composition; Physiology of Red blood cells; Blood groups and cross-matching; types of white blood cells; Platelets and Homeostasis; Regulations & functions of the heart and blood vessels; Regulations of Cardiac output; regulation of blood pressure; Functions of the lymphatic system and microcirculation; Special circulations; Maternal/placental/fetal unit and functions; Physiology of shock. **(Y1T2)**

NURS 101: Nursing Skills and First Aid (30/15/0: 2.5 C.F)

History of nursing; Nursing process: plan of care, monitoring and evaluation. Infection control practices: aseptic techniques, barrier nursing, specimen collection, storage and transportation. Admissions and discharge procedures, care of equipment and supplies, care of the

dying and the dead. Nurse-clinician relationship. Assessment of accident situation; Safe provision of appropriate First Aid: ethics in First Aid, ethics in First Aid, Clinical conditions: respiratory failure, cardiac arrest and circulatory failure; Shock, injuries;. Unconscious patient/convulsions; Mass accident; Ethics of handling accident victims; Burns, Drowning, Bites, and poisoning; Basic life support; First aid measures at site: Determination of priorities and transportation. **(Y1T1)**

ANAT 102: Anatomy of Thorax, Abdomen and Perineum (45/60/0:5.0 C.F)

Gross anatomy of the gut; gastro-intestinal tract; anterior abdominal wall; abdominal cavity; peritoneum; vessels and nerves; liver and biliary tract; pancreas; spleen; posterior abdominal wall; kidneys, ureters and suprarenal glands. Pelvic cavity; rectum; urinary bladder and ureters in the pelvis; male internal genital organs; female internal genital organs and urethra; pelvic vessels and nerves; perineum – male and female urogenital regions; pelvic joints and ligaments; pelvic osteology; Histology – digestive system including liver and pancreas; urinary system; male and female reproductive systems. Embryology: development of body cavities; development of the larynx, trachea, bronchi and lungs; development of the heart and vessels and the lymphatic system; fetal and neonatal circulation: The foregut, mid-gut and hindgut, development of the spleen; development of the genito-urinary system, suprarenal glands and inguinal region; development of the genitor – urinary system, suprarenal glands and inguinal canals. **(Y1T3)**

HPHY 102: Physiology of Endocrine and Respiratory System (45/15/0:3.5 C.F)

Respiratory system; respiratory cycle, factors affecting respiration, Lung volumes and capacities, gas transport and control of respiration. Hormones; definition, mechanism of action and types. Functions of the endocrine system: Hypothalamus; the pituitary, Pancreas, thyroid, Calcium ion regulation; adrenal glands, other endocrine glands. **(Y1T3)**

PHIL106: Law and Society (45/0/0:3.0 C.F)

Definition and concept of Philosophy; historical perspectives of philosophy. Divisions of philosophy;

logic, epistemology; metaphysics and ethics. Logical reasoning and the nature of Philosophical inquiry. Problems of knowledge; forms of realism; subjective idealism; empiricism; methods of hypothesis testing and the presumptions of science; rationalism and a priori knowledge. Theory of Intuitive knowledge. Problems of reality; materialism and nature of the universe, evolutions Vs creation; teleological arguments. Human nature and the mind/body problem; freedom and determinism; ethics and human behavior; Interdependence of culture, morality religion and acceptable behavior, reason, responsibility and transparency in society. (Y1T2)

PATH 110: Immunology (30/15/0:2.5 C.F)

Introduction to immunology: historical background, Immune system: lymphatic and immune system; immunoglobulin's- classification, structure, production, properties, functions; resistance and immunity. Mechanisms of immune response: humoral immunity; non-specific and specific immunity; complement system; proteins activation and biological properties; antigen processing and presentation; antigen-antibody interactions; genetic basis of immune function- major histocompatibility complex; immunity to infections; immune evasion mechanisms. Immune disorders. Hypersensitivity; transplantation immunology – tolerance, immunosuppressant and immune-enhancement; vaccines and disease control; autoimmune diseases; Acquired Immunodeficiency Disease Syndrome (AIDS). (Y1T2)

BIOC 111: Cell Structure & Biomolecules (45/45/0:4.5 C.F)

Introduction to biochemistry. Origins, classification, nomenclature, organization and chemical characteristics of various biomolecular; carbohydrates, proteins, lipids and nucleic acids. Structure function relationship of biomolecular. Cell structure and functions; Prokaryotic and eukaryotic cells: various cell organelles and function of biomembranes; transport across the membrane. (Y1T2)

BIOC 112: Carbohydrate Metabolism (45/30/0:4.0 C.F)

Bioenergetics: mitochondrial respiration and substrate and oxidative phosphorylations. Carbohydrate metabolism: glycolysis, TCA cycle, fructose and

galactose metabolism. Gluconeogenesis, the HMP shunts and different shuttle pathways. Glycogen storage diseases. C3 and C4 pathways of carbohydrate metabolism, Glycolate cycle. Regulation of Carbohydrate metabolism by hexokinase and glucokinase; covalent – noncovalent modification of phosphorylase; feedback control by allosteric enzymes; phosphofructokinase and pyruvate kinase; hormonal control of glycogen synthase and glycogen phosphorylase. (Y1T3)

FOND 121: Principles of Human Nutrition (45/0/0:3.0 C.F)

An introduction to the basic principles of human nutrition including the different food nutrients, their functions, deficiency diseases and food sources; nutritional status assessment tools as well as dietary standards; nutrition through the life cycle; common nutrition problems afflicting the world populations, their prevention and management. (Y1 S1)

COMH 200: Primary Health Care & Community Based Health Care (45/0/0:3.0 C.F)

Definition – PHC, CBHC. PHC/CBHC: Origin, elements, organization, strategies, implementation, achievements, and constraints. Community needs; assessment and tools. Training of community based health workers and their roles. Roles of traditional health practitioners. Financing and reforms in PHC. (Y2T1)

HPHY 200: Physiology of Nervous System & Special Senses (45/15/0:3.5 C.F)

Functions of Central and peripheral nervous systems; Control of posture and movement; Higher functions of the brain, learning and memory; pain; temperature regulation; control of visceral functions by the hypothalamus; sleep; control of emotions and behavior by limbic system; Spinal cord reflexes; muscle spindles; functions of the Autonomic nervous system; Functions of the special senses; the eye, ear, tongue, nose. (Y2T1)

PATH 200: Bacteriology and Mycology (30/30/0:3.0 C.F)

Historical background; Definitions. Classifications and taxonomy of bacteria; Culture of micro-organisms. Physiology of micro-organisms. Diagnostic

procedures in bacteria and mycology. Bacteria in health and disease. Resistance & sensitivity testing methods. Procedures in handling equipment and clinical samples. Fungal and bacterial infection prevention and control; personal hygiene practices, handling of equipment and clinical samples, decontamination, sterilization, disinfection, immunity to microbial infections, chemotherapy and vaccination. (Y2T1)

PHAM 200: Introduction to Pharmacology & Therapeutics (45/0/0:3.0 C.F)

Basic principles: introduction; drug receptors and pharmacodynamics; pharmacokinetics and pharmacodynamics – rational dosing and the time course of drug action; drug biotransformation; basic and clinical evaluation of new drugs; Complementary and alternative therapies: herbal and traditional medicines; rights of drug administration and client teaching. Drug regulations: rationale of use; drug handling; storage; procurement and supply; pharmacoeconomics. Drug legislation: pharmacy and Poisons Act Cap 244; Narcotics and psychotropic Act. (Y2T1)

COMH 201: Environmental & Occupational Health (30/15/0:2.5 C.F)

Occupational Health – historical background; legislation in Kenya; Occupational Safety and Health Act. (OSHA, 2007); Risk assessment: Risk management; Occupational Hygiene; Occupational diseases and accidents; housing; hazards of poor housing; principles of disaster management; hazards and nuisances; Occupational health services; Principles of Environmental health- principles and practices; water-sources, protection, treatment; waterborne diseases; waste- definition, types and disposal; food-preservation, storage, handling and spoilage; food borne diseases; (Y2T2)

HPHY 201: Physiology of Digestive System (30/30/0:3 C.F)

Gastrointestinal motility; Gastrointestinal hormones; Mastication, digestion, absorption and metabolism; Regulation of gastrointestinal functions; Liver physiology; (Y2T2)

MED 201: Hematology and Oncology (30/0/45:3.0 C.F)

Haematology and Oncology – molecular and cellular haematopoiesis; pathophysiology of anaemia; types of anaemia; disorders of haemoglobin; bone marrow failure and aplastic anaemia; myeloproliferative disorders and leukemia; malignant lymphomas; blood groups and blood transfusion; bone marrow transplantation; disorders of the platelet and vessel wall; disorders of coagulation and thrombosis; anticoagulants; fibrinolytic and anti- platelet therapy; principles of neoplasia; principles of cancer therapy; malignant tumours of the head and neck, breast, ovary, testis and the skin; endocrine manifestations of neoplasia; paraneoplastic neurologic syndromes.(Y2T3)

PATH 201: Medical Virology (30/15/0:2.5 C.F)

Virology: Introduction, history of virology, virus composition, classification of viruses, replication of viruses, methods of study of viruses, cultivation of viruses, serological diagnostic procedures, pathogenesis of viral disorders, control of viral infections, control and submission of specimen and survey of viruses. Viral Infection prevention and control.(Y2T2)

PHAM 201: Pharmacology of Autonomic, Renal and Cardiovascular Drugs (45/0/0:3.0 C.F)

Autonomic drugs: introduction; cholinceptor – actioning and cholinesterase - inhibiting drugs; cholinceptor – blocking drugs; adrenoceptor – activating and other sympathomimetic drugs; adrenoceptor antagonist drugs. Cardiovascular – renal drugs: antihypertensive agents; vasodilators; cardiac glycosides and other drugs used in congestive cardiac failure; drugs used in cardiac arrhythmias; diuretic agents; drugs with important actions on smooth muscles; histamine, serotonin and the ergot alkaloids; vasoactive peptides; the eicosanoids – prostaglandins, thromboxanes, leukotrienes and related compounds; nitric oxide, donors and inhibitors; drugs used in asthma, PUD, Gout. (Y2T2)

HPHY 202: Physiology of Genital Urinary System (30/30/0:3 C.F)

Genito-Urinary system and its functions; renal function and micturition; regulation of extracellular fluid and electrolyte composition and volume; Reproductive

system; puberty, hormones that regulate male and female functions. Oogenesis; Menstrual cycle; Spermatogenesis; Physiology of pregnancy; neonatal physiology; menopause.(Y2T2)

PATH 202: Medical Parasitology (45/30/0:4.0 C.F)

Definition and general considerations; habitats - body fluids tissue and other structures; classifications - protozoa such as trichomonads, giardiasis, trypanosome and leishmania; sporozoa such as toxoplasma and plasmodium; trematoda such as echenostomatidae, schistosomatidae and echinostomatidae; eucostoda such as pseudophyllidea and cyclophyllidea and nematoda such as trichiuroidea, rhabditida, ascaridida and strongylida. Characteristics and life cycles. Aetiology and modes of transmission; prevention and control measures.(Y2T3)

PHAM 202: Pharmacology of Central Nervous and Endocrine Drugs (45/0/0:3.0 C.F).

Central nervous system drugs: sedative – hypnotic drugs; the alcohols; antiseizure drugs; general anaesthetics; local anesthetics; skeletal muscle relaxants; management of movement disorders; anti-psychotic agents and lithium; antidepressants; opioid analgesics and antagonists; drugs of abuse; endocrine drugs; hypothalamic and pituitary hormones; thyroid and antithyroid drugs; adreno-corticosteroids and adreno – cortical antagonists; gonadal hormones and inhibitors; pancreatic hormones and anti-diabetic drugs; agents that affect bone mineral homeostasis.

COMH 210: Epidemiology and Medical Statistics (45/0/0:3.0 C.F)

Definition and meaning of statistics; Statistics in epidemiology, public health and medicine; Mathematical operations; development and survey instruments, data collection, analyses, report writing, presentation and dissemination; Scales of measurements; Probability theory, binomial distribution, normal distribution, confidence level; Correlation and regression analysis, linear correlation coefficient, z-transformation of the correlation coefficient, grouped data, Vital statistics, nomenclature, health data gathering; Definitions Terminology used in community diagnosis. Participatory rural assessment: Epidemics: outbreaks, characterization and establishment of

outbreak existence. Measurements of morbidity and mortality; Sources of data in community health; Analytical studies: Choice of study methods: Case Control Studies Clinical Trials and Descriptive studies, Cross-Sectional studies, Cohort studies; Problems in etiologic investigation of diseases; Populations dynamics and health (Y2T2)

PATH 210: Introduction to General Pathology (30/15/0:2.5C.F)

Introduction to pathology: Definitions; cell types, growth and differentiation and cell injury, cell adaptation; Disorders of fluid, electrolyte and Acid Base Balance; Inflammation; acute inflammation, vascular changes, cellular changes, events, extravagation, phagocytosis and chemical mediators; chronic inflammation; wound healing and repulsion; edema; Pathogenesis of diseases: liver disease, kidney disease. Cysts: definition and types. Neoplasms: benign tumors, malignant tumors; clinical feature of tumors; cardiogenic agents; grading; staging; laboratory diagnosis. (Y2T1)

BIOC 211: Lipid Metabolism 11 (60/0: 4.0 C.F)

Lipid metabolism and its links with carbohydrate metabolism, fatty acid oxidation, lipogenesis triglyceride synthesis; phospholipids synthesis. Ketone bodies and propionate metabolism. Lipid storage diseases. Gluconolactone pathway, cholesterol biosynthesis. Regulation of lipid metabolism and associated diseases. Metabolism of each individual amino acid and their relationship to carbohydrate metabolism and urea cycle. Biosynthesis and breakdown of haeme; breakdown of purines and pyrimidines.(Y2T1)

PATH 211: Pathology of Circulatory, Respiratory, and Genito- Urinary Systems (45/30/0: 4.0 C.F)

Common infectious, inflammatory and neoplastic conditions affecting the cardiovascular and pulmonary systems such as rheumatic fever and rheumatic heart disease, Disorders of blood flow, Blood pressure, and Cardiac function. Heart failure and circulatory shock. Cardiomyopathy, peripheral vascular disease, Disorders of ventilation and gas exchange; bronchial asthma, bronchiectasis, pneumonia and lung cancer. Genitourinary system: - infective, inflammatory

and congenital disorders; hereditary conditions; benign and malignant tumours; chronic renal failure and renal transplant; other conditions such as a calculi. Disorders of male and female genital urinary systems(Y2T2)

BIOC 212: Biochemical Endocrinology (45/30: 4.0 C.F.)

Hormones and their classification; organizational hierarchy of hormones; role of hormones in the interaction of a multicellular organism; mechanisms of hormone action on target receptors; second messengers; the structure, biosynthesis, secretion, action and disorders of the principal relevant hormones - pituitary, insulin, glucagon, adrenaline, thyroid, parathyroid, steroid and gut; prostaglandins and paracrine hormones. (Y2T2)

PATH 212: Clinical Chemistry (30/30/0:3.0 C.F)

Blood coagulation, fibrinolysis, and related disorders. Hematological changes in disease. Immunohematology and blood transfusion. Laboratory evaluation of urine, pancreatic, synovial and cerebrospinal fluid disorders. Serum enzymes, isoenzymes and their application in clinical abnormalities. Clinical tests for liver, renal and adrenal function. Examinations. Findings and interpretation of blood and bone marrow specimens. (Y2T3)

PATH 213: Pathology of Endocrine, Neuromuscular, Gastrointestinal System (45/30/0:4.0 C.F)

Endocrine pathology: Disorders of growth and metabolism endocrine control; hypothalamus, pituitary, thyroid, adrenal and parathyroid glands: Diabetes and metabolic syndrome; multiple endocrine neoplasia syndromes: the pineal body. Nervous system: congenital, traumatic, infective, inflammatory and metabolic disorders; space occupying lesions; extrapyramidal disorders; autonomic nervous system disorders, neuromuscular disorders; peripheral neuropathies, ageing and the dementias: locomotor system-diseases of joints: soft tissues tumours and tumour-like lesions: Alimentary tract: inflammatory diseases, tumours and miscellaneous conditions; stomach – inflammation, peptic ulcer disease, tumours; intestines – infective and inflammatory disease, diverticulosis and tumours; functional disturbances; peritoneum – peritonitis and other miscellaneous

conditions; diseases of the liver, biliary tract and the pancreas. (Y2T3)

BIOC 214: Protein & Nucleotide Metabolism. (45/30/0.4 C.F)

Chromosomal organization; structure of nucleic acids. DNA functions and replication. Mutations – length mutations and point mutations and point mutations and DNA repair. RNA – types, synthesis, structure and properties; biosynthesis of proteins, Bacterial conjugation, transformation and transduction. Introduction to genetic engineering. (Y2T3)

COMH 220: Communicable Diseases. (30/0:2.0C.F)

Introduction: non-communicable diseases – definitions; diagnosis and management of non-communicable diseases; communicable diseases - diagnosis, management and control of communicable diseases; epidemic patterns, control and prevention; international health issues and their relevance to the local situation; diagnosis and management of emerging and re-emerging diseases; readings and seminars in selected topics of major public health importance; horizontal and vertical course integration. (Y2T3)

PATH 220: Medical Ethics and Medico Legal Issues (30/0/0:2.0 C.F)

Medical ethics and professional conduct: definition; doctor patient relationship; advertising; medico-legal issues – informed consent; confidentiality; termination of pregnancy; euthanasia; death; medical certification; National and international codes and relevant acts including Medical Practitioners and Dentist Act; Public Health Act; The Helsinki declaration, The Nuremberg convention, Geneva convention. The international code of medical Ethics, the Tokyo declaration, The oath of Athens and the Hippocratic Oath; The Role of research and ethics committee; factors influencing ethical practice-political, socio - economic and cultural; emerging issues. (Y2T1)

IMED 300: Respiratory and Cardiovascular Medical Disorders (30/0/45:3.0 C.F)

Medical history; Physical examination. Medical conditions of respiratory, cardiovascular; approach to a patient with respiratory and with heart disease; disturbance of respiratory functions; pneumonia and

lung abscess; hypersensitivity pneumonitis and environmental lung disease; chronic obstructive airway disease; primary pulmonary thromboembolism; neoplasms of the lung, disorders of the pleura, mediastinum and diaphragm; adult respiratory distress syndrome; mechanical ventilator support. Symptoms of heart disease; investigations of the cardiovascular system including heart failure; cardiac electrical conduction disturbances; congenital heart disease in adult; rheumatic fever and rheumatic heart disease; peripheral vascular disease such as obliterative arterial disease, systemic hypertension, Raynaud's phenomenon and vasculitis. Medical emergencies. (Y3T1)

PAED 300: Child Growth, Nutrition and Infectious Diseases (45/0/90:5.0 C.F)

Introduction; history taking, examination and presentation; growth and development and affecting factors; the premature and term infant, child and adolescent; overview of nutrition requirements; pathophysiology of deficient or excessive intake; Infectious and communicable diseases: characteristics, epidemiology, pathogenicity and control: Pathophysiology of septic shock; (Y3T1)

PHAM 300: Haemopoietic, Anti-inflammatory and Chemotherapeutic Agents (45/0/0:3.0 C.F)

Agents used in anaemias; haematopoietic growth factors. Drugs used in disorders of coagulation. Agents used in hyperlipidaemia. Nonsteroidal anti-inflammatory drugs, disease-modifying antirheumatic non-opioid analgesics and drugs used in gout. Chemotherapeutic drugs: beta-lactam antibiotics and other inhibitors of cell wall synthesis; chloramphenicol, tetracyclines, macrolides, clindamycin and streptogramins. Aminoglycosides and spectinomycin. Sulphonamides, trimethoprim and quinolones. Antimicrobial drugs. Antifungal agents. Antiviral drugs. Miscellaneous antimicrobial; disinfectants, antiseptics and sterilants. Clinical use of antibacterial agents. Basic principles of anti-parasitic chemotherapeutic. Antiprotozoal drugs. Clinical pharmacology of anti-helminthic drugs. Cancer chemotherapy. Immunopharmacology.

REPH 300: Female System Development and Gynecological Emergencies (45/0/90:5.0 C.F) Anatomy and physiology of the human reproductive system. Obstetrical and gynaecological history, examination and investigations; Embryology: Fertilization, implantation, embryogenesis and organogenesis; maternal placental fetal unit; reproductive physiology – puberty, menstrual and spermatogenic cycles; menstrual disturbances; Amenorrhea and abnormal vaginal bleeding; human sexuality. Gynecologic emergencies abortion, acute abdomen, ectopic pregnancy. Pelvic infections including STI and HIV. **(Y3T1)**

SURG 300: Minor Surgical Conditions and Emergency Management (30/0/45:3.0 C.F) History, physical examination; Investigations of surgical/orthopedic conditions and their interpretation. Minor surgical conditions and procedures. Trauma-approaches to first aid; initial and secondary assessment and management of emergencies and specific injuries; - causes and management; of burns and cold injuries: bites and stings; diagnosis, management and prognosis of tropical conditions such as ulcers, sarcomas, lymphomas, mycoses, leprosy, schistosomiasis; routine respiratory care and support; shock-definition, types and management. Preoperative evaluation, preparation and premedication fluid and electrolyte management - body fluid compartment; factors affecting fluid and ion distribution; operative and postoperative states – operative incisions and skin graft; wound healing; nutrition; complications and management. **(Y3T1)**

IMED 301: Tropical Medicine (30/0/45:3.0 C.F) Tropical infectious diseases: basic considerations in infectious diseases and clinical syndromes; community acquired and nosocomial infections; general considerations of bacterial diseases, diseases caused by gram – negative, gram – positive bacteria and mycobacteria; spirochetal diseases; rickettsia, mycoplasma and Chlamydia; viral diseases: DNA and RNA viruses; HIV/AIDS; fungal infections; protozoan and helminthes infections; ectoparasites. **(Y3T2)**

PAED 301: Neonatology, Cardiovascular and Emergency Childhood Conditions (45/0/90:5.0 C.F) Neonatology; effects of labor on the neonate; neonatal adaptation and associated problems; physiology of the newborn; breastfeeding; factors influencing perinatal mortality and morbidity, congenital infections: Cardiovascular system: congenital and acquired disorders, causes and management. Common childhood, conditions e.g burns, drowning, electrocution and heat stroke; shock; sudden infant death syndrome; child abuse; drug abuse, allergy, immunity and immune related disease; principles, practical applications and adverse effects of immunization; pigmentary, inflammatory and immune response of the skin and its appendages; dermatological manifestation of systemic disease; immunology and connective tissue disorders. **(Y3T2)** *(Prerequisites: PAED 300).*

REPH 301: Pregnancy, Labor and Obstetric Emergencies (45/0/90:5.0 C.F) Normal pregnancy and prenatal care: diagnosis, common problems and nutrition; high risk pregnancy; assessment of foetal well – being. Labour and delivery and its complications. Newborn assessment; normal puerperal changes; abnormal puerperal presentation and management-Analgesia: types; indications and contra-indications in labour; anaesthesia – preoperative assessment, premedication, preparation for theatre, intra-operative and post-operative care; Obstetric emergencies: eclampsia, ruptured uterus, ante-partum haemorrhage, cord prolapsed, cephalo-pelvic disproportion, obstructed labour, intra-uterine foetal death, retained placenta foetal and maternal distress. **(Y3T2)** *(Prerequisites: REPH 300).*

SURG 301: Gastrointestinal and Respiratory Surgical Conditions (45/0/90:5.0 C.F) Gastrointestinal tract – Diagnosis and management of congenital anomalies, trauma, inflammatory conditions and tumours of the Oral cavity, Salivary glands, tongue and oesophagus; peptic ulcer disease syndrome; stomach tumours; intestinal obstruction; acute abdomen; congenital anomalies, inflammation, and tumours of the hepatobiliary tree; perianal and rectal disease: congenital anomalies, infections and tumours of the urogenital system; testicular conditions and management. Respiratory system-air way obstruction;

congenital anomalies; haemopneumothorax; empyema thoracis; tracheostomy-indications and management. **(Y3T2)**

IMED 302: Genitourinary and Gastrointestinal Medical Disorders. (30/0/45:3.0 C.F) Medical conditions of Genitor-urinary and gastrointestinal systems: Inflammatory bowel diseases; gastro-intestinal tract tumors; peritonitis; derangement of bilirubin metabolism; hepatitis; pancreatic tumors; endocrine tumors of the gastro-intestinal tract; diseases and disorders of the kidney and urinary tract; disturbances of renal functions and immunopathogenesis or renal injury; acute renal failure, dialysis and transplantation in the treatment of renal failure. **(Y3T2)**

COMH 310: Research Methodology (45/0/:3.0 C.F) Research methodology – definition of research; types of research; importance of research to community and nation; available resources; research design, (formatting research objectives; - conceptual framework; the concept proposal) methods and instruments; data – collection, analysis, interpretation and presentation; problems in research; report writing and publication; dissemination of findings to stakeholders; application of findings. **(Y3T1)**

SURG 310: Common Fractures and Management (30/0/45:3.0 C.F) Common fractures and dislocations – first aid and transportation; priorities in polytrauma; diagnosis; classification; methods of fracture management-closed reduction, continuous traction, internal and external fixation and arthroplasty; fracture healing; children fractures; early and late complications of fractures and dislocations-nerve injury, ischaemia, thromboembolism and wound care; upper extremities, spinal, and lower extremity-various types of fractures and management. **(Y3T1)**

COMH 321: Health Service Management (45/15/0:3.5 C.F) Management – definition, principles functions, roles and styles of leadership; team leadership and management of group processes; interpersonal relations; public relations; industrial relations; conflict resolutions;

dispute handling; collective bargaining; problem solving and decision-making; critical thinking; change management and crisis management organization of health services in Kenya and comparative systems; Hospital administration and management: Human resource management;- practices, counseling, coaching, mentoring, motivation, work environment: National vertical programmes; Communication and networking; medical education, Philosophy and objectives of School of Health sciences. Introduction to medical education. (Y3T2)

COMH 322: Community Attachment and Research Project (0/150/0:6.0 C.F)

The students will be attached to approved rural health facilities for projects and community diagnosis activities. Factors that determine community health, community diagnosis, operational research and problem solving. Health service management exposure. Students will be attached to the administrative wing of the health institution. (Y3T3)

IMED 400: Medical Disorders of the Central Nervous System (30/0/45:3.0 C.F)

Central nervous system diseases – congenital, infectious, traumatic, nutritional and metabolic disorders; convulsive disorders; cerebrovascular diseases; dementias; extrapyramidal disorders; motor neurone disease and progressive ataxia; demyelinating diseases; disorders of the autonomic nervous system; disorders of cranial nerves and the spinal cord; diseases of the peripheral nervous system; dermatomyositis and polymyositis; inherited, metabolic, endocrine and toxic myopathies; myasthenia gravis; periodic paralysis and chronic fatigue syndrome; diagnosis and management. (Y4T1)(Prerequisites: IMED 300, 302).

PAED 400: Gastrointestinal, Endocrine and Neuromuscular Childhood Diseases. (45/0/90:5.0 C.F)

Disorders of gastrointestinal system including pancreas, liver and biliary systems; pathophysiology and management of primary genitourinary disorders; ambiguous genitalia; diagnosis and management of growth retardation, hyperglycaemia, hypoglycaemia; thyroid, adrenal and parathyroid disorders; nervous and muscular systems – development, structure and

function; major neuropathies; degenerative disorders; seizures, myopathies; mental and motor retardation; congenital and hereditary disorders. (Y4T1)(Prerequisites: PAEDS 300, 301).

REPH 400: Infertility, Tumors and Medical Diseases in Pregnancy (45/0/90:5.0 C.F)

Infertility – definition, cause, investigations and management; in vitro fertilization and related techniques; Diagnosis and management of benign and malignant disorders of the Vulva, Vagina, Cervix, Uterus, Tubes and Ovaries. Management of conditions associated with pregnancy – diabetes, hypertensive diseases of pregnancy (HDP), anaemia, Rhesus isoimmunisation, deep venous thrombosis (DVT), disseminated intravascular coagulopathy (DIC) and HIV. (Y4T1)

SURG 400: Cardiovascular, Endocrine and Breast Surgical Disorders (30/0/45:3.0 C.F)

Cardiovascular system-etiology of various conditions; complications of arterial disease, trauma to vessels and heart; aneurysms; varicose veins and varicose ulcers; arteriovenous shunts; endocrine system – diagnosis and management of tumors of the pituitary, thyroid, parathyroid, thymus and suprarenal glands; management of thyroglossal cysts and fistulae; diagnoses and management of testicular tumors; Breast disorders and management. (Y4T1)

IMED 401: Palliative Medicine (30/0/45:3.0 C.F)

Definition and philosophy of palliative care.; Historical development of palliative medicine; Death and dying; impact of diagnosis of life-threatening illness; distressing symptoms and control; Relationships of social support system and the dying; Bereavement cares.; Contextual and ethical issues in palliation; Counseling skills, Professional issues in palliative care. (Y4T2)

PAED 401: Musculo- skeletal, Teratology and Pediatric Forensic Medicine (45/0/90:5.0 C.F)

Skeletal system and connective tissue – normal and abnormal development of bones and joints; immunological factors in pathogenesis of connective tissue disorders; hereditary and acquired disorders of

connective tissue; genetics and teratology; common malformations; Social pediatrics. Physiotherapy and occupational therapy in child health. Counseling of patients and relatives in disease and health. Drug used in child medicine. Post-mortem (autopsy) examination: indications, values and limitations. Informed consent. Psycho-social aspects of childhood diseases. Side room laboratory tests and the interpretation of the results. Radiological investigations and techniques. Clinico-pathological sessions: certification of death, body identification and preservation. Euthanasia: definition, its pros and cons in pediatrics practice in various countries. (Y4T3)(Prerequisites: PAED 301, 300).

REPH 401: Family Planning, Menopause, Breast and Pelvic Relaxation Disorders (30/0/90:4.0 C.F)

Contraception and family planning – methods, contraindications and side effects; menopause and post menopause – and HTR; Disorders of the breast: causes, diagnosis and management of relaxation of pelvic structures such as cystocele, urethrocele, rectocele and enterocele and uterine prolapsed, causes, diagnosis and management of fistulae. (Y4T3)

SURG 401: Head Injuries, Transplantation and Oncological Surgical Conditions (30/0/90:4.0 C.F)

Head injuries: Skull fracture; brain damage; Primary injuries and secondary injuries, raised intracranial pressure; ischemic brain damage; clinical aspects of brain injury and management. Basic immunology of transplantation-transplantation antigens; histocompatibility; factors associated with associated with allograft rejection; circumventing rejection; induction and maintenance of tolerance; cancer biology and general approaches to management, overview, epidemiology and metastasis; tumor immunology and chemotherapy; preoperative preparation; postoperative care; prognosis of transplants. (Y4T3)

IMED 402: Diseases of the Endocrine System (30/0/90:4.0 C.F)

Endocrine and metabolic disorders – hormones and action; neuroendocrine regulation and diseases of the pituitary, neurohypophysis and hypothalamus; diseases of the thyroid, adrenal cortex, ovary, testes and

parathyroid glands; diabetes mellitus; hyperlipoproteinaemias; haemochromatosis; porphyrias and Wilson's diseases; inherited disorders of connective tissue and amino acids; rare disorders of carbohydrate and adipose tissue metabolism; disorders of calcium, phosphorus and bone metabolism; Paget's disease; neoplasms and other disorders of bone and cartilage. (Y4T3)

IMED 403: Forensic Medicine, Toxicology and Medical legal Issues (30/0/0:2.0 C.F)

Principles and scope of forensic medicine. Forensic medical examination: prisoners, assessment of occupational injuries, sexual abuse, sudden death, suicide and contested paternity. Crime investigations. Substance abuse. Medico-legal autopsy. Conduct, document, forensic tests. Governing acts of parliament. Elements of forensic science. Forensic odontology, anthropology, psychiatry. Court procedures and presentation of forensic evidence. Clinician as an expert witness. (Y4T3)

IMED 410: Mental Health and Substance Abuse (30/0/45:3.0 C.F)

The concept of mental health. Mental and psychiatric illnesses in Kenya and Africa. Mental and psychiatric disorders: a etiology, symptomatology, and classification. Major psychiatric conditions: mood disorders, schizophrenia. Psychiatric history taking, examination of mentally ill patients, assessment of mental status and behavior, diagnosis and management. Parole, discharge and follow-up of clients. Mental health act in Kenya. (Y4T1)

SURG 410: Metabolic and Pediatric Orthopedic Disorders (30/0/45:3.0 C.F)

Common adult orthopedic disorders; metabolic and degenerative joint diseases; specific joint; indications, procedure and prognosis of total joint replacement. Common orthopedic disorders in children-congenital dislocation of the hip; idiopathic avascular necrosis of the femur, slipped capital femoral epiphysis; congenital club foot; idiopathic scoliosis; neuromuscular – cerebral palsy; myelomeningocele; upper extremities amputations; lower extremities amputations; common primary bone tumors: benign and malignant. (Y4T1)

COMH 420: Disaster Management (30/0/0:2.0 C.F)

Definition: Disaster, disaster area, and classification of disasters. Roles of various groups and vulnerable groups. Procedure of containing disaster. Practical skills in disaster management. Prevention and surveillance. Prediction of disaster occurrence, Disaster preparedness and rehabilitation of the affected. (Y4T1)

IMED 420: Dermotovenereology (30/0/45:3.0 C.F)

Anatomy and physiology of skin. General principles of diagnosis and management of skin conditions. Classification, presentation, etiological, management and follow up of skin disorders: congenital, microbial drug eruptions, neoplasm, autoimmune, pigment hair and nail disorders. Preventive and promotive of skin health measures. (Y4T2)

SURG 420: Anesthesia (30/0/45:3.0 C.F)

Principals of anesthesia: pre - intra- and post-operative care. Classification of anesthesia, anesthetic drugs, and methods of giving anesthesia. Selection of patients for anesthesia. Cardiopulmonary resuscitation. (Y4T2)

COMH 421: Health economics and Entrepreneurship (30/15/0:2.5C.F)

Commodity and supplies management, Commodity cycle management- Distribution, inventory management, procurement; Quality assurance in Health service management; Financial resource management, recording, reporting, accountable documents; GOK financial policies and procedures, Government budgetary cycles. Facility improvement fund (FIF); Auditing and reporting; Health sector reforms and financing; Health Information Systems; Entrepreneurship in medical practice; nature of a commercial enterprise; Evaluating an on-going small business; investor's perspective and Entrepreneur's perspective, Preparation of a proposal for raising business capital. Presentation of a proposal to venture capital investor. Operational decisions; market analysis and location considerations. Customer relations. (Y4T3)

COMH 422: Health Services Delivery Systems (30/15/0:2.5C.F)

Project management-definitions; types; project design, appraisal, implementation, evaluation, monitoring and impact assessment; Performance indicators and targets;

Report writing; operational research; factors associated with safe motherhood; implementation and usefulness of school health programs, youth and adolescent health issues. (Y4T3)

SURG 430: Ophthalmology (30/0/45:3.0 C.F)

Anatomy and physiology of the eye. Ocular examination: visual acuity, visual fields, ocular pressures, and investigations. Ocular disorders: etiology, epidemiology, path physiology, clinical features, complications, differential diagnosis, management, prognosis, prevention of congenital, infections, neoplasms and foreign bodies. Ocular manifestations of systemic disease: hypertension, diabetes mellitus. Ocular emergencies. (Y4T2)

SURG 440: Ear, Nose and Throat (30/0/45:3.0 C.F)

Anatomy and physiology of head and neck region. Disorders of the ear, nose, throat: etiology, epidemiology, path physiology, clinical features, complications, differential diagnosis, management, prognosis, prevention of congenital, infections, neoplasms and foreign bodies. Audiology, speech pathology and therapy. ENT emergencies. (Y4T2)

SURG 450: Dental Health (30/0/45:3.0 C.F)

Structure of the oral cavity and teeth. Common dental disorders: dental caries, periodontal disease, malocclusion, teeth impaction, dislocation of temporomandibular joint, congenital, traumatic, infectious, inflammatory and neoplastic and teeth decoration. Oral manifestation of systemic disease: hematological, endocrinological, nutritional, autoimmune and deficiency disease. (Y4T2)

i. Examination Schedule for Bachelor of Science in Clinical Medicine (Pre-service)

S/No.	EXAM CODE	COURSES EXAMINED	Total CFs	SUBJECT TITLE	EXAMINATIONS TYPE AND DURATION		
	YEAR ONE				Written	Practical/Clinical	Oral paper
1	ANAT -E100	ANAT 100, 101 & 102	14.0	Human Anatomy	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	BIOC - E 100	BIOC 111&112	7.5	Biochemistry I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	COMH-E 100	COMH 100	3.0	Behavioral Sciences	Essay 1x2hrs MCQ1x2hrs	-	-
4	HPHY - E100	HPHY100, 101 & 102	11.0	Human Physiology I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
6	NURS- E100	NURS 101	2.5	Nursing Skills and First Aid	Essay 1x2hrs MCQ1x2hrs	-	-
7	PATH - E 100	PATH 110	2.5	Immunology	Essay 1x2hrs MCQ1x2hrs	-	-
8	COMS 101	COMS 101	3.0	Communication Skills	1x2hrs	-	-
9	COMP 101	COMP 101	3.5	Introduction to computing	1x2hrs	-	-
11	PHIL 106	PHIL 104	3.0	Law & Society	1x2hrs	-	-
13	FOND 121	FOND 121	3.0	Human Nutrition	1x2hrs	-	-
	YEAR TWO						
1	BIOC - E200	BIOC 211 & 212	8.5	Biochemistry II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	COMH- E200	COMH , 200, 201, 210, 220	10.5	Community Health I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	-
3.	HPHY- E200	HPHY 200, 201& 202	9.5	Human Physiology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
4	PHAM –E200	PHAM 200, 201&202	9.0	Pharmacology I	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
5.	PATH- E 200	PATH 220	2.0	Medical ethics and medical Legal Issues	Essay 1x2hrs MCQ1x2hrs	-	-
6	PATH- E 202	PATH 200, 201, & 202	9.5	Microbiology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
7	PATH –E201	PATH 201	3.0	Hematology and Oncology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	-
8	PATH - E 201	PATH 210, 211, 212, &213	13.5	Pathology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
	YEAR THREE						
1	COMH -E300	COMH 310, 321 & 322	12.5	Community Health II	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
2	PHAM - E300	PHAM 300	3.0	Pharmacology II	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
3	IMED –E300	IMED 300, 301, 302 & 303	9.0	Medicine I	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs

4	PEAD – E300	PEAD 300 &301	10.0	Pediatrics and Child Health I	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
5	REPH – E300	REPH 300 & 301	10.0	Reproductive Health I	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
6	SURG –E300	SURG 300, 301 & 310	11.0	Surgery I	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
	YEAR FOUR						
1	COMH E400	COMH 420, 421, 422	7.0	Community Health III	Essay 1x3hrs MCQ1x2hrs	1x 0.25hrs	1x 0.25hrs
2	IMED –E 400	IMED 400, 401 402, 403, 410 and 420	18.0	Medicine II	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
3	PEAD – E400	PEAD 400 & 401	9.0	Pediatrics and Child Health II	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
4	REPH – E400	REPH 400 &401	9.0	Reproductive Health II	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
5	SURG –E400	SURG 400, 401,410,420,430, 440, 450 & 460	25.0	Surgery II	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs

a) Schedule of Courses for Bachelor of Science in Clinical Medicine (In-Service)

The students joining this program through in-service mode shall follow the following course schedules which entails all the mandatory courses spread over three years (8 terms) only. This schedule excludes courses that are deemed adequately covered in their basic Diploma in Clinical Medicine program(s) where they get a block transfer of 76.0 CF i.e. 30.28% of the Pre service programme

CODE	TITLE	CREDIT HOURS			
		L	P	C	CF
Y1 T1					
ANAT 100	Anatomy of Upper and Lower Limb	45	30	0	4.0
HPHY 100	Cell Biology, Body Fluids Genetics, and Excitable Tissues	45	30	0	4.0
HPHY 101	Physiology of Blood and Cardiovascular System	45	15	0	3.5
BIOC 111	Cell structure and Biomolecules	45	45	0	4.5
PATH 110	Immunology	30	15	0	2.5
PATH 200	Bacteriology and Mycology	30	30	0	3.0
COMH 201	Environmental & Occupational Health	30	15	0	2.5
	TOTALS	270	180	0	24.0
Y1 T2					
ANAT 101	Anatomy of Head and Neck	45	60	0	5.0
HPHY 102	Physiology of Endocrine and Respiratory System	45	15	0	3.5
BIOC 112	Carbohydrate Metabolism	45	30	0	4.0
PATH 201	Medical Virology	30	15	0	2.5

COMH 210	Epidemiology & Medical Statistics	45	0	0	3.0
PATH 211	Pathophysiology of Circulatory, Respiratory, and Genito-Urinary Systems	45	30	0	4.0
COMH 220	Communicable Diseases	30	0	0	2.0
	TOTALS	285	150	0	24.0
Y1 T3					
ANAT 102	Anatomy of Thorax, Abdomen and Perineum	45	60	0	5.0
HPHY 200	Physiology of Nervous system and Special Senses	45	15	0	3.5
IMED 201	Hematology and Oncology	30	0	45	3.0
PHAM 201	Pharmacology of Autonomic, Renal and Cardiovascular Drugs	45	0	0	3.0
PATH 202	Medical Parasitology	45	30	0	4.0
PATH 212	Clinical Chemistry	30	30	0	3.0
PATH 213	Pathophysiology of Endocrine, Neuromuscular, and Gastrointestinal Systems	45	30	0	4.0
	TOTALS	285	165	45	25.5
Y2 T1					
HPHY 201	Physiology of Digestive Systems.	30	30	0	3.0
HPHY 202	Physiology of Genito-Urinary Systems.	30	30	0	3.0

PHAM 202	Pharmacology of central Nervous and Endocrine Drugs	45	0		3.0
IMED 300	Respiratory and Cardiovascular Medical Disorders	30	0	45	3.0
REPH 300	Female System Development, and Gynecologic Emergencies	45	0	90	5.0
COMH 310	Research Methodology	45	0	0	3.0
PAED 300	Child Growth, Nutrition and Infectious Diseases	45	0	90	5.0
	TOTALS	270	60	225	25.0
Y2 T2					
PHAM 300	Haemopoetic, Anti-inflammatory and Chemotherapeutic Agents	45	0	0	3.0
PAED 301	Neonatology, Cardiovascular, and Emergency Childhood Conditions	45	0	90	5.0
REPH 301	Pregnancy, Labor and Obstetric Emergencies	45	0	90	5.0
SURG 301	Gastrointestinal and Respiratory Surgical Conditions	45	0	90	5.0
IMED 302	Genitourinary and Gastrointestinal Medical Disorders	30	0	45	3.0
COMH 321	Health Service Management	45	15	0	3.5

	TOTALS	255	15	315	24.5	IMED 410	Mental Health and Substance Abuse	30	0	45	3.0	401	Menopause, Breast and Pelvic Relaxation Disorders				
Y2 T3						SURG 410	Metabolic and Pediatric Orthopedic Disorders	30	0	45	3.0	SURG 401	Head Injuries, Transplantation and Oncological Surgical conditions.	30	0	90	4.0
IMED 400	Medical Disorders of the Central Nervous System	30	0	45	3.0		TOTALS	240	0	360	24.0	IMED 402	Diseases of the Endocrine system	30	0	90	4.0
PAED 400	Gastrointestinal, Endocrine, and Neuromuscular childhood Diseases.	45	0	90	5.0	Y3 T1						COMH 421	Health Economics and Entrepreneurship	30	15	0	2.5
REPH 400	Infertility, Tumors and Medical Diseases in Pregnancy	45	0	90	5.0	COMH 322	Community Attachment and Research Project	0	150	0	6.0	COMH 422	Health Services Delivery Systems	30	15	0	2.5
												SURG 460	Imaging Sciences	30	0	45	3.0
SURG 400	Cardiovascular, Endocrine and Breast Surgical Disorders	30	0	45	3.0	Y3 T2							TOTALS	210	30	405	27.0
IMED 403	Forensic Medicine, Toxicology and Medical Legal Issues	30	0	0	2.0	PAED 401	Musculo-Skeletal, Teratology & Pediatric Forensic Medicine	30	0	90	4.0		GROSS TOTALS	1815	750	1350	180.0
						IMED 401	Medical oncology and Palliative Medicine	30	0	45	3.0						
						REPH	Family Planning,	30	0	90	4.0						

a) Examination Schedule for Bachelor of Science in Clinical Medicine (In-Service)

S/No.	EXAM CODE	COURSES EXAMINED	Total CFs	SUBJECT TITLE	EXAMINATIONS TYPE AND DURATION		
	YEAR ONE				Written	Practical/Clinical	Oral paper
1.	ANAT 100	ANAT 100, 101 & 102	14.0	Human Anatomy	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2.	BIOC - E 100	BIOC 111 and 112	7.5	Biochemistry I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3.	PATH – E 100	PATH 110	2.5	Immunology	Essay 1x2hrs MCQ1x2hrs		
4.	COMH- E 101	COMH 201, 210, 220	5.5	Community Health IV	Essay 1x3hrs MCQ1x2hrs	1x3hrs	-
5.	HPHY - E101	HPHY100, 101, 102 & 200	14.5	Human Physiology III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
6.	PATH- E 200	PATH 200, 201 & 202	9.5	Microbiology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
7.	PATH –E201	PATH 201	3.0	Hematology and Oncology	Essay 1x2hrs MCQ1x2hrs	1x3hrs	-
8.	PATH – E 202	PATH 210, 211, 212, & 213	13.5	Pathology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs

	YEAR TWO						
1	HPHY- E 201	HPHY 201& 202	6.0	Human Physiology III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	PHAM – E201	PHAM 201, 202 & 300	6.0	Pharmacology III	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
3	IMED –E 202	IMED 300, 302, 400, 401, 403 & 410	17.0	Medicine III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
4	PEAD – E200	PEAD 301 & 400	10.0	Pediatrics and Child Health III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
5	REPH – E200	REPH 300, 301 & 400	15.0	Reproductive Health III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
6	SURG –E200	SURG 301, 400, 410	11.0	Surgery III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
7	COMH –E301	COMH 220, 310, 321 & 322	14.5	Community Health V	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
	YEAR THREE						
1	COMH –E301	COMH 421, & 422	5.0	Community Health VI	Essay 1x3hrs MCQ1x2hrs	1x 0.25hrs	1x 0.25hrs
2	IMED –E 301	IMED 402	4.0	Medicine IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
3	PEAD – E301	PEAD 401	4.0	Pediatrics and Child Health IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
4	REPH – E301	REPH 401	4.0	Reproductive Health IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
5	SURG –E301	SURG 401 & 460	7.0	Surgery IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs

9.2 Matrix aligning courses/units to programme learning outcomes

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1 Describe the normal physiological functions and anatomical structure of the human body to differentiate normal from abnormal health states	Anatomy of Upper and Lower Limb	4.0	Histology and Embryology	3.0				
			Physiology of Nervous System and Special Senses	3.5				
	Anatomy of head and neck	5.0	Physiology of Digestive Systems					
	Anatomy of Thorax, Abdomen and Perineum	5.0	Physiology of Genito-Urinary Systems	3.0				
	Cell Biology ,Body Fluids, Genetics, and Excitable Tissues	4.0		3.0				
	Introduction to Inorganic Chemistry	3.0						
	Introduction to Physical Chemistry	3.0						
	Physiology of Blood and Cardiovascular System	3.5						
	Physiology of Endocrine and Respiratory System	3.5						
PLO 2 Explain the pathophysiology of diseases	Cell Structure & Biomolecules	3.5	Bacteriology and Mycology	3.0				
	Carbohydrate metabolism	4.0	Medical Virology	2.5				
	Principles of Human Nutrition	2.5	Lipid metabolism	4.0				
			Pathology of Circulatory, Respiratory, and Genito-Urinary Systems	4.0				
			Biochemical Endocrinology					
			Hematology and Oncology	4.0				
			Medical Parasitology	3.0				
			Clinical Chemistry	4.0				
			Pathology of Endocrine, Neuromuscular, and Gastrointestinal Systems	3.0				
			Proteins & Nucleotide Metabolism	4.0				
				3.0				

PLO 3 Improve population health by critically analysing prevailing and emerging health problems by conducting community diagnosis and research for purposes of solving such problems.	Nursing Skills and First Aid	3.0	Communicable Diseases.	3.0	Tropical Medicine	3.0	Disaster Management	2.0
	Introduction to Computing				Neonatology, Cardiovascular, and Emergency Childhood Conditions	5.0 5.0 3.0	Medical Oncology and Palliative Medicine	3.0
PLO 4 Provide curative, preventive promotive, and rehabilitative services to the community in an ethical manner.	Behavioral Sciences Law and Society	3.0					Imaging Sciences	3.0
		3.0					Musculo-skeletal, Teratology & Pediatric Forensic Medicine	4.0
PLO 5 Manage health facilities and provide leadership and supervision of staff in health care delivery system.	Behavioral Sciences Introduction to Computing	3.0	Medical Ethics and Medico Legal Issues	2.0			Family Planning, Menopause Breast and Pelvic Relaxation Disorders	4.0
		3.0					Head Injuries, Transplantation and Oncological Surgical Conditions	4.0
							Forensic Medicine, Toxicology and Medical legal Issues	2.0
							Health Economics and Entrepreneurship	4.0
							Health Service Delivery Systems	2.5

DEPARTMENT OF HUMAN NUTRITION

BACHELOR OF SCIENCE IN FOODS, NUTRITION AND DIETETICS

1. Philosophy of the programme

Human nutrition department innovatively influences human development through holistic education and generation, acquisition, preservation and dissemination of knowledge and skills, with emphasis on NUTRITION and related disciplines. The department provides equal opportunity in producing competitive and hands – on graduates that contribute to national and global developments.

2. Rationale

Human Nutrition as a subject has continued to occupy an important position in the world due to the prevailing food and nutritional problems affecting populations in both the developed and the developing countries. The expertise and subject content in Foods, Nutrition and Dietetics prepares professionals capable of providing services in various settings to help solve health and nutritional problems associated with food and nutrition inadequacies at the individual, family, community and at the national levels.

The programme addresses current issues in foods, nutrition and dietetics, and is geared towards filling existing gaps in manpower needs in this area in both the public and private sector. Additional courses in agricultural sciences are offered to provide a good understanding of issues related to food production and food supply at home and national level.

Professional openings for graduates in Foods, Nutrition and Dietetics include the Ministries of Health and Agriculture, Private and Government Hospitals, Hospices, Non-government organizations (NGO's), and other community service oriented organizations, research organisations as well as self-employment.

Graduates of the programme can be deployed in the community as field nutritionists by government ministries or NGO's, to advice families on food production and consumption in order to improve household food security

and nutrition status. In addition they can also serve in outreach programmes within hospitals where they could follow and advice discharged patients with diet related illnesses, as well as the management of nutrition-related conditions in hospitals. The graduates are also well prepared for self-employment in the area of food service delivery, and as diet counsellors to individuals or groups with diet related ailments. This can therefore, strengthen and contribute to primary health care which emphasizes preventive rather than curative health care.

The programme is unique in that it produces a special cadre of professionals who will be well grounded in foods, nutrition and dietetics as well as in agricultural and health related sciences. This background is essential to ensure adequate food security and proper utilization of food as well as in preventive and curative health provision. The programme is also in line with the requirements of Kenya Nutritionists and Dieticians Institute (KNDI).

3. Goal of the programme

The overall goal of the programme is to improve the health and nutrition status of the population, through holistic training in foods nutrition and dietetics, research and enhancing professional capacity in the field and within the various related sectors. The programme will produce graduates who will address issues of national importance in the area of health-related sciences and will contribute towards addressing the Sustainable development goals and the Kenya vision 2030.

4. Programme Learning Outcomes

By the end of the programme the graduates should be able to:

- i) Counsel individuals or communities on proper food choices to promote healthy eating, prevent malnutrition or manage diet related conditions;
- ii) Demonstrate expertise on food utilization and preservation to improve food and nutrition security and overall nutritional status of communities;
- iii) Undertake research in emerging issues in the areas of food, nutrition and dietetics; and
- iv) Establish entrepreneurial activities in the areas of Foods, Nutrition and Dietetics.

5. Mode of Delivery

The programme will be offered on a full time, face to face basis.

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission, candidates must satisfy the minimum entry requirements as set out by Egerton University Statutes 36 (2) of 2013.

In addition,

- i) Candidates must have passed the Kenya Certificate of Secondary Education (KCSE) at the minimum C+ grade in the courses below as well as KUCCPS cluster subjects

Alternative A

Biology
Chemistry
Mathematics or Physics
Geography or any of the group IV subjects

Alternative B

Biological Sciences
Physical Sciences
Mathematics
Geography or any of the Group IV subjects

- ii) Candidates with a diploma in related areas from a recognized institution may be admitted, provided that they passed at credit level or above.
- iii) Admission is also open to other degree holders with minimum entry requirements.

6.2 Regulations on Credit Transfer

Credit transfer will be in accordance to Egerton University Statutes 36(3) of 2013.

6.3 Course Requirements

This is accordance to ISO procedures on teaching (EU/AA/OP/06 rev 3)

6.4 Student Assessment Policy/ Criteria

Student assessment will be through class work assessment, practical evaluations, practicum and field attachment assessment as is applicable to courses and also in accordance to Egerton University Statute 36 (6) of 2013.

6.5 Grading System

The grading system for this programme shall be in accordance with the University Statutes 36 (6) of 2013

6.6 Examination Regulation

Procedures for examinations and award of degrees shall follow university regulations in accordance to Egerton University Statutes 36 (5) of 2013.

6.7 Moderation of Examination

Moderation of examination for both the internal and external moderation will be in accordance to ISO procedures (EU/AA/OP/07) and Egerton University statutes 36(5) of 2013.

6.8 Graduation Requirements

To graduate a student shall be required complete a minimum of 212.5 CFs

6.9 Degree Classification

The degree for Bsc. FOND programme shall be classified as stipulated by University Statute 36 (17) of 2013.

7. Course Evaluation

This will be done in accordance with the ISO Teaching Effectiveness Evaluation Procedure (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme is hosted in the Department of Human Nutrition, the faculty of Health Sciences. The programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

A self-assessment of the programme will be conducted after every cohort of students in accordance with the ISO procedure on Quality Assurance of academic programmes (EU/VC/OP/05).

8.3 Course Coding

The Course Codes used are FOND which stand for FO = Foods, N = Nutrition and D = Dietetics. This is followed by three digits where:

- a. Digit 1 indicates the year the Course is offered.
- b. Digit 2 indicates the sub-discipline of the Course and it is as follows:
 - i. 1 – Foods courses
 - ii. 2 – Nutrition courses
 - iii. 3 – Dietetics courses
 - iv. 4 – Common courses to the sub-disciplines
- c. Digit 3 indicates the level of the course within the sub-discipline.

9. Course/units offered for the programme

9.1 Schedule of courses

a) Common core courses

The following are the core courses for the programme:

COMS 111: Communication Skills.

COMP 101: Introduction to Computer Application.

ECON 100: Introductory Economics.

ENSC 101: Environmental Education

PHIL 106: Law and Society

PHIL 108: Ethics, Integrity and National Values.

b) Schedule of Courses

YEAR I SEMESTER 1

CODE	TITLE	L	P	C.F
BOTA 101	General Botany	30	30	3.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
FOND 121	Principles of Human Nutrition	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
AGRO 102	Principles of Crop Production	45	15	3.5
AGBM 102	Principles of Entrepreneurship	45	0	3.0
EPSY 121	Introduction to Psychology	30	30	3.0
SOCI 101	Introduction to Sociology	45	0	3.0
TOTAL		360	105	27.5

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F.
STAT 131	Introductory Statistics/ Biostatistics	45	0	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
ANAT 108	Human Anatomy	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
PHIL 106	Law and Society	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
FOND 123	Nutritional Anthropology	45	0	3.0
FOND 122	Introduction to Nutrition and Dietetics	45	0	3.0
TOTAL		360	105	27.5

YEAR 2 SEMESTER I

CODE	TITLE	L	P	C.F.
ENSC 100	Environmental Education	30	30	3.0
AGHE 140	Human Health	45	0	3.0
FOND 222	Human Nutrition I Macronutrients	30	45	3.5
FOND 211	Food Selection & Preparation	30	60	4.0
COMH 213	Epidemiology and Biostatistics / Epidemiology	45	0	3.0
FOST 211	Food Microbiology I	30	60	4.0
HPHY 208	Introduction to Human Physiology	30	30	3.0
FOND 224	Nutrition and Behaviour	45	0	3.0
TOTAL		285	225	26.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F.
BIOC 204	Basic Biochemistry	30	30	3.0
FOND 212	Meal Planning and Management	15	60	3.0
FOND 213	Household Food Preservation	15	60	3.0
FOND	Human Nutrition II –	30	30	3.0

223	Micronutrients			
FOND 231	/ Therapeutic diets	30	45	3.5
FOST 212	Food Microbiology II/ Food Microbiology and Parasitology	30	60	4.0
COMH 100	Behavioural Sciences	45	0	3.0
FOND 232	Nutrition Education & Counselling	45	30	4.0
TOTAL		240	315	26.5

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F.
ANSC 359	Principles of Animal Production	45	15	3.5
FOND 314	Food Service Systems Management	45	0	3.0
FOST 316	Food Experimentation	30	45	3.5
FOND 324	Nutrition Throughout the Life Cycle	30	30	3.0
FOND 341	Research Methods in Foods & Nutrition/ Nutrition Epidemiology	45	0	3.0
FOND 332	Nutrition in Disease Management.	30	45	3.5
FOND 336	Nutrition Care Process	45	30	4.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
TOTAL		315	165	26.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F.
CHEM 341	Analytical Chemistry I	30	30	3.0
FOND 315	Quantity Food Production & Service	15	60	3.0
FOND 326	Nutrition Assessment	30	60	4.0
FOND 334	Clinical Dietetics	15	60	3.0
FOND 335	Nutritional Pharmacology	45	0	3.0
COMH 200	Primary Health Care and Community Based Health Care	45	0	3.0
FOST 324	Food Analysis	30	60	4.0
FOND 327	Nutrition Surveillance	45	30	4.0

TOTAL	255	300	27.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F.
FOND 426	Advanced Human Nutrition	45	0	3.0
FOND 443	Research Projects	0	120	4.0
FOND 444	World Food Problems & Food Security	45	0	3.0
FOND 445	Nutrition Programme Planning & Management	45	0	3.0
FOST 448	Principles of Food Processing & Preservation	30	45	3.5
FOST 360	Food Quality Assurance/ Food Safety	45	45	4.5
FOND 441	First Aid	30	30	3.0
TOTAL		240	240	24.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F.
FOND 427	Nutrition in Emergencies	45	0	3.0
FOND 428	Nutrition & HIV	45	0	3.0
FOND 446	Entrepreneurship in Foods & Nutrition	0	60	2.0
FOND 447	Seminars in Food & Nutrition	15	30	2.0
FOND 448	Food & Nutrition Extension Outreach	15	60	3.0
FOST 414	Food biotechnology	30	30	3.0
FOND 429	Leadership in Nutrition and Dietetics	30	30	3.0
FOND 442	Life Skills	45	30	4.0
TOTAL		240	240	23.0

c. Course Descriptions

FOND 121: Principles of Human Nutrition (45/0: CF 3.0) Y1 S1

Nutrients in foods: composition and variation, the basics of interaction of nutrients and their metabolism; introduction to nutrient digestion, absorption, sources of nutrients and intake regulation; natural and human made factors influencing nutrient utilization; balanced diets and disorders related to under- and over-nutrition, dietary

guidelines, non-nutritive components of food; energy metabolism, weight control and contemporary nutrition issues.

FOND 122: Introduction to Nutrition and Dietetics (45/0: CF 3.0) Y1 S1

An introduction to dietetics as profession: educational requirements and Career opportunities; orientation to the field of dietetics; role, responsibilities and relationships within the professions; and interrelations with other health professionals; Standards and ethics of professional conduct among dietitians; the history of dietetics; modern dietetic practice; Skill and competencies in modern dietetics; Opportunities for interaction with dietetics practitioners will be offered.

FOND 123: Nutrition Anthropology (45/0: CF 3.0) Y1 S2

Nutritional anthropology: social-cultural factors influencing nutrition; Indigenous Foods: types and resources; indigenous knowledge in food, nutrition and development; international indigenous knowledge network; adaptive strategies and sustainable livelihoods; African knowledge and ideas about indigenous foods; community-based natural resource; indigenous knowledge and intellectual property; projects.

FOND 211: Food Selection & Preparation (30/60: CF 4.0) Y2 S1

Principles involved in selecting and preparing different types of foods to preserve quality and nutritive value. Cookery methods and their application to different foods, kitchen equipment and their use; weights and measures. (Prerequisite: FOND 121)

FOND 212: Meal Planning & Management (15/60: CF 3.0) Y2 S2

Planning meals for the family considering goals, values and resources. Menu choices and menu construction considering appropriateness to individual and groups. Management of meals for special groups. Food service: Table appointments, table setting, styles of food service and table etiquette. Food costing and food buying practices. Time management.

FOND 213: Household Food Preservation (15/60: CF3.0) Y2 S2

Diversity and quality of food materials; quality of raw materials; deterioration of food materials: cases, effects and control. Processing and preservation techniques: energy input (heat, irradiation, microwaves, pressure), temperature reduction (chilling, freezing), water removal (concentration, evaporative drying, freeze drying), biological methods (acid and alcohol fermentation, malting) chemical methods (additive, smoking). Nutrient loss and process optimization. Packaging and storage. (*Prerequisite:* FOND 121,211)

FOND 222: Human Nutrition I - Macro-Nutrients (30/30: CF 3.0) Y2 S1

The macronutrients: Carbohydrates, proteins and fats; classification, dietary requirements, function and deficiencies; digestion and absorption; disorders of nutrient imbalances; case studies; visits to rehabilitation centres. (*Prerequisite:* FOND 121)

FOND 223: Human Nutrition II - Micro-Nutrients (30/30: CF 3.0) Y2 S2

Vitamins: classification, structure, dietary requirements, vitamin deficiencies and vitaminosis; Minerals: classification, dietary requirements, function and deficiencies; absorption; micronutrient supplements; current micronutrient research; new discoveries, micronutrients and malnutrition; case studies of micronutrient deficiencies; hospital visits. (*Prerequisite:* FOND 121)

FOND 224: Nutrition and Behaviour (45/0: CF 3.0) Y2 S2

Introduction to nutrition behaviour; Concepts and Models in Nutrition and Behaviour; Research Methods and Analytic strategies; Direct Effects of Nutrition and Behaviour: Brain-Behaviour Connections; Short-term Effects of Nutrition and Behaviour: Neurotransmitters; Effects of Chronic and Acute Forms of Undernutrition; B Vitamins, the Central Nervous System and Behaviour; Minerals, Central Nervous System and Behaviour; Dietary Supplement, Mental Performance and Behaviour; Bio-behavioural and Psychosocial Influence on Nutrition; Dietary Sugar and Behaviour; Caffeine, the Methylxanthines and behaviour; Alcohol, Brain Functioning and Behaviour; Eating disorder

Syndromes: Anorexia and Bulimia Nervosa; Behavioural Aspects of Overweight and Obesity. (*Prerequisites:* FOND 222, 223)

FOND 231: Therapeutic Diets (30/45: CF 3.5) Y2 S2

Basic concepts of diet therapy. Tools for planning diets such as Food composition Tables, Exchange Lists and Dietary standards. Regular diets and therapeutic diets. Enteral and Parenteral diets; Overweight and underweight and their management. Management of diseases of the gastrointestinal system. Management of the common diseases of infancy and early childhood. (*Prerequisite:* FOND 121, 222, 223)

FOND 232: Nutrition Education and Counselling (45/0: CF 3.0) Y3 S1

Theories, skills, and methods in nutrition and health education; identification of objectives for individual and group nutrition interventions for different age levels; selection of techniques, tools, and resources. Translation of scientific nutrition literature for the lay public; verbal and written communication skills are emphasized; Principles of counselling; counselling process; nutrition counselling laboratory; dietary and health counselling; nutrition counselling techniques; designs and implementation of nutrition counselling. Approaches used in nutrition Education Messages role of a nutrition educator; the problems and potential of nutrition education planning implementation, management of nutrition education programmes. Channels of communicating nutrition education messages. The role of other stakeholders in nutrition education. Nutrition advocacy. Case studies of successful nutrition education programmes. Nutrition health education and community mobilization sensitization.

FOND 314: Food Service Systems Management (45/0: CF 3.0) Y3 S1

Principles and techniques in the management of quantity food production and service in both commercial and institutional operation. The interrelationships between scientific and management approach in quantity food production techniques. Types of equipment, selection and care. Management in food service operations. (*Prerequisite:* FOND 211)

FOND 315: Quantity Food Production and Service (15/60: CF 3.0) Y3 S2

Preparing and serving food in large quantities, menu planning, purchasing, storage and service. Menu preparation and costing. Types of services and factors determining them. Control of waste and food recycling. Attachment in food service facilities will be emphasized. (*Prerequisite:* FOND 212,314)

FOND 324: Nutrition Throughout the Life Cycle (30/30: CF 3.0) Y3 S1

Concepts of growth and development; nutrient requirements in the human life cycle; infancy, childhood, adolescent, adulthood, old age; factors affecting food choices in the human life cycle; nutrient requirements in special physiological states e.g. pregnancy and lactation; nutrient related issues affecting each age group in Kenya and worldwide; WHO guidelines on infant feeding, breastfeeding code; Nutrition during special needs (vegetarians, allergies, resource poor setting, alcohol abuse, food intolerance). (*Prerequisite:* FOND 121, 222,223, 211)

FOND 326: Nutrition Assessment (45/30: CF 4.0) Y3S2

Studies the principles of nutrition assessments; Nutrition assessment techniques; anthropometry, biochemical techniques; clinical methods and dietary history; procedures used in identifying individuals and groups at risk; and the planning, implementation, monitoring and evaluation of activities required to institute a successful nutritional intervention programme. Presents quality assurance requirements and programme implementation. Theoretical frameworks of the methods, their history, standards of reference and limitations of the different methods. Criteria for selection of method and determination of method appropriateness for different assessment needs. Practical experience in application of these methods.

FOND 327: Nutrition Surveillance (45/30: CF: 4.0) Y3/S2

Principles of nutrition surveillance; anthropometric assessment methods, their analysis and interpretation; biochemical, dietary, demographic and anthropologic assessment methods, their analysis, interpretation, values and limitations; methods of monitoring household food

security; development of early warning systems; theory and methodology of programme and system planning; practical planning of a workshop. (*Prerequisite: FOND 121, 222, 223, 341*)

FOND 332: Nutrition in disease Management (30/45: CF 3.5) Y3 S1

Dietary management in immunity, stress and infections; surgery and burns; diseases of the liver, cardiovascular and kidney diseases, diabetes mellitus, cancer, HIV/AIDS and other clinical disorders or conditions. (*Prerequisite: FOND 331*)

FOND 334: Clinical Dietetics/Dietetics (30/60: CF 4.0) Y3 S2

Basic terminologies; enteral and parenteral nutrition addressed; supervised experience in patient care areas of designated health care facilities; assigned experiences are designed to complement and reinforce the knowledge gained in Advanced Nutrition Care; emphasis on staff performance with students functioning as staff members in patient care and nutrition education corresponding with Community Nutrition; role of nutrition education in patient care; methodologies and approaches in nutrition education; development of educational tools and materials; behaviours change concept; application of behavioural theories in behaviour communication; discussions on the care process of challenging cases using practical examples. (*Prerequisite: FOND 331, 332*)

FOND 335: Nutrition Pharmacology (45/0: CF 3.0) Y3 S2

Nutrient – drug interactions: effect of nutrients on drugs, effect of drugs on nutrients; Cardiovascular pharmacology, antihypertensives, diuretics and antiangina agents, endocrine pharmacology, gastrointestinal and pulmonary pharmacology including antiasthmatic agents; antimicrobial chemotherapy, resistance, development and mechanisms for antimicrobial resistance; drugs for treatment of tuberculosis antiparasitic agents, including antiprotozoal and antihelminthics, antiviral agents including anti-retrovirals, cancer chemotherapy.

FOND 336: Nutrition care Process (45/30) C.F. 4.0 Y3 S1

Introduction to nutrition therapy; role of dieticians and other health professionals in the therapeutic process; application of the principles of dietetics: the nutrition care algorithm, critical thinking, and steps in the nutrition care process: nutrition assessment, nutrition diagnosis, nutrition intervention, nutrition monitoring and evaluation. Design and implementation of nutrition care strategies; evaluation of client response and progress.

FOND 341: Research Methods in Foods and Nutrition/ Nutrition Epidemiology (45/0: CF 3.0) Y3 S1

Types of studies and study designs appropriate for specific surveys; nutrition related disorders and their distribution and determinants; measuring exposure outcomes, measuring diet-disease (exposure outcome) associations; interpretation of associations nutrition surveillance; screening tests; collection of data for programme evaluation and decision making; management of nutrition related disorders; Research methodology. Principles of research methods; ethical considerations in human and animal research; the research process: data sources, research designs, sampling procedures and guide to referencing. Importance of research in nutrition and dietetics; evaluation of nutrition and dietetics research; purposes of scientific research; basic terminologies; types of nutrition research; proposal development; primary healthcare. (*Prerequisite: AGRO 291*)

FOND 343: Institutional Attachment (0/120 CF 4.0)

Supervised experience in a facility employing dieticians (e.g. hospitals, nursing home, community agency etc.); students will be placed for three months in various institutions with nutrition component in the country; the students will be assigned specific tasks or duties by the host institution; students maintain diary of their daily activities. Final reports compiled based on attachment experience; students report their experience through seminar. (After Y3 S2)

FOND 426: Advanced Human Nutrition (45/0: CF 3.0) Y4 S2

The biochemistry of nutrients at the cellular level. The mechanisms by which cells and organs control nutrient metabolism. Intermediary metabolic pathways. Physiologic and metabolic considerations such as hormone interactions and, immunology. Current research topics in macro - and micro-nutrients. (*Prerequisite: FOND 222, 223*)

FOND 427: Nutrition in Emergencies (45/0: CF 3.0) Y4 S2

Types of emergency situation; Assessment of nutrition status in emergencies; LQAS and SMART methodology in conducting nutrition surveys. Nutrition interventions, CTC programme planning, implementation, monitoring and evaluation. Human rights approaches to emergencies, cultural dynamics: Gender issues in emergency: SPHERE standards: vulnerable groups: disaster preparedness plan: Challenges in management of a crises situation; current developments in nutrition and emergencies.

FOND 428: Nutrition and HIV (45/0 CF 3.0) Y4 S2

Role of nutrition in HIV/AIDS, Nutrition throughout stages of HIV infection and management of HIV/AIDS related symptoms. Food security in HIV/AIDS nutritional care and support. Nutritional Care for pregnant and lactating women and adolescent girls infected with HIV/AIDS. Infant feeding and prevention of mother-to-child transmission of HIV and nutritional care of children born to HIV infected women. Management of drug-food interactions in HIV/AIDS.

FOND 429: Leadership in Nutrition and Dietetics (45/0: CF 3.0) Y4 S2

Leadership skills and styles and types leadership; philosophy and ethics related to leadership and professional practice; leadership traits; effective leadership: competencies and qualities of effective leaders; functions of a leader; Behavioural, and situational approaches to leadership; management and leadership; alternative leadership styles; action-centred leadership; vision and work life of leaders; leaders and decision-making. Professional competencies needed for career entry and advancement in nutrition and dietetics; an overview of appropriate means of delivery of

professional services for a variety of needs; professional behaviour: ethics, academic integrity and principles of professional practice; successful professionals: qualities and characteristics.

FOND 441: First Aid (30/30 CF: 3.0) Y4 S1

Definition of first aid. First aid measures at site. Assessment of accident situation; safe provision of appropriate first aid; ethics in first aid. Clinical conditions; respiratory failure, cardiac arrest, and circulatory failure. Shock, injuries, unconscious patients/ convulsions. Mass accidents; ethics of handling accident victims. Burns, drowning, bites and poisoning. Basic life support and determination of priorities and transportation.

FOND 442: Life Skills (45/30 CF: 4.0)

Definition of life skills, importance of learning life skills, functions and roles of life skills in different conditions, important life skills: personal skills-understanding oneself, interpersonal skills-communicating with and relating to others, accessing and using information, critical thinking, solving problems and making decisions, living with and initiating change, setting goals, making and enacting plans. Other important life skills: assertiveness, employability skills etc, importance of role models in life skills learning

FOND 443: Research Projects (0/120: CF 4.0) Y4 S1

Identification, design, and development of a project in the area of foods, nutrition or dietetics. The project will focus either on a community or special groups with special problems. It could also be aimed at improving the operations of an existing establishment such as a school, hospital or any catering establishment. This course involves project proposal and presentation. *(Prerequisite: FOND 341)*

FOND 444: World Food Problems and Food Security (45/0: CF 3.0) Y4 S1

The relationship between population and food supply at the country and world level. Development of national food policies from legislative, economics, agricultural and nutritional point of view. Major nutritional problems in the developing and developed countries.

Factors influencing food security at the household and national level. *(Prerequisite: FOND 325)*

FOND 445: Nutrition Programme Planning & Management (45/0 CF 3.0) Y4 S1

Nutrition promotion, assessment of food and nutrition needs at community level. Programme planning, implementation and management at different levels in the community; individual, group, networks, community and organizational levels. Development of appropriate strategies and materials for specific target groups. Monitoring and evaluation of nutrition and health programmes. Students are expected to write a program and it is evaluated. Visits to programmes handling relevant food and nutrition issues. *(Prerequisite: FOND 325, 341)*

FOND 446: Entrepreneurship in Foods & Nutrition (0/60: CF 2.0) Y4 S2

Definition and characteristics of entrepreneurship; entrepreneurship concept: the role, nature and function of various entrepreneurial concepts; the nature of entrepreneurs and entrepreneurship in society; role of entrepreneurs in economic situation; main features of economic and non-economic theories; Understanding self-employment through new business creation and growth; innovative application of entrepreneurial skills in preparing viable business plans. *(Prerequisite: AGBM 103)*

FOND 447: Seminars in Foods and Nutrition (15/30: CF 2.0) Y4 S2

Contemporary issues and problems in food, nutrition, and dietetics. Nutritional issues in the developing and developed countries. Solutions to food and nutritional problems at the local and international level. Students will write reports and give presentations on selected research topics. Guest speakers will be invited.

FOND 448: Food & Nutrition Extension Outreach (15/60: CF 3.0) Y4 S2

Extension methods applied in food and nutrition education for communities and groups. Assessment of felt and unfelt needs. Preparation and presentation of lectures and demonstrations on selected topics in foods and nutrition in relation to the needs of the different age

and social economic groups involved. *(Prerequisite: AGED 334)*

9.2 SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

FOND 0121: Introduction to Human Nutrition (30/0: CF 2.0) Y1 S1

An introduction to the basic principles of human nutrition including the different food nutrients, their functions, deficiency diseases and food sources; nutritional status assessment tools as well as dietary standards; nutrition through the life cycle; common nutrition problems afflicting the world populations, their prevention and management.

FOND 322: Applied Human Nutrition (30/45: CF 3.5) Y3T2

Applications of principles of normal nutrition in special diets in physical and pathological conditions. Use of the food composition tables and the food exchange list. The uses and limitations in calculating nutrient composition of different diets. Menu planning and meal management for vulnerable groups (Pre-school children, pregnant and lactating women and the elderly). Modifications of normal diets for the treatment of various disorders. Emphasis will be given to the study of gastrointestinal diseases, metabolic diseases, protein-energy malnutrition (PEM), cardiovascular and renal diseases and other nutrient deficiency conditions. Nutrition management of HIV/AIDS conditions.

FOND 325: Community Nutrition and Health (30/60: C.F. 4.0) Y3S2

The various methods used in the assessment of nutritional status of individuals & groups. Biochemical, clinical, anthropometric and dietary assessment methods used to determine nutritional status. Measurement techniques, equipment and use. Food security principles and assessment. Planning, implementation and evaluation of nutrition and health programmes at the community level. The dynamics of family interactions at each stage of the life cycle in relation to nutrition. Public health and environmental issues related to nutrition. Practical application of these assessment methods in community settings, data collection, analysis and interpretation.

9.3 Programme Learning Outcomes Matrix

	Year 1		Year 2	
Programme Learning Outcomes (PLO)				
	Courses	CF	Courses	CF
PLO 1: Provide advice on proper food choices to individuals or communities to promote healthy eating, prevent malnutrition or manage diet related conditions;	-introduction to Human Nutrition -Principles of Human Nutrition	3.0 3.0	-Human Nutrition I- macronutrients -Human nutrition II- Micronutrients -Nutrition and behaviour -Therapeutic diet -Food selection and preparation * -Nutrition education and Counselling	3.5 3.0 3.0 3.5 4.0 3.0
PLO 2: Provide expertise ON overall nutritional on food utilization and nutrition security and status of communities; and preservation to improve food security	-Introduction to Nutrition and Dietetics - Nutrition Anthropology	3.0 3.0	- Food selection and preparation * - Household food preservation -Meal planning and Management*	4.0 3.0 3.0
PLO 3: Undertake research in emerging issues in the areas of food, nutrition and dietetics; and				
PLO 4: Establish entrepreneurial activities and skills in the areas of Foods, Nutrition and Dietetics.			- Food selection and preparation * - Meal planning and Management *	4.0 3.0

	Year 3		Year 4	
Programme Learning Outcomes (PLO)				
	Courses	CF	Courses	CF
PLO 1: Provide advice on proper food choices to individuals or communities to promote healthy eating, prevent malnutrition or manage diet related conditions;	-Applied Human Nutrition -Nutrition in disease management -Nutrition Assessment -Nutrition care process -Dietetics -Nutrition Pharmacology -Field attachment*	3.5 3.5 4.0 4.0 3.0 3.0 4.0	-Advanced Human Nutrition -Nutrition & HIV	3.0 3.0
PLO 2: Provide expertise on overall nutritional on food utilization and nutrition security and status of communities; and preservation to improve food security	-Nutrition throughout life cycle - Nutrition Assessment -Nutrition Surveillance - Field attachment * -Community Nutrition and Health - Dietetics*	3.0 4.0 4.0 4.0 4.0 3.0	-Nutrition in Emergencies -Leadership in Nutrition and Dietetics -Life Skills* -World food Problems and Food Security -Nutrition Programme Planning & Management - Food & Nutrition Extension Outreach	3.0 3.0 4.0 3.0 3.0 3.0
PLO 3: Undertake research in emerging issues in the areas of food, nutrition and dietetics; and	- Nutrition Assessment * -Research methods in Foods & Nutrition/ Nutrition Epidemiology - Field attachment * - Nutrition Surveillance *	4.0 3.0 4.0 4.0	- Life Skills * -Research projects - Nutrition Programme Planning & Management * -Seminars in Foods & Nutrition	4.0 4.0 3.0 2.0

PLO 4: Establish entrepreneurial activities and skills in the areas of Foods, Nutrition and Dietetics.	-Food service System Management	3.0	- Life Skills *	4.0
	-Quantity Food Production & Service	3.0	- Leadership in Nutrition and Dietetics *	3.0
	- Nutrition Assessment *	4.0	-First Aid	
	- Nutrition care process *	4.0	- Nutrition Programme Planning & Management *	3.0
	- Field attachment *	4.0	-Entrepreneurship in Foods & Nutrition	3.0
	- Dietetics *	3.0		2.0

DEPARTMENT OF NURSING

BACHELOR OF SCIENCE IN NURSING

1. Philosophy of the Programme

Bachelor of Science in Nursing provides broad foundation of sciences and art-based courses to prepare competent and highly skilled nurses.

2. Rationale

Globally, health is of great concern particularly, the burden of disease which comes in two-fold; firstly, the non-communicable diseases' and secondly, infectious diseases, malnutrition and complications of childbirth. The focus of any health system should be to reduce the disease burden, improve the populations' life expectancy and mitigate the effects of vicious cycle of poverty. East Africa, just like other developing regions, is focused on containing infectious diseases, malnutrition and on reducing maternal and neonatal morbidity and mortality though with little success. Training of highly skilled human resource is one of the key areas to be considered towards realization of improved health. Following the development of society and technology and disease burden, there is a growing need of highly skilled nursing care providers. This programme of Bachelor of Science in Nursing is aimed at training highly skilled Nursing professionals to enhance Nursing care, and contribute to attainment of Sustainable Development Goals of Kenya. Graduates of this programme are expected to be critical thinkers, cultural-sensitive individual, knowledgeable care-coordinator who embraces and uses technology effectively, an effective communicator, accountable leader and manager who understand the regulatory environments. Bachelor of Science in Nursing graduates partner with individuals, families, communities and populations in attaining mutually established preventive, promotive, curative and rehabilitative health goals and in facilitating highest level of functioning and the maximization of their health potentials. These graduates shall be forefront in patient care quality and safety and to design and develop more efficient approaches to the delivery of health care services as full partners of the health care teams.

3. Goal of the Programme

The programme prepare competent graduate nurses with qualities to enable them function effectively in provision of quality nursing services to the individual, family and the community and who is actively involved in research, health leadership and nursing education in a dynamic society.

4. Programme Learning Outcomes

By the end of the programme, the graduates will be able to:

- Demonstrate knowledge and competence in the assessment and management of patients and clients in diverse health care settings using the Nursing Process
- Design and conduct health research and practice evidence-based nursing
- Manage and provide healthcare leadership in diverse health settings
- Demonstrate knowledge and skills to teach and evaluate patients/clients, nursing students and health professionals

5. Mode of delivery

This is both a full-time programme (for Pre-service students) and Part-time (work-based) programme (for the In-service students).

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates should have met the minimum University entry requirements as stipulated in the Egerton University Statute 36(2) of 2013.

In addition they should meet the following Faculty requirements;

a) Alternative A

i. Biology	C+ (Plus)
ii. Chemistry	C+ (Plus)
iii. Mathematics or Physics	C+ (Plus)
iv. English or Kiswahili	C+ (Plus)

b) Alternative B

- A minimum of two principal passes in Biology and Chemistry and
- Subsidiary passes in either Mathematics or Physics.

d) Alternative C (for In-service students only)

- Must have a minimum grade of C plain at KCSE Examination or a Principal and Subsidiary for A Level Examination.
 - Should be holders of the following:
 - Kenya Registered Nursing/Midwifery/Public Health Diploma. (KRN/M/PH) OR
 - Kenya Registered Nursing/Midwifery Diploma. (KRN/M/) OR
 - Kenya Registered Nursing Diploma (KRN) OR
 - Kenya Registered Community Health Nursing Diploma (KRCHN) OR
 - Equivalent qualifications assessed by the Faculty and approved by the Senate and Nursing council of Kenya.
 - Must be registered with the Nursing Council of Kenya or other institutions recognized by the Nursing Council of Kenya.
- Reference Kenya Universities and Colleges Central Placement Service (KUCCPS) cluster subjects;
- Subject 1: BIOLOGY
 - Subject 2: CHEMISTRY
 - Subject 3: MATH or PHYSICS
 - Subject 4: ENG/KIS or 3rd GROUP II or any GROUP III or any GROUP IV or any GROUP

6.2 Regulation on Credit Transfer

These shall be as per Egerton University Statute 36(3) of 2013. The Nursing Council of Kenya shall be concurrently notified of any credit transfers.

6.3 Course Requirements

This programme shall adhere to ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment Criteria

The assessment shall be as stipulated in the Egerton University Statute 36(6) of 2013. In addition the examination shall entail both Continuous Assessment Test(CAT) and End of Year Examination(EYE) outlined below:

a) Continuous assessment tests

- Continuous assessment tests will comprise of 40%

- iii. Continuous assessment test shall comprise of assignments, group discussion or presentations, practicum, written assessments or case studies
- b) *End of Year /Course Examination*
 - i. End of Year /Course Examination will account for 60% of the total mark and:-
 - ii. Written examinations will account for 25 % (or 30% where Viva Voce is not applicable) of the marks and may comprise of Essay, Multiple Choice Questions and Short Answer Questions.
 - iii. Clinical or practical examination will account for 30% of the marks
 - iv. Any candidate who fails the clinical examination will have failed to satisfy examiners in the overall discipline examination
- c) The pass mark shall be 50% in all courses attempted by the candidate.

6.5 Grading System

The grading system shall be as stipulated in the Egerton University Statutes 36(6) of 2013.

6.6 Examination Regulations

The University examination rules and regulations shall apply as stipulated in the University Statutes 36(5) of 2013.

6.7 Moderation of Examination

The Egerton University Statutes 36(5) of 2013 shall apply and the ISO Procedure for Examination Management (DOC NO. EU / AA /OP/ 07)

6.8 Graduation Requirements

To graduate a student shall be required to take and pass **ALL** scheduled courses within the stipulated period.

6.9 Classification of Degrees

The programme shall not be classified as stipulated in the Egerton University Statutes 36(17b) of 2013.

7. Course Evaluation

The course evaluation shall be in conformity with the relevant ISO procedure (EU/VC/OP/04: Procedure for Teaching Effectiveness Evaluation).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme shall be hosted by the Department of Nursing. The two program leaders (one for Pre-service group and another for In-service group) shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme evaluation

This programme shall be reviewed after four-year cycle and shall also go through Self-assessment process bench-marking on the University of Nairobi, Bachelor of Nursing Programme.

8.3 Course coding

The course offered by the program will be coded as NURS

- i. The first numeral stands for year of study
- ii. The second digit indicate speciality as follows:
0= Introduction to Nursing Courses
1 = Medical-Surgical Nursing Courses
2 = Reproductive Health Courses
3 = Child Health Nursing Courses
4 = Community Health Nursing Course.
5= Nursing Education Courses
6 = Psychiatric Nursing.
7 = Specialist Nursing Courses
- iii. The third digit shall denote the sequence within a specialty/discipline

9. Courses/ Units offered for the Programme and their examinations

9.1 Schedule of courses (Pre-service)

a)Common University Core Courses

CODE	TITLE	CREDIT HOURS			
COMS 111	Communication Skills	45	0	0	3.0
PHIL 108	Ethics, Integrity and National Values	45	0	0	3.0
COMP 101	Introduction to Computer Applications	45	15	0	3.5

b) i. Schedule of Courses for BScN(Preservice) Students

CODE	TITLE	CREDIT HOURS			
		L	P	C	C.F
	Y1 T1				
ANAT 100	Human Anatomy of Upper and Lower Limb	90	60	0	8.0
HPHY 100	Cell Biology ,Body Fluids, Genetics and Excitable Tissues	45	30	0	4.0
NURS 100	Introduction to Fundamental of Nursing	30	30	0	3.0
COMS 111	Communication Skills	45	0	0	3.0
BIOC 113	Basic Biochemistry	210	135	0	3.5
	TOTAL	300	120	0	21.5
	YEAR1 TERM 2				
ANAT 101	Anatomy of Head, Neck and Neuroanatomy	90	60	0	8.0
HPHY 101	Physiology of Blood & cardiovascular systems	45	15	0	3.5
PHIL 108	Ethics, Integrity and National Values	45	0	0	3.0
COMP 101	Introduction to Computer Applications	45	15	0	3.5
BIOC 116	Biochemistry II	45	15	0	3.5
COMH 100	Behavioural Science	45	0	0	3.0
	TOTAL	315	105	0	24.5
	YEAR1 TERM 3				
ANAT 102	Anatomy of Thorax, Abdomen, Pelvis and Perineum	90	60	0	8.0
HPHY 102	Physiology of Endocrine & Respiratory systems	45	15	0	3.5
NURS 101	Fundamental Concepts In Nursing Practice	30	60	0	4.0
PATH 110	Immunology	30	15	0	2.5
EPSC 121	Introduction to Psychology	45	0	0	3.0
COMH 100	Behavioural Science	45	0	0	3.0
FOND 121	Principles of Human Nutrition	45	0	0	3.0
	TOTAL	330	150	0	24.0
	YEAR2 TERM 1				
HPHY 200	Physiology of Nervous System and Special Senses	45	30	0	4.0

PATH 200	Bacteriology and Mycology	30	30	0	3.0
PHAM 200	Introduction to Pharmacology & Therapeutics	45	0	0	3.0
PATH 210	Introduction to General pathology	30	15	0	2.5
COMH 201	Environmental & Occupational Health	30	15	0	2.5
PATH 220	Medical Ethics and Medico Legal Issues	30	0	0	2.0
EPSC 223	Psychology of Learning	30	0	0	2.0
	TOTAL	240	90	0	19.0
YEAR 2 TERM 2					
PATH 214	Hematology and Oncology	45	30	0	4.0
HPHY 202	Physiology of Genito Urinary System	45	30	0	4.0
PATH 201	Medical virology	30	15	0	2.5
PHAM 204	Clinical Pharmacology I	60	0	0	4.0
NURS 210	Cardiovascular Medical-Surgical Nursing	45	0	45	4.0
PATH 211	Pathology of Circulatory, Respiratory, and Genital-Urinary Systems	45	30	0	4.0
	TOTAL	270	105	45	22.5

YEAR 2 TERM 3

	Medical Parasitology	45	30	0	4.0
HPHY 201	Physiology of Digestive System	45	30	0	4.0
PHAM 205	Clinical Pharmacology II	60	0	0	4.0
NURS 211	Medical-Surgical Nursing Practicum	0	0	180	4.0
PATH 212	Clinical Chemistry	30	30	0	3.0
PATH 213	Pathology of Endocrine, Neuromuscular, and Gastrointestinal Systems.	45	30	0	4.0
	TOTAL	225	120	180	23.0

YEAR 3 TERM 1

COMH 220	Communicable Diseases Control	30	0	0	2.0
NURS 320	Introduction to Midwifery and pregnancy	45	0	45	4.0
NURS 310	Respiratory and Gastrointestinal Medical-Surgical Nursing	45	0	45	4.0
NURS 321	Labor and Obstetric Emergencies	45	0	45	4.0
NURS 330	Introduction to Child Health & Pediatric Nursing	45	0	0	3.0
NURS 340	Introduction to Community Health Nursing	45	0	45	4.0
	TOTAL	255	0	180	20.0

YEAR 3 TERM 2

NURS 311	Genital Urinary, Skin and Geriatric Medical-Surgical Nursing	45	0	45	4.0
NURS 323	Midwifery Practicum	0	0	180	4.0
NURS 322	Puerperium and Neonatal Nursing	45	0	45	4.0
FOND 322	Applied Human Nutrition	30	45	0	3.5
NURS 331	Advanced Child Health and Pediatric Nursing	45	0	0	3.0
NURS 332	Child Health & Pediatric Practicum	0	0	180	4.0
	TOTAL	165	45	405	22.5

YEAR 3 TERM 3

COMH 210	Epidemiology & Medical Statistics	45	0	0	3.0
NURS 324	Family Planning & Emergency Contraceptives	30	0	45	3.0
NURS 312	Endocrine Musculoskeletal and Nervous System Medical-Surgical Nursing	45	0	45	4.0
COMH 321	Health Services management	45	15	0	3.5
NURS 350	Introduction to Nursing Education	45	0	45	4.0
NURS	Community Health	45	0	45	4.0

341	Nursing Practice				
	TOTAL	255	15	180	20.5

YEAR 4 TERM 1

COMH 310	Research Methodology	45	0	0	3.0
NURS 450	Advanced Nursing Education	45	0	45	4.0
NURS 420	Gynecologic Nursing	30	0	45	3.0
NURS 440	Nursing clinical Management	30	0	45	3.0
NURS 460	Mental Health & Psychiatric Nursing	45	0	0	3.0
NURS 461	Mental Health & Psychiatric Nursing practicum	0	0	180	4.0
NURS 470	Peri-Operative & ENT Nursing	30	0	45	3.0
	TOTAL	225	0	540	21.0

YEAR 4 TERM 2

NURS 441	Field Attachment and Research Practicum	0	270	0	6.0
	TOTAL	0	270	0	6.0

YEAR 4 TERM 3

NURS 421	Gender & Health Issues	30	0	45	3.0
NURS 422	Sexual, Reproductive Health and safe Motherhood.	30	0	45	3.0
NURS 471	Palliative Care & Oncology Nursing	30	0	45	3.0
NURS 472	Trauma & Emergency Nursing	30	0	45	3.0
NURS 473	Ophthalmic & Dental Nursing	30	0	45	3.0
NURS 474	Renal & Critical Care Nursing	30	0	45	3.0
	TOTAL	270	0	270	18.0
GROSS TOTALS		2850	1020	1800	233.0

b) ii. Schedule of courses for the BScN (In-service) students

YEAR1 TERM 1

CODE	COURSE TITLE	CREDIT HOURS			
		L	P	C	CF
ANAT 100	Human Anatomy of Upper and Lower Limb	90	60	0	8.0
HPHY 100	Cell Biology ,Body Fluids, Genetics and Excitable Tissues	45	30	0	4.0
HPHY 101	Physiology of Blood & cardiovascular systems	45	15	0	3.5
PATH 110	Immunology	30	15	0	2.5
BIOC 113	Basic Biochemistry	45	15	0	3.5
PATH 200	Bacteriology and Mycology	30	30	0	3.0
	TOTAL	285	255	0	24.5

YEAR1 TERM 2

ANA T 101	Anatomy of Head and Neck	90	60	0	8.0
HPHY 102	Physiology of Endocrine & Respiratory systems	45	15	0	3.5
BIOC 116	Biochemistry II	45	15	0	3.5
PATH 201	Medical virology	30	15	0	2.5
PATH 210	Introduction to General Pathology	30	15	0	2.5
COM H 220	Communicable Diseases Control.	30	0	0	2.0
	TOTAL	330	120	0	24.0
EPSC 223	Psychology of Learning	30	0	0	2.0
BIOC 116	Biochemistry II	45	15	0	3.5
PATH 201	Medical virology	30	15	0	2.5
PATH 210	Introduction to General Pathology	30	15	0	2.5

COMH 220	Communicable Diseases Control.	30	0	0	2.0
EPSC 223	Psychology of Learning	30	0	0	2.0
	TOTAL	330	120	0	24.0

YEAR1 TERM 3.

ANAT 102	Anatomy of Thorax, Abdomen and Perineum	90	60	0	8.0
HPHY 200	Physiology of Nervous System and Special Senses	45	30	0	4.0
PATH 202	Medical Parasitology	45	30	0	4.0
COMH 210	Epidemiology& Biostatistics	45	0	0	3.0
PATH 211	Pathology of Circulatory, Respiratory, and genital Urinary Systems	45	30	0	4.0
	TOTAL	330	150	0	27.0

YEAR2 TERM 1

HPHY 201	Physiology of Digestive System	45	30	0	4.0
HPHY 202	Physiology of GenitoUrinary System	45	30	0	4.0
PHAM 205	Clinical Pharmacology II	60	0	0	4.0
NURS 210	Cardiovascular Medical-Surgical Nursing	45	0	45	4.0
PATH 213	Pathology of Endocrine, Neuromascular, and Gastrointestinal Systems	45	30	0	4.0
NURS 320	Introduction to Midwifery & pregnancy	45	0	45	4.0
	TOTAL	255	0	360	20.0
NURS 340	Introduction to Community Health Nursing	45	0	45	4.0
	TOTAL	330	90	135	28.0

YEAR2 TERM 2

NURS 310	Respiratory and Gastrointestinal Medical-Surgical Nursing	45	0	45	4.0
NURS 321	Labor and Obstetric Emergencies	45	0	45	4.0
NURS 323	Midwifery Practicum	0	0	180	4.0
FOND 322	Applied Human Nutrition	45	15	0	3.5
NURS 330	Introduction to Child Health & Pediatric Nursing	45	0	0	3.0
NURS 341	Community Health Nursing Practice	45	0	45	4.0
NURS 350	Introduction to Nursing Education	45	0	45	4.0
	TOTAL	270	15	360	24.5

YEAR 2 TERM 3

COMH 310	Research Methodology	45	0	0	3.0
NURS 312	Endocrine, Musculoskeletal and Nervous Medical-Surgical Nursing	45	0	45	4.0
NURS 322	Puerperium and Neonatal Nursing	45	0	45	4.0
NURS 331	Advanced Child Health and Paediatric Nursing	45	0	0	3.0
NURS 332	Child Health & Pediatric Practicum	0	0	180	4.0
NURS 421	Gender & Health Issues	30	0	45	3.0
NURS 450	Advanced Nursing Education	45	0	45	4.0
	TOTAL	255	0	360	25.0

YEAR 3 TERM 1					
NURS 441	Field Attachment & Research Practicum	0	270	0	6.0
	TOTALS	0	270	0	6.0
YEAR 3 TERM 2					
NURS 422	Sexual, Reproductive Health and safe Motherhood.	30	0	45	3.0
COMH 321	Health Services management	45	15	0	3.5
NURS 460	Mental Health & Psychiatric Nursing	45	0	0	3.0
NURS 461	Mental Health & Psychiatric Nursing practicum	0	0	180	4.0
NURS 470	Peri-Operative & ENT Nursing	30	0	45	3.0
NURS 472	Trauma & Emergency Nursing	30	0	45	3.0
NURS 473	Ophthalmic & Dental Nursing	30	0	45	3.0
NURS 474	Renal & Critical Care Nursing	30	0	45	3.0
	TOTAL	240	15	360	24.5
GROSS TOTALS		2040	915	1215	178.5

c) Course Descriptions

ANAT 100: Anatomy of Upper and Lower Limb (90/60/:0:8.0 C.F)

Definitions of anatomical terminology; Human posture; Anatomical landmarks: structural organization, location of human organs and their relationships. Skin and appendages; introduction to regional anatomy: gross anatomy of lower limb and upper limb including blood, nerve and lymphatic supply.; Histology: introduction to methods of study of histology and instrumentation; cell and various cell types; organization of epithelial tissue and glands, the skin and its appendages and connective tissue: organization of cartilage, bone, blood; the muscle tissue – skeletal, cardiac and smooth, myoepithelial cells. Fertilization, implantation, embryogenesis and organogenesis. Teratogenesis and congenital disorders; Stages of limb development of bone, cartilage, joints and skeleton. Development of skeletal, smooth and cardiac muscles; development of skin, hair, nails, mammary glands and teeth. (Y1T1)

COMH 100: Behavioural Sciences (45/0: 3.0 C.F)

Introduction to community health- terminologies, concepts, principles and practice; human behavior - psychology, ecology, anthropology and sociology; health seeking behavior; socio-economic factors and health; group dynamics, applications of behavioral sciences in health; nutrition; food - energy requirements; food chain; nutritional diseases; nutritional assessment for individuals and community. (Y2T1)

HPHY 100: Cell Biology, Body Fluids, Genetics and Excitable Tissues (45/30/0:4.0 C.F)

Homeostasis; body fluids and electrolytes; cellular communication; cell structure; Cell biology-various types of organelles, their replication & functions, skin functions; cell division-mitosis, cell replication, translation and meiosis ; genetic basis of inheritance-genetic code, chromosomes, gene expression; population genetics-inheritance patterns; chromosomal abnormalities; ethical issues in genetics; gene therapy; excitable tissues and basics of electrical communication; nerve cell action potentials; chemical communication;. Types of muscles, muscle contractions and their functions.(Y1T1)

NURS 100: Introduction to Fundamental of Nursing(30/30/0:3.0 C.F)

Professionalism in Nursing: definitions; Philosophy; characteristics of nursing profession; trends in Nursing; code of ethics; legal aspects of nursing; professional organizations; basic theories/models in nursing; the Nursing Process; Critical thinking and reflection in nursing; nursing care delivery systems; scope and standards of nursing practice. Basic Nursing Skills: principles of communication and nurse-patient relationship; admission and discharge; personal hygiene and comfort; positioning; body mechanics; range of motion exercises; vital signs; venopuncture; drug administration; blood transfusion; specimen collection; feeding; assisting patients with elimination; infection prevention; wound management; concept of health and illness. (Y1T1)

ANAT 101: Anatomy of Head and Neck (90/60/:0:8.0 C.F)

Head, neck and spine: gross anatomy – general topography; neck triangles; paravertebral region; root of the neck; face; nose and paranasal region; mouth and palate; larynx; vertebral column and canal; cranial cavity and meninges; central nervous system: brain, spinal cord, peripheral nerves, motor, sensory and autonomic nerves. Sensory systems; anatomy of special sense organs and systems eye; ear; Histology – organization of neurons; spinal cord and peripheral nerves; organization of receptors, brain and eyeball; endocrine gland Embryology: pharyngeal arches, pouches, grooves and membranes; development of thyroid and salivary glands, tongue, face, nasal cavities and palate; development of spinal cord, brain, peripheral nervous system and autonomic nervous system, Special senses: eyes, ears, nose. (Y1T2)

HPHY 101: Physiology of Blood and Cardio-vascular System (45/15: 3.5 C.F)

Functions of blood, plasma and its composition; Physiology of Red blood cells; Blood groups and cross-matching; types of white blood cells; Platelets and Homeostasis; Regulations & functions of the heart and blood vessels; Regulations of Cardiac output; regulation of blood pressure; Functions of the lymphatic system and microcirculation; Special circulations;

Maternal/placental/fetal unit and functions; Physiology of shock. (Y1T2)

ANAT 102: Anatomy of Thorax, Abdomen and Perineum (90/60/0:8.0 C.F)

Gross anatomy of the gut; gastro-intestinal tract; anterior abdominal wall; abdominal cavity; peritoneum; vessels and nerves; liver and biliary tract; pancreas; spleen; posterior abdominal wall; kidneys, ureters and suprarenal glands. Pelvic cavity; rectum; urinary bladder and ureters in the pelvis; male internal genital organs; female internal genital organs and urethra; pelvic vessels and nerves; perineum – male and female urogenital regions; pelvic joints and ligaments; pelvic osteology; Histology – digestive system including liver and pancreas; urinary system; male and female reproductive systems. Embryology: development of body cavities; development of the larynx, trachea, bronchi and lungs; development of the heart and vessels and the lymphatic system; fetal and neonatal circulation: The foregut, mid-gut and hindgut, development of the spleen; development of the genito-urinary system, suprarenal glands and inguinal region; development of the genitor – urinary system, suprarenal glands and inguinal canals.(Y1T3)

HPHY 102: Physiology of Endocrine and Respiratory System (45/15/0:3.5 C.F)

Respiratory system; respiratory cycle, factors affecting respiration, Lung volumes and capacities, gas transport and control of respiration. Hormones; definition, mechanism of action and types. Functions of the endocrine system: Hypothalamus; the pituitary, Pancreas, thyroid, Calcium ion regulation; adrenal glands, other endocrine glands.(Y1T3)

NURS 102: Fundamental Concepts in Nursing Practice (30/60/0:4.0 C.F)

Health assessment: history taking; physical examination; systemic examination; and examination of special areas- ENT, eyes, skin, dental, unconscious patient; diagnostic procedures and investigations- laboratory and radiologic. Basic life support: principles; safe provision of appropriate assessment and first aid taking and ethics therein; respiratory failure; circulatory failure; cardiac arrest and shock; convulsions; accidents; triaging and determination of priorities; referral and

transportation, pre-hospital care; scoop and run techniques and the golden hour principle. (Y1T3)

PATH 110: Immunology (30/15/0:2.5 C.F)

Introduction to immunology: historical background, Immune system: lymphatic and immune system; immunoglobulin's- classification, structure, production, properties, functions; resistance and immunity. Mechanisms of immune response: humoral immunity; non-specific and specific immunity; complement system; proteins activation and biological properties; antigen processing and presentation; antigen-antibody interactions; genetic basis of immune function- major histocompatibility complex; immunity to infections; immune evasion mechanisms. Immune disorders. Hypersensitivity; transplantation immunology – tolerance, immunosuppression and immune-enhancement; vaccines and disease control; autoimmune diseases; Acquired Immunodeficiency Disease Syndrome (AIDS). (Y1T2)

BIOC 113: Basic Biochemistry (45/15/0/3.5C.F)

Introduction to the biochemistry of carbohydrates, lipids and amino acids in plants and animals; structure of nucleic acids; the nature of enzymes and enzyme reactions; biological oxidation and energy conservation- glycolysis, the Krebs's cycle, electron transport, oxidation of fatty acids and oxidative degradation of amino acids. (Y1 T1)

BIOC 116: Biochemistry II (45/15/0/3.5C.F)

Bioenergetics: Mitochondrial respiration (respiratory chain) TCA cycle. Carbohydrate metabolism: Glycolysis, fructose and galactose metabolism, fatty acid oxidation, lipogenesis, triglyceride synthesis, phospholipids synthesis. Ketone bodies formation and catabolism, propionate and cholesterol metabolism and lipid storage diseases: Amino acids metabolism and formation of urea. Purines and pyrimidines metabolism. Metabolic control and regulation in carbohydrates, lipids and amino acids. The links between metabolism of carbohydrates, lipids and amino acids. Biochemistry of nucleic acids – DNA replication, RNA transcription and protein biosynthesis. Genetic code and genetic disorders (chromosomal disorders, mitochondrial disorders, single gene disorders, cumulative genetic disorders) (Y1 S2)

PHAM 200: Introduction to Pharmacology & Therapeutics (45/0/0:3.0 C.F)

Basic principles: introduction; drug receptors and pharmacodynamics; pharmacokinetics and pharmacodynamics – rational dosing and the time course of drug action; drug biotransformation; basic and clinical evaluation of new drugs; Complementary and alternative therapies: herbal and traditional medicines; rights of drug administration and client teaching. Drug regulations: rationale of use; drug handling; storage; procurement and supply; pharmacoeconomics. Drug legislation: pharmacy and Poisons Act Cap 244; Narcotics and psychotropic Act.(Y2T1)

HPHY 200: Physiology of Nervous System & Special Senses (45/30/0:4.0 C.F)

Functions of Central and peripheral nervous systems; Control of posture and movement; Higher functions of the brain, learning and memory; pain; temperature regulation; control of visceral functions by the hypothalamus; sleep; control of emotions and behavior by limbic system; Spinal cord reflexes; muscle spindles; functions of the Autonomic nervous system; Functions of the special senses; the eye, ear, tongue, nose.(Y2T1)

PATH 200: Bacteriology and Mycology (30/30/0:3.0 C.F)

Historical background; Definitions. Classifications and taxonomy of bacteria; Culture of micro-organisms. Physiology of micro-organisms. Diagnostic procedures in bacteria and mycology. Bacteria in health and disease. Resistance & sensitivity testing methods. Procedures in handling equipment and clinical samples. Fungal and bacterial infection prevention and control; personal hygiene practices, handling of equipment and clinical samples, decontamination, sterilization, disinfection, immunity to microbial infections, chemotherapy and vaccination.(Y2T1)

COMH 201: Environmental & Occupational Health (30/15:2.5 C.F)

Occupational Health – historical background; legislation in Kenya; Occupational Safety and Health Act. (OSHA, 2007); Risk assessment: Risk management; Occupational Hygiene; Occupational diseases and accidents; housing; hazards of poor housing; principles of disaster management; hazards and nuisances;

Occupational health services; Principles of Environmental health- principles and practices; water-sources, protection, treatment; waterborne diseases; waste- definition, types and disposal; food-preservation, storage, handling and spoilage; food borne diseases; (Y2T2)

PATH 201: Medical Virology (43/0/15/0:2.5 C.F)

Virology: Introduction, history of virology, virus composition, classification of viruses, replication of viruses, methods of study of viruses, cultivation of viruses, serological diagnostic procedures, pathogenesis of viral disorders, control of viral infections, control and submission of specimen and survey of viruses. Viral Infection prevention and control.(Y2T2)

HPHY 201: Physiology of Digestive System (45/30/0:4 C.F)

Gastrointestinal motility; Gastrointestinal hormones; Mastication, digestion, absorption and metabolism; Regulation of gastrointestinal functions; Liver physiology; obesity; Genito-Urinary system and its functions; renal function and micturition; regulation of extracellular fluid and electrolyte composition and volume; Reproductive system; puberty, hormones that regulate male and female functions. Oogenesis; Menstrual cycle; Spermatogenesis; Physiology of pregnancy; neonatal physiology; menopause.(Y2T2)

HPHY 202: Physiology of GenitoUrinary System (45/30/0:4 C.F)

Reproductive system – sexual differentiation; physical, psychosocial and biochemical changes associated with puberty; the menstrual and spermatogenesis cycles; the gonads and associated hormones; Physiology of pregnancy, parturition and lactation: Urinary system – glomerular function; proximal and distal tubular function; renal handling of solutes; control of urinary bladder function; homeokinetic functions of the kidney; body fluids – total body water; fluid compartment; volume, regulation, estimation and composition; Renal regulation of electrolytes; Renal Acid-Base balance; Physiology of diuretics. (Y2T1)

PATH 214: Hematology and Oncology (45/30/0:4.0 C.F)

Introduction to haematology;; Blood and lymphoid tissues: development, histology, gross anatomy,

functional organization, characteristics; primary and secondary lymphoid organs; composition,formation, functions of of blood cell, plasma and plasma proteins.; Haemoglobin molecule; red blood cell destruction and bilirubin metabolism. Haemostasis and fibrinolysis; Blood transfusion: donor recruitment, screening, collection; grouping and cross matching; storage and transfusion; complications. Blood and haemopoietic disorders: anaemia- hemoglobinopathies; leukemias-acute and chronic, non-leukemic myeloproliferative disorders; lymphomas-Hodgkin's and non-Hodgkin's. Haematological Laboratory tests.(Y2T1)

PATH 202: Medical Parasitology (45/30/0:4.0 C.F)

Definition and general considerations; habitats - body fluids tissue and other structures; classifications - protozoa such as trichomonads, giardiasis, trypanosome and leishmania; sporozoa such as toxoplasma and plasmodium; trematoda such as echenostomatidae, schistosomatidae and echinostomatidae; eucostoda such as pseudophyllidea and cyclophyllidea and nematoda such as trichiuroidea, rhabditida, ascaridida and strongylida. Characteristics and life cycles. Aetiology and modes of transmission; prevention and control measures. (Y2T3)

PHAM 204: Clinical Pharmacology I (60/0/0:4.0 C.F)

The pharmacokinetics, pharmacodynamics, clinical use and interactions and undesirable effects of antimicrobial agents; antibiotic; antimalarials; anthelmintics; antivirals; antiseptics; anti-retrovirals; opioids; analgesics; sedatives; anti-anxiety drugs; anti-inflammatory drugs; anaesthetic agents; antipsychotics, anti-depressants, anticonvulsants; muscle relaxants; hormonal agents; vitamins and mineral supplements. (Y2T2)

PHAM 205: Clinical Pharmacology II (60/0/0:4.0 C.F)

The pharmacokinetics, pharmacodynamics, clinical use and interactions and undesirable effects of cytotoxic agents; haematinics; anticoagulants; antacids; antiulcers drugs; anti-diarrhoea agents; antihypertensives; cardiac ionotropes; anti-anginal drugs; diuretics; antiasthma drugs; cough/cold remedies; mucolytics; antihistamines; antiseptics; disinfectants; diagnostic agents; poison and

antidotes, Drug and substances toxicity: diagnosis, drug and supportive management. (Y2T3)

COMH 210: Epidemiology and Medical Statistics(45/0/0:3.0 C.F)

Definition and meaning of statistics; Statistics in epidemiology, public health and medicine; Mathematical operations; development and survey instruments, data collection, analyses, report writing, presentation and dissemination; Scales of measurements; Probability theory, binomial distribution, normal distribution, confidence level; Correlation and regression analysis, linear correlation coefficient, z-transformation of the correlation coefficient, grouped data, Vital statistics, nomenclature, health data gathering; Definitions Terminology used in community diagnosis. Participatory rural assessment: Epidemics: outbreaks, characterization and establishment of outbreak existence. Measurements of morbidity and mortality; Sources of data in community health; Analytical studies: Choice of study methods: Case Control Studies Clinical Trials and Descriptive studies, Cross-Sectional studies, Cohort studies; Problems in etiologic investigation of diseases; Populations dynamics and health (Y2T2)

PATH 210: Introduction to General Pathology (30/15/0:2.5C.F)

Introduction to pathology: Definitions; cell types, growth and differentiation and cell injury, cell adaptation; Disorders of fluid , electrolyte and Acid Base Balance; Inflammation; acute inflammation, vascular changes, cellular changes, events, extravagation, phagocytosis and chemical mediators; chronic inflammation; wound healing and repulsion; edema; Pathogenesis of diseases: liver disease, kidney disease. Cysts: definition and types. Neoplasms: benign tumors, malignant tumors; clinical feature of tumors; cardiogenic agents; grading; staging; laboratory diagnosis.(Y2T1)

NURS 210: Cardiovascular Medical-Surgical Nursing (45/0/45:4.0 C.F)

Introduction to medical surgical nursing: Historical development of medical- surgical nursing; Principles and concepts. Overview of major medical surgical conditions relating to nursing care. Pathophysiology of

medical and surgical conditions. The nursing process. Making a nursing diagnosis. Provision and differential diagnosis and management. Hematology: Blood and cardiovascular disease such as bleeding disorders, anaemias, heart diseases (Y2T2)

PATH 211: Pathology of Circulatory, Respiratory, and genital urinary Systems (45/30/0: 4.0 C.F)

Common infectious, inflammatory and neoplastic conditions affecting the cardiovascular and pulmonary systems such as rheumatic fever and rheumatic heart disease, Disorders of blood flow, Blood pressure, and Cardiac function. Heart failure and circulatory shock. Cardiomyopathy, peripheral vascular disease, Disorders of ventilation and gas exchange; bronchial asthma, bronchiectasis, pneumonia and lung cancer. Disorders of renal function, Acute and chronic renal disease. (Y2T2)

NURS 211: Medical-Surgical Nursing Practicum (0/0/180:4.0 C.F)

An experience in medical-surgical patient/client admission procedures, use of nursing process approach in management of medical-surgical patients/clients with various conditions in hospital settings. Preparing patients for various diagnostic and therapeutic procedures including surgery. Practice of safe discharging or referral and patient education and follow up in relevant clinics. (Y2T3) (Prerequisites: NURS 210).

PATH 212: Clinical Chemistry (30/30/0:3.0 C.F)

Blood coagulation, fibrinolysis, and related disorders. Hematological changes in disease. Immunohaematology and blood transfusion. Laboratory evaluation of urine, pancreatic, synovial and cerebrospinal fluid disorders. Serum enzymes, isoenzymes and their application in clinical abnormalities. Clinical tests for liver, renal and adrenal function. Examinations. Findings and interpretation of blood and bone marrow specimens. (Y2T3)

PATH 213: Pathology of Endocrine, Neuromuscular and Gastrointestinal System (45/30/0:4.0 C.F)

Endocrine pathology: Disorders of growth and metabolism endocrine control; hypothalamus, pituitary, thyroid, adrenal and parathyroid glands: Diabetes and

metabolic syndrome; multiple endocrine neoplasia syndromes: the pineal body. Nervous system: congenital, traumatic, infective, inflammatory and metabolic disorders; space occupying lesions; extra-pyramidal disorders; autonomic nervous system disorders, neuromuscular disorders; peripheral neuropathies, ageing and the dementias: locomotor system-diseases of joints: soft tissues tumours and tumour-like lesions: Disorders of GIT, hepatobiliary and exocrine pancreas function; Disorders of male and female genital urinary systems. (Y2T3)

COMH 220: Communicable Disease Control. (30/0:2.0C.F)

Introduction to midwifery: definition of terms; concepts; diagnosis and management of non-communicable diseases; communicable diseases - diagnosis, management and control of communicable diseases; epidemic patterns, control and prevention; international health issues and their relevance to the local situation; diagnosis and management of emerging and re-emerging diseases; readings and seminars in selected topics of major public health importance; horizontal and vertical course integration. (Y2T3)

NURS 220: Introduction to Midwifery and pregnancy (45/0/45:4.0 C.F)

Introduction to midwifery: definition of terms; concepts; historical development; Fertilization and early embryonic development: placenta; fetal growth and development; fetal circulation. Anatomy and physiology of female reproductive system and the pelvis; breast care. Normal pregnancy: diagnosis; physical (anatomical) and physiological changes; sociological changes; ANC- pre-conception care, Focused Ante-Natal Care (FANC), PMTCT, ANC profile. Abnormal pregnancy: complications of pregnancy; medical conditions in pregnancy. (Y2T3)

PATH 220: Medical Ethics and Medico Legal Issues (30/0/0:2.0 C.F)

Medical ethics and professional conduct: definition; doctor patient relationship; advertising; medico-legal issues – informed consent; confidentiality; termination of pregnancy; euthanasia; death; medical certification; National and international codes and relevant acts including Medical Practitioners and Dentist Act; Public

Health Act; The Helsinki declaration, The Nuremberg convention, Geneva convention. The international code of medical Ethics, the Tokyo declaration, The oath of Athens and the Hippocratic Oath; The Role of research and ethics committee; factors influencing ethical practice-political, socio - economic and cultural; emerging issues. (Y2T1)

NURS 324: Family Planning & Emergency Contraceptives (30/0/45:3.0 C.F)

Family Planning: Definitions; government policies; benefits; Methods of contraception: hormonal contraception; intra-uterine contraceptives devices (IUCD) ; barrier methods; spermicidal agents; voluntary surgical contraception (VSC), vasectomy; natural methods; lactational amenorrhea method; traditional methods; assessment of a client for family planning; identification and prescription of various family planning methods. Emergency Contraception ; government policy; indications, mode of action, dosage -guidelines, side-effects, counseling, Bridging Emergency Contraceptive Pills (ECP) to other Reproductive Health services. (Y3T3)

COMH 310: Research Methodology (45/0/:3.0 C.F)

Research methodology- definition of research; types of research; importance of research to community and nation; available resources; research design, methods and instruments; data- collection, analysis, interpretation and presentation; problems in research; report writing and publication; dissemination of findings to stakeholders; application of findings. (Y3T1)

NURS 310: Respiratory & Gastrointestinal Medical-Surgical Nursing (45/0/45:4.0 C.F)

Respiratory disorders: Review of anatomy and physiology; upper respiratory tract disorders; Special respiratory procedures; Bronchoscopy, laryngoscopy, tracheostomy, chest intubation, incentive spirometry. Gastrointestinal disorders: Review of Anatomy and physiology; Oral; Esophageal disorders; Disorders of the stomach; intestinal disorders; mal-absorption, obstructive disorders. Diagnostic and therapeutic procedures; Gastroscopy, gastric lavage, gastric surgery, colostomy washout, barium meal, liver biopsy, cholecystogram. (Y3T1)

NURS 311: Genito-Urinary, skin & Geriatric Med'-Surgical Nursing (45/0/45:4.0 C.F)

Genital urinary disorders: renal disorders; disorders of the urinary tract; cancer of the bladder; Urinary disorders secondary to other disease processes. Disorders of the male reproductive system: Disorders of sexual function; infections; disorders of the testis and adjacent tissues; Disorders of the prostate gland. Diagnostic and therapeutic procedures. Skin disorders: infections; infestations; psoriasis; pigmentation disorders; skin neoplasms; burns; procedures- plastic reconstructive surgery, skin tests. Geriatric nursing: definition; nursing care of the elderly; theories of aging; age- related changes; mental health problems in the elderly. (Y3T2)

NURS 312: Endocrine, Musculoskeletal and Nervous System Medical-Surgical Nursing (45/0/45:4.0 C.F)

Endocrine disorders: Review of anatomy and physiology; Disorders of the endocrine glands; Diagnostic and therapeutic procedures- blood sugar analysis, hormone assays. Musculoskeletal disorders: Review of anatomy and physiology; inflammatory disorders, Muscular and connective tissue disorders, degenerative disorders; metabolic bone disorders; low back pain; foot problems; Musculoskeletal surgical procedures. Diagnostic procedures, nervous system disorders: Headache; Altered levels of consciousness; inflammatory disorders; Degenerative disorders; Traumatic disorders, Disorders of the peripheral nervous system; diagnostic and therapeutic procedures in the nervous system (Y3T3)

NURS 320: Labour and Obstetric Emergencies (45/0/45:4.0 C.F)

Normal Labour: definitions; physiology and mechanism of labour; stages; management using nursing process; partography. Presentation, management and complications of Abnormal labour; premature labour; premature rupture of membranes; prolonged labour; obstructed labour; precipitate labour; post-term; malpresentation and malpositions; operative delivery; Obstetric emergencies. (Y3T1)

COMH 321: Health Services Management (45/15/0:3.5 C.F)

Management – definition, principles functions, roles and styles of leadership; team leadership and management of group processes; interpersonal relations; public relations; industrial relations; conflict resolutions; dispute handling; collective bargaining; problem solving and decision-making; critical thinking; change management and crisis management organization of health services in Kenya and comparative systems; Hospital administration and management: Human resource management: National vertical programmes; Communication and networking; medical education, Philosophy and objectives of School of Health sciences. Introduction to medical education.(Y3T2)

NURS 350: Introduction to Nursing Education (45/0/45:4.0 C.F)

Definition of concepts; History of nursing education Theories of learning; Didactics – teaching strategies/aids. Syllabus, lesson plan, scheme of work; theories of learning; personality development; guidance and counseling; motivation; intelligence and ability testing; Classroom organization and management instructional/lesson objectives, sequencing classroom and clinical teaching. Preceptorship, coaching and mentoring. Nursing skills laboratory; Types of evaluation. Tests and measurements; Moderation of exams. Rationale for measurements; Types of tests and their use. Micro-teaching-peer teaching. Patient/client teaching individually and as a group Continuing professional development for health personnel. (Y3T3)

NURS 321: Midwifery Practicum (0/0/180:4.0 C.F)

An experience in admission of a reproductive health client, use of nursing process approach in management of a client with various reproductive health needs in prenatal, intra-natal and postnatal settings. Preparing patients for various diagnostic and therapeutic procedures including surgery(C/S). Practice of safe discharging or referral and patient education and follow up in relevant clinics. (Y3T1) (Prerequisites: NURS 320).

NURS 322: Puerperium and Neonatal Nursing (45/0/45:4.0 C.F)

Normal puerperium and postnatal care: management of 4th stage of labour; physical and psycho-social changes in puerperium; family planning; assessment of mother and baby; nursing process; postnatal checkups. Abnormal puerperium; The newborn: APGAR scoring; characteristics; physiological changes; fetal circulation; newborn care and management; Babies with special needs (babies at risk). (Y3T2)

NURS 340: Introduction to Community Health Nursing (45/0/45:4.0 C.F)

Introduction to community health nursing; definitions; purpose; historical development; principles and standards; characteristics; ethical principles,ethical-legal aspects of community health nursing practice; role of community health nurse and specialization; Conceptual models in community health nursing. Health care delivery systems: levels and community strategy. Primary Health Care and MDGs: Health promotion and health education: behavior change communication; Information, education and communication (IEC); advocacy; information dissemination. Family Health: Family-centered nursing process; Home-visiting and Home-based care. (Y3T1)

NURS 341: Community Health Nursing Practice (45/0/45:4.0 C.F)

Trends; Child health: growth and development monitoring; child health: growth and development; nutrition; milestones and immunizations. Referral system: health systems; Community organization models; community development. District health nursing; Disaster management; Vulnerability and vulnerable groups; management of special groups and social services (Y3T3)

NURS 330: Introduction to Child Health & Pediatric Nursing (45/0/0:3.0 C.F)

Pediatric nursing; Introduction; definition of concepts; principles and concepts of paediatric nursing: family centered care; traumatic care; impacts of childhood illness and hospitalization. Theories: Casey's model, Ahmann's theory; Growth and development; theories; developmental milestones and developmental disorders. Paediatric health assessment; history and physical

examination; Nutrition in children; nutritional disorders; Preventive paediatrics and Paediatric techniques/skills. Management of conditions in infants and children: respiratory problems, haematological conditions, cardio-vascular conditions, Gastro- intestinal disorders and Genito-urinary tract disorders (Y3T1)

NURS 331: Advanced Child Health and Pediatric Nursing (45/0/0:3.0 C.F)

The definition, pathophysiology, prevention, Management and complications of conditions in infants and children: Dermatological disorders, metabolic disorders, connective tissue disorder, Neurologic disorders, orthopaedic conditions and oncologic disorders. Paediatric emergencies: paediatric intensive care; poisoning; foreign body aspiration; respiratory distress; hypoglycaemia; cardio-pulmonary failure; shock; fluid and electrolyte imbalance. integrated management of childhood illnesses; At risk children: failure to thrive; septicaemia, mental retardation, down's syndrome, autism; genetic counseling; abused child; a child of substance dependent mother; the dying child; family influence on child health. Care of the terminally ill child (Y3T2) (*Prerequisites: NURS 330*).

NURS 332: Child Health & Pediatric Practicum (0/0/180: 4.0 C.F)

An experience in admission of a Pediatric client, use of nursing process approach in management of a client with various child health needs in neonatal and early childhood settings. Preparing patients for various diagnostic and therapeutic procedures. Practice of safe discharging or referral and patient and parent education and follow up in relevant clinics. (Y3T2) (*Prerequisites: NURS 330, 331*).

NURS 450: Advanced Nursing Education (45/0/45:4.0 C.F)

Nursing Curricular concepts, Historical philosophical base of curriculum models/principles, traditional model, progressive, discovery learning; product & Process models. Nursing Curriculum development and accreditation. Role of regulatory bodies and other stakeholders; Nursing Curriculum Nursing Curriculum review/retiring; role of Management of nursing Laboratory. The role of the media, Instructional materials commonly used, projected & non-projected

visuals/audio materials. Film video television media production & operation of equipment for effective, presentation. Initiation & management of learning resource centers. Students to development of Nursing curriculum in groups (Y4T1)

NURS 421: Gender & Health Issues (30/0/45:3.0 C.F)

Concepts of gender: definitions; gender, sex, gender mainstreaming, gender analysis, gender based violence, gender sensitiveness, gender equality, gender equity, gender discrimination, affirmative action, engender, gender awareness, gender blindness, power relations, gender responsive. Social construction of gender; Gender and reproductive health; gender mainstreaming in provision of health services; Gender based violence; Consequences and Management of Gender-based violence; Documentation and Psychosocial support. (Y4T3)

NURS 420: Gynecology Nursing (30/0/45:3.0 C.F)

Gynecological assessment and diagnostic procedures; disorders of menstruation; infections; genital prolapse; fistulae; neoplasms; endometrial hyperplasia, uterine fibroids cysts ovarian infertility; breast disorders; ectopic pregnancy; abortions; maternal mortality and morbidity, sexual dysfunction; Rape and sexual violence; Screening and imaging for premalignant disease and therapeutic procedures (Y4T1)

NURS 422: Sexual, Reproductive Health and safe Motherhood.(30/0/45:3.0 C.F)

Sexual and reproductive health: definitions; components; reproductive health policies; guidelines and standards; pillars of safe motherhood; safe motherhood and child survival; vital statistics; counseling-approaches, importance, tools, concepts, theories. Old age: menopause; andropause; osteoarthritis and osteoporosis. Youths and adolescents: rationale for focusing on youths and adolescents; health needs; youth friendly services; role of health service providers. Reproductive tract infections; HIV/AIDS and; Cancers: of the female reproductive system. Forensic materials/samples & organ transplant; Factors influencing ethical practice; Forensic nursing; principles, concepts, ethical issues and practice including handling of forensic specimen or data.

Review Anatomy and physiology of the female reproductive system; (Y4T3)

NURS 471 Palliative Care & Oncology Nursing (30/0/45:3.0 C.F)

Palliative care Nursing: definition of concepts; historical development; user involvement and palliative care; referral patterns and access; coping with recurrence/remission; communication; integration of palliative care; assessment in palliative care; the spiritual dimension of hospice and palliative care; working with distressing; Psychological aspects of care; working with family care-givers; supporting families of terminally ill persons; the impact of protracted dying; ethical issues at the end of life; the impact of socialization on the dying process; palliative care in institutions; death and bereavement. Oncology: Concepts and principles; classification; screening and diagnosis; interventional approaches; complications of cancer; their nursing management. (Y4T3)

NURS 440: Nursing Clinical Management (30/0/45:3.0 C.F)

Supervision: nursing supervision and supervisory tools; preparation and organization for supervision;-ward rounds, nursing rounds, seminars, meetings and conferences. Supervisory visits; clinical teaching and nursing audits. Nursing care modalities and quality assurance (Y4T1)

NURS 441: Field Attachment and Research Practicum (0/0/270:6.0 C.F)

Experience in District public health facility. The student will be rotate through administrative and service provision areas. They should also participate in community diagnosis and write a report on the experience. Experience in teaching practice in a school of nursing, to learn curriculum delivery and management of a nursing school. Application of concepts and principles of Nursing Research to write a research proposal, collect data, write a research report and give research findings feedback. (Y4T2)

NURS 460: Mental Health & Psychiatric Nursing (45/0/0:3.0 C.F)

Mental Health and Psychiatric Nursing: roles of mental health nurse; therapeutic communication; nurse-client

relationship. Legal and ethical frameworks: Mental Health Act (Cap 248) Criminal Procedure code (Cap 75). Prison Act; crime and mental disorders; patients' Bill of Rights; structure of mental health services in Kenya; medico-legal issues. Approaches in management of mental disorders: perceptions of mental health; mental illness/disorders; stress and coping; classification of mental disorders. Psychopathology and symptomatology: schizophrenia, other psychosis, mood; anxiety, somatoforms, pain, factitious, dissociative, substance abuse and disorders associated different ages; delirium, dementia and other cognitive disorders; psychiatric emergencies. Community mental and psychiatry.(Y4T1)

NURS 461: Mental Health & Psychiatric Nursing practicum (0/0/180:4.0 C.F)

An experience in admission of a psychiatric client, use of nursing process approach in management of a client with various mental health problems in different settings. Preparing patients for various diagnostic and therapeutic procedures. Practice of safe discharging or referral and patient education and follow up in relevant clinics. (Y4T2) (Prerequisites: NURS 460).

NURS 470: Peri-Operative & ENT Nursing (30/0/45:3.0 C.F)

Peri-operative Nursing: historical development; principles and concepts; operating theatre layout, theatre equipment and instruments; drapes; different roles of the nurse in theatre nursing- Anaesthetic drugs; infection prevention and management; medico-legal issues; application of nursing process in the management of peri-operative patients. ENT nursing: review anatomy and physiology; Historical development of ENT nursing; ENT assessment: Diagnostic procedures and therapeutic procedures; Application of the nursing process; Management of conditions of the ear; nose and throat conditions. (Y4T1)

NURS 472: Trauma and Emergency Nursing (30/0/45:3.0 C.F)

Concepts and principles of trauma and emergency nursing; organization of trauma and emergency unit; principles of disaster management; Principles of Advanced Trauma Life Support; management of

specific emergency conditions and accidents- diabetic crisis, severe hemorrhage, severe asthmatic attack, shock, burns and scalds, wound management, epistaxis, spinal cord injuries, abdominal trauma, haemo- and pneumothorax, penetrating wound of the chest, limb trauma, multiple injuries, sexual assault; etc psychological management of patients and families in emergency- crisis situations. (Y4T3)

NURS 473: Ophthalmic and Dental Nursing(30/0/45:3.0 C.F)

Ophthalmic nursing: Review Anatomy and physiology; Historical development; Ophthalmic Assessment: Diagnostic and therapeutic procedures and instruments; Application of the nursing process; Management of eye conditions- infections, refractive disorders, traumatic disorders, glaucoma, cataract, corneal disorders, retinal disorders; Ocular manifestations of systemic disorders; low vision and blindness; Pen-operative care; Patient and community education. Dental nursing: The pathophysiology, presentation, treatment and application of the Nursing Process to manage Tooth disorders: infections/carries; Dental emergencies; Ludwig Angina; Oral cancers. (Y4T3)

NURS 474: Renal and Critical Care Nursing (30/0/45:3.0 C.F)

Critical care nursing: principles and concepts; role of critical care nurse; critical care unit- setting, staffing, supplies, equipments and machines, infection prevention and control; invasive monitoring; application of the nursing process in support of physiological integrity of patients with life-threatening illnesses; medico-legal and ethical issues. Nephrology nursing: principles and concepts; renal assessment; diagnostic procedures and imaging modalities; Equipments and supplies; application of the nursing process in management of patients with renal function impairment. (Y4T3)

9.2 Service Course to Other Departments

COURSE CODE	COURSE TITLE	CREDIT HOURS			
NURS 101	Nursing Skills and First Aid	30	0	45	3.0

c) i. Examination Schedules for BScN (Pre-service)

End of year examinations (EYE) shall be conducted at the end of each year of study. The clinical courses will be examined together with the related theoretical courses. The various courses will be examined according to the following examination schedules;

	Exam Code	Courses Examined	Total CFs	Subject Title	Type and Duration		
					Written	Practical/ Clinical	Orals
		YEAR ONE					
1	ANAT-E100	ANAT 100, 101 & 102	24.0	Human Anatomy	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	HPHY -E100	HPHY100, 101 & 102	11.0	Human Physiology I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	PATH -E100	PATH 110	2.5	Immunology	Essay 1x3hrs MCQ1x2hrs	-	-
4	BIOC-E101	(BIOC 113 & 116)	7.0	Biochemistry	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
5	COMS 101	COMS 101	3.0	Communication Skills	1x3hrs	-	-
6	COMP 101	COMP 101	3.0	Introduction to Computer Applications	Computer Applications	-	-
7	NURS-E100	NURS 100 & 102	7.0	Fundamentals of Nursing	Essay 1x2hrs MCQ1x2hrs	-	-
8	PHIL 108	PHIL 108	3.0	Ethics, Integrity & National Values			
9	EPSC 121	EPSC 121	3.0	Introduction to Psychology	1x3hrs	-	
10	COMH 100	COMH 100	3.0	Behavioural Sciences	1x3hrs	-	
11	FOND 121	FOND 121	3.0	Principles of Human Nutrition	1x3hrs	-	
		YEAR TWO					
1	COMH-E200	COMH 201	2.5	Environmental & Occupational Health	Essay 1x3hrs MCQ1x2hrs		
2	HPHY- E200	HPHY 200, 201 & 202	12	Human Physiology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	PATH- E200	PATH 220	2.0	Medical ethics and medical Legal Issues	Essay 1x3hrs MCQ1x2hrs	-	-
4	NURS-E200	NURS 210 & 211	8.0	Medical Surgical A	1x3hrs	1x3hrs	1x 0.25hrs
5	PATH- E201	PATH 200, 201 & 202	9.5	Microbiology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
6	PATH -E202	PATH 210, 211, 212 & 213	13.5	Pathology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
7	PHAM-E201	PHAM 200, 204 & 205	11.0	Pharmacology IV	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
8	PATH-E205	PATH 214	4.0	Hematology and Oncology	Essay 1x3hrs MCQ1x2hrs	-	-

		YEAR THREE					
1	NURS-E300	NURS 310,311 & 312	12.0	Medical Surgical B	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
2	COMH-E300	COMH 210 ,220 & 321	8.0	Community Health Nursing A	Essay 1x3hrs MCQ1x2hrs	-	-
3	NURS-E301	NURS 320, 321, 322 & 323	16.0	Midwifery	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
4	NURS-E303	NURS 340 & 341	8.0	Community Health Nursing B	Essay 1x3hrs MCQ1x2hrs	-	-
5	NURS-E302	NURS 330, 331 & 332	10.0	Child health and Pediatric Nursing	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
6	FOND 322	FOND 322	3.5	Applied Human Nutrition	1x3hrs	-	-
8	NURS -E304	NURS 324	3.0	Family Planning and Emergency contraception	1x3hr	-	-
		YEAR FOUR					
1	NURS-E400	NURS 470, 471 & 472	9.0	Medical Surgical Nursing C	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
2	NURS-E401	COMH 310, NURS 440 & NURS 441)	12.5	Community Health Nursing D	Essay 1x3hrs MCQ1x2hrs	-	-
3	NURS-E402	NURS 460 & 461	7.0	Mental Health & Psychiatric Nursing	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
4	NURS-E403	NURS 473 & 474	6.0	Medical Surgical Nursing D	Essay 1x3hrs MCQ1x2hrs	1x1hrs	-
5	NURS-E404	NURS 420, ,421 & 422)	9.0	Reproductive Health Nursing A	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
6	NURS-E 405	NURS 350 & NURS 450	8.0	Nursing Education	1x3hrs	-	-

c) ii. Examination Schedules for BScN (In-service)

YEAR ONE							
S/No	Code	Title	Total CF		Type and Duration Written	Pract/ Clinic	Oral
YEAR ONE							
1	ANAT-E100	ANAT 100, 101 & 102	24.0	Human Anatomy	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	COMH-E100	COMH 210 & 220	5.0	Communicable Diseases, Epidemiology and Biostatistics	Essay 1x3hrs MCQ1x2hrs	-	-
3	PATH -E100	PATH 110	2.5	Immunology	Essay 1x3hrs MCQ1x2hrs	-	-
4	BIOC-E101	BIOC 113 & 116	7.0	Biochemistry	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
5	PATH- E200	PATH 200, 201 & 202	9.5	Microbiology	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
6	HPHY -E101	HPHY 100, 101, 102 & 200	15.0	Human Physiology III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
7	PATH -E202	PATH 210, 211	7.5	Pathology I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
8	EPSC 223	EPSC 223	2.0	Psychology of Learning	1x2.5hrs	-	-
YEAR TWO							
1	HPHY –E201	HPHY 201	4.0	Human Physiology IV	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	PATH-E201	PATH 213	4.0	Pathology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	
3	PHAM-E201	PHAM 204 & 205	8.0	Pharmacology IV	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
4	NURS-E201	NURS 210, 310 & 312	12.0	Medical Surgical E	1*3HOURS	1*1HOUR	1*0.5HOUR
5	NURS-E307	COMH 310, 323 & 324	10.0	Community Health Nursing E	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
6	NURS-E305	NURS 320, 321, 322 & 323	16.0	Midwifery	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
7	NURS-E306	NURS 330, 331 & 332)	10.0	Child health and Pediatric Nursing	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
9	FOND 322	FOND 322	3.5	Applied Human Nutrition	1x3hrs	-	-
YEAR THREE							
1	NURS-E 406	COMH 321, & NURS 441	13.5	Community Health	Essay 1x3hrs MCQ1x2hrs	-	-
2	NURS-E407	NURS 421 & 422	4.0	Reproductive Health Nursing B	Essay 1x3hrs MCQ1x2hrs	-	-
3	NURS-E402	NURS 460 & 461	6.0	Mental Health & Psychiatric Nursing	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
4	NURS-E403	NURS 473 & 474	6.0	Medical Surgical Nursing D	Essay 1x3hrs MCQ1x2hrs	1x1hrs	1x 0.25hrs
5	NURS-E408	NURS 470 & 472)	6.0	Medical Surgical Nursing C	Essay 1x3hrs MCQ1x2hrs	1x1hrs	-
6	NURS-E 405	NURS 350 & NURS 450	8.0	Nursing Education	1x3hrs	-	-

9.2. Matrix Aligning Courses/Units to Programme Learning Outcomes

	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcome (PLO)	Courses	CF	Course	CF	Courses	CF	Course	CF
PLO 1: Demonstrate knowledge and competence in the assessment and management of patients / clients in diverse health care settings using the Nursing Process	ANAT 100: Anatomy of Upper and Lower Limb	8.0	HPHY 200: Physiology of Nervous System & Special Senses	4.0	NURS 320: Labor and Obstetric Emergencies	4.0	NURS 420 Gynecology Nursing	3.0
	HPHY100: Cell Biology, Body Fluids, Genetics and Excitable Tissues	4.0	PATH 200: Bacteriology and Mycology	3.0	NURS 310: Respiratory & Gastrointestinal Medical-Surgical Nursing	4.0	NURS 460 Mental Health & Psychiatric Nursing	3.0
	NURS 100: Introduction to Fundamental of Nursing	2.0	PHAM 200: Introduction to Pharmacology & Therapeutics	3.0	NURS 321 Midwifery Practicum	4.0	NURS 461 Mental Health & Psychiatric Nursing practicum	3.0
	COMS 111		PATH 210: Introduction to General Pathology	2.5	NURS 330 Introduction to Child Health & Pediatric Nursing	4.0	NURS 470 Peri-Operative & ENT Nursing	3.0
	BIOC 113: Basic Biochemistry	3.0	PATH 220: Medical Ethics and Medicolegal Issues	2.0	NURS 311: Genito-Urinary, skin & Geriatric Med'-Surgical Nursing	3.0	NURS 421 Gender & Health Issues	3.0
	ANAT 101: Anatomy of Head and Neck	8.0	PATH 214 Hematology and Oncology	4.0	NURS 323	3.0	NURS 422 Sexual, Reproductive Health and safe Motherhood	3.0
	HPHY 101: Physiology of Blood and Cardio-vascular System	3.5	HPHY 202: Physiology of Genito-Urinary System	4.0	NURS 322 Puerperium and Neonatal Nursing	4.0	NURS 471 Palliative Care & Oncology Nursing	3.0
	PHIL 108 Ethics, Integrity and National Values	3.0	PATH 201: Medical Virology	2.5	FOND 322 Applied Human Nutrition		NURS 472 Trauma and Emergency Nursing	
	COMP 101 Introduction to Computer	8.0	PHAM 204: Clinical Pharmacology I	4.0	NURS 331 Advanced Child Health and Pediatric Nursing		NURS 473 Ophthalmic and Dental Nursing	3.0
	BIOC 116: Biochemistry II	3.5	NURS 210: Cardiovascular Medical-Surgical Nursing	4.0	NURS 332 Child Health & Pediatric Practicum		NURS 474 Renal and Critical Care Nursing	
	ANAT 102: Anatomy of Thorax, Abdomen and Perineum	4.0	PATH 211: Pathology of Circulatory, Respiratory, and genital urinary Systems	4.0	NURS 324: Family Planning & Emergency Contraceptives			
	HPHY 102: Physiology of Endocrine and Respiratory System	2.5	PATH 202: Medical Parasitology	4.0	NURS 312: Endocrine, Musculoskeletal and Nervous System Medical-Surgical Nursing			
	NURS 101: Concepts in Nursing Practice	3.0	HPHY 201: Physiology of Digestive System	4.0				
	PATH 110: Immunology		PHAM 205: Clinical Pharmacology II	4.0				
	FOND 121 Principles of Human Nutrition		NURS 211: Medical-Surgical Nursing Practicum	4.0				
			PATH 212: Clinical Chemistry	4.0				
			PATH 213: Pathology of Endocrine, Neuromuscular and Gastrointestinal	3.0				
				4.0				

PLO 2: Design, implement and utilize health research and evidence-based practice	COMH 100: Behavioural Sciences PHIL 108 Ethics, Integrity and National Values COMP 101 Introduction to Computer COMS 111	3.0 3.5 3.0	COMH 201: Environmental & Occupational Health	2.5	COMH 220: Communicable Disease Control NURS 340: Introduction to Community Health Nursing NURS 341: Community Health Nursing Practice COMH 210: Epidemiology and Medical Statistics	2.0 4.0 4.0 3.0	COMH 310 Research Methodology NURS 441 Field Attachment and Research Practicum	3.0 6.0
PLO 3: Manage and provide healthcare leadership in diverse health settings	PHIL 108 Ethics, Integrity and National Values COMP 101 Introduction to Computer COMS 111	3.0 3.5 3.0			COMH 321 Health Services Management NURS 340: Introduction to Community Health Nursing NURS 341: Community Health Nursing Practice	3.5 4.0 4.0	NURS 440 Nursing Clinical Management NURS 441 Field Attachment and Research Practicum	3.0 6.0
PLO 4: Apply principles of learning and curriculum development/review in patients/client education and training of nursing students	EPSC 121 Introduction to Psychology PHIL 108 Ethics, Integrity and National Values COMP 101 Introduction to Computer COMS 111	3.0 3.5 3.0	EPSC 223	2.0	NURS 340: Introduction to Community Health Nursing NURS 341: Community Health Nursing Practice NURS 350 Introduction to Nursing Education	4.0 4.0 4.0	NURS 441 Field Attachment and Research Practicum NURS 450 Advanced Nursing Education	6.0 4.0

BACHELOR OF MEDICINE & BACHELOR OF SURGERY

1. Philosophy of the programme

The Bachelor of Medicine and Bachelor of Surgery (MB, ChB) programme at Egerton University trains, equips and nurtures students into ethical health care professionals with a scholarly appreciation of the normal and abnormal health state and prepares them to make a lasting contribution within the local community and worldwide as leaders in healthcare practice, research and innovation.

2. Rationale

Health care provision remains a major challenge for many countries globally not only in terms of health care financing but also in the number of trained personnel. The ratio of trained health care providers to general population in Africa and more so in Kenya remains high in comparison to the recommended ratio by WHO of one doctor to 10,000 people. In Kenya this ratio is 1: 100,000. Although Kenya has been training doctors from late 1970s an acute shortage of doctors still persists both due to increasing demand and migration to other regions. There is no doctor available below the level of a district hospital and indeed many district hospitals are under the management of clinical officers. This programme of Bachelor of Medicine and Bachelor of Surgery is designed to train high calibre Medical doctors who will provide both curative and preventive health care. To this end the graduate should be able to develop skills to maintain continuous medical education throughout his/her professional life. Further the programme envisages inculcating acquisition of knowledge and skills in research in health and health related issues. To achieve this, self-directed learning, problem solving and effective communication will be crucial. The graduate will be expected not only to excel in curative medicine but also in community-based prevention of disease and promotion of health.

3. Goal of the programme

The goal of this programme is to equip the learners with the knowledge, skills and attitude to effectively manage diseases conditions, conduct research and participate in

community Health programme design and disease prevention.

4. Programme learning outcomes

By the end of the programme for Bachelor of Medicine and Bachelor of Surgery, the graduates will have acquired knowledge and skills to be able to:

- i. Identify and differentiate the normal health state from the diseased health state.
- ii. Manage, prevent and actively participate in disease prevention and promotion within the community.
- iii. Conduct community diagnosis and research.
- iv. Manage and be a leader in the health care institutions and community.
- v. Plan and implement training/educational programmes for the community and health workers.
- vi. Apply ethical, legal, and behavioural (attitudinal) principles in the practice of medicine.

5. Mode of delivery

This is a full time day face-to-face programme.

6. Academic regulations of the programme

6.1 Admission Requirements

Applicants shall have met the minimum University entry requirements as stipulated in the Egerton University Statute No. 36 (1) of 2013.

Specifically, applicants must have attained a Kenya Certificate of Secondary Education (KCSE) mean grade of B (Plus) or its equivalent and passed in the subject cluster with B (Plus) and above as indicated below:

b) Biology	B (Plus)
c) Chemistry	B (Plus)
d) Mathematics or Physics	B (Plus)
e) English or Kiswahili	B (Plus)

OR

- i) General Certificate of Education (GCE) Advanced level or equivalent with a minimum of two principal passes of C and above in Biology and Chemistry and a subsidiary pass in Mathematics or Physics.

OR

- ii) Diploma in Clinical Medicine and Surgery candidates who have passed with at least a

“credit” and above plus mean grade of C (Plain) in KCSE or equivalent from an institution recognized by Egerton University Senate. Clinical Officers with a Higher National Diploma in a related discipline who will need to enrol in this programme will have an added advantage.

OR

- iii) Have a degree in relevant health related medical course with “credit” and above plus mean grade of C (Plain) in KCSE or equivalent from an institution recognized by Egerton University Senate.

The following Kenya Universities and Colleges Central Placement Service (KUCCPS) cluster subjects are required:

- v) Subject 1: BIOLOGY
- vi) Subject 2: CHEMISTRY
- vii) Subject 3: MATHEMATICS or PHYSICS
- viii) Subject 4: ENGLISH/KISWAHILI or 3rd GROUP II or any GROUP III or any GROUP IV or any GROUP V.

6.2 Regulations for Transfer of Credits

Where credit transfer is applicable, it shall adhere to Egerton University Statutes of 2013 articles 36 (3). The Medical Practitioners and Dentists Board shall be concurrently notified of the credit transfer.

6.3 Course Requirements

The University's ISO procedure for teaching EU/AA/OP/06 rev 3 shall apply.

6.4 Student Assessment Criteria

Assessment of the programme shall be in accordance to Egerton University Statute 36 sections (6b) and (12) of 2013.

With regard to the End of Year examinations the following specifications shall also apply:

End of Years/Course Examinations

End of Year or Course Examination will account for 60% of the total marks and;

- i. Written Examination that will account for 25% (or 30% where the viva voce is not applicable) of the marks and may comprise of

- ii. Clinical or Practical Examination that will account for 30 % of the marks.
- iii. Structured oral (Viva Voce) examination (where applicable) that will account for 5% of the marks.
- iv. Any candidate who fails the clinical examination will have failed to satisfy the examiners in the overall discipline examination even if the final mark is 50% or higher

6.5 Grading System

The grading system for this programme shall be in accordance with Egerton University Statutes 36 (6e iii) of 2013.

6.6 Examination Regulations

The University rules and regulations shall apply for the Bachelor of Medicine and Bachelor of Surgery programme as stipulated in the University Statutes 36 (6) of 2013.

Annual Examination Codes

The course code for a Bachelor of Bachelor of Surgery Examination will depend on the subject area of the course. It is the subject area acronym e.g. ANAT for Anatomy, followed by letter “E” for Examination, followed by 3 numerical numbers e.g. ANAT-E 101 except for those examined as one course that retain their codes.

The first numerical represents the year of examination The second and third numeral represents sequence of the examination in that year.

6.7 Moderation of Examinations

Moderation of examination for both the internal and external moderation will be in accordance to ISO procedure EU/AA/OP/07 and Egerton University Statutes 36 (5) of 2013.

6.8 Graduation Requirements

The Bachelor of Medicine and Bachelor is designed to be covered over 413.5 CFs. All courses in the programme are compulsory unless the Faculty Board recommends exemption and Senate approves.

Completion of all prescribed course work is mandatory before graduation.

6.9 Classification of the degree

The Bachelor in Medicine and Bachelor of Surgery programme shall not be classified.

7. Course evaluation

All courses will be evaluated using the Egerton University Quality Assessment Tool EU/VC/OP/04, as revised from time to time. Course evaluation shall capture all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments.

8. Management & administration of the programme

8.1 Host department and Programme Academic Leader

The programme shall be hosted by the Faculty of Health Sciences. The programme academic leaders shall be appointed in accordance with the University Standards and Guidelines (2014).

8.2 Programme Evaluation

At the end of the programme’s academic cycle, the programme shall undergo an internal programme evaluation (self-assessment) in accordance to ISO procedure EU/VC/OP/05. The Bachelor of Medicine and Bachelor of Surgery programme shall be bench marked against a similar programme at a highly ranked University.

8.3 Course Coding

- a) The course code for Bachelor of Medicine and bachelor of Surgery will depend on the subject area e.g. ANAT for Anatomy followed by 3 numerical numbers e.g. ANAT 101.
- b) The first numeral represents the year of study,
- c) The second numeral represents course category, i.e.
 - 1. ANAT=Anatomy
 - 0= general anatomy
 - 2. HPHY=Physiology
 - 0=General physiology
 - 1=Pathophysiology

- 3. COMH=Community Health
- 0=Environmental health and Occupational health
- 1=Epidemiology
- 2=Management
- 3=Education
- 4= field attachment

- 4. PATH= Pathology
- 0=Microbiology
- 1= Pathology
- 2= Immunology

- 5. PHAM=Pharmacology
- 0= General pharmacology
- 1=Clinical pharmacology

- 6. IMED=Internal Medicine
- 0=General Medicine
- 1=Mental Health
- 2=Dermatology
- 3=Therapeutics

- 7. SURG=Surgery
- 0=General Surgery
- 1=Orthopaedic Surgery
- 2=Anaesthesia
- 3=Ophthalmology
- 4=Ear, Nose and Throat
- 5=Dentistry
- 6=Radiology

- 8. PAED=Paediatrics and Child Health
- 0 = General paediatrics

- 9. REPH=Reproductive health
- 0=Obstetrics and Gynaecology
- 10. MEDS = Clinical Elective

- 9 = Clinical Elective
- d) the third numeral represents the order of the specific courses in the particular category

9. Courses and units offered for the programme

9.1 Schedule of courses

a) University Common core courses

CODE	TITLE	YEAR	L	P	C	C.F.
COMS 111	Communication Skills	Y1T1	45	0	0	3.0
COMP 101	Introduction to Computer Applications	Y1T2	45	0	0	3.0
PHIL 108	Ethics, Integrity and National Values	Y1T3	45	0	0	3.0

b) Schedule of courses

The schedule of courses shall be arranged on a trimester basis as follows:

YEAR 1 TERM 1

CODE	TITLE	L	P	C	C.F.
COMS 111	Communication Skills	45	0	0	3.0
ANAT 103	Anatomy of Lower Limb	45	150	0	8.0
HPHY 103	Cell Biology, Body Fluids and Genetics.	45	0	0	3.0
BIOC 111	Cell structure and Biomolecules	45	45	0	4.5
CHEM 120	Introduction to Physical Chemistry	45	0	0	3.0
	Total	225	195	0	21.5

YEAR 1 TERM 2

CODE	TITLE	L	P	C	C.F.
COMP 101	Introduction to Computer Applications	45	0	0	3.0
ANAT 104	Anatomy of the upper limb	45	150	0	8.0
HPHY 104	Physiology of Body Tissues – Nerve, Muscle and Connective Tissue Cells	60	60	0	6.0
BIOC 112	Carbohydrate Metabolism	45	30	0	4.0
	Total	195	240	0	21.0

YEAR 1 TERM 3

CODE	TITLE	L	P	C	C.F.
COMH 100	Behavioural Sciences	45	0	0	3.0
ANAT 105	Anatomy of the Head and Neck and spine	45	150	0	8.0
HPHY 105	Physiology of the Digestive System	45	15	0	3.5
PHIL 108	Ethics, Integrity and National Values	45	0	0	3.0
BIOC 211	Lipid Metabolism	60	0	0	4.0
	Total	240	165	0	21.5

Year 2 Term 1

CODE	TITLE	L	P	CL	C.F.
ANAT	Neuroanatomy (Brain	60	90	0	7.0

200	and Spine)				
COMH 200	Primary Health Care & Community Based Health Care	45	0	0	3.0
HPHY 203	Physiology of the Nervous System	60	45	0	5.5
HPHY 204	Physiology of the Endocrine System	45	15	0	3.5
BIOC 215	Metabolism of Proteins and Vitamins	45	30	0	4.0
	Total	285	180	0	23.0

YEAR 2 TERM 2

CODE	TITLE	L	P	C	C.F.
ANAT 201	Anatomy of the Thorax	45	150	0	8.0
COMH 201	Environmental & Occupational Health	30	15	0	2.5
HPHY 205	Physiology of the Respiratory System	45	30	0	4.0
HPHY 206	Physiology of the Cardiovascular system	45	30	0	4.0
BIOC 216	Biochemical Endocrinology & Endocrinological Techniques	45	30	0	4.0
COMH 230	Medical Education	30	15	0	2.5
	Total	240	270	0	25.0

YEAR 2 TERM 3

CODE	TITLE	L	P	C	C.F.
ANAT 202	Anatomy of the Abdomen & Pelvis	45	150	0	8.0
HPHY 207	Physiology of the Genito-Urinary System	75	15	0	5.5
BIOC 217	Molecular Biology and Genetics	45	30	0	4.0
COMH 220	Disaster Management	30	0	0	2.0
FOND 322	Applied Human Nutrition	30	45	0	3.5
	Total	255	240	0	23.0

YEAR 3 TERM 1

CODE	TITLE	L	P	C	C.F.
PATH	Bacteria and	60	30	0	5.0

300	Bacterial Diseases				
PHAM 300	Basic Principles and autonomic Pharmacology.	60	0	0	4.0
PHAM 301	Cardiovascular, renal and analgesics and anti-rheumatic pharmacology	45	45	0	3.0
PATH 310	Biology of Tissues and Response To Disease	30	0	0	2.0
PATH 311	Haematology and Blood Transfusion	60	30	0	5.0
PATH 312	Principles of Neoplasia	15	30	0	2.0
PATH 320	Introduction to Immunology	45	30	0	4.0
	Total	285	165	0	27.0

YEAR 3 TERM 2

CODE	TITLE	L	P	C	C.F.
PATH 301	Medical Parasitology	60	45	0	5.5
PHAM 302	Central Nervous drugs, Anaesthetic Drugs and Endocrine drugs and Corticosteroids	60	0	0	4.0
PATH 302	Medical Entomology	15	30	0	2.0
PHAM 303	Respiratory GIT and special aspects of Pharmacology	45	45	0	3.0
PATH 313	Systemic Pathology	60	60	0	6.0
PATH 321	Immune Response in Health and Diseases.	45	45	0	4.5
	Total	285	225	0	25.0

YEAR 3 TERM 3

CODE	TITLE	L	P	C	C.F.
PATH 303	Medical Mycology	45	30	0	4.0
PATH 304	Viruses and Viral Infections	45	30	0	4.0
PHAM 304	Haematopoietic, Oncogenic pharmacologic agents	30	0	0	2.0
PHAM 305	Antimicrobials	45	0	0	3.0
PATH	Clinical Chemistry	45	60	0	5.0

314					
PATH 315	Medical Ethics & Medico-legal Issues	30	0	0	2.0
PATH 316	Autopsies and Laws Related to Medical Practice	30	60	0	4.0
	Total	240	180	0	22.0

YEAR 4 TERM 1

CODE	TITLE	L	P	C	C.F.
IMED 401	Clinical Methods	30	0	45	3.0
PAED 402	Introduction to paediatrics	45	0	90	5.0
REPH 402	Introduction to Reproductive Health	45	0	90	5.0
SURG 402	Foundations of Surgery	45	0	90	5.0
IMED 404	Tropical and Infectious diseases	60	0	90	6.0
	Total	225	0	405	24.0

YEAR 4 TERM 2

CODE	TITLE	L	P	C	C.F.
PAED 403	Infectious and Communicable Diseases/Social Paediatric	45	0	90	5.0
REPH 403	Pregnancy and Management of Labour	45	0	90	5.0
SURG 403	Trauma, critical care and endocrine surgery	60	0	90	6.0
IMED 405	Respiratory and Cardiovascular System	45	0	90	5.0
SURG 411	Introduction to Orthopaedics and Traumatology	30	0	45	3.0
	Total	225	0	405	24.0

YEAR 4 TERM 3

CODE	TITLE	L	P	C	C.F.
PAED 404	Neonatology & Cardiorespiratory Paediatrics	45	0	90	5.0
REPH 404	Delivery Interventions and Postpartum Care	45	0	90	5.0
SURG 404	Gastroenterology & Cardiothoracic Surgery	60	0	90	6.0
IMED 406	Gastrointestinal Tract System and Nephrology	45	0	90	5.0

SURG 460	Introduction to Radio Imaging	30	0	45	3.0
	Total	225	0	405	24.0

YEAR 5 TERM 1

CODE	TITLE	L	P	C	C.F.
COMH 510	Research Methodology	45	0	0	3.0
IMED 510	Introduction to psychiatry	30	0	45	3.0
COMH 511	Epidemiology & Biostatistics	60	0	0	4.0
COMH 520	Community Diagnosis & Communication Skills for Health Workers	30	0	0	2.0
COMH 521	Health Economics and Entrepreneurship	30	15	0	2.5
COMH 522	Health Service Management	45	15	0	3.5
COMH 531	Information Technology in Healthcare	45	15	0	3.5
COMH 540	Field attachment	0	120	0	4.0
	Total	285	45	45	21.5

YEAR 5 TERM 2

CODE	TITLE	L	P	C	C.F.
PAED 500	Endocrine & Nervous System Paediatric Genetics & Teratology	45	0	225	8.0
REPH 500	Gynaecological Emergencies and Fertility	45	0	112.5	5.5
PAED 501	Genitourinary system and Haematology and paediatric oncology	45	0	225	8.0
REPH 501	Medical Conditions in Pregnancy, Ageing and Urogynaecology	45	0	112.5	5.5
IMED 511	Psychiatry and Mental Health I	60	0	112.5	6.5
	Total	280	0	787.5	33.5

YEAR 5 TERM 3

CODE	TITLE	L	P	CL	C.F.
REPH 502	Benign and Malignant Gynaecological Conditions	45	0	112.5	5.5
PAED	Skeletal System,	45	0	225	8.0

502	Connective Tissue, Diseases, paediatrics dermatology, Accidents and Poisoning				
IMED 512	Psychiatry and Mental Health II	60	0	112.5	6.5
MEDS 590	Clinical Elective: Covering Internal Medicine, Paediatrics, Reproductive Health and Surgery clinical experience	0	0	225	5.0
	TOTAL	150	0	450	25.0

YEAR 6 TERM 1

CODE	TITLE	L	P	CL	C.F.
IMED 620	Dermatology and Venereology	30	0	45	3.0
SURG 620	Anaesthesia and Critical Care	60	0	112.5	6.5
SURG 630	Ophthalmology	60	0	45	5.0
SURG 640	Ear, Nose and Throat	60	0	45	5.0
SURG 650	Dental Health	15	0	45	2.0
SURG 661	Radio Imaging and Radiology	30	0	45	3.0
	TOTAL	255	0	340.5	24.5

YEAR 6 TERM 2

CODE	TITLE	L	P	CL	C.F.
IMED 600	Central Nervous System, Endocrinopathies and Metabolic Disorders	60	0	112.5	6.5
SURG 600	Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery	60	0	112.5	6.5
SURG 610	Orthopaedic Conditions in Adulthood	60	0	112.5	6.5
IMED 630	Therapeutics	30	0	0	2.0
	Total	180	0	337.5	21.5

YEAR 6 TERM 3

CODE	TITLE	L	P	CL	C.F.
SURG 601	Paediatric and Urologic Surgery	45	0	112.5	5.5
IMED 601	Connective Tissue Disorder	45	0	0	3.0
IMED 602	Haematology and Oncology	60	0	112.5	5.5
SURG 611	Orthopaedic Conditions of Childhood	60	0	90	5.0
	Total	210	0	315	19.0

(c) Course descriptions**ANAT 103: Anatomy of Lower Limb (45/150/0: C.F 8.0) Y1T1**

Introduction to regional anatomy: gross anatomy: lower limb – thigh compartment (anterior, medial and posterior); gluteal region; popliteal fossa and knee, ankle and foot joints; foot (dorsum and sole); osteology: Mechanism of walking. Histology: introduction to methods of study of histology and instrumentation; cell theory, cell structure and organelles; cell functions and functional specialization, cell cycle regulation and disorders, epithelial tissue and glands, the skin and its appendages and connective tissue. Embryology: Reproductive cycles and female reproductive system, Gametogenesis. Gamete viability and transport. Fertilization: definition, events and results. Formation and transport of the morula. Blastula, normal and abnormal implantation. Bilaminar germinal disc, gastrulation, neurulation. Embryonic folding and organogenesis. Placenta and foetal membranes. Umbilical cord and twinning. Teratology and teratogenesis, stages of limb development; dermatomes and cutaneous innervation of limbs; blood supply to limbs; development of bone, cartilage, joints and skeleton.

BIOC 111: Biochemistry of Biomolecules (30/45/0: C.F 3.5) (Y1T1)

Introduction to biomolecules in living systems (Carbohydrates, Proteins, Amino acids, Lipids, steroids & hormones, glycoproteins, glycolipids, Nucleic acids, Vitamins, Neurotransmitters), Structure & function relationship of biomolecules, Origins, classification,

nomenclature, organization and chemical characteristics; bond formation: analytical techniques for vitamins and trace elements determination

HPHY 103: Cell Biology, Body Fluids and Genetics. (45/0/0: C. F 3.0) (Y1T1)

Cell biology: the cell theory; cell structure and organelles; unicellular and multicellular organisms; organization of cells into tissues and organism cell specialization; communication and functions; Body fluid compartments; ECF vs. ICF; Ionic compositions; Osmolality vs. Osmolality; Gibbs-Donnan relationship; ATP driven pumps; Channels; Carriers: Human genetics: genetic basis of inheritance; the genetic code and chromosomes; gene expression; DNA Replication; semiconservative replication, replication forks, origin of replication, semi discontinuous synthesis, primers, proof-reading, the replication of a bacterial chromosome; elongation and initiation of DNA replication, the replication of a eukaryotic chromosome; replication of the ends of linear eukaryotic chromosomes; DNA Mutation and Repair; RNA Processing/Translation; Overview of protein synthesis; ; the cell cycle, mitosis and cell replication. Physiology of Epithelial tissue.

ANAT 104: Anatomy of Upper Limb (45/150/0: C. F 8.0) (Y1T2)

Gross anatomy: Bones, joints, muscles, nerves and vessels. Breast, features, blood supply and lymphatic drainage. Scapular region and shoulder joint complex. Axilla; boundaries and contents. Formation and distribution of the brachial plexus. Cubital fossa; boundaries and contents. The hand; palmar spaces, intrinsic muscles, arterial arches, finger movements and prehension Histology: organization of cartilage, bone, blood; the muscle tissue- skeletal, cardiac and smooth, myoepithelial cells. Embryology: development of skeletal, smooth and cardiac muscles; development of skin, hair, nails, mammary glands and teeth.

HPHY 104: Physiology of Body Tissues Nerve, Muscle and Connective Tissue Cells. (45/45/0: C. F 4.5) (Y1T2)

Excitable tissue nerve: nerve cells excitation and conduction; ionic basis of excitation and conduction; Nernst equation; properties of mixed nerves; nerve fibre

types and functions; neurotrophins; glia; Muscles: skeletal muscle- morphology, electrical phenomena and ionic fluxes, contractile responses; energy source and metabolism: cardiac muscle- morphology, electrical and mechanical properties, metabolism, pacemaker tissue; smooth muscle- visceral, multi-unit: synaptic and junctional transmission: synaptic- functional anatomy, events at synapses and postsynaptic neurons, principle neurotransmitter systems; neuromuscular transmission; initiation of impulses in sense organs. Physiology of bone and connective tissue proper.

COMH 100: Behavioural Sciences (45/0/0: C.F 3.0) (Y1T3).

Introduction to community health – terminologies, concepts, principles and practice; human behaviour – psychology, ecology, anthropology and sociology; health seeking behaviour; socio-economic factors and health; group dynamics, applications of behavioural sciences in health;

ANAT 105: Anatomy of Head, Neck and Spine (45/150: C.F 8.0) (Y1T3)

Head and neck: features, foramina and aspects of the skull. Layers, blood vessels, nerves, lymphatics and applied anatomy of the scalp and the face. Cranial fossae, meninges, Dural venous sinuses and hypophysiscerebri. Boundaries and contents of the orbit. Optic nerve and visual pathways. Nasal cavity-boundaries, nasal conchae, paranasal sinuses and olfactory pathways. Ear - features of the external ear, tympanic cavity and inner ear. Neck - boundaries and contents of the triangles. Fasciae - investing, carotid sheath, pretracheal and prevertebral. Pharynx - layers and subdivisions, nerves and vessels. Larynx - cartilages, muscles, nerves, vessels and the internal features. Trachea – cartilages, muscles, nerves, vessels. Thyroid and parathyroid glands. Oral cavity; organization of the tongue, palate, gums and the salivary glands and teeth. Root of the neck; subclavian vessels, jugular system and the scalene triangle. Back: features, articulations and movements of the vertebrae. Vertebral venous plexi and their communications. Layers of the extensor muscles of the back. Histology - organization of neurons; spinal cord and peripheral nerves; organization of receptors, brain and eyeball; endocrine glands; Embryology: pharyngeal arches, pouches,

grooves and membranes; development of thyroid and salivary glands, tongue, face, nasal cavities and palate; development of ear and eye.

HPHY 105: Physiology of the Digestive System (45/15/0: C.F 3.5) (Y1T3)

Functional organization: mouth and oesophagus – mastication, salivary glands and salivary secretion control; saliva; swallowing; stomach – gastric juice composition and secretion regulation; secretion of pepsinogen and hydrochloric acid; gastric motility, emptying and regulation; other gastric functions; functions of the pancreas, liver and biliary system - intestinal secretion, motility and regulation ; functions, motility and secretion of the colon; absorption; faeces; defaecation; metabolism of nutrients. Regulation of gastro-intestinal function; Appetite and satiety.

ANAT 200: Neuroanatomy (Brain and Spine) (60/90/0: C.F 7.0) (Y2T1)

Spinal cord segments, blood supply internal features, laminae of the gray mater, ascending and descending tracks. Brain; topography and the functional areas. Cerebral vessels, ventricles and cerebrospinal fluid. Cerebellum: features, phylogeny and connections. Brain stem; features of midbrain; pons and the medulla. Components and connections of the diencephalons, basal ganglia and limbic system. Cerebral white matter; association, commissural and projection fibres. Peripheral nervous system; cranial spinal nerves and autonomic nerves. Histology: Nervous System: Structural and functional organization of the spinal cord, brain, peripheral nerves, ganglia, receptors of general and special sensation. Embryology: development of brain, spinal cord, peripheral and autonomic nervous system.

COMH 200: Primary Health Care and Community Based Health Care (45/0/0: C. F 3.0) (Y2T1)

Primary health care (PHC) – historical background, principles and elements; community – definition, organization and resources; needs assessment and implementation; training of personnel in primary health care, healthcare reforms; management of district/ county health system; vertical vs. horizontal programmes; and community strategy- implementation.

HPHY 203: Physiology of the Nervous System (60/45/0: C.F 5.5) (Y2T1)

General functions of the nervous system; Cellular components of the nervous system; Supportive Matrix of the Nervous System; The Blood-Brain-Barrier; Cerebrospinal Fluid (CSF); Synaptic Transmission; Modulation Of Synaptic Activity; Neurotransmitters; Central Pathways for Touch and Proprioception; Pain and Temperature pathways; Organization of Motor Function; corticospinal and corticobulbar system; Lateral versus Medial Motor Systems; posture – regulating systems; basal ganglia; cerebellum; Motor Control by the Cerebral Cortex; Motor Control by the Cerebellum; Motor Control by the Basal Ganglia; the reticular formation and the reticular activating systems; The Cerebral Cortex; Functions of the Lobes of the Cerebral Cortex; The Electroencephalogram (EEG); Cerebral Dominance and Language; Inter-hemisphere Communication; Autonomic nervous system- anatomic organization; chemical transmission and autonomic functions; Learning and Memory; neural basis of instinctual behaviour and emotions; limbic functions; Special Senses; The Visual System; The Auditory and Vestibular Systems; Sound and Sound Transduction; Central Auditory Pathways; Central Vestibular Pathways; The Chemical Senses (Taste and Smell). (PREREQUISITES HPHY 103)

HPHY 204: Physiology of the Endocrine System. (45/15/0: C.F 3.5) (Y2T1)

Functions of the endocrine system; Metabolism and transport of hormones in general; Signal transduction mechanisms; Thyroid and steroid hormone mechanisms; Adenylate cyclase mechanism; phospholipase C mechanism; Tyrosine kinase mechanism; guanylate cyclase mechanism; Hypothalamic releasing hormones; Anterior and Posterior Pituitary Hormones; Thyroid Hormones; Endocrine Pancreas; Adrenal Gland Hormones; Catecholamine and Steroidogenesis; Parathyroid gland Hormones, Calcitonin and Vitamin D for each hormone- secretion, chemical nature, transportation, receptors, physiological effects, inactivation/degradation and excretion; integrated actions of hormones in regulation of calcium homeostasis; water and electrolyte balance; (PREREQUISITES HPHY 103)

ANAT 201: Anatomy of the Thorax (45/150/0: C.F 8.0) (Y2T2)

Thoracic cage, intercostal spaces, and divisions and recesses of pleura. Lungs: features, relations, lobes bronchopulmonary segments and blood vessels. Pericardium; layers, relations nerve supply. Heart; surface landmarks, external features, interior of the chambers, conducting system and coronary blood vessels; Mediastinum; subdivisions contents and relations. Histology- respiration and circulatory systems; lymphatic tissue; Embryology: development of body cavities; development of the larynx, trachea, bronchi and lungs; development of the heart and vessels and the lymphatic system; foetal and neonatal circulation.

COMH 201: Environmental & Occupational Health (30/15/0: C.F. 2.5) (Y2T2)

Environmental health – principles and practices; water – sources, protection, treatment; waterborne diseases; waste – definition, types and disposal; food – preservation, storage, handling and spoilage; food borne diseases; Public Health Act (Cap 242); housing; hazards of poor housing; occupational health – historical background; legislation in Kenya; hazards and nuisances; occupational diseases and accidents; occupational health services.

COMH 230: Medical Education (30/15/0: C.F 2.5) (Y2T2)

Concepts and definitions: teaching and learning, education, education philosophy. Theories of Teaching and learning, educational objectives, learning objectives. Evaluation and assessment: types of tests, formative and summative. Instructional designs. Instructional media and designing. Resource centres. Curriculum development: history, models, structure, changes, innovative medical education trends. Medical literature search, IT in medical education.

HPHY 205: Physiology of the Respiratory System (45/30/0: C.F 4.0) (Y2T2)

Overview of anatomy of the Respiratory System; Physiologic function of the various parts; Pulmonary Volume and Capacities; Gas Laws; Structure of alveolar-capillary membrane; Ventilation/Perfusion (V/Q) Ratio; Effects of gravity on regional ventilation in

the upright lung; Shunts: Anatomical, Physiological; Mechanics of Breathing; gas exchange in the lungs; pulmonary circulation; other functions of the respiratory system; gas transport between lungs and the tissues; oxygen transport; carbon dioxide transport; regulation of respiration – respiratory activity; chemical control of breathing; non – chemical influences on respiration; respiratory adjustments; effects of exercise; hypoxic hypoxia; non-respiratory functions of the lung; Aviation, High-Altitude, and Space Physiology; Physiology of Deep-Sea Diving. (PREREQUISITES HPHY 103)

HPHY 206: Physiology of the Cardiovascular System. (45/30/0: C.F 4.0) (Y2T2)

Blood: production, composition and functions of the constituents; blood types, plasma, haemostasis; immune system; composition and functions of lymph; origin of the heartbeat and the electrical activity of the heart; cardiac output; dynamics of blood and lymph flow; interstitial fluid volume; cardiovascular regulatory mechanism - local regulatory mechanism; substances secreted by the endothelium, systemic regulation by hormones; systemic regulation by the nervous system; circulation through special regions – cerebral, coronary, splanchnic and skin. (PREREQUISITES HPHY 103)

ANAT 202: Anatomy of the Abdomen & Pelvis (45/150/0: C.F 8.0) (Y2T3)

Gross anatomy of the gut; gastro-intestinal tract; anterior abdominal wall; abdominal cavity; peritoneum; vessels and nerves; liver and biliary tract; pancreas; spleen; posterior abdominal wall; kidneys, ureters and suprarenal glands. Histology - digestive system including liver and pancreas; urinary system; male and female reproductive systems. Embryology: the foregut, midgut and hindgut, development of the spleen; development of the genito urinary system, suprarenal glands and inguinal region. Pelvic cavity; rectum; urinary bladder and ureters in the pelvis; male internal genital organs; female internal genital organs and urethra; pelvic vessels and nerves; perineum- male and female urogenital regions; pelvic joints and ligaments; pelvic osteology; Histology: the urinary system, male and female reproductive systems. Embryology: development of the genito- urinary system, suprarenal glands and inguinal canals.

COMH 220: Disaster Management (30/0/0: C.F 2.0) (Y2T3)

Definition: Disaster, disaster area, and classification of disasters. Roles of various groups and vulnerable groups. Procedure of containing a disaster. Practical skills in disaster management. Prevention and surveillance. Prediction of disaster occurrence, Disaster preparedness and rehabilitation of the affected.

HPHY 207: Physiology of the Genitourinary System (75/15/0: C.F 5.5) (Y2T3)

Reproductive system – sexual differentiation; physical, psychosocial and biochemical changes associated with puberty; the menstrual and spermatogenesis cycles; the gonads and associated hormones: urinary system – glomerular function; proximal and distal tubular function; renal handling of solutes; acidification of urine; control of urinary bladder function; homeokinetic functions of the kidney; body fluids – total body water; fluid compartment; volume, regulation, estimation and composition. (PREREQUISITES HPHY 103)

PATH 310: Biology of Tissues and Response to Disease (30/0/0: C.F 2.0) (Y3T1)

Cell types, growth and differentiation, cell and tissue injury (including drugs and Irradiation, trauma) and adaptation; Acute and Chronic Inflammation; Repair, regeneration and degeneration; Reparative process: injury and wound healing, granulation tissue, angiogenesis, scar formation

PATH 300: Bacteria and Bacterial Diseases (60/30/0: C.F 5.0) (Y3T1)

Structure, composition, metabolism, physiology and regulation of bacteria; Principles of bacterial genetics; Pathophysiology of infection; Virulence; Antibiotics and chemotherapy of bacterial infections; Principles and methods of sterilization and disinfection; Specific pathogenic bacteria; Public health bacteriology; Clinical microbiology: Systemic infections; upper and lower respiratory tract infections; central nervous system infections; septicaemia and endocarditis; gastrointestinal infections; urinary tract infections and sexually transmitted infections; wound, skin, musculoskeletal and soft tissue infections; collection and handling of clinical specimens: body fluids including CSF, urine, blood, sputum, stool, wound, genitourinary specimens

and tissue biopsies. Principles of laboratory diagnosis: microscopy and microbiological methods; isolation and identification of pathogenic organisms, antibiotic sensitivity testing, interpretation, minimum inhibitory concentration, minimum bactericidal concentration. Quality control

PHAM 300: Basic Principles of Pharmacology and Autonomic drugs. (60/0/0: C.F 4.0) (Y3T1)

Basic principles: Introduction; Drug receptors and pharmacodynamics; pharmacokinetics and pharmacodynamics – rational dosing and the time course of drug action; drug biotransformation; basic and clinical evaluation of new drugs. Autonomic drugs: Introduction; cholinergic agonists and antagonists, cholinesterase inhibitors; adrenoceptor agonists and antagonists.

PHAM 301: Cardiovascular, Renal, Analgesic and Anti-Rheumatic Drugs 45/0/0: C.F 3.0) (Y3T1)

Cardiovascular – renal drugs: antihypertensive agents; vasodilators; cardiac glycosides and other drugs used in congestive cardiac failure; drugs used in cardiac arrhythmias; diuretic agents; drugs with important actions on smooth muscles; histamine, serotonin and the ergot alkaloids; vasoactive peptides; the eicosanoids – prostaglandins, thromboxane, leukotrienes and related compounds; nitric oxide, donors and inhibitors; NSAIDs, DMARDs, Opioids, Drugs used in gout. (PREREQUISITES PHAM 300)

PATH 311: Haematology and Blood Transfusion (60/30/0: C.F 5.0) (Y3T1)

Haemopoiesis; normal parameters of blood elements; Normal haemostatic function, role of platelets and vascular endothelium, coagulation system, fibrinolysis, natural inhibitors of coagulation anaemia; haemoglobinopathies; bleeding disorders;; leukaemia and other myeloproliferative disorders; immunopathology; blood transfusion Indications, compatibility Complications and blood bank, ; lymphadenopathy; causes and management of splenomegaly and hepatomegaly; examination, findings and interpretation of blood and bone marrow specimens.

PATH 312: Principles of Neoplasia (30/0/0: C.F 2.0) (Y3T1)

Classification of neoplasms; Basis for histological diagnosis of tumours; Carcinogenesis; Carcinogens: genetic, environmental, physical, chemical factors, viruses; Cell biology, biochemistry, and molecular biology of neoplasms; Tumour immunology; Spread of malignant tumours; Clinical effects of tumours including paraneoplastic manifestations; Cancer epidemiology and prevention

PATH 320: Introduction to Immunology: (45/30/0: C.F 4.0) (Y3T1)

Functional organization of the immune system;; diversity of immune response; damaging effects of the immune response; regulation of Immune response; Elements of immune response: Immune response cells; lymphatic system; interrelationship between acquired and innate immunity; Immunogens and antigens: Immunogenicity, primary and secondary immune response, antigenicity, antigen-binding sites, epitopes, major classes of antigens, cross-reactivity; immunologic adjuvants ;Antibody structure and function: Activation and function of T and B cells: Cytokines: actions and interactions in the immune responses; properties and functional categories; role in disease ; Compliment systems: ; Cell mediated immunity: Effector cells in CMI, effector responses, assessment of cell mediated; cytotoxicity; Hypersensitivity reactions: Control mechanisms in the immune response: Tolerance; immune regulation in the individual; immunologically privileged sites; immunosuppression by drugs, radiation and others.

PATH 301: Medical Parasitology and Parasitic Diseases (60/45/0: C.F 5.5) (Y3T2)

Taxonomy and classification of medically important parasites; Definitions and terminology; Life cycles, epidemiology, pathogenesis, host response, clinical manifestations, diagnosis, treatment and control of diseases caused by nematodes, cestodes and trematodes; Life cycles, epidemiology, pathogenesis, host response, clinical manifestations, diagnosis, treatment and control of diseases caused by protozoan parasites including blood protozoa, gastrointestinal protozoa and tissue protozoa; Emerging parasitic disease in immuno-suppressive states (HIV / AIDS); Laboratory methods;

Collection and handling of clinical specimens; Identification of pathogenic organisms.

PHAM 302; Central Nervous System drugs, Anaesthetics and Endocrine Drugs (60/0/0: C.F 4.0) (Y3T2)

Central nervous system drugs: sedative – hypnotic drugs; anti-seizure drugs; general anaesthetics; local anaesthetics; skeletal muscle relaxants; management of movement disorders; anti-psychotic agents and lithium; antidepressants; drugs of abuse; endocrine drugs; hypothalamic and pituitary hormones; thyroid and anti-thyroid drugs; adreno-corticosteroids and adreno – cortical antagonists; gonadal hormones and inhibitors; pancreatic hormones and anti-diabetic drugs; agents that affect bone mineral homeostasis. (PREREQUISITES PHAM 300)

PATH 302: Medical Entomology (15/30/0: C.F 2.0) (Y3T2)

Medically important vectors of parasitic infections; Ecology, physiology, population biodynamics, vectoral capacity and control; Ectoparasites: blow flies, bot flies, venomous bites and stings; Laboratory methods: Collection, handling of clinical specimens, identification of pathogenic organisms.

PHAM 303; Respiratory, GIT drugs and Drugs for Special Groups (45/0/0: C.F 3.0) (Y3T2)

Agents used in asthma; Cough suppressants, drugs used in Gastrointestinal disease, special aspects of perinatal, paediatric and geriatric pharmacology, dermatological pharmacology.

Toxicology: introduction to occupational and environmental hazards; heavy metal intoxication and cheaters; management of a poisoned patient.

PATH 313: Systemic Pathology: (60/60/0: C.F 6.0) (Y3T2)

Congenital, inflammatory, infectious, immunological, metabolic, endocrine, traumatic, neoplastic and degenerative disorders of the Central and peripheral nervous systems, Respiratory system, Cardiovascular system, Gastrointestinal system, Renal system, Reproductive system, Endocrine system, Skin, bone and connective tissue; Pathology of HIV / AIDS disorders. (PREREQUISITES PATH 310)

PATH 321: Immune Responses in Health and Disease: (45/45/0: C.F 4.5) (Y3T2)

Host defence against pathogens: Major immuno-histocompatibility complex in the immune system: Variability of MHC; genes and genetic polymorphism; Structure and function of MHC class I and II molecules; association of MHC with disease; Autoimmunity and autoimmune disorders: Aetiology, examples of autoimmune disease - Transplantation immunology: Allograft rejection –; tests for histocompatibility Ag's; prolongation of allograft survival; bone marrow and peripheral stem cell transplantation; graft-vs.-host reactions; fetal-maternal relationship; Tumour immunology: Tumour antigens categories; immunologic factors and cancer; effectors mechanisms in tumour immunity; Principles of immunization; Current methods of vaccine production - Immune assays and laboratory methods: Principles of antigen-antibody interactions; comparison of agglutination and precipitation reactions, direct binding and solid-phase immunoassays; Immunofluorescence, Fluorescence activated cell-sorting analysis; comparison of immune-adsorption and immune-absorption, Monoclonal and genetically engineered antibodies. (PREREQUISITES PATH 320)

PHAM 304; Haematopoietic Agents and Cancer Chemotherapy (45/0/0: C.F 3.0) (Y3T3)

Agents used in anaemias, haematopoietic growth factors, cancer chemotherapy. (PREREQUISITES PHAM 300)

PHAM 305; Anti-microbial drugs (60/0/0: C.F 4.0) (Y3T3)

Antimicrobials: beta-lactam antibiotics and other inhibitors of cell wall synthesis; chloramphenicol, tetracycline, macrolides, clindamycin and streptogramins. Aminoglycosides and spectinomycin. Sulphonamides, trimethoprim and quinolones. Anti-mycobacterial drugs. Antifungal agents. Antiviral drugs. Anti-protozoal, anti-helminths. Miscellaneous antimicrobials, disinfectants, antiseptics and sterilants (PREREQUISITES PHAM 300).

PATH 303: Medical Mycology (45/30/0: C.F 4.0) (Y3T3)

Classification, epidemiology, structure, pathogenesis, diagnosis, treatment and control of medically important fungi; Superficial and cutaneous mycosis; Dermatophytes and non-dermatophytes; Systemic, subcutaneous and deep mycoses; Mycetoma; Eumycetoma; Yeast infections; Candida; Cryptococcus; Aspergillosis and Mycotoxins.

PATH 304: Viruses and Viral Infections (45/30/0: C.F 4.0) (Y3T3)

Classification; General properties related to viral families; Physical and chemical properties; Replication and cultivation of viruses; Host response to viral infections; Viral Genetics; Molecular basis of pathogenesis; Latent and persistent infections; Epidemiology; Oncogenic viruses; Principles of cultivation, assay and laboratory diagnosis, laboratory safety; Pathogenic viruses; HIV / AIDS and other viral sexually transmitted diseases; Emerging viral infections; Viral childhood fevers; Viral CNS infections; Viral skin manifestations; Prions and their disorders; Anti-retroviral agents and mechanisms of action.

PATH 314: Clinical Chemistry (45/60/0: C.F 5.0) (Y3T3)

Specimen collection, processing and analysis; instrumentation and point of care testing; interpretation of results; biostatistics in clinical chemistry: clinical sensitivity, specificity, predictive values and efficiency of a test, test selection; quality assurance; Normal metabolic, physiologic and regulatory pathways of Fluid and electrolyte balance: Endocrinology; anterior Pituitary function, adreno-cortical and thyroid function and endocrine pancreas; Bone metabolism ; Plasma enzymes: isoforms and isoenzymes, clinical enzymology; Plasma lipids, serum proteins; Purine metabolism; Biochemical assessment of renal, hepatic, gastric and pancreatic function; Porphyrins and porphyrinuria; Vitamins, trace elements; Disorders involving metabolic, physiologic or regulatory pathways in carbohydrate metabolism, lipid and lipoprotein metabolism;; protein metabolism: Protein energy malnutrition; Purine metabolism;; fluid and electrolytes: acid base and electrolyte imbalance; Renal: Biochemical tests in acute and chronic renal failure, renal

osteodystrophy, biochemical monitoring of dialysis and renal transplant patients, renal calculi, Liver disorders, Inherited metabolic disorders, Iron metabolism in health and disease, Principles of Clinical toxicology: chemical poisoning including drug overdose, management of poisoning, therapeutic drug monitoring, Biochemistry of neoplastic disorders: Biomarkers, paraneoplastic endocrine syndromes, ectopic hormone production, Laboratory methods in Clinical Chemistry and their interpretation.

PATH 315: Medical Ethics and Medico Legal Issues (30/0/0: C.F 2.0) (Y3T3)

Medical ethics and professional conduct: definition; doctor patient relationship; advertising; medico-legal issues – informed consent; confidentiality; termination of pregnancy; euthanasia; death; medical certification; National and international codes and relevant acts including Medical Practitioners and Dentist Act; Public Health Act; The Helsinki declaration, The Nuremberg convention, Geneva convention. The international code of medical Ethics, the Tokyo declaration, the oath of Athens and the Hippocratic Oath; The Role of research and ethics committee; factors influencing ethical practice-political, socio - economic and cultural; emerging issues.

PATH 316: Autopsies and Laws Related to Medical Practice (30/60/0: C.F 4.0) (Y3T3)

Limited and full autopsies; demonstration of disease and cause of death both gross and microscopic; International and national laws related to the practice of medicine; confidentiality, negligence and medical malpractice.

IMED 401; Clinical Methods (30/0/45: C.F 3.0) (Y4T1)

History taking and physical examination: The intricacy of how to exchange information on their first encounter with the sick and injured persons. Chief complaints; history of present and previous illnesses including treatment; menstrual and obstetric history where applicable; family, social and occupation history; review of systems; physical examination:- general approach; mental and emotional state; attitude, gait, physique, speech, vital signs and systemic examination; write the history and examination findings in an orderly traditional way; case presentation; data interpretation;

and diagnosis; formulate the investigation and management of the patient. **(PREREQUISITES: ALL Y1-Y3 COURSES)**

PAEDS 402: Introduction to Paediatrics (60/0/90: C.F 5.0) (Y4T1)

Introduction to paediatrics; history taking, examination and presentation of a paediatric history, difference between paediatrics history and adult history immunization history feeding history; socio-economic history; growth and development; childhood illnesses; use of appropriate non-patient information sources; summarized history ; growth and development and affecting factors, assessment of growth and development assessment of growth and development; cognitive and psychosocial development; the premature and term infant, child and adolescent; emergency treatment and triage course; management of respiratory distress, dehydration, shock, convulsions, resuscitation of a collapsed child and acute malnutrition. Overview of nutrition requirements in different age groups; pathophysiology epidemiology and management of deficient or excessive intake of nutrients; clinical significance of micro nutrients in child nutrition. Disorders of gastrointestinal system; pancreas, liver and biliary systems; genetics and teratology; modes of inheritance; chromosome abnormalities; common genetic malformations; risk factors and assessment; teratology – factors adversely affecting normal foetal development **(PREREQUISITES: ALL Y1-Y3 COURSES)**.

REPH 402: Introduction to Reproductive Health (45/0/90: C.F 5.0) (Y4T1)

Reproductive organs; reproductive physiology – puberty, menstrual and spermatogenic cycles; menstrual disturbances; abnormal vaginal bleeding; human sexuality; overview on embryonic and foetal growth and development; foeto – placental unit; development and functions of the placenta, anatomic abnormalities; History, examination and investigations in reproductive health.

SURG 402: Foundations of Surgery (45/0/45: C.F 4.0) (Y4T1)

History of surgery, Basic principles of surgery, history & physical examination of the surgical patient, Systemic

response to injury, fluids & electrolytes. Surgical sepsis, wounds & wound healing, Principles of management of acute trauma, management of specific injuries, shock, respiratory support. (PREREQUISITES: ALL Y1-Y3 COURSES)

IMED 404: Tropical Infectious Diseases (45/0/90: C.F 5.0) (Y4T1)

Human immunodeficiency virus, Tuberculosis, Malaria, Influenza virus, Salmonellosis, Shigellosis, Campylobacter, Cholera, Brucellosis, Tetanus, Anthrax, Plague, Syphilis, Leptospirosis/Borrelia recurrentis, Rickettsia, Mycoplasma & Chlamydia, Pneumocystis carinii, Pseudomonas, aeruginosa, Viral Hepatitis, Rabies, Yellow fever, Marburg virus, Dermatophytes, Candida albicans, Cryptococcus neoformans, Aspergillosis, Amoebiasis, Giardiasis, Trichomoniasis, Cryptosporidia, Hydatid disease, Intestinal helminthiasis, Schistosomiasis, Kala-azar, Filariasis, Trypanosomiasis, Ectoparasites. (PREREQUISITE IMED 401)

PAEDS 403: Infectious and Communicable Diseases (45/0/90: C.F 5.0) (Y4T2)

infectious and communicable diseases: characteristics, epidemiology, pathogenicity, management and control, prevention of the infection- protozoa infections malaria, leishmaniasis, trypanosomiasis, amoebiasis, viral infections- HIV, polio, measles, chicken pox, mumps, rubella, bacterial infections-typhoid, brucellosis, parasitic infections- ascariasis, hookworm, strongyloidiasis, teniasis, schistosomiasis. Vaccinology, principles, practical applications, adverse effects of immunizations, Prevention and Health Promotion: Recognition of genetic predisposition, ethnic/cultural, and environmental factors that influence health of children. Screening programmes, Immunization programmes: EPI schedules, Communication and advocacy for right to health of children, Intervention and health promotion: child health statistics; preventive and promotive child health; child health programmes; Child abuse; delinquency; child labour; child advocacy; child fostering and adoption; children living in difficult circumstances. (PREREQUISITE PAED 402)

REPH 403: Pregnancy and Management of Labour. (45/0/90: C.F 5.0) (Y4T2)

Maternal physiology during pregnancy; psychosocial factors influencing pregnancy and parturition; changes in various systems; Basic pharmacology and pharmacotherapeutics and safety in pregnancy ;Normal pregnancy and prenatal care: diagnosis, management of common problems of pregnancy and nutrition; high risk pregnancy; assessment of foetal wellbeing, imaging techniques; course and conduct of normal labour – definition; factors that influence labour; course of normal labour; the understanding and usefulness of the partogram; recording and record keeping, aids to normal delivery. Multiple gestation, malpresentations (PREREQUISITE REPH 402)

SURG 403: Gastroenterology (45/0/45: C.F 4.0) (Y4T2)

Haemostasis, surgical bleeding, transfusion, thermal injury, gastrointestinal bleeding; Blunt & penetrating abdominal injury, peritonitis, PUD & its complications; Surgical jaundice. (PREREQUISITE SURG 402)

IMED 405: Respiratory and Cardiovascular System (45/0/90: C.F 5.0) (Y4T2)

Upper respiratory tract infection, Pneumonia, Bronchitis, Emphysema, Bronchial Asthma, Bronchiectasis, Pneumoconiosis / Interstitial lung disease, Pleurisy and pleural effusion, Pulmonary embolism, Pneumothorax.: Cardiovascular System : Rheumatic fever, Valvular heart disease, Congenital Heart disease, Infective endocarditis, Hypertension, Congestive cardiac failure, Cor-pulmonale, Ischaemic heart disease, Myocardial infarction, Peripheral vascular diseases, Deep venous thrombosis, ECG and Arrhythmias. (PREREQUISITE IMED 401)

SURG 411: Introduction to Orthopaedics and Traumatology (30/0/45: C.F 3.0) (Y4T2)

Evaluation of the trauma patient, description and classification of fractures, principles of fracture management, fractures in children, complications of fractures, common fractures and dislocations of the upper and lower limbs. (PREREQUISITE SURG 402)

PAEDS 404: Neonatology & Cardiorespiratory Paediatrics (45/0/90: C.F 5.0) (Y4T3)

Effects of labour on the neonate; neonatal adaptation, examination of the new-born physiology of the new-born, basic needs and routine care feeding of new-born; breastfeeding and breast milk; HIV and breast feeding; complementary feeding; kangaroo care; associated neonatal problems, neonatal jaundice, prematurity ,low birth weight, small for gestational age, birth asphyxia, neonatal septicaemia; importance of weight and gestational age; lactation, problems associated with lactation; neonatal resuscitation, factors influencing perinatal mortality and morbidity, congenital infections, temperature management; sepsis; haemolytic disease of new born (ABO, Rhesus incompatibility), PMTCT. Pathophysiology and management of common diseases affecting the respiratory tract; congenital, inflammatory and infective, immunologic including acute respiratory infections, neoplastic lung diseases. Cardiovascular system: foetal and neonatal circulations; foetal and neonatal circulations, Management of rheumatic fever, rheumatic heart disease and congenital heart diseases, infective endocarditis; pathophysiology and management of cardiac failure; hypertension. Common accidents and poisonings in childhood; diagnosis, management and prevention; burns, drowning, electrocution and heat stroke; shock; sudden infant death syndrome; child abuse; drug delinquency; child labour; child fostering and adoption; children living in difficult circumstances abuse. (PREREQUISITE PAED 402)

REPH 404: Delivery Interventions and Postpartum Care (45/0/90: C.F 5.0) (Y4T3)

Induction of labour – indications and use of Bishop's score; Obstetric analgesia: types; indications and contra-indications in labour; anaesthesia – preoperative assessment, premedication, preparation for theatre, intra-operative and post-operative care; new-born assessment; Neonatal resuscitation. Normal puerperal changes; abnormal puerperal presentation and management-infections, psychosis; lactogenesis, lactation management and disorders of lactation; complications and management of labour and delivery. (PREREQUISITE REPH 402 & REPH 403)

SURG 404: Gastroenterology and Cardiothoracic Surgery (45/0/45: C.F 4.0) (Y4T3)

Pancreatitis & complications; Cholelithiasis; Portal hypertension; Appendicitis; Intestinal obstruction, benign conditions of the anal canal, stomach cancer, colorectal carcinoma, the pleura and the pleural space, empyema thoracis, surgical conditions of the lungs, the mediastinum, principles of cardiac surgery, congenital & acquired cardiac lesions, cardiac trauma. **(PREREQUISITE SURG 402)**

IMED 406: Gastrointestinal Tract System (45/0/90: C.F 5.0) (Y4T3)

Peptic ulcer disease, Oesophagitis and gastritis, Gastroenteritis & Dysentery, Jaundice, Liver cirrhosis & Portal hypertension, Liver failure, Peritonitis & Ascites, Inflammatory bowel disease & Spastic bowel syndrome, Pancreatitis and Cholecystitis, Major glomerulopathies (Acute glomerulonephritis, Rapidly progressive glomerulonephritis, Nephrotic syndrome, Chronic glomerulonephritis, Asymptomatic urinary abnormalities, Urinary tract infection, Acute and chronic renal failure, Obstructive uropathy & Haematuria. **(PREREQUISITE IMED 401)**

SURG 460: Introduction to Medical Imaging (30/0/45: 3.0 C. F) (Y4T3)

Principles of radiation physics; diagnosis, principles and scope of diagnostic radiology; non specialized general radiology for areas such as skull, facial bones, spine, pelvis and extremities; specialized radiology for regions such as central nervous, cardiovascular and respiratory systems; imaging modalities and scope - x-rays; genitourinary – ultrasound, intravenous urogram, hystero- salpingography and others.

COMH 510: Research Methodology (45/0/0: C.F 3.0) (Y5T1)

Research methodology – definition of research; types of research; importance of research to community and nation; available resources; research design, (formatting research objectives; - conceptual framework; the concept proposal) methods and instruments; data – collection, analysis, interpretation and presentation; problems in research; report writing and publication; dissemination of findings to stakeholders; application of findings.

COMH 511: Epidemiology & Biostatistics (60/0/0: C.F 4.0) (Y5T1)

Epidemiology – foundations and roots; principles and practice; measurements – prevalence and incidence rates; disease determinants – environmental, host and agent factors; study designs; biostatistics – concepts and terminologies; principles and practice; sampling methods, data – collection, analysis and presentation; measurement of central tendency and dispersion; tests of significance; demography – basic concepts and definition; population structures and processes; census; vital statistics; population trends in Kenya.

COMH 520: Community Diagnosis & Communication Skills for Health Workers (30/0/0: C.F 2.0) (Y5T1)

Concept and principles of human communication, Interviewing, History taking, Questioning and active listening, Listening verbal and non-verbal, Summarizing, Socio-cultural variations, Ethics in interviewing, Challenging patients. Communicating; sensitive subjects (breaking bad news empathy, sexual history. Communication with professional colleagues and other stakeholders. **(PREREQUISITE COMS 111, COMH 200 & 230).**

COMH 521: Health Economics and Entrepreneurship (30/15/0: C.F 2.5) (Y5T1)

Commodity and supplies management, Commodity cycle management; Quality assurance in Health service management; Financial resource management, recording, reporting, accountable documents; GOK financial policies and procedures, Government budgetary cycles. Facility improvement fund (FIF); Auditing and reporting; Health sector reforms and financing; Health Information Systems; Entrepreneurship in medical practice; nature of a commercial enterprise; Evaluating an on-going small business; investor's perspective and Entrepreneur's perspective. Preparation of a proposal for raising business capital. Presentation of a proposal to venture capital investor. Operational decisions; market analysis and location considerations. Customer relations.

COMH 522: Health Service Management (45/15/0: C.F 3.0) (Y5T1)

Leadership and Management – definition, concepts, principles, functions, roles, strategies and styles of leadership and management. Team leadership and Management of meetings and other group processes; Mentoring and Role modelling. Critical thinking and priority setting in decision making. Human resource management and financial resource management; commodity and supplies management; maintenance – preventive and routine; health information; organization of health systems; national vertical programs; policy and planning. entrepreneurship in medical practice; nature of a commercial enterprise; project management – definition of terms, project design, implementation and evaluation. Quality assurance in health services management; Quality Assurance in health. **(PREREQUISITE COMS 111, COMH 200 & 230).**

COMH 531: Information Technology in Healthcare (45/15/0: C.F 3.5) (Y5T1)

Health Informatics: Reasons of computers in Healthcare; Requirements for computer rooms; Information Security issues and Solutions; Organisation of Health informatics department; Functions of staff, database and database design; Tool for managing and processing Health Data; Application of IT in health care; ; medical record keeping, and retrieval and searching for information, Oracle software and its application in health; database processing and management systems. Health information challenges; Analysis and presentation of healthcare statistics. IT in health research; Telemedicine; Virtual reality. **(PREREQUISITES COMP 101)**

COMH 540: Field Attachment (0/120: C.F 4.0) (Y5T1)

The students will be attached to approved rural health facilities for projects and community diagnosis activities. **(PREREQUISITES: COMH 200, 230, 521 & 522)**

IMED 510: Introduction to Psychiatry (60/0/90: C.F 6.0) (Y5T1)

Psychiatric formulation, mental state examination; respect, empathy, responsiveness, and concern regardless of the patient's problems or personal

characteristics; psychotherapy; counselling; team concept in management of patients; psychopharmacology; alternative forms of therapy, Delirium, dementia Alzheimer's disease, Parkinson's disease and HIV encephalopathy; seizure disorders, strokes and head injuries; disorders of eating, sleeping and psychosexual functions, suicide.

PAED 500: Endocrine and Nervous System and genetic conditions in Paediatrics (45/0/225: C.F 8.0) (Y5T2)

Diagnosis and management of growth retardation, hyperglycaemia, hypoglycaemia; thyroid, adrenal and parathyroid disorders; growth disorders, precocious puberty, nervous and muscular systems; congenital and acquired disorders of CNS; neural tube defects, Microcephaly, hydrocephalus, meningitis, encephalitis, febrile convulsions, major neuropathies; degenerative disorders; seizures, myopathies, cerebral palsy, muscle and spinal cord disorders. Behaviour and psychiatric disorders: phobias; conversion disorders; anxiety; antisocial behaviour; truancy; drug abuse; behaviour problems associated with physical illness; neurotic and psychotic disorders mental retardation, enuresis. Adolescent medicine: neurosis; behaviour disorders; alcohol and substance abuse; psychotic disorders; hysteria; adolescent psychiatry; congenital and hereditary disorders. (*PREREQUISITE PAED 402*)

REPH 500: Gynaecological Emergencies and Fertility (45/0/112.5: C.F 5.5) (Y5T2)

Preoperative and post-operative care – evaluation and counselling; disorders affecting operative risk and their management; diagnosis and management of gynaecological emergencies such as abortions, acute abdomen, ectopic pregnancy and ovarian cysts; pelvic infections including STI and HIV; Paediatric and adolescent gynaecology, Infertility – definition, causes, investigations and management; in vitro fertilization and related techniques, contraception and family planning - methods, contraindications and side effects; (*PREREQUISITE REPH 402*)

PAED 501: Genitourinary System and Haematological and oncological Disorders (45/0/225: C.F 8.0) (Y5T2)

Renal system: congenital renal disorders, acquired renal diseases ; water and electrolyte balance; pathophysiology and management of primary genitourinary disorders, urinary tract infections, Nephrotic syndrome acute glomerulonephritis; Urinary: congenital, inflammatory and infections of the urinary system, immunologic (including nephrotic syndrome), neoplastic condition, Hematologic and oncologic disorders: anaemias, haemorrhagic disorders, leukaemia's, lymphomas, solid tumours of childhood, Neuroblastoma, neuroblastoma and common CNS malignancies, transfusion medicine; blood and other blood products, indication of transfusion, complications of transfusion (*PREREQUISITE PAED 402*)

REPH 501: Medical Conditions in pregnancy, Ageing and Urogynaecology (45/0/112.5: C.F 5.5) (Y5T2)

Management of conditions associated with pregnancy – diabetes, hypertensive disease of pregnancy (HDP), Cardiac diseases, anaemia, Rhesus isoimmunisation, deep venous thrombosis(DVT), disseminated intravascular coagulopathy (DIC) and HIV/PMTCT; Menopause and post menopause – aetiology and pathogenesis, presentation and management, HRT; Pelvic Relaxation; causes, diagnosis and management e.g. cystocoele, urethrocoele, rectocoele and enterocoele and uterine prolapse, (*PREREQUISITE REPH 402 & 404*)

IMED 511: Psychiatry and Mental Health I (60/0/112.5: C.F 6.5) (Y5T2)

Pathology and management of behaviour and personality disorders, phobic and obsessions states, anxiety, neuroses, acute and chronic psychiatric states, organic syndromes, drug and alcohol abuse, acute reaction to stress, somatoform disorders; community liaison, child, adolescent, forensic and geriatric psychiatry; mental retardation, Schizophrenic, affective disorders, Mental health legislation; involuntary admission; fitness to plead, testamentary capacity; power of attorney, court report, Appropriate history taking and documentation mental status examination. (*PREREQUISITE IMED 510*)

PAED 502: Muscular-Skeletal System, Connective Tissue, accidents and poisoning diseases and Paediatrics Dermatology (45/0/225: C.F 8.0) (Y5T3)

Skeletal system and connective tissue –abnormal development of bones and joints; immunological factors in pathogenesis of connective tissue disorders; hereditary and acquired disorders of connective tissue epidemiology, pathogenesis and management of connective tissue diseases; Skeletal systems: congenital, inflammatory, infective, traumatic, degenerative and neo plastic. pigmentary, inflammatory and immune response of the skin and its appendages; dermatological manifestation of systemic disease. Common Paediatrics dermatological conditions including atopy, urticaria and dermatoses. (*PREREQUISITE PAED 502*)

REPH 502: Benign and Malignant Gynaecological Conditions (45/0/90: C.F 5.0) (Y5T3)

Diagnosis and management of benign disorders such as leucorrhoea, viral and fungal infections, Bartholin's cyst and abscess, cervicitis, cervical growths, fibroids, non – neoplastic and physiologic ovarian lesions; aetiology, pathology, clinical findings, diagnosis and management of gestational trophoblastic diseases; diagnosis and management of premalignant and malignant disorders of the vulva, vagina, cervix, uterus and ovaries; causes, diagnosis and management of fistulae (*PREREQUISITES REPH 402 & 500*)

IMED 512: Psychiatry and Mental Health II (60/0/112.5: CF 6.5) (Y5T3)

Neurocognitive disorders e.g. Delirium, dementias e.g. Alzheimer's disease, Parkinson's disease, HIV encephalopathy, seizure disorders, strokes and head injuries; Eating and feeding disorders; Sleep- wake disorders; Sexual disorders, paraphilic disorders and gender identity disorders; Psychiatric emergencies and crisis intervention; Somatic symptom and related disorders, Dissociative disorders; Geriatric psychiatry (*PREREQUISITES IMED 510 & 511*)

IMED 620: Dermatology and Venereology (30/0/45: C.F 3.0) (Y6T1)

Anatomy and physiology of skin. General principles of diagnosis and management of skin conditions. Classification, presentation, etiological, management and follow up of skin disorders: Cutaneous infection,

Eczema and dermatitis, Acne, Papulo-squamous skin disorders, Vesico-bullous disease: congenital, microbial drug eruptions, neoplasm, autoimmune, pigment hair and nail disorders. Preventive and promotive of skin health measures.

SURG 620: Anaesthesia and Critical Care (60/0/90: C.F 6.0) (Y6T1)

Preoperative preparation, evaluation and premedication; types of anaesthesia: intravenous – barbiturates, ketamine; inhalational – nitrous oxide, halothane and others; muscle relaxants – succinylcholine, tubocurarine and nondepolarizing agents; reversal of muscle relaxants: regional anaesthesia – spinal, epidural and local: postoperative pain control; epidural narcotics; technical considerations – trace anaesthetic concentrations in operative room, patient positioning and monitoring; associated problems – aspiration pneumonia, cardiac arrhythmias, hypothermia, hyperthermia and others.

SURG 630: Ophthalmology (60/0/45: C.F 5.0) (Y6T1)

Diagnosis and management of congenital, traumatic, infective and neoplastic disorders involving the eyeball; causes, diagnosis and management of disorders of external ocular muscles and the eye socket; causes, diagnosis and management of disorders of the visual pathways; eye disorders as a sign of systemic disease; preventive and promotive community- based care.

SURG 640: Ear, Nose & Throat (60/0/45: C.F 5.0) (Y6T1)

Congenital, traumatic, infectious, immunological, neoplastic and other disorders involving the ear, vestibular apparatus, nasal sinuses and palate- diagnosis and management; causes, diagnosis and management of epistaxis; types and management of foreign bodies; types, diagnosis and management of hearing impairments; indications and procedure of tracheostomy; indications and procedure of tonsillectomy; ear syringing; antral washout; laryngoscope; otoscopy, simple tests for hearing; imaging techniques.

SURG 650: Dental Health (15/0/45: C.F 2.0) (Y6T1)

Structure of the oral cavity; dental carries; periodontal disease; malocclusion; dislocation of the temporomandibular joint; congenital, traumatic, infectious, inflammatory and neoplastic disorders; teeth discolouration, oral manifestation of systemic diseases; haematological, Endocrinological, nutritional, Auto Immune Deficiency Syndrome {AIDS} and others. Anaesthetic procedures in dentistry; effects of radiotherapy on oral cavity structures; community dental health programmes; forensic dentistry.

SURG 661: Radio Imaging and Radiotherapy (30/0/45: C.F 3.0) (Y6T1)

Specialized radiology: CNS – ultrasonography, C.T. scan, magnetic resonance imaging (M.R.I.), myelography and others; respiratory system – C.T. scan and M.R.I.; alimentary system – barium swallow, barium meal, barium enema and others; radioisotope imaging; computerized tomography (C.T.); magnetic resonance imaging (M.R.I.); ultrasound; image assessment and interpretation; role of positioning. Basics of the various modalities of radiological therapeutics; bio effects of radiation and management; awareness and avoidance of radiation hazards; protection against radiation in a radiology unit; radiation protection and monitoring devices; radiation prevention and protection for workers, patients and the general population. **(PREREQUISITES SURG 460)**

IMED 600: Central Nervous System and Endocrinopathies and Metabolic Disorders (60/0/90: C.F 6.0) (Y6T2)

Organization of the central nervous system (Motor system, Sensory system, Extrapyramidal system, Cerebellum), Cranial nerves, Meningitis and Encephalitis, Epilepsy, Cerebrovascular accident & Subdural haematoma, Space occupying lesions, Peripheral neuropathy, Headaches, Spinal cord lesions, Parkinsonism, Dementias, Demyelinating diseases & Motor neuron diseases, Myopathies / Myasthenia gravis; Endocrinopathies & Metabolic Disorders; Diabetes mellitus, Hypothalamic/Pituitary disorders, Thyroid and parathyroid diseases, Adrenal disease, Pheochromocytoma and MEN, Osteoporosis, Paget disease of the bone, Diseases of intermediary metabolism, Disorders of lipoprotein metabolism,

Haemochromatosis, Porphyrias, Wilson disease, Gout, Glycogen storage diseases, Inherited disorders of amino acid metabolism, Vitamin deficiencies **(PREREQUISITE IMED 401)**

SURG 600: Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery (60/0/90: C.F 6.0) (Y6T2)

CNS infections, SOLS & CNS tumours, neuro trauma, principles of wound closure, wound management; burns, management of urine retention, urologic tumours; Skin grafts & flaps, Tropical surgery, malignancies of the skin, surgical oncology. **(PREREQUISITE SURG 402)**

SURG 610: Orthopaedic Conditions in Adulthood (60/0/90: C.F 6.0) (Y6T2)

Common adult orthopaedic conditions/disorders including infections, inflammatory, metabolic degenerative and neoplastic conditions of the mature musculoskeletal system, their epidemiology, aetiology, presentation and management. **(PREREQUISITE SURG 411)**

IMED 630 Therapeutics (30/0/0: C.F 2.0) (Y6T2)

Management of hypertension, Acute coronary syndromes, heart failure, cardiac arrhythmias, Asthma/COPD. Anti-diabetic drugs, Drugs used in management of seizures, movement disorders, thyroid disorders, dyslipidaemias, rheumatoid arthritis and anticoagulants and antiplatelet. Antimicrobial use and PUD management. **(PREREQUISITES PHAM 300, 301, 302, 303, 304 & 305)**

IMED 601: Connective Tissue Disorder (30/0/0: C.F 2.0) (Y6T3)

Major connective tissue disorders (Rheumatoid arthritis, Systemic lupus Erythematosus, Progressive systemic sclerosis, Mixed connective tissue disorder), Seronegative arthritides, Osteoarthritis / Osteomyelitis, Dermatomyositis and Polymyositis, Muscular dystrophies. **(PREREQUISITE IMED 401)**

SURG 601: Paediatric and Urologic Surgery (45/0/90: C.F 5.0) (Y6T3)

Paediatric hernias, neonatal intestinal obstruction, abdominal masses, scrotal swellings, anorectal

malformations, hydrocephalus spina bifida, peripheral nerve injuries the chest wall, arterial disease, venous conditions, DVT and thromboembolism, thyroid & parathyroid glands, the pituitary gland, the adrenal gland, the men syndromes, testicular tumours, the breast **(PREREQUISITE SURG 402)**

IMED 602: Haematology and Oncology (60/0/90: C.F 6.0) (Y6T3)

Anaemia including Sickle cell anaemia & Blood transfusion, Bone marrow transplantation, Haemostasis disorders & Hematologic malignancies (Plasma cell disorders, Leukaemia's, Myelodysplasia and Myeloproliferative disorders Malignant lymphomas), Introduction to medical oncology, Breast cancer, Gastrointestinal malignancies (Hepatoma, Cancer of the oesophagus, stomach, pancreas, Colorectal carcinoma), Lung cancer, Musculoskeletal & mesenchymal cancers (oro-naso-pharyngeal, eye & orbit, salivary gland, germ cell tumours, sarcomas and malignant melanoma), Urologic malignancies, Endocrine malignancies, CNS tumours, Cancer of Unknown Primary Site & Oncological emergencies. **(PREREQUISITE PATH 311, 312 & 313).**

SURG 611: Orthopaedic Conditions of Childhood (60/0/45: C.F 5.0) (Y6T3)

Congenital/developmental disorders of the musculoskeletal system, infections of the musculoskeletal system in children, childhood bone tumours, metabolic and inflammatory conditions of the musculoskeletal system in children and other common orthopaedic conditions in children. **(PREREQUISITE SURG 402 & 411)**

Examination Schedule

S/No.	EXAM CODE	COURSES EXAMINED	Total CFs	SUBJECT TITLE	EXAMINATIONS TYPE AND DURATION		
	YEAR ONE				Written	Practical/Clinical	Oral paper
1	ANAT -E101	ANAT 103 104& 105	24.0	Human Anatomy II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	MBIO - E 101	BIOC 111&112	7.5	Biochemistry I	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	COMH-E 100	COMH 100	3.0	Behavioural Sciences	Essay 1x2hrs MCQ1x2hrs	-	-
4	HPHY - E101	HPHY103, 104& 105	11.0	Human Physiology III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
5	COMS 111	COMS 111	3.0	Communication Skills	1x2hrs	-	-
6	COMP 101	COMP 101	3.5	Introduction to computer applications	1x2hrs	-	-
7	CHEM 120	CHEM 120	3.0	Introduction to Physical Chemistry	1x2hrs	-	-
8	PHIL 104	PHIL 106	3.0	law & Society	1x2hrs	-	-
9	CHEM 110	CHEM 110	3.0	Introduction to Inorganic Chemistry	1x2hrs	-	-
	YEAR TWO						
1	ANAT –E200	ANAT 200, 201&202	23.0	Human Anatomy III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	MBIO - E201	BIOC 215 216 & 217	15.0	Biochemistry II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	COMH- E200	COMH , 200, 201, 210, 420, FOND 322	15.0	Community Health II	Essay 1x3hrs MCQ1x2hrs		
4	HPHY- E200	HPHY 204,205,206,& 207	17.0	Human Physiology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
5	PATH E 203	PATH 210	5.0	Pathology II	Essay 1x3hrs MCQ1x2hrs		
	YEAR THREE						
1	PATH - E 300	PATH 310, 311, 312, 313, 314, 315, 316 320, & 321	31.5	Pathology III	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
2	PATH- E 301	PATH 300, 301, 302, 303&304	20.5	Microbiology II	Essay 1x3hrs MCQ1x2hrs	1x3hrs	1x 0.25hrs
3	PHAM - E300	PHAM 300,301 & 302	12.0	Pharmacology II	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
	YEAR FOUR						
1	IMED –E 401	MEDS 404, 405 406,	15.0	Medicine III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
2	PEAD – E401	PEAD 402,403& 404	15.0	Paediatrics and Child Health III	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
3	REPH – E401	REPH 402 403 &404	15.0	Reproductive Health III	Essay 1x3hrs	Long case 1x .75hrs	1x 0.25hrs

4	SURG –E401	SURG 402, 403,404,411, & 460	19.0	Surgery III	MCQ1x2hrs Essay 1x3hrs MCQ1x2hrs	Short case 1x0.25hrs Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
	YEAR FIVE						
1	COMH E500	COMH 310,321, 502, 501,510,520, 530, 531 &540	26.0	Community Health III	Essay 1x3hrs MCQ1x2hrs	-	1x 0.25hrs
2	IMED- E500	MEDS 510 & 511	12.0	Psychiatry and Mental Health	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
3	PEAD – E500	PEAD 500,501&502	14.0	Paediatrics and Child Health IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
4	REPH – E500	REPH 500,501&502	14.0	Reproductive Health IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
	YEAR SIX						
1	IMED- E600	MEDS 600, 601,602, 603& 620	17.0	Internal Medicine IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
2	SURG– E600	SURG 600,601,610, 611,	18.0	Surgery IV	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs
3	SURG –E601	SURG 620,630,640,650&661	12.0	Special Units	Essay 1x3hrs MCQ1x2hrs	Long case 1x .75hrs Short case 1x0.25hrs	1x 0.25hrs

Order of Clinical Rotations and Teaching

CLASS	STUDENT GROUP	CLINICAL ROTATION	DURATION (weeks)	UNITS	TOTAL CF
YEAR IV	Group 1	Internal Medicine	9	MEDS 404, 405 406,	15.0
	Group 2	Child Health	9	PAED 402,403 & 404	15.0
	Group 3	Rep Health	9	REPH 402 403 &404	15.0
	Group 4	Surgery	9	SURG 402, 403,404,411, & 460	22.0
		Total	36		
YEAR V	ALL	COMMUNITY HEALTH (Includes Field Attachment)	16 (teaching 8 weeks, field attachment 8 weeks)	COMH 310,321, 502, 501,510,520, 530, 531 & 540	26.0
	Group 1	Child Health	8	PEAD 500,501&502	14.0
	Group 2	Rep Health	8	REPH 500,501 & 502	14.0
	Group 3	Mental Health	8	MEDS 510 & 511	12.0
		Total	32		
	ALL	Elective Term	8		
YEAR VI	Group 1	Internal Medicine	12	MEDS 600, 601,602, 603& 620	17.0
	Group 2	Surgery	12	SURG 600,601,610, 611,	18.0
	Group 3	Special Disciplines	12	SURG 620,630,640,650&661	12.0
		Total	36		

9.3 Matrix aligning courses/units to programme learning outcomes

	Year 1		Year 2		Year 3	
Program Learning Outcomes (PLO)						
	Courses	CF	Courses	CF	Courses	CF
PLO 1: To identify and differentiate the normal health state from the diseased health state.	ANAT 103: Anatomy of Lower Limb	8.0	ANAT 200: Neuroanatomy (Brain and Spine)	7.0	PATH 310: Biology of Tissues and Response to Disease	2.0
	HPHY103: Cell Biology, Body Fluids and Genetics.	3.0	HPHY 203: Physiology of the Nervous System	5.5	PATH 300: Bacteria and Bacterial Diseases	5.0
	BIOC 111: Cell structure and Biomolecules	4.5	HPHY 204: Physiology of the Endocrine System	3.5	PATH 311: Haematology and Blood Transfusion	5.0
	CHEM 120: Introduction to Physical Chemistry	3.0	PATH 210:	2.0	PATH 312: Principles of Neoplasia	2.0
	ANAT 104: Anatomy of the upper limb	8.0	BIOC 215: Metabolism of Proteins and Vitamins	8.0	PATH 320: Introduction to Immunology	4.0
	HPHY 104: Physiology of Body Tissues – Nerve, Muscle and Connective Tissue Cells	6.0	ANAT 201: Anatomy of the Thorax	4.0	PATH 301: Medical Parasitology	5.0
	BIOC 112: Carbohydrate Metabolism	4.0	HPHY 205: Physiology of the Respiratory System	4.0	PATH 302: Medical Entomology	2.0
	ANAT 105: Anatomy of the Head and Neck and spine	8.0	HPHY 206: Physiology of the Cardiovascular system	4.0	PATH 313: Systemic Pathology	6.0
	HPHY 105: Physiology of the Digestive System	3.5	BIOC 216: Biochemical Endocrinology & Endocrinological Techniques	4.0	PATH 321: Immune Response in Health and Diseases.	4.5
	BIOC 211: Lipid Metabolism	4.0	ANAT 202: Anatomy of the Abdomen & Pelvis	8.0	PATH 303: Medical Mycology	4.0
			HPHY 207: Physiology of the Genito-Urinary System	5.5	PATH 304: Viruses and Viral Infections	4.0
			BIOC 217: Molecular Biology and Genetics	4.0	PATH 314: Clinical Chemistry	3.5
			FOND 322: Applied Human Nutrition	3.5	PATH 315: Medical Ethics & Medico-legal Issues	5.0
					PATH 316: Autopsies and Laws Related to Medical Practice	2.0
						4.0
PLO 2: Manage, prevent and actively participate in disease prevention and promotion within the community.	COMS 111: Introduction to academic communication skills	3.0	COMH 200: Primary Health Care & Community Based Health Care	3.0	PHAM 300: Basic Principles and autonomic Pharmacology.	4.0
	COMP 101: Introduction to Computer Applications	3.0	COMH 201: Environmental & Occupational Health	2.5	PHAM 301: Cardiovascular, renal and analgesics and anti-rheumatic pharmacology	3.0
	COMH 100: Behavioural Science	3.0	COMH 220: Disaster Management	2.5	PHAM 302: Central Nervous drugs, Anaesthetic Drugs and Endocrine drugs and Corticosteroids	4.0
	PHIL 108: Ethics, Integrity and National Values	3.0	COMH 230: Medical Education	2.0	PHAM 303: Respiratory GIT and special aspects of Pharmacology	3.0
					PHAM 304: Haematopoietic, Oncogenic pharmacologic agents	2.0
					PHAM 305: Antimicrobials	3.0
					PATH 315: Medical Ethics & Medico-legal Issues	2.0
					PATH 316: Autopsies and Laws Related to Medical Practice	4.0

PLO 3: Conduct community diagnosis and research.	COMS 111: Introduction to academic communication skills	3.0	COMH 200: Primary Health Care & Community Based Health Care COMH 201: Environmental & Occupational Health COMH 220: Disaster Management COMH 230: Medical Education	3.0	PATH 315: Medical Ethics & Medico-legal Issues PATH 316: Autopsies and Laws Related to Medical Practice	2.0
	COMP 101: Introduction to Computer Applications	3.0		2.5		4.0
	COMH 100: Behavioural Science	3.0		2.5		
	PHIL 108: Ethics, Integrity and National Values	3.0		2.0		
PLO 4: Manage and be a leader in the health care institutions and community.						
PLO 5: Plan and implement training/educational programmes for the community and health workers.						
PLO 6: Apply ethical, legal, and behavioural (attitudinal) principles in the practice of medicine						

	Year 4		Year 5		Year 6	
Program Learning Outcomes (PLO)						
	Courses	CF	Courses	CF	Courses	CF
PLO 1: To identify and differentiate the normal health state from the diseased health state.	PAED 402: Introduction to paediatrics	5.0	IMED 510: Introduction to Psychiatry	3.0		
	REPH 402: Introduction to Reproductive Health	5.0				
	SURG 402: Foundations of Surgery	5.0				
	IMED 401: Clinical Methods	5.0				
	IMED 404: Tropical and Infectious diseases	3.0				
		6.0				
	PAED 403: Infectious and Communicable Diseases/Social Paediatric Problems	5.0				
	REPH 403: Pregnancy and Management of Labour	5.0				
	SURG 403: Trauma, critical care and endocrine surgery	6.0				
	IMED 405: Respiratory and Cardiovascular System	5.0				
	SURG 411: Introduction to Orthopaedics and Traumatology	3.0				
	PAED 404: Neonatology & Cardiorespiratory Paediatrics	5.0				
	REPH 404: Delivery Interventions and Postpartum Care	5.0				
	SURG 404: Gastroenterology & Cardiothoracic Surgery	6.0				
	IMED 406: Gastrointestinal Tract System and Nephrology	5.0				
	SURG 460: Introduction to Radio Imaging	3.0				

PLO 2: Manage, prevent and actively participate in disease prevention and promotion within the community.			IMED 510: Introduction to Psychiatry	3.0	IMED 620: Dermatology and Venereology	3.0
			COMH 510: Research Methodology	3.0	SURG 620: Anaesthesia and Critical Care	6.0
			COMH 521: Health Economics and Entrepreneurship	2.5	SURG 630: Ophthalmology	5.0
			COMH 531: Information Technology in Healthcare	3.5	SURG 640: Ear, Nose and Throat	5.0
			COMH 522: Health Service Management	3.5	SURG 650: Dental Health	5.0
			COMH 511: Epidemiology & Biostatistics	4.0	SURG 661: Radio Imaging and Radiology	2.0
			COMH 520: Community Diagnosis & Communication Skills for Health Workers	2.0	IMED 600: Central Nervous System, Endocrinopathies and Metabolic Disorders	3.0
			COMH 540: Field attachment	4.0	IMED 630: Therapeutics	6.5
			PAED 500: Endocrine & Nervous System Paediatric Genetics & Teratology	8.0	SURG 600: Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery	2.0
			PAED 501: Genitourinary system and Haematology and paediatric oncology	8.0	SURG 610: Orthopaedic Conditions in Adulthood	6.5
			REPH 501: Medical Conditions in Pregnancy, Ageing and Urogynaecology	5.5	SURG 601: Paediatric and Urologic Surgery	6.5
			IMED 511: Psychiatry and Mental Health I	6.5	IMED 601: Connective Tissue Disorder	5.0
			REPH 500: Gynaecological Emergencies and Fertility	5.0	IMED 602: Haematology and Oncology	3.0
			REPH 502: Benign and Malignant Gynaecological Conditions	5.0	SURG 611: Orthopaedic Conditions of Childhood	5.0
			PAED 502: Skeletal System, Connective Tissue, Diseases, paediatrics dermatology, Accidents and Poisoning	5.5		5.0
			IMED 512: Psychiatry and Mental Health II	5.0		
			MEDS 590: Clinical Elective Term	5.0		
PLO 3: Conduct community diagnosis and research.			COMH 510: Research Methodology	3.0	IMED 620: Dermatology and Venereology	3.0
			COMH 521: Health Economics and Entrepreneurship	2.5	SURG 620: Anaesthesia and Critical Care	6.0
			COMH 531: Information Technology in Healthcare	3.5	SURG 630: Ophthalmology	5.0
			COMH 522: Health Service Management	3.5	SURG 640: Ear, Nose and Throat	5.0
			COMH 511: Epidemiology & Biostatistics	3.5	SURG 650: Dental Health	5.0
			COMH 520: Community Diagnosis & Communication Skills for Health Workers	4.0	SURG 661: Radio Imaging and Radiology	2.0
			COMH 540: Field attachment	2.0	IMED 600: Central Nervous System, Endocrinopathies and Metabolic Disorders	3.0
				4.0	IMED 630: Therapeutics	6.5
					SURG 600: Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery	2.0
					SURG 610: Orthopaedic	6.5

					Conditions in Adulthood SURG 601: Paediatric and Urologic Surgery IMED 601: Connective Tissue Disorder IMED 602: Haematology and Oncology SURG 611: Orthopaedic Conditions of Childhood	6.5 5.0 3.0 5.0 5.0
PLO 4: Manage and be a leader in the health care institutions and community.	PAED 402: Introduction to paediatrics REPH 402: Introduction to Reproductive Health SURG 402: Foundations of Surgery IMED 401: Clinical Methods IMED 404: Tropical and Infectious diseases PAED 403: Infectious and Communicable Diseases/Social Paediatric Problems REPH 403: Pregnancy and Management of Labour SURG 403: Trauma, critical care and endocrine surgery IMED 405: Respiratory and Cardiovascular System SURG 411: Introduction to Orthopaedics and Traumatology PAED 404: Neonatology & Cardiorespiratory Paediatrics REPH 404: Delivery Interventions and Postpartum Care SURG 404: Gastroenterology & Cardiothoracic Surgery IMED 406: Gastrointestinal Tract System and Nephrology SURG 460: Introduction to Radio Imaging	5.0 5.0 5.0 3.0 6.0 5.0 5.0 5.0 6.0 5.0 3.0 5.0 5.0 6.0 5.0 3.0	COMH 510: Research Methodology COMH 521: Health Economics and Entrepreneurship COMH 531: Information Technology in Healthcare COMH 522: Health Service Management COMH 511: Epidemiology & Biostatistics COMH 520: Community Diagnosis & Communication Skills for Health Workers COMH 540: Field attachment	3.0 2.5 3.5 3.5 4.0 2.0 4.0	IMED 620: Dermatology and Venereology SURG 620: Anaesthesia and Critical Care SURG 630: Ophthalmology SURG 640: Ear, Nose and Throat SURG 650: Dental Health SURG 661: Radio Imaging and Radiology IMED 600: Central Nervous System, Endocrinopathies and Metabolic Disorders IMED 630: Therapeutics SURG 600: Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery SURG 610: Orthopaedic Conditions in Adulthood SURG 601: Paediatric and Urologic Surgery IMED 601: Connective Tissue Disorder IMED 602: Haematology and Oncology SURG 611: Orthopaedic Conditions of Childhood	3.0 6.0 5.0 5.0 2.0 3.0 6.5 2.0 6.5 6.5 5.0 3.0 5.0 5.0
PLO 5: Plan and implement training/educational programmes for the community and health workers.			COMH 510: Research Methodology COMH 521: Health Economics and Entrepreneurship COMH 531: Information Technology in Healthcare COMH 522: Health Service Management COMH 511: Epidemiology & Biostatistics COMH 520: Community Diagnosis & Communication Skills for Health Workers COMH 540: Field attachment	3.0 2.5 3.5 3.5 4.0 2.0 4.0		
PLO 6: Apply ethical, legal, and behavioural (attitudinal) principles in the practice of medicine	PAED 402: Introduction to paediatrics REPH 402: Introduction to Reproductive Health	5.0 5.0	IMED 510: Introduction to Psychiatry	3.0	IMED 620: Dermatology and Venereology SURG 620: Anaesthesia and	3.0 6.0

	SURG 402: Foundations of Surgery			Critical Care	
	IMED 401: Clinical Methods	5.0		SURG 630: Ophthalmology	5.0
	IMED 404: Tropical and Infectious diseases	3.0		SURG 640: Ear, Nose and Throat	5.0
		6.0		SURG 650: Dental Health	
	PAED 403: Infectious and Communicable Diseases/Social Paediatric Problems	5.0		SURG 661: Radio Imaging and Radiology	2.0 3.0
	REPH 403: Pregnancy and Management of Labour	5.0		IMED 600: Central Nervous System, Endocrinopathies and Metabolic Disorders	6.5
	SURG 403: Trauma, critical care and endocrine surgery	6.0		IMED 630: Therapeutics	2.0
	IMED 405: Respiratory and Cardiovascular System	5.0		SURG 600: Neurosurgery, Tropical Surgery Plastic Surgery, Surgical Oncology and Transplant Surgery	6.5
	SURG 411: Introduction to Orthopaedics and Traumatology	3.0		SURG 610: Orthopaedic Conditions in Adulthood	5.0
	PAED 404: Neonatology & Cardiorespiratory Paediatrics	5.0		SURG 601: Paediatric and Urologic Surgery	3.0
	REPH 404: Delivery Interventions and Postpartum Care	5.0		IMED 601: Connective Tissue Disorder	5.0
	SURG 404: Gastroenterology & Cardiothoracic Surgery	6.0		IMED 602: Haematology and Oncology	5.0
	IMED 406: Gastrointestinal Tract System and Nephrology	5.0		SURG 611: Orthopaedic Conditions of Childhood	
	SURG 460: Introduction to Radio Imaging	3.0			

FACULTY OF LAW

THE BACHELOR OF LAWS

1. Philosophy of the Programme

Drawing on the University's traditions of practical hands-on approaches to tertiary education and transforming lives through quality education, the programme is designed to produce graduates who shall be equipped to work with grassroots communities to develop innovative socio-legal solutions to our economic and social problems. Our programme shall position the Faculty of Law and its graduates to curve out a distinctive impact on the country's legal landscape by generating and disseminating knowledge and ideas which influence our practices. Our people-centred approach to learning law shall foster students' practical engagement with local and national communities through human rights studies, advocacy, civic education, legal aid and other extension work. This philosophy is manifested in our course concentrations in the niche areas of legal research and human rights education.

2. Rationale of the Programme

2.1. Needs assessment/ market surveys/situation analysis

The establishment of the Faculty of Law at Egerton University in 2014 has been preceded by several needs assessment surveys and feasibility studies. From these studies, it became clear that the Faculty of Law and its programmes should transcend general-practitioner oriented legal education and seek to address skills training needs in selected niche areas that are of critical importance to society and the legal profession. Accordingly, the Faculty's Bachelor of Laws degree programme shall be designed to make a

distinctive contribution to legal education through providing training in human rights law as well as legal research and writing, and related fields. In line with the recommendations of stakeholders, the Faculty of Law shall be positioned to be a world class hub for advanced academic and clinical legal studies. Drawing on the University's traditions of practical hands-on approaches to tertiary education and transforming lives through quality education, the programme seeks to produce graduates who shall be equipped to work with grassroots communities to develop innovative socio-legal solutions to our numerous challenges. A report of needs assessment survey is attached in appendix six

2.2 Stakeholders involvement.

The Bachelors of Law degree programme has been formulated in consultation with various stakeholders. A report of consultation meetings with stakeholders is attached in Appendix VI

2.3 Justification of the need for a programme

With the adoption and the 2010 constitution and the inauguration of the Second Republic, the Kenyan political and legal landscape has witnessed far reaching changes. Besides establishing legal structures for various levels of government the constitution creates many new public institutions and entrenches an enhanced Bill of Human Rights that for the very first time includes economic, social cultural rights. This necessitates a rethinking of existing legal education programmes to realign them to the emerging needs in the society. The bachelors' of laws degree programme at Egerton University is poised to make a unique contribution to addressing the training needs for the next generation of legal professionals in Kenya.

3. Goals of the programme.

The programme is designed to provide skills training; knowledge and socialization of learners to enable them develop competencies required for successful career practice in the law. Besides enhancing capacity building in the law and governance sector, our programme serves to produce graduates who are equipped to contribute to promoting social change through professional practice that tends towards advancing humanistic values such as human dignity, pro-poor advocacy, charity, voluntarism, solidarity and humanitarianism. Our graduates shall apply their technical knowledge, skills and experience to the service of our society in a variety of placement contexts. These shall include the judiciary, State human rights/governance institutions, private practice, grassroots and national non-governmental organizations, local and global civil society organizations and international human rights bodies.

4. Programme learning outcomes

The objectives of the Egerton University Bachelor of Laws degree programme are to:

1. Equip learners with substantial knowledge and training in the key technical competencies in the field of law, which are adequate for a successful professional career in this field.
2. Provide training and learning experience in the area of legal research and writing as an enabler for effectively finding and applying the law, and pursuing excellence in the legal profession.
3. Provide training in the area human rights law, theory and practice to equip learners for various professional careers in this niche area.

4. Provide academic and career training and mentoring for the learners in professional ethics and etiquette.

2.2 A learner who has successfully taken the prescribed courses and participated in other learning activities offered in this programme shall be able to:

1. Apply the knowledge, skills and training gained in the training to render professional legal services and provide legal solutions in various employment contexts
2. Utilize competencies and experience in legal research and writing to contribute to expert discourses in law, provide consultancy services, undertake independent studies and generate academic writing of publishable quality;
3. Use the knowledge and skills developed in this programme to contribute to the dissemination of human rights education and humanistic values through the provision of civic education, legal aid and other extension services to the community and reinvigorate the academic study and clinical practice of human rights law.
4. Draw on the mentoring, socialization and institutional brand identity to demonstrate adherence to the highest standards of ethics, etiquette, comportment and professionalism.

5. Mode of Delivery of the programme

The programme shall be delivered full-time, face to face through lectures, seminars, tutorials, through discussions, moot courts, practical demonstrations, case studies, group discussions, library research, field studies and clinical attachments.

6. Academic Regulations for the programme

6.1. Admission Requirements

The minimum requirements for admission to the Bachelor of Laws degree program shall be:

- i. A minimum mean Grade of B- (minus) at KCSE and a B Plain in English or Kiswahili, or

- ii. Three (3) principal passes in the Kenya Advanced Certificate of Education (KACE) or its equivalent obtained at the same sitting, with an equivalent of a B Plain in English.
- iii. Three (3) principal passes in the Kenya Advanced Certificate of Education (KACE) or its equivalent obtained at different sittings, provided that the principals are of Grade C or higher; with an equivalent of a B Plain in English Language;
- iv. An undergraduate degree in any appropriate field other than law and a minimum of C+ (plus) in the Kenya Certificate of Secondary Examination or its equivalent with a minimum of grade B (plain) in English Language;
- v. A diploma in law of a legal education institution accredited by the Council of Legal Education, with at least a Credit pass or higher.
- vi. The minimum admission requirement for applicants admitted through the Kenya Universities and Colleges Central Placement Service (KUCCPS) shall from a four (4) subject-cluster as follows: 1. English; 2. Mathematics or any subject in Group II; 3. any subject in Group III, and 4. Kiswahili or any subject in Group II or 2nd Group III, or any subject in Group IV or any subject in Group V.

6.2. Regulations on credit Transfer

The credit transfer will adhere to the Egerton University Statutes of 2013 (Article 36).

6.3 Student Assessment criteria

6.3.1 Examinations shall be graded on the basis of percentage marks consisting of thirty percent (30%) continuous assessment and seventy percent (70) as final examinations.

6.3.2 Where a course is designated as mainly practical in nature such as Legal Research and Writing courses, it shall be examined wholly or

substantially by continuous and/or practical assessment.

6.3.3 The duration of the final examinations shall be as follows:

- (a) A course having three or less lecture hours per week shall be examined by a paper of two (2) hours only.
- (b) A course having more than three lecture hours per week shall be examined by a paper of three (3) hours only.

6.3.4 The total marks scored for each course shall be translated into letter grades as follows:

100-70 per cent	A (Excellent)
69-60 percent.....	B (Good)
59-50 percent.....	C (Average)
9- 40 percent.....	D (Below Average)
39-0 percent.....	F (Fail)

6.4 Examination regulations

The conduct of examinations and assessments in this program shall be governed by the provisions of statute 36 of the Egerton University 2013. Paragraph 5

6.5 Moderation of Examinations

the moderation of examination papers and examination results shall be in this program shall be governed by the provision of statute 36 of Egerton University 2013. Paragraph

6.8. Graduation Requirement

Graduation requirement of this course are prescribed by Statute 36 of Egerton University 2013. Paragraph 3, 4, 5

6.9. Classification of Degree

The Bachelor of Laws degree shall be classified on weighted average percentage marks of all the courses

taken in all the years of study at the University as follows:

Per cent (%) Degree Classification Bracket

100- 70	First Class Honours
69-60	Upper Second Class Honours
59-50	Lower Second Class Honours
49-40	Pass
Below 40	Fail

7. Course Evaluation

The course will be evaluated according to the Quality Assessment provisions of Egerton University (EU/VC/OP/04).

8. Management and administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the Faculty of Law and the programme academic leader shall be appointed in accordance to University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme evaluation (self-assessment) at the end of each program's academic cycle. Each program cycle will be benchmarked with at least one such programme in a highly ranked University.

8.3 Course coding

9. Courses Offered for the programme

9.1 Course distribution Table

The course offered in the programme are set out in Tables 1,2,3 and 4 below.

Table 1: The Egerton University Bachelor of Laws (LL.B.) degree Curriculum Structure – TABLE 1A: FIRST YEAR 1ST SEMESTER

CODE	TITLE	L	P	T	CF
COMS 111	Communication Skills	45	0	0	3
LLBE 111	Law of Contract	60	0	30	5
LLBE 112	Constitutional Law	60	0	30	5
LLBE 114	Legal Research and Writing I	45	0	30	4
LLBE 115	History and Theory of Human Rights	45	0	30	4
ZOOL 143	Biology of HIV/AIDS and Society	45	0	0	3
Totals		300	0	120	24

TABLE 1B: FIRST YEAR 2ND SEMESTER

CODE	COURSE TITLE	L	P	T	CF
COMP 111	Introduction to Computer Applications	45	0	0	3
LLBE 121	Criminal Law	60	0	30	5
LLBE 122	Tort Law	60	0	30	5
LLBE 124	Legal research and Writing II	45	0	30	4
LLBE 125	Kenyan and Comparative Human Rights Law and practice	45	0	30	4
LLBE 126	Legal Systems and Methods	45	0	30	4
Total		300	0	150	25

Table 2: The Egerton University Bachelor of Laws (LL.B.) degree Curriculum Structure

TABLE 2A: SECOND YEAR 1ST SEMESTER

CODE	TITLE	L	P	T	CF
LLBE 216	Property Law I	45	0	30	4
BENT 220	Entrepreneurship	45	0	0	3

	for Lawyers				
LLBE 211	Public International Law	45	0	30	4
LLBE 212	Family Law	45	0	30	4
LLBE 213	Commercial Law	45	0	30	4
LLBE 214	Legal Research and Writing III	45	0	30	4
LLBE 215	Regional Protection of Human Rights	45	0	30	4
Total		315	0	180	27

TABLE 2B: SECOND YEAR, 2ND SEMESTER

CODE	COURSE TITLE	L	P	T	CF
BACT 227	Accounting for Lawyers	45	0	0	3
LLBE 221	Equity and Law of Trusts	45	0	30	4
LLBE 222	Law of succession	45	0	30	4
LLBE 223	Labour Law	45	0	30	4
LLBE 224	Legal Research and Writing IV	45	0	30	4
LLBE 225	The United Nations Human Rights System	45	0	30	4
LLBE 226	Property Law II	45	0	30	4
Total		315	0	180	27

Table 3: The Egerton University Bachelor of Laws (LL.B.) degree Curriculum Structure
TABLE 3A: THIRD YEAR 1ST SEMESTER

CODE	THIRD YEAR 1 ST SEMESTER	L	P	T	CF
LLBE 311	Jurisprudence	45	0	30	4
LLBE 312	Administrative Law	45	0	30	4
LLBE 313	Law of Evidence	45	0	30	4
LLBE 314	Legal research and Writing V	45	0	30	4

LLBE 315	Human Rights Law Seminar I	45	0	30	4
LLBE 316	Child Law	45	0	30	4
LLBE 317	Civil Procedure	45	0	30	4
Total		315	0	210	28

TABLE 3B THIRD YEAR 2ND SEMESTER

CODE	COURSE TITLE	L	P	T	CF
LLBE 321	Law of Business Associations	45	0	30	4
LLBE 322	Company Law	45	0	30	4
LLBE 323	Intellectual Property Law	45	0	30	4
LLBE 324	Legal research and Writing VI	45	0	30	4
LLBE 325	Human Rights Law Seminar II	45	0	30	4
LLBE 326	Law and Gender Relations	45	0	30	4
LLBE 327	Criminal Procedure	45	0	30	4
LLBE 328	*Judicial and Clinical Attachment	0	240	0	8
Total		315	240	210	36

* This is a six-week practical course taken immediately after the end of the Second Semester of the Third Year. Students shall be attached to Resident Magistrates' Courts at approved stations in Kenya. Each week, students shall be engaged in full time learning supervised by designated Magistrates. Students shall work for eight hours each day, for thirty (30) working days= 240 practical learning hours.

Table 4: The Egerton University Bachelor of Laws (LL.B.) degree Curriculum Structure - Fourth Year
TABLE 4A: FOURTH YEAR 1ST SEMESTER

CODE	COURSE TITLE	L	P	T	CF
LLBE 411	Trial and Appellate Advocacy	45	0	30	4
LLBE 412	Environmental and	45	0	30	4

	Natural Resources Law				
LLBE 413	Alternative Dispute Resolution	45	0	30	4
LLBE 414	Legal research and Writing VII	45	0	30	4
	ELECTIVES Candidates shall take one (1) elective				
LLBE 415	Insurance Law	45	0	30	4
LLBE 416	Consumer Protection Law	45	0	30	4
Total		225	0	150	20

TABLE 4B: FOURTH YEAR 2ND SEMESTER

CODE	COURSE TITLE	L	P	T	CF
LLBE 421	Professional Ethics and Responsibility	45	0	30	4
LLBE 422	International Humanitarian and Refugee Law	45	0	30	4
LLBE 423	East African Community Law	45	0	30	4
LLBE 424	Research Paper	60	0	30	5
	ELECTIVES Candidates shall take one (1) elective				
LLBE 425	Revenue Law	45	0	30	4
LLBE 426	Banking Law	45	0	30	4
TOTALS		240	0	150	21

SUMMARY OF PROGRAMME COURSES UNIT LOADING

		L	P	T	CF
1	FIRST YEAR TOTALS	600	0	270	49
2	SECOND YEAR TOTALS	630	0	360	54
2A	FIRST AND SECOND YEAR SUB-TOTAL	1230	0	630	103
3	THIRD YEAR TOTALS	630	240	420	64

4	FOURTH YEAR TOTALS	465	0	300	41
4A	THIRD AND FOURTH YEAR SUB-TOTALS	1080	240	720	104
5	TOTALS	2310	240	1350	207

Therefore, Bachelor of Laws degree curriculum design complies with the minimum requirements for the undergraduate degree prescribed by the university's statutes, the Council for Legal Education and the Commission for University Education.

c). COURSE DESCRIPTIONS

LLBE 111: Law of Contract (Y1S1) (L: 60 P:0 T: 30 CF:5)

Fundamental principles of contract law: freedom of contract, requirements of a valid contract, offer and acceptance, consideration, contractual intention, capacity, contents of a contract: express and implied terms: vitiating factors: illegality, mistake, misrepresentation, duress and undue influence, plurality of parties, agency, privity of contract, assignment, discharge of contracts: performance, monitoring and managing contractual obligations, breach, frustration, remedies: assessment of damages for breach of contract, mitigation of loss, equitable remedies (specific performance, injunction, restitution, rescission, rectification) defences to contractual claims: invalidity, limitation of actions, inordinate delay, absence of consideration/total failure of consideration, illegality.

LLBE 112: Constitutional Law (Y1S1) (L: 60 P:0 T: 30 CF:5)

Definitions of a constitution, history of constitution making in Kenya, types of constitutions, purpose and scope of constitutional law, natural law, positivism and social contract theories of constitutional order,

sources of constitutional law, constitution making processes, fundamental concepts in constitutional law: rule of law, constitutionalism, democracy and popular participation in governance, supremacy of the constitution, entrenched provisions, sovereignty of the people/State, separation of powers, vesting of State power: executive, legislative and judicial power, domestic and foreign relations, revenue raising and resource distribution powers, systems of government, unitary and federalist government, devolved systems of government, constitutional protection of human rights, electoral systems and processes, role of political parties and civil society organizations, mechanisms for accountability: oversight bodies, audit mechanisms, ethics and anticorruption techniques, states of emergency, suspension of the constitution, constitutional crisis/breakdown and State failure, selected case studies in comparative constitutional law

**LLBE 114: Legal Research and Writing I (Y1S1)
(L: 45 P:0 T:30 CF:4)**

Concepts of research and legal methods, need for and applications of legal research, introduction to legal research theory, types of legal research: analysis of new and emerging areas of law, empirical research, new insights on established areas of law and comparative legal research. Main sources of materials for legal research, case law, determining the material facts of a case, determining the ratio *decidendi* of a case, legislation, international law materials, customary law, academic materials; analysis and use of legal materials; primary and secondary sources, using general and specialist libraries, electronic databases; accessing and using the Kenya Law Reports, printed and electronic/online case law materials; law journals and periodicals, catalogues, literature search and survey, case review, literature review, referencing standards, constructing reading lists and bibliography; quantitative research methods.

Introduction to Legal writing: Academic writing: literature reviews, essays, case reviews; clinical writing: legal briefs: letter, memoranda, trial and appellate briefs, transactional documents, submissions, pleadings, rulings, judgments.

LLBE 115: History and Theory of Human Rights (Y1S1) (L: 45 P:0 T:30 CF:4)

Theories of rights: what are human rights? Origins and bases of rights claims; Distinctions between moral rights and legal rights, human rights and the role of political structures, Natural law theories of rights, Positivist theories of rights: Thomas Hobbes and John Locke on human rights, feminist theories of rights, historical evolution of human rights law: statehood and human rights law: ancient civilizations and human rights, colonialism and human rights, evolution of economic and social rights: Evolution of civil and political rights, cultural rights, group and peoples' rights, the United Nations Charter 1945, UDHR 1948, ICESCR 1966, ICCPR 1966, ACPHR 1981, ACRWC 1990, European Convention on Human Rights 1950, American Convention on Human Rights 1969, European Social Charter 1961: The emerging International Bill of Human Rights: child rights, migrant workers, persons with disabilities, domestic bills of human rights: statutory and constitutional bills of rights. Issues and problems in human rights theory and practice: derogations and suspensions of rights protections, limitations of bills of rights, universality versus cultural relativism, religion and human rights, scope of obligations and duties of rights holders and States, abuses and violations of rights, human rights and humanist values- solidarity, charity, humanitarianism.

LLBE 121: Criminal Law (Y1S2) (L: 60 P:0 T:30 CF:5)

Definition of a crime; distinction between civil and criminal wrongs; historical origins of criminal law;

the fundamental principles of criminal law; the social role of criminal law; the elements of crime- *mens rea* and *actus reus*; general principles of criminal liability; parties to offences; presumptions; general defences. Specific offences: strict liability offences, inchoate offences; attempts; conspiracy; solicitation, economic crimes, white collar crimes, statutory crimes. Classification of offences- offences against the person: murder, manslaughter, infanticide, assault. Offences against property: theft, robbery, robbery with violence, burglary and housebreaking; handling stolen property; sexual offences; offences against public order, general defences in criminal law. Elements of international criminal law: piracy, slave trade, drug trafficking, money laundering, transnational corruption, war crimes, crimes against humanity, The Statute of the International Criminal Court.

LLBE 122: Tort Law (Y1S2) (L: 60 P:0 T:30 CF:5)

Fundamental principles of liability in tort, historical development of tort law in England, tort in Civil Law tradition, common elements of a claim in tort, vicarious liability, general defences; specific torts: Negligence: general principles, key elements, proof, remedies, defences. Strict liability:, conditions of application, remedies, remedies. Nuisance: general principles, remedies, defences. Defamation: general principles, remedies, defences, current developments in the law torts.

**LLBE 124: Legal Research and Writing II (Y1S2)
(L: 45 P:0 T:30 CF:4)**

Using a Law Library, catalogues and databases, critical study and analysis of law textbooks, monographs, journals and periodicals, Law reports, structure of critical reviews: summarizing techniques, interpreting and describing legal texts, critical discussion and presentation, constructing arguments

for book reviews and commentaries, reviews of legislation, case reviews, article reviews, review essays, writing and submitting review essays for publication.

LLBE 125: Kenyan and Comparative Human Rights Law and Practice (Y1S2) (L: 45 P:0 T:30 CF:4)

Evolution of human rights law in Kenya, pre-colonial socio-legal systems, state power and human rights under colonial rule, nationalist struggles and the state of emergency, human rights in the Kenya (Independence) Order in Council 1963, human rights under the independence constitution and the First Republic 1963-2010, human rights under one-party political system 1982-1991, restoration of multiparty democratic system, state of human rights protection mechanisms, leading human rights cases and problems, human rights under the second Republic since 2010, enhanced Bill of Rights, economic, social and cultural rights, judicial and administrative institutions for protection and promotion of human rights: superior courts, special courts, National Commission on Human Rights, Commission on the Administration of Justice, ethics and anticorruption commission, civil society organizations, emerging issues and developments, national and county government budgets and human rights, resource allocations and human rights, emerging human rights and problems in the extractive sector: artisan mining, metal mining operations, oil and gas sector, mass retrenchment of workers, youth unemployment and human rights, rural communities, marginalization and violations of human rights, insecurity and underlying human rights abuses and violations, selected case studies in comparative human rights law in Africa and other parts of the world, current problems and future directions in Kenyan human rights law.

LLBE 126: Legal Systems and Methods (Y1S2) (L: 45 P:0 T:30 CF:4)

The concepts of legal systems and comparative law, uses and misuse of comparative law, methods of comparing legal systems, concept of functional micro-comparison, Legal taxonomy: the concept of legal families, outlines of the major legal systems of the world; Common Law and Civil law; theories and processes of legal transplantation, sources of law in Kenya, Structure of the Kenyan court system, the legal profession, comparative law in academic research, comparative law in Kenyan courts, comparative law before international and national courts, selected topics and current issues in comparative study of legal systems.

LLBE 211: Public International Law (Y2S1) (L: 45 P:0 T:30 CF:4)

Modern history of the law of nations, the rise of nation States in Europe, the Peace of Westphalia 1648, the contradictions of the law of nations and colonial empires, Covenant of the League of Nations 1919, Charter of the United Nations 1945 and decolonization; sources of international Law: custom, treaties, subsidiary sources, soft law, international law and domestic law, subjects of international law: States and statehood, inter-governmental organizations, Non-governmental organizations, State jurisdiction, territory, elements of the law of the sea, sovereignty of States, how international law is made and implemented: elements of the law of treaties, procedures for treaty making, ratification and implementation, withdrawal from treaties, elements of diplomatic law and practice, horizontal techniques, transnational issue networks, international courts and tribunals, sanctions; theories of international law and international relations, weaknesses and effectiveness of international law: case studies in international law: law and armed conflict; law and refugees, law and terrorism, law and underdevelopment/global poverty, law and violations of human rights; State failure and

international responsibility, possible alternatives to international law, the future of global governance.

LLBE 212: Family Law (Y2S1) (L: 45 P:0 T:30 CF:4)

Definitions of family and family law, role of law in family relationships, concept of family structures, structure of Kenyan marriage law, plural and monogamous marriages, families outside marriage, customary family unions and practices, adoptive and foster families, single parent families, matrimonial rights and obligations, law and family property: community of property and separate property in marriage, parental rights and responsibility, family breakdown: separation agreements, judicial separation, grounds and procedures for divorce. Emerging issues and problems in family law: post-divorce maintenance, surrogacy and parental status, legal recognition/regulation of families outside marriage, conflicts of marriage law, transnational aspects of family law, same sex unions, human rights and family law.

LLBE 213: Commercial Law (Y2S1) (L: 45 P:0 T:30 CF:4)

Nature of contract for sale of goods; definition; distinction with other contracts; the concept of property in the goods; formalities of contract; terms implied by statute; the doctrine of caveat emptor; transfer of property in the goods; transfer of title; title by estoppel; sale by mercantile agent; sale under voidable title- sale in exercise of statutory power of sale ; sale by seller in possession; sale by buyer in possession- performance of the contract of sale; delivery; place of delivery; condition and quality of goods; rights and remedies of an unpaid seller; rights and remedies of the buyer; standard form contracts; international commercial terms; the nature of hire purchase agreement; distinction from other transactions; essentials of a hire purchase agreement; implied terms of hire-purchase agreements; effect of

misrepresentation; assignment of the option to purchase; rights, duties and remedies under hire-purchase agreement; the legal nature of agency relationship; formation of agency; express appointment; agency by estoppel; agency inferred from cohabitation; agency by ratification; agency by operation of law; rights and duties under a contract of agency; implied duties of the agent; duties of the principal; termination of agency; Historical development of bankruptcy law in Kenya, purpose of insolvency law, distinction between insolvency and bankruptcy, acts of bankruptcy, procedure relating to bankruptcy, making of the adjudication order, filing of the bankruptcy petition, secured and unsecured creditors, management of the estate, receivership, role of the trustee in bankruptcy, realization of assets of the bankrupt, order of settlement of debts and claims by creditors, distribution of assets and exemptions, investigations, disabilities of the adjudged, bankruptcy discharge of the bankrupt, bankruptcy offences, alternatives to bankruptcy, no assets compromises and schemes of arrangements, effects of bankruptcy.

LLBE 214: Legal Research and Writing III (Y2S1) (L: 45 P:0 T:30 CF:4)

Choosing and constructing topics for legal research and writing, idea mapping and other brainstorming techniques, formulating academic arguments, literature surveys, literature reviews, case law surveys, legislative materials, comparative law methods, planning and executing research tasks, standards for citation of legal authorities, critical reading and writing, selection and interpretation of authorities, writing styles and techniques: forecasting, signposting, signaling and summarizing techniques. Ethical and professional responsibility issues: originality, plagiarism and intellectual property in literary works. The candidate shall be assisted and

guided by a Supervisor assigned by the Board of Examiners for the Bachelor of Laws degree.

LLBE 215: Regional Protection of Human Rights (Y2S1) (L: 45 P:0 T:30 CF:4)

The case for regional human rights protection systems, concept of exhaustion of domestic remedies, The African Charter on Human and Peoples' Rights 1981, jurisdiction, procedure, practice and leading decisions of the African Commission on Human and Peoples' Rights, the Protocol on the Banjul Charter, the African Court of Human and Peoples' Rights, Procedure and Practice of the Court, the African Charter on the Rights and Welfare of the Child 1991, the African Committee of Experts on the Rights and Welfare of the Child, role of political bodies: African Union, East African Court of Justice and human rights, European Convention on Human Rights 1950, historical developments and evolution of the European Convention on Human Rights 1950; European Commission on Human Rights and its work, leading decisions of the Commission on admissibility, dissolution of the European Commission on Human Rights, the rebranding of the European Court of Human Rights since 1998, jurisdiction, procedure and practice of the ECtHR, leading decisions of the ECtHR. The American Convention on Human Rights 1969, Jurisdiction, procedure and leading decisions of the Inter-American Commission on Human Rights, jurisdiction, procedure and leading decisions of the Inter-American Court of Human Rights, effectiveness of regional human rights protection mechanisms.

LLBE 216: Property Law I (Y2S1) (L: 45 P:0 T:30 CF:4)

Origins and evolution of the law on property; concept property; distinctions between property and obligations, Nature of property rights; various types of property; moveable and immovable property;

intangible property, intellectual property; definitions of land: interests in land, tenancies, leasehold and mortgages, the right of occupancy; foundations of land law in Kenya, the colonial factor, importation of land laws; pre-independence settlement era; post-independence era of settlement; forms of land tenure; transfer of proprietary rights; land management; allocation of public land; community land; administration and management of private land; co-tenancy, sub-division and consolidation, elements of land use law: control of land development, physical planning law and practice, illegal development of land, compulsory acquisition of interests in land; land registration; functions of lands offices; functions and powers of the National Land Commission ; emerging forms of property: futures and spectrum space.

BENT 220: Entrepreneurship for Lawyers (Y2S1) (L: 45 P:0 T:30 CF:4)

Introduction to the concept and practice of entrepreneurship, national and international issues on entrepreneurship, wealth/employment creation and poverty eradication: Millennium Development Goals, Sustainable Development Goals, Kenya Vision 2030; National policies and practices on entrepreneurship; Youth Enterprise Fund, Women Enterprise Fund, Uwezo Fund, Private sector micro-finance initiatives, rationale for entrepreneurial skills; types of entrepreneurship, attributes of entrepreneurs and entrepreneurial careers; the law firms and other professional establishments as entrepreneurial ventures; finding and evaluating opportunities; needs assessment surveys, conducting feasibility studies, SWOT analysis, developing a business plan; start up legal issues; organizational forms; resource mobilization and funds raising, business networking, business promotion and growth strategies, elements of marketing, project evaluation and review, report writing, harvesting and exit strategies, risk management, emerging investment and

entrepreneurship options for lawyers, case studies, risk management; ethical issues.

LLBE 221: Equity and Law of Trusts (Y2S2) (L: 45 P:0 T:30 CF:4)

Nature and historical development of equity; traditional distinctions between law and equity; its introduction to Kenya; equity and common law; equity and customary law; maxims of equity; doctrines of equity: tracing, subrogation, proprietary estoppels, nature of equitable rights and interests; priorities; assignment; application of equitable remedies in Kenya; equitable defenses; definition of a trust; origins of a trust; principles of creation of trusts; nature of a trust; legal obligations and rights of a trustee and beneficiary, comparison of trusts and other relationships; classifications of trusts; appointment and qualification of trustees; duties and functions of trustees; trust property and investment; administration of trusts; termination and liquidation of trusts; modern use of trusts.

LLBE 222: Law of Succession (Y2S2) (L: 45 P:0 T:30 CF:4)

Introduction to the law of succession; the scope and purpose of the law of succession Act; systems of succession law in Kenya, testate succession; the legal mechanisms of making a will; formulating and drafting wills, formalities; validity of a will, testamentary freedom; revocation, alteration and revival of wills; construction of wills; intestacy; application for letters of administration, personal representatives; administration of estates and dependency; probate procedures; constitution and human rights aspects of succession law: cultural rights claims, gender and succession law.

LLBE 223: Labour Law (Y2S2) (L: 45 P:0 T: 30 CF:4)

Historical development of labour law and relations; colonialism and labour laws; sources of employment

law; sources of rights and obligations in the contract of employment: express terms of employment contracts, employment legislation, the right of workers to organize and collective bargaining/solidarity mechanisms, rights of employees; benefits of employees; duties of employers and employees under statute and common law; termination of employment of employment contract; summary dismissal; redundancy; discrimination; sexual harassment; regulatory legislation; trade unions and trade disputes; industrial conflicts management; Employment and Labour Relations Court; dispute resolution mechanisms; health and safety of employees at work place; compensation; social security; international core labour standards; International Labour Organisation and conventions, constitutional and human rights aspects of employment law; limits of employment law, options for retrenched workers, right to access education, retraining and employment, violations of employment rights.

LLBE 224: Legal Research and Writing IV (Y2S2) (L: 45 P:0 T:30 CF:4)

Elements of socio-legal theory of law: law as an instrument of policy, the social and political agenda of law, how social and political forces shape the evolution of law, how law shapes trends in society, consequences of applying law, effectiveness of legal rules and institutions, selected case studies of legal responses to social problems, constructing proposals for socio-legal and empirical studies, formulating hypothesis, identifying and constructing quantitative and qualitative indicators, identifying and using quantitative data sources, field studies and methods, data presentation and report writing techniques, ethical issues in empirical research.

LLBE 225: United Nations Human Rights System (Y2S2) (L: 45 P:0 T:30 CF:4)

UN Charter provisions on its human rights mandate, political bodies and human rights: the General Assembly and its contribution to human rights protection; the Economic and social council, the Human Rights Council, the High Commissioner for Human Rights, Thematic and country mandates of Special Rapporteurs; preparing parallel/shadow reports to UN human rights bodies, UN treaty-based systems: the Human Rights Committee, the Committee on Economic, Social and Cultural Rights, the Committee Against Torture, Convention on the Elimination of Racial Discrimination, Committee on the Rights of the Child, CEDAW, Migrant workers, Convention on the Rights of Persons with Disabilities; treaty reporting procedures, inter-State communications, individual communications/complaints, inquiries procedures, Human rights and the mandates of Specialized Agencies: ILO, UNESCO, UNICEF, WHO, FAO, UNDP, World Bank and IMF.

LLBE 226: Property Law II (Y2S2) (L: 45 P:0 T:30 CF:4)

Concept and functions of conveyancing law; the different forms of documentation; definition of terms; conditions attached to conveyancing instruments; execution; power of attorney; stamp duty; land rent and rates; clearance certificates; restraint on disposition; registration; rectification and indemnity; investigation of title: conducting searches at Land Registries and the Motor Vehicles Registry, controlled transactions and statutory consents to subdivide and transfer, designing and drafting formal documents used in property conveyancing: sale agreements, mortgage agreements, lease agreement, documents; disposition affecting land; mortgages and charges; covenants conditions and powers implied in charges; discharge of charges; leases; transfer and assignment of leases; transfers, transmissions and

trusts; easements; licences; profits; alienation of property rights; rules of construction; redemption of mortgages; monitoring and managing proprietary transactions; registration of interests in moveable property: industrial property, licenses and logbooks, breach of proprietary contracts and litigation strategies, formulating defenses, remedies, elements of real estate law.

BACT 227: Accounting for Lawyers (Y2S2) (L: 45 P:0 T:30 CF:4)

Business records, Assets. Liabilities, Accounting cycle, the Journal and ledger, entries into the ledger, Trial Balance, Income Statement, Balance Sheet, Analysis of simple financial statements, Capital expenditure decisions, Return on capital: Advocates office accounts rules, advocates clients' accounts rules, rules and principles for the management of clients funds; management of advocates clients' accounts; Advocates' office accounts, clients' accounts, principles for management of trust funds and trust accounts, separation of office and clients' funds, professional misconduct and unprofessional conduct. Simple and Compound interests, Calculations of Discounts and Commissions, Discounting, Annuities. Personal and Simple Business Budgets, Financial Projections; Purpose, Principal types and calculation of personal Income Taxes (PA YE): calculation and charging of V.A.T. on advocates' services; Stocks, Shares, Bonds, stock Market Ratios, Share Valuation, money and stock exchange, currency fluctuations, inflation etc.

LLBE 311: Jurisprudence (Y3S1) (L: 45 P:0 T: 30 CF:4)

What is jurisprudence? Theories of law: Schools of jurisprudence: natural law, positivism, the political and legal philosophy of Thomas Hobbes, John Locke, Hans Kelsen, Montesque, historical school, sociological jurisprudence, utilitarianism, legal

realism, socialism, Marxism, critical legal studies, postmodernism, feminist jurisprudence, the pure theory of law; socio-legal theories of law and society, jurisprudence of legal concepts: Legitimacy and authority of law; morality of law, theories of rights, personhood, nationhood and statehood; theories of international society, theories of justice; case studies applying divergent theories of law.

LLBE 312: Administrative Law (Y3S1) (L: 45 P:0 T:30 CF:4)

Meaning and function of administrative law; Scope of administrative law; political and constitutional context of administrative law in Kenya; fundamental principles of administrative law; the exercise of administrative functions; delegated legislation; the vesting and structure of administrative and discretionary powers and public agencies, administrative tribunals, quasi-judicial and other administrative bodies, control of administrative actions; Judicial review; grounds and basis of judicial review; *ultra vires* doctrine, rule against bias, constitutional basis, human rights claims to an effective remedy, other grounds: reasonableness, procedure for administrative law remedies, judicial review remedies- prerogative orders: mandamus, certiorari, prohibition, habeas corpus, other remedies: declaration, damages. Issues, limits and challenges in judicial review of administrative action: political questions, majority governments and legislative 'dictatorship', reluctant courts, finality and ouster clauses.

LLBE 313: Law of Evidence (Y3S1) (L: 45 P:0 T: 30 CF:4)

Historical development of Kenya law of evidence; the sources of law of evidence in Kenya; role of evidence in the administration of justice, preliminary definitions; principal forms of admissible evidence: facts in issue, similar facts, burden of proof; standard

of proof; relevance and admissibility; evidence of similar facts, hearsay, competence and compellability of witnesses, opinion evidence; admissions, confessions; presumptions, rebuttal of allegations and statements, documentary evidence, exhibits, judicial notice; estoppel; privilege public policy and illegally obtained evidence, mode of taking evidence, sworn and unsworn testimony, examination of witnesses, dying declarations, *de bene esse* proceedings, commission to take evidence, attesting and notarizing dispositions.

LLBE 314: Legal Research and Writing (Y3S1) (L: 45 P:0 T: 30 CF:4)

Concept and structure of legal argument, the procedure and process of legal argumentation, models of legal reasoning; framing questions for argument; syllogistic models, metaphors and analogical reasoning, legality, constitutional and universalist models; policy considerations in legal reasoning (realism and functionalism), types of legal arguments: case law, academic argument, argumentation lines, weighing information, burden of proof, admissibility, rebutting averments, justification, distinguishing decisions; art of persuasion and rhetoric, oral presentations and moot court debates.

LLBE 315: Human Rights Law Seminar I (Y3S1) (L: 45 P:0 T:30 CF:4)

Concepts of normative and operational human rights systems: Preventive and proactive strategies: understanding the root causes of violations of rights and abusive behavior, managing behavior/culture change, departmental and sectoral managerial strategies, managerial tools: service charters, performance targets, complaints reporting mechanisms, training and civic education; judicial protection: individual petitions, public interest litigation, constitutional interpretations, judicial review and other remedies, legislative techniques:

monitoring and assessment of human rights implications of proposed legislation, parliamentary committees on human rights and policy. Political strategies: strategic political dialogue and negotiation; issue-based campaigns, civil disobedience, peaceful demonstrations, protests, naming and shaming, media action strategies. Diplomatic strategies: contacting foreign governments and international agencies; exhaustion of domestic remedies; international law mechanisms: treaty law reporting, inquiries mechanisms, complaints and communication procedures; role of national human rights institutions, international and domestic intergovernmental and nongovernmental bodies; case studies.

LLBE 316: Child Law (Y3S1) (L: 45 P:0 T:30 CF:4)

The evolution of national and international systems of child law, concept of childhood, theories of children's rights, child rights in national, comparative and international law, Kenyan child law, best interests (welfare) principle in national and international law, children and family law: child custody, fostering, adoption, children and the criminal law: child offenders and public policy, parental responsibility, current issues and problems in Kenyan and international child law and policy.

LLBE 317: Civil Procedure (Y3S1) (L: 45 P:0 T:30 CF:4)

Sources of rules of civil procedure, structure and jurisdiction of civil courts and tribunals, preliminaries to suing; types of civil claims and suits, competence of parties, joinder of parties, place of suing; process of filing suits, service of process; appearance; plaints; defences and counterclaim; amendment of pleadings; prosecution of suits, discovery and interrogatories; hearing; examination of witnesses; submissions; rulings and judgments; orders and decrees; review; execution of decrees; time, Applications for judicial review; government proceedings; petitions;

originating summons and originating motions, constitutional applications; appeals

LLBE 321: Law of Business Associations (Y3S2) (L: 45 P:0 T:30 CF:4)

History of cooperative societies and partnerships as business ventures; formation and structure of cooperatives and partnerships, the distinction between cooperative societies, companies, partnerships, non-governmental organisations; and other unincorporated associations; registration of cooperatives, rights and obligations of members; creation of agency relationships, management of cooperatives, government control of partnerships; rights and duties of partners; settlement of disputes; insolvency and dissolution of cooperatives and partnerships; distribution of assets upon dissolution; emerging issues in cooperatives and partnership law: self-help groups, welfare associations, unregistered savings and credit groups, future directions in cooperatives and partnership law.

LLBE 322: Company Law (Y3S2) (L: 45 P:0 T:30 CF:4)

Historical background, meaning and nature of a company; comparison of the basic features of a partnership, sole proprietorship and companies; consequences of incorporation; incorporation procedures : promoters and company secretaries; lifting the veil of incorporation and corporate personality; types of companies, memorandum of association and articles of incorporation; doctrine of ultra vires; rights and duties of the directors, shareholders; protection of minority shareholders and powers of majority shareholders and company officers; audits, promoters and prospectuses, shares, debentures and dividends; mergers and takeovers, reconstructions; good corporate governance. Procedures for resolving corporate insolvency, petitions for receivership, powers of official receivers, liquidation and winding up.

LLBE 323: Intellectual Property Law (Y3S2) (L: 45 P:0 T:30 CF:4)

The concept of intellectual property, nature of intellectual property rights, historical development of intellectual property rights; acquisition of intellectual property rights; Legal framework for protection of intellectual property rights, national regimes, regional and global regimes of intellectual property law; national intellectual property institutions; Types of intellectual property: industrial property and copyright; patents, procedures for registration of patents, scope of patent protection, alternative techniques for protection of technological innovations; trade secrets and confidential information; claims and defences in patent litigation; Copyright: meaning and scope of copyright protection; claims and defences in copyright litigation; trademarks: nature and scope of trademark protection; applications for registration of trademarks, unregistered trademarks; Enforcement of Intellectual property rights; special problems relating to infringement of intellectual property rights; procedural mechanisms: Mareva injunctions and Anton Piller orders; contemporary issues in intellectual property rights; relevance of World Trade Organization and World Intellectual Property Organization; Current issues in intellectual property law: public interest and monopoly protection, parallel importation, trademarks, comparative advertising and unfair competition; parallel importation and generic medicine.

LLBE 324: Legal Research and Writing VI (Y3S2) (L: 45 P:0 T:30 CF:4)

Identifying and using legal research materials and sources, case law materials, using the law library, catalogues, online resources, Kenya Law Reports, East African Law Reports, reports of regional and international/global courts and quasi-judicial bodies, legislative and academic materials, international treaties and conventions, comparative law; writing

case reviews, writing literature reviews. Choosing topics for legal research: types of legal research topics: study of new and emerging areas of law; empirical research, revisiting and reconsidering established areas of law, comparative legal research. Describing and formulating research methodology, estimating time frames and budgets, undertaking study activities, generating chapter drafts, planning and organizing strategies for completing and presenting findings of research work.

LLBE 325: Human Rights Law Seminar II (Y3S2) (L: 45 P:0 T:30 CF:4)

Violations and abuses of human rights, Judicial protection of economic and social rights, World poverty, hunger related deaths and human rights, Child labour, child marriages, international and national armed conflict (civil war) and the refugee crisis, international humanitarian law and the prohibition of war crimes and crimes against humanity, racial, ethnic and sexual minorities and human rights, indigenous people and human rights, disability and human rights, hunger-related deaths, high level corruption, economic crime and human rights, street families, xenophobia, racial and sexual discrimination, economic recession and mass retrenchment of workers, youth unemployment, HIV-AIDS, environment: conservation, degradation and pollution, security and human rights, scope of State responsibility: domestic and extraterritorial obligations (ETOs), aging and elder law, future directions in human rights law.

LLBE 326: Law and Gender Relations (Y3S2) (L: 45 P:0 T:30 CF:4)

General introduction to the concept and ideology of gender; gender anatomy and physiology; law and gender identity; constitutional and legislative provisions on gender equity and equality, gender equity, gender and marriage law, prohibitions of sex

discrimination, equal rights of men and women, development of feminist jurisprudence and methodology; linkages between sexism, law and development; women and constitutionalism; gender relations in African customary law; gender and employment law; gender, reproductive health rights, pregnancy options and right to privacy; gender and property rights; gender and political rights and representation, gender and sexual harassment; gender based crime; regional and global conventions on gender discrimination; emerging issues in law and gender relations: affirmative action, customary bride price and marriage law; transactional sex practices, prostitution and the law, plural marriages, gender based violence; equal opportunities and boy/girl child education.

LLBE 327: Criminal Procedure (Y3S2) (L: 45 P:0 T:30 CF:4)

The concept of fairness in criminal justice; role of procedure and evidence in the enforcement of criminal law, Constitutional and human rights standards for fairness in criminal justice; retroactive application of criminal statutes and penalties, rights of an arrested and accused person, inquisitorial and adversarial criminal law procedures, criminal jurisdiction of Kenyan courts, government and non-governmental agencies engaged in the criminal justice process; vesting of public prosecutorial powers and prosecuting agencies, private prosecutions, investigative powers, procedures for making and registering criminal complaints, statements and reports, entry and search of premises, powers to stop and search, seizure of evidentiary materials, arrest, interrogation and indictments; formulating charge sheets and counts, arraignment, plea taking, parties to criminal prosecutions, Nolle prosequi and power to discontinue criminal prosecutions, procedure and principles for bail pending trial and bail pending appeal, structure and

contents of a criminal judgment, procedure for sentencing upon conviction, permissible forms of punishment, process and legality of the death sentence, imprisonment, corporal punishment, probation, right to appeal, review, presidential pardon, special procedures for child offenders, current issues and problems in Kenyan criminal justice system: role of the legal profession in the criminal justice system; elements of the international criminal procedure, jurisdiction of the International Criminal Court and its procedures under the Statute of the International Criminal Court 1998.

LLBE 328: Judicial and Clinical Attachment (Y3S2) (L: 0 P:240 T: 0 CF:8)

The course consists of a six-week clinical attachment at Resident Magistrates Courts at designated stations around the country. In the first four weeks, attachment at the courts is mandatory. However, the final two weeks may be spent at alternative stations including the National Council for Law Reporting, human rights civil society organizations, the National Commission on Human Rights or such other institutions that the Faculty Board may determine. In the first week, learners shall sit in the civil and criminal registries, where they shall be acquainted with the procedures preliminary to court trial and hearing of suits and criminal prosecutions. In the subsequent three weeks, candidates shall sit in court or chambers and shall follow court proceedings. They may be asked to prepare briefs, legal opinions and conduct research on current litigation before the court. The supervising Magistrate may assign learners to prepare draft rulings, orders and judgments for discussion. In the final two weeks, learners shall be engaged in research in court archives and libraries. They shall also prepare a project paper/essay on a topic assigned by the Board of Examiners of the Faculty of Law. The paper/essay shall be submitted

shortly upon resuming coursework at the start of the second semester of the Fourth year.

LLBE 411: Trial and Appellate Advocacy (Y4S1) (L: 45 P:0 T:30 CF:4)

Preliminaries to trial: Client counseling: basic counseling skills, models of client counseling, generating options and predicting outcomes, analysis of court decisions, ethical issues in client counseling. Fact gathering and analysis, approaches to client interviewing, independent fact-finding and investigation, analysis of legal problems, analysis of options for redress; drafting complaints, applications, summons, motions, affidavits, rulings, orders, judgments and decrees, drafting applications in criminal cases, personal and court diaries, time management, statutory deadlines; Trial advocacy, selecting and interviewing witnesses, preparing clients and witnesses for court proceedings; professional etiquette and decorum, application for interlocutory or interim relief, conclusion of trial/hearing; taking rulings and judgments. Appellate advocacy; preparation of the record of appeal; preparation and drafting of submissions and persuasive argument; Legal writing in context of case management: client opinion letters, letter on behalf of client, drafting negotiated agreement to settle disputes/claims, consent letters.

LLBE 412: Environmental and Natural Resources Law (Y4S1) (L: 45 P:0 T:30 CF:4)

Defining environment; concepts, principles and theories of environmental law and standards: sustainable development, precautionary principle, polluter pays principle, common and differentiated responsibility; Sources of environmental law; national and international legal and policy instruments for management of environment; constitutional provisions on land and environmental management, sector-based policies and issues: forestry, wildlife, water, solid waste management,

hazardous substance and chemicals, biodiversity management; Implementation and Enforcement: Environmental Impact Assessment, Environmental audit, Trade-related measures; determining liability; use of private law remedies: injunctions and damages; public law remedies: administrative law and criminal law procedures. Current problems and issues in environmental and natural resource law: Climate Change, Conservation and Natural Resources, Water and Sanitation, Agriculture and Food Security, Agriculture and Rural Productivity, environment and housing; waste management, emerging environmental management issues in the oil and gas sector, degradation and resource-use management; Human rights and the environment: clean environment as a human right; land use law policies and the human rights, doctrines of eminent domain, state responsibility and obligations for economic/social rights; right to housing, food, water; competing claims of equity in the extractive resources sector, options for future directions for the development of environmental law and policy?

LLBE 413: Alternative Dispute Resolution (Y4S1) (L: 45 P:0 T:30 CF:4)

Evolution of Alternative Dispute Resolution (ADR), principles of dispute management and alternative dispute resolution, constitutional provisions on Alternative dispute resolution, overview of dispute resolution options and processes; Unilateral, bi-partite and tripartite options: Arbitration, legal framework for arbitration, requirements of valid arbitration agreements, arbitration proceedings, enforcement of arbitration awards, litigation, mediation, arbitration, advantages and disadvantages of litigation, advantages and weaknesses of ADR processes; Negotiation theory techniques, analysis of interests and positions; Mediation theory and process, ethical and legal issues and responsibilities in mediation, strategies for breaking impasses, enforceability of negotiated and mediated outcomes;

role of the judiciary in ADR processes; other Grievance/dispute management options: Ombudsman and Statutory Commissions, the national Commission on Human Rights, internal complaints/grievance redress mechanisms, small claims courts; the future of ADR.

LLBE 414: Legal Research and Writing VII (Y4S1) (L: 45 P:0 T:30 CF:4)

Choosing and constructing topics for legal research and writing, idea mapping and brainstorming techniques, formulating original academic arguments, critical literature surveys, literature reviews, case law surveys, legislative materials, comparative law methods, planning and executing research tasks, standards for citation of legal authorities, OSCOLA, critical reading and writing, selection and interpretation of authorities, writing styles and techniques: forecasting, signposting, signaling and summarizing techniques. Ethical and professional responsibility issues: originality, plagiarism and intellectual property in literary works. The candidate shall be assisted and guided by a Supervisor assigned by the Board of Examiners for the Bachelor of Laws degree.

LLBE 415: Insurance Law (Y4S1) (L: 45 P:0 T:30 CF:4)

The history and development of insurance law, special features of the contract of insurance, how insurance works, concept of insurable interest, parties to the insurance contract (policy), types of insurance cover: asset insurance (buildings and moveable property), life and health policies, Compulsory Third Party motor vehicle insurance, privity of contract and rights of third parties, construction of insurance policies; Principles of insurance law: insurable risk, ascertaining risk, loss and compensation, doctrines of indemnity and subrogation; apportionment and contribution; settlement of insurance claims and disputes;

litigation, arbitration, current problems and developments in insurance law and industry: regulation of the insurance sector: requirements for registration and licence of insurance service providers (underwriters), brokers and agents, statutory financial regulations for underwriters, supervision and financial reporting, insolvency of underwriters, re-insurance obligations, current issues and developments in insurance law and practice: insolvency and collapse of Kenya's insurance companies, fraud and economic crime in insurance claims, effectiveness of regulatory systems.

LLBE 416: Consumer Protection Law (Y4S1) (L: 45 P:0 T:30 CF:4)

Historical development of the concept of consumer protection; constitutional and human rights law provisions on consumer protection and rights, freedom of contract, scope of duty of care in contract and tort, misrepresentation in supply of goods and services; disclaimers of liability in consumer contracts; counterfeiting and passing off, inequality of bargaining power; consumer rights; remedies in common law and statutes to protect consumers; technological and economic challenges; public utilities regulation; sectorial issues; unlawful pricing practices, monopolies and unfair competition, self-regulation: codes of best practices, codes of conduct, ISO certification and national standards agencies, service charters, complaints mechanisms, international law and consumer protection.

LLBE 421: Professional Ethics and Responsibility (Y4S2) (L: 45 P:0 T:30 CF:4)

Structure of legal profession in Kenya, training and accreditation bodies, qualifications for admission to the legal profession, constitutional and statutory mandate of the legal profession, advocacy and legal representation, advocate's responsibility in the trial process, Professional ethics, conduct and etiquette:

duties and obligations towards clients and the society, professional misconduct and unprofessional conduct; disciplinary offences, management of client's property and funds, advocates Remuneration order, statutory mandate of the law Society of Kenya; complaints against advocates, advocates disciplinary procedures; continuing legal education.

LLBE 422: International Humanitarian and Refugee Law (Y4S2) (L: 45 P:0 T:30 CF:4)

Evolution of the laws of war, main sources (the Hague and Geneva Conventions, decisions of international criminal tribunals), key concepts in international humanitarian law: international/non-international conflicts, combatants/non-combatants, protected persons, protection of the rights and dignity of prisoners of war, special international and neutrality status of the International Committee of the Red Cross (ICRC), protected objects, the principles which aim to limit the means and effect of combat, implementation of international humanitarian law, availability and efficacy of remedies, concept of war crimes and crimes against humanity, the Rome Statute of the International Criminal Court (ICC), jurisdiction and case law of the ICC, studies of selected contemporary armed conflicts, current issues and problems in IHL; Definitions of refugee, determination of the status of refugees: international and regional conventions and protocols on the protection of the dignity and rights of refugees; role of UNHCR; asylum and refugee status, principle of non-refoulement; resolution of refugee status: legal implications of protracted refugee case loads, voluntary repatriation, relocation to third States, local integration, current issues and problems in refugee law, policy and practice.

LLBE 423: East African Community Law (Y4S2) (L: 45 P:0 T:30 CF:4)

Legal and political history of regional integration in Eastern Africa; regional integration during colonial administration, East African Community 1965-1977; The emergence of the new East African Community (EAC) : the EAC Treaty 1999, EAC Customs Union Protocol 2004, EAC Common Market Protocol 2009; functions and procedures of key institutions of the EAC: the Summit, East African Legislative Assembly, East African Court of Justice; jurisdiction and procedures of the EA Court of Justice, case law of the EA Court of Justice, issues and developments in the establishment of the Common Market and Customs Union, current issues and problems in EAC cooperation: members' reservations e.g. Tanzania, constitutional breakdown and political instability, corruption, underdevelopment and human rights violations.

LLBE 424: Research Paper (Y4S2) (L: 45 P:0 T:30 CF:4)

Choosing and constructing topics for legal research and writing, idea mapping and brainstorming techniques, formulating original academic arguments, literature surveys, literature reviews, case law surveys, legislative materials, comparative law methods, planning and executing research tasks, standards for citation of legal authorities, critical reading and writing, selection and interpretation of authorities, writing styles and techniques: forecasting, signposting, signaling and summarizing techniques. Ethical and professional responsibility issues: originality, plagiarism and intellectual property in literary works. In preparing and submitting the Research Paper, the candidate shall be supported by a supervisor assigned by the Board of Examiners for the Bachelor of Laws degree. The Research paper shall not exceed 20,000 words (including footnotes, but excluding bibliography), and shall conform to the

University's conventions regarding submission and examination of degree theses.

LLBE 425: Revenue Law (Y4S2) (L: 45 P:0 T:30 CF:4)

Sources of Kenyan tax law: constitutional principles of revenue allocation, legislative and judicial control of taxation powers and measures, principles of taxation, tax legislation and authorities; Kenya Revenue Authority; national and county governments; types of taxes, corporate and individual tax payers, exemptions to tax, computing various taxes; direct and indirect taxes, income tax, customs duties, stamp duty; enforcement and penalties, reviews and appeals, judicial review. Allocation and appropriation of public revenues, Commission on Revenue Allocation, equalization funds, legislative control of public expenditure and budgets, public audit and oversight institutions: Public borrowing and debt: control and regulation of public borrowing and debt; public procurement law, donor financing.

LLBE 426: Banking Law (Y4S2) (L: 45 P:0 T:30 CF:4)

Historical sources and development of banking; evolution of banking law in East Africa and specifically in Kenya; classification of banks; role of banks in the social-economic system; establishment of banks; services offered by banks; bank-customer relationship; legal framework for regulation of banks; use of information technology in banking transactions; the central bank and credit control; garnishee proceedings; international finance: regional banks; IMF and World Bank, commercial credits; history and function of negotiable instruments; forms of and parties to the instrument; rights and obligations of parties; payment and discounting; securitization; negotiation; endorsement; crossings by holder; dishonouring of cheques; banks' authority to pay; termination of authority; discharge of instruments.

9.3 Matrix Aligning Courses to Programme Learning Outcomes

Program learning Outcomes (PLO)	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
Apply the knowledge, skills and training gained in the training to render professional legal services and provide legal solutions in various employment contexts	– Criminal Law – Tort Law – Law of Contract – Constitutional Law	– 4.0 – 4.0 – 4.0 – 4.0	– Public International law – Family law – Commercial law – Property Law I – Entrepreneurship for lawyers – Equity and law of trusts – Law of succession – Labour law – Property Law II – Accounting for lawyers	– 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0	– Jurisprudence – Administrative law – Law of evidence – Child law – Civil procedure – Law of business associations – Company law – Intellectual property law – Law and gender relations – Criminal procedure – Judicial and clinical attachment	– 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0	– Trial and appellate advocacy – Environmental and natural resources law – Alternative Dispute resolution – Insurance law – Consumer protection law – East African community law – Revenue law – Banking law	– 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0 – 4.0
Utilize competencies and experience in legal research and writing to contribute to expert discourses in law, provide consultancy services, undertake independent studies and generate academic writing of publishable quality	– Legal Research and Writing I – Communication Skills – Legal research and Writing II	– 4.0 – 4.0 – 4.0	– Legal research and writing III – Legal research and writing IV	– 4.0 – 4.0	– Legal research and writing V – Legal research and writing VI	– 4.0 – 4.0	– Legal research and writing VII – Research paper	– 4.0 – 4.0
Use the knowledge and skills developed in this programme to contribute to the dissemination of human rights education and humanistic values through the provision of civic education, legal aid and other extension services to the community and reinvigorate the academic study and clinical practice of human rights law.	– History and Theory of Human Rights – Kenyan and Comparative Human Rights Law and practice	4.0 4.0	– Regional Protection of Human rights – The United Nations Human rights system	– 4.0 – 4.0	– Human rights law seminar I – Human rights law seminar II	– 4.0 – 4.0	– International humanitarian and refugee law	– 4.0
Draw on the mentoring, socialization and institutional brand identity to demonstrate adherence to the highest standards of ethics, etiquette, comportment and professionalism.							– Professional ethics and responsibility	4.0

FACULTY OF SCIENCE



DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY

BACHELOR OF SCIENCE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

1. Philosophy of the Programme

Bachelor of Science in Biochemistry and Molecular Biology programme endeavours to produce world class and competitive graduates with hand on skills and concepts in the ever dynamic field of Biochemistry. The knowledge acquired will be vital in life sciences and is geared towards addressing fundamental problems in agriculture, human health and related industry.

2. Rationale

There is a wide range of research and industrial concerns that are increasingly making use of Biochemistry and Biomedical Sciences to solve a variety of problems. Employment opportunities for graduates of Biochemistry therefore exist in the following areas: Biomedical research institutes and hospital establishments; Agro-Industries and agro – based research institutes; Pharmaceutical Industries and Diagnostic laboratories; Health service environmental agencies in a variety of paramedical fields, brewing, food and other fermentation industries; Biotechnology and Molecular Biology concerns; and All Educational fields of Biochemistry.

3. Goal of the Programme

Biochemistry and molecular biology will allow learners to have an insight and understand the mechanisms of animal and plant evolution, growth, development, reproduction, diseases, and senescence. understand logically, critically and quantitatively the molecular basis of life. Empower graduates with knowledge essential to future discoveries and innovations in all areas of biology, biotechnology, and medicine.

4. Programme Learning Outcomes

On completion of the programme, the graduate shall:

1. Have acquired necessary theoretical and practical

skills in Biochemistry, Molecular Biology and Biomedical Science to enable them engage in gainful self-employment such as consultancy.

2. Demonstrate skills required by biomedical and Agro-based research and development Institutions, Institutions of higher learning and Industry; hence contributing to national economic growth.
3. Be able to communicate knowledge acquired and research work in oral and written forms.
4. Have acquired the necessary theoretical and practical competencies in Biochemistry to enable them undertake post-graduate studies in recognized Institutions of higher learning.

5. Mode of Delivery

The programme will be delivered face-to-face on full-time and part-time basis.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates admitted to the programme must satisfy the minimum entry requirements as stipulated in the common university entrance regulations in the Egerton University Statutes of 2013 Article 36 (2b).

In addition, candidates must have passed the Kenya Certificate of Secondary Education or its equivalent with a minimum grade as follows:-

- Chemistry B or Physical Science B+
- Physics B or Physical Science B+
- Mathematics C+
- Biology B or Biological Science B+

Alternatively, candidates with the following minimum will be considered:

- A level with principal pass in each of the following subjects: Chemistry; Physics; Biology; Mathematics
- Any other qualifications accepted by Egerton University Senate as equivalent.

6.2 Regulation on Credit Transfer

This will be as per the Egerton University Statue 36 (4)

of 2013

6.3 Course Requirements

This will be done as per Egerton University ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment Policy

The Programme will be assessed by Coursework, Examination as stipulated in Egerton University Statutes 36 (6) of 2013.

6.5 Grading System

All Examinations for the programme shall be conducted in accordance to the University Rules and Regulations on Examinations as stipulated in Egerton University Statutes 36 (6) of 2013.

6.6 Examination Regulations

The guidelines on examination regulations are as stipulated in Egerton University Statutes 36 (6) of 2013.

6.7 Moderation of Examination.

This is undertaken in accordance with ISO Procedure EU/AA/OP/07

6.8 Graduation Requirements

A candidate must take and pass all Credit Factors of prescribed Courses to qualify to the award of a Degree. These are stipulated in the Egerton University Statutes.

6.9 Classification of Degrees

The classification of undergraduate degrees is as stipulated in Egerton University Statutes (36) 17a of 2013.

7. Course Evaluation

Evaluation of courses to be will be conducted following the Teaching Effectiveness Evaluation Procedures. ISO Procedures EU/VC/ OP/04

8.0 Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader.

The programme will be hosted at the Department of Biochemistry and Molecular Biology, Faculty of Science. The programme leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme Evaluation

As stipulated in university ISO procedure for Quality Assurance of Academic programmes EU/VC/OP/05

8.3 Course Coding

The Course codes used are;

BIOC, which stands for ‘Biochemistry’ followed by 3 digits as described below.

Digit 1, indicates the study year course is offered or level of the course

Digit 2, indicates nature or sub discipline of the course within the discipline.

- **Level 0:** Introductory courses
- **Level 1:** Principles courses
- **Level 2:** Laboratory Techniques
- **Level 3:** Advanced: Genetics and Molecular Biology
- **Level 4:** Applied courses
- **Level 5:** Seminars, Research and industrial attachment

Digit 3, indicates serial number for courses in the respective disciplines.

9.0 Courses offered for the Programme

9.1 Schedule of Courses

Year 1 Semester 1

Code	Title	L	P	CF
BIOC 100	Introduction to Biochemistry & Biodiversity	45	0	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM	Introduction to Physical	45	0	3.0

120	Chemistry			
MATH 100	General Mathematics	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
Total		165	45	18.5

Year 1 Semester 2

Code	Title	L	P	C.F
BMED 110	Human Morphology and Developmental Anatomy	45	30	4.0
BMED 111	Human Physiology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
ZOOL 143	HIV/AIDs and Society	45	0	3.0
Total		180	90	22.0

Year 2 Semester 1

Code	Title	L	P	CF
BIOC 203	Introduction to Laboratory Techniques	30	30	3.0
BIOC 205	Biochemistry of Lipids	30	30	3.0
BIOC 206	Introduction to Proteins and Nucleic Acids	30	30	3.0
BIOC 207	Physical Biochemistry	45	0	3.0
BIOC 208	Biochemistry of Carbohydrates	30	30	3.0
ZOOL 232	Cell Biology	30	30	3.0
Total		165	120	18.0

Year 2 Semester 2

Code	Title	L	P	C.F
BIOC 209	Biochemistry of Vitamins & Minerals	30	30	3.0
BIOC 210	Carbohydrate Metabolism	45	0	3.0
BMED 224	Medical Virology	30	30	3.0
BMED	Medical and Veterinary	30	30	3.0

225	Entomology			
BMED 226	Medical Mycology	30	30	3.0
BMED 222	Medical Histology	30	30	3.0
Total		195	150	18.0

Year 3 Semester 1

Code	Title	L	P	CF
BIOC 300	Enzymology	45	0	3.0
BIOC 301	Biochemistry of Nucleic Acids	30	30	3.0
BIOC 306	Biomembranes and Cellular Signaling	45	0	3.0
BIOC 310	Biochemistry of Parasites	45	0	3.0
BOTA 302	Biostatistics	45	0	3.0
Total		160	30	15.0

Y3S1 Electives (Student Takes at least 2 Electives)

BIOC 304	Basic Nutrition	30	30	3.0
BIOC 309	Biochemistry of Gene Expression	45	0	3.0
BIOC 311	Phytochemistry	30	30	3.0

Year 3 Semester 2

Code	Title	L	P	C.F
BIOC 302	Biochemical Bacteriology and Mycology	30	30	3.0
BIOC 303	Advanced Laboratory Techniques	30	30	3.0
BIOC 307	Pharmaceutical Biochemistry	45	0	3.0
BMED 331	Forensic Science and Technology	30	30	3.0
BMED 332	Pharmacognosy & Drug Delivery Systems	30	30	3.0
BIOC 308 *	Industrial Attachment	0	120	4.0
Total		120	240	19.0

(*After Year 3 Semester 2)

Y3S2 Electives (Students to take at least Two)

Code	Title	L	P	C.F
BIOC 305	Industrial Biochemistry	45	0	3.0

BIOC 312	Biochemistry of Food Processing	30	0	2.0
BIOC 314	Nutritional Biochemistry	45	0	3.0

Year 4 Semester 1

Code	Title	L	P	CF
BIOC 401	Special Metabolism	45	0	3.0
BIOC 402	Biochemical Endocrinology	45	0	3.0
BIOC 408	Molecular Cell Biology	45	0	3.0
BIOC 409	DNA Technology	30	30	3.0
BMED 413	Immunology and Immunochemistry	30	30	3.0
BMED 414	Introduction to Bioinformatics	30	30	2.5
Total		195	60	17.5

Y4S1 Electives (Students to take at least One)

BIOC 405	Reproductive Biochemistry	45	0	3.0
BIOC 410	Industrial Biotechnology	45	0	3.0
BIOC 412	Advanced Laboratory Techniques	15	60	3.0
BIOC 452	Research Projects	0	60	2.0

Year 4 Semester 2

Code	Title	L	P	C.F
BIOC 403	Clinical Biochemistry	30	30	3.0
BIOC 404	Metabolic Regulation and integration	45	0	3.0
BIOC 417	Bio-entrepreneurship	15	60	3.0
BIOC 451	Current Trends in Biochemistry and Molecular Biology	30	0	2.0
BMED 417	Biomedical Research Ethics	45	0	3.0
BMED 434	Techniques in Molecular Biology	30	30	3.0
Total		120	120	17.0

Y4S2 Electives (Students to take at least One)

BIOC 414	Advanced Industrial Biotechnology	45	0	3.0
BIOC 452	Research Projects	0	60	2.0
BIOC 453	Seminar Paper	0	90	3.0

(c) COURSE DESCRIPTIONS

BIOC 100: Introduction to Biochemistry and Biodiversity [3.0: L(45) P(0)]

Definition, scope and history of biochemistry; The molecular sense of life-Characteristic features and the major roles of Biology and Chemistry; various lifeless (inanimate) molecules and their unique roles in the living system; Foundations of biochemistry; Biomolecular hierarchy, Biomacromolecules composition, classification and their attributes to life, Water -Non-covalent interactions, Properties of water Acid/base properties, pH buffering capacity; The cell; Vertebrate and invertebrate biology; Plant biology; the variety among living organisms from all sources including terrestrial, marine and other aquatic ecosystems of which they are part; genetic diversity species diversity and ecosystem diversity, loss of biodiversity and proximate causes; a global crisis involving categories like vulnerable, endangered, rare and extinct species and probable solutions; systems of classification (binomial system, cladistics); food webs, pyramids of numbers & biomass; nutrient cycles; human influences on ecosystem e.g. pollution, greenhouse effect, acid rain, conservation, recycling

BIOC 203: Introduction to Laboratory Techniques [3.0: L(15) P(45)]

General laboratory instrumentation; Measurements of pH and the preparation of buffers; Chromatographic techniques- partition, ion-exchange, absorption, affinity, GLC, HPLC, paper and TLC; spectroscopy-UV-Vis, AAS, MS.

BIOC 205: Biochemistry of Lipids [3.0: L(45) P(0)]

Introduction to lipids; General characteristics, saponifiable vs unsaponifiable lipids. Classification of lipids, Fatty acids:- structures, nomenclature and sources

of fatty acids of physiological significance, Structures, nomenclature and source of triacylglycerol of physiological importance, Structures, sources and functions of glycerolphospholipids, Glycolipids: - structures, sources and functions, Glycolipids and the blood groups, Structures and functions of some steroids and sterols. The fat soluble vitamins, the eicosanoids: Classification, biosynthesis, nomenclature and their physiological functions.

BIOC 206: Introduction to Proteins and Nucleic acids [3.0: L(45) P(0)]

Structures and classification of amino acids that occur in proteins, non-protein amino acids of physiological importance. Acid based properties of amino acids that occur in proteins; general chemical reactions of amino acids: colour reactions and peptide bond formation; Classification of proteins. Some important properties of protein; representation of peptide structures; nucleic acids: structures of purines and pyrimidines; chemical reactions of nucleosides and nucleotides; biochemically important nucleotide derivatives and their mechanisms of action; phosphodiester bridge formation.

BIOC 208: Biochemistry of Carbohydrates [3.0: L(45) P(0)]

Carbohydrates: classification, structure, function & selected reactions of monosaccharides, disaccharides, polysaccharides, derivatives of monosaccharides (amino sugars & sugar alcohols), peptidoglycans & glycoproteins, glycosides and amino sugars: structures, sources and physiological significance polysaccharides: structure, sources and functions of starch, glycogen, insulin, dextrans, cellulose, chitin and glycoaminoglycans.

BIOC 209: Biochemistry of Vitamins & Minerals [3.0: L(45) P(0)]

Classification of vitamins; structures of vitamins: water soluble and fat soluble vitamins: general and specific characteristics of vitamins ; functions of vitamins as coenzymes in various biochemical reactions; enzyme co-factors, PAL-PAM shuttle and transaminations, retinal chromophore, rhodopsin and transmembrane

helices; sources and deficiency diseases involving vitamins; sources and metabolism of all gross and trace minerals; deficiency diseases associated with minerals.

BIOC 210: Carbohydrate Metabolism [3.0: L(45) P(0)]

Carbohydrate metabolism, Glycolysis, TCA cycle, ETC and glyoxylate cycle, cori cycle. Metabolism of other sugars and their genetic disorders. Glycogen metabolism and storage disorders; Gluconeogenesis; pentose phosphate pathway. Photosynthesis and photophosphorylation. C₃ and C₄ pathways of carbohydrate metabolism in plants.

BIOC 300: Enzymology [3.0: L(45) P(0)]

Enzymes and their classification; the active centre; dependence of enzyme reaction rates on enzyme and substrate concentration, pH and temperature; enzyme kinetics; the Michaelis equation, K_m and V_{max}; uni- and bisubstrate reaction; enzyme co-factors, inhibitors and activators; the physiological control of enzyme activity; zymogens and Isoenzymes; case studies of mode of action of ribonuclease, carboxypeptidase, chymotrypsin, trypsin, pepsin and lysozyme; allosteric enzymes. (*Prerequisite: Bioc 206/Bioc 200*)

BIOC 301: Biochemistry of Nucleic Acids [3.0: L(45) P(0)]

Chromosome organization; structure of nucleic acids (nucleoside and nucleotide structure, secondary structure of nucleic acids, thermal properties of DNA, DNA replication; DNA recombination; the gene; bacterial conjugation, transformation and transduction; the genetic code and protein biosynthesis; (structure and properties) mutability of DNA and DNA repair mechanisms; gene manipulation; cancer genes. (*Prerequisite: BIOC 200/206*).

BIOC 302: Biochemical Bacteriology and Mycology [3.0: L(45) P(30)]

General structural features of bacteria and fungi; Microbial growth; Pathogenicity and virulence; Comparative metabolism of carbohydrates, lipids and proteins in microbes; Fermentation and microbial fermentation products; Peptidoglycan biosynthesis, lipopolysaccharide biosynthesis, nitrogen fixation and

assimilation. (*Prerequisite BIOC 201 AND BIOC 202*)

BIOC 303: Principles of Laboratory Techniques [3.0: L(30) P(30)]

Techniques for studying whole cell, tissue, and whole organisms; introduction to centrifugation; subcellular fractionation by differential centrifugation and density gradient centrifugation; types of centrifuges and their applications; enzyme assays:- (simple and coupled NAD⁺(P) linked assays), visible range spectrophotometry, assays of metabolites and tissue metabolite levels; the assay of metabolites and tissue metabolite levels; electrophoresis:- paper, starch, agarose and PAGE High resolution electrophoretic methods; iso-electric focusing. Characterization of proteins:- N-terminal analysis and elucidation of primary structure; introduction to manometry, fluorimetry and radio isotope techniques in biochemistry. (*Prerequisite: BIOC 203*)

BIOC 304 Basic Nutrition [3.0: L(45) P(0)]

Digestion (ruminant and non-ruminant), transport; digestion of carbohydrates, proteins and lipids; Obesity, alcoholism, fatty liver atherogenesis, lipoproteinaemia; protein quality, digestion coefficient, biological value and nitrogen balance; malnutrition and its manifestations: kwashiorkor and marasmus; vitamins and their role in nutrition and deficiency diseases; trace elements in nutrition and their metabolism; calorimetry; basal metabolism; Partitioning of food energy; specific dynamic action; human nutrition and recommended dietary allowance. (*Prerequisite (BIOC 201 AND BIOC 202)*)

BIOC 305: Industrial Biochemistry [3.0: L(45)P(0)]

Communication of Procedures in Industrial Biochemistry, set-up in an industrial microbiology establishment, Biochemical reactions of industrial importance; industrial fermented products- organic acids, amino acids, vitamins, alcoholic beverages, microbial enzymes, pharmaceuticals, monoclonal antibodies etc; fuel and biogas; waste treatment systems and biodegradation; microbial transformation; single cell protein (SCP) and oil (SCO); the study of natural toxins of chemical, fungal and bacterial origin;

environmental contaminants, residues of pesticides, insecticides and detergents. Patents and Intellectual Property Rights in Industrial Microbiology and Biotechnology.

BIOC 306: Biomembranes and Cellular Signaling [3.0: L(45) P(0)]

Membranes structures and assembly; plasma membranes and organelle membranes; role of the plasma membrane in intracellular signaling, signal transduction with receptors and second messengers, growth factors, hormones, receptors tyrosine kinases, G proteins, phosphoinositides and other components of signal transduction pathways.

BIOC 307: Pharmaceutical Biochemistry [3.0: L(45) P(0)]

Pharmacokinetics and pharmacodynamics; Classification of antimicrobial drugs based on their chemical structures; applications of antimicrobial; structure, biosynthesis, strain development and production method of antimicrobial; mode of action of various antimicrobial. Mechanisms of antimicrobial drug resistance. Drug delivery systems; viruses as tools in drug delivery, drug delivery to CNS, transdermal, iontophoretic delivery of therapeutic peptides/proteins; immunotoxins and cytotoxins for *in vivo* therapy, lipid emulsions and liposomes as drug delivery systems; gene therapy and delivery of oligonucleotides. (*Prerequisites BIOC 206/BIOC 200; BIOC 205; BIOC 208*)

BIOC 308: Industrial Attachment [4.0: L(0) P(120)]

A work-based experience programme providing a real-life organizational context for students to develop specific or generic skills, valuable to their professional development. Students can apply and enhance their skills in reality, contribute to the organization, and, at the same time, obtain invaluable guidance from their mentors. The cumulative total duration of the attachment should be no less than 2 months.

BIOC 309: Biochemistry of Gene Expression [3.0: L(45) P(0)]

Regulation of transcription in prokaryotes and

eukaryotes; general transcription factors:- gene and tissue specific; examples of transcription regulation in eukaryotes i.e. hormonal regulation, HIV transcription, antibody diversity and embryonic development; concepts and principles of genetic Analysis of disease mechanisms with cancer as the primary focus; oncogenes in tumours/ viruses, categories of oncogenes and their products; retroviruses and characteristics of virally transformed cells; tumour suppressor genes.

BIOC 310: Biochemistry of Parasites [3.0: L(30) P(30)]

Cellular and molecular structures of parasitic organisms and their functional morphology; Organelles and subcellular compartments in parasites, Energy metabolism including a metabolism of carbohydrates proteins, lipids and nucleic acids. (*Trypanosoma*, *Plasmodium*); Mechanisms of drug resistance in protozoan parasites; Surface antigens of parasites and their role in invasion and survival in mammalian hosts, molecular and biochemical basis of antigenic variation and antigenic diversity in protozoan parasites, Surface membrane enzymes and transporters and their role in acquisition of nutrients by parasites; Invasion and survival of intracellular parasites; Survival and development of parasites in their arthropod vectors and parasite/vector interaction; Unusual features of gene organisation and regulation in kinetoplastid parasites, DNA-containing organelles (mitochondria, apicoplast, crypton). Kinetoplast DNA: structure and replication; developmental regulation of gene expression in African trypanosomes/antigenic variation; RNA editing; Unique biochemical pathways found in parasites and their potential for exploitation as chemotherapeutic targets; empirical and rational drug design.

BIOC 311: Phytochemistry [3.0: L(45) P(30)]

Primary and secondary metabolism in plants; Building blocks of phytochemicals ; The shikimate pathway; Coumarins, Flavonoids and stilbenes, Terpenoids quinines, Isoflavonoids, Plastoquinone, Vit E and phyloquinones, The mevalonate and deoxyxylulose phosphate pathways. Terpenoids (monoterpenes, sesquiterpenes, triterpenes, tetraterpenes). Steroids

(cholesterol, steroidal saponins, cardiac glycosides). Alkaloids- tropane alkaloids, pyrrolizidine alkaloids, pyridine alkaloids, phenylethylamines and isoquinoline alkaloids, imidazole alkaloids, steroidal alkaloids, purine alkaloids. The acetate pathway: fatty acids and polyketides; Saturated Fatty Acids Unsaturated Fatty Acids Fixed Oils and Fats, Evening Primrose Oil Acetylenic Fatty Acids Branched-Chain Fatty Acids Simple Phenols Structural Modifications: Anthraquinones.

BIOC 312: Biochemistry of Food Processing [3.0: L(30) P(30)]

Definition, scope and importance of food biochemistry, Cellular basis of foods (animal, plant, and microbial sources), The roles of carbohydrates in food structure, colour, flavour, and texture, The roles of lipids in food structure, colour, flavour, and texture, The roles of proteins in food structure, colour, flavour, and texture, Enzymatic and non-enzymatic browning reactions; influences on color , flavour, and texture; Water activity and water migration; the basis for food preservation, The roles of enzymes in food production, processing, and quality attributes, Fruits and vegetables; ripening and storage quality, Meats; biological and chemical considerations, Food additives; Vitamins, amino acids, minerals, Aroma Compounds in food and flavour enhancers-monosodium glutamate, nucleotide, Sugar substitutes – sorbitol, saccharin, cyclamate, Food Colours; Antinutritional factors and food contaminant Toxic trace elements, radio nuclides; Food microbiology, food hygiene, food borne illness.

(Prerequisite: BIOC 205, BIOC 206 and BIOC 208)

BIOC 314: Nutritional Biochemistry [3.0: L(45)P(0)]

Digestion (ruminant and non-ruminant), transport; digestion of carbohydrates, proteins and lipids; basic diet, sources of energy, obesity, alcoholism, fatty liver atherogenesis, lipoproteinemia; protein quality, digestion coefficient, biological value and nitrogen balance; malnutrition and its manifestations: kwashiorkor and marasmus; human nutrition recommended dietary allowance. (Prerequisite: (BIOC 202/207/210).

BIOC 401: Special Metabolism [45/0; CF:3.0]Y4S1

The nerve and molecular mechanisms of neurotransmission; Neurotransmitters; Sensory receptors and neurotransmission; Biochemistry of vision; Muscle contraction, cell motility, bacteria chemotaxis; Iron metabolism (absorption, heme, bile pigment formation); Calcium and Phosphate metabolism and bone disorders. Prerequisite : BIOC 306.

BIOC 402: Biochemical Endocrinology [3.0: L(45) P(0)]

Hormones and their classification; hypothalamic regulation of endocrine secretion; the role of hormones in the interactions of multicellular organisms; mechanisms of hormone action on target receptors and the role of second messengers; the structure, biosynthesis, secretion, action and disorders of the principal relevant hormones, insulin, glucagons, adrenalin, the pituitary hormone, thyroid hormone, parathyroid hormone, steroid hormone, gut hormone etc, diabetes state; prostaglandins as paracrine hormones and miscellaneous regulatory substances; hormones in insects. and other invertebrates; plant hormones and growth factors.

BIOC 403: Clinical Biochemistry [3.0: L(30) P(30)]

Introduction to clinical biochemistry; Laboratory quality control and assurance; (GLP); Interpretation of chemical laboratory test data: sensitivity and specificity, predictive value, reproducibility, normal ranges, problems with the lab specimens and effects of physiological variables, medications and hospital working procedures; Handling of specimens and their storage for quality assurance; Hematology - fundamentals of phlebotomy blood transfusion; blood groups; Blood biochemistry - cholesterol, low-density lipoproteins and high density lipoproteins; Examination, findings and interpretation of blood and bone marrow specimens. Theory of functional tests; diagnostic histology and, the comparisons between healthy and diseased tissues; Urinalysis - macroscopic and chemical examination of urine; Laboratory evaluation of pancreatic, synovial and cerebrospinal and fluid disorders, Gastric, duodenal contents and feces; Organ

function tests - renal function tests, hepatic function tests; types of jaundice, cause and diagnosis; Tissue serum enzymes and their level in clinical abnormalities;

BIOC 404: Metabolic Regulation and Integration [3.0: L(45) P(0)]

Introduction to metabolic regulation. Integration of metabolism and hormonal control of metabolism. Regulation of carbohydrate metabolism. Glycolysis. Gluconeogenesis. TCA cycle. Pentose phosphate pathway and glycogen metabolism (glycogenesis and glycogenolysis). Regulation of lipid metabolism. β -oxidation. Lipid synthesis. Regulation of nucleotide metabolism. The urea cycle. Regulation of protein synthesis at the genetic level.

BIOC 405: Reproductive Biochemistry [3.0: L(45) P(0)]

Basic concepts of reproduction and reproductive systems in mammals; sex hormones in mammals; ovulation and menstrual cycle and their hormonal control; chemistry of oral contraceptives; antifertility drugs and vaccines; other means of contraception; medical termination of pregnancy; role of prostaglandins; toxemia in pregnancy; infertility and its control; superovulation and other fertility promoting factors. *Prerequisite : BIOC 402*

BIOC 408: Molecular Cell Biology [3.0: L(45) P(0)]

Structure and functioning of the cell, plasma membrane, the extracellular matrix, the cytoskeleton, the nucleus, mitochondria and plasmids; the various microscopic techniques in cell biology; the concepts of molecular biology as they apply to genetics; control of cell cycle; the mechanisms of control of gene expression during development and cell differentiation in eukaryotes

BIOC 409: DNA Technology [3.0: L(45) P(0)]

Analysis methods of DNA structure, restriction endonucleases and other enzymes used in recombinant DNA technology, DNA hybridization, Southern and Northern analysis; and isolation of cloned genes (vectors: plasmids, bacteriophage, cosmids, YACs, M13 sequencing vectors, expression vectors, safe host and vectors); the synthesis of ds cDNA; probes and probing; chemically synthesized oligonucleotides; the

Polymerase Chain Reaction (PCR); Nucleotide sequencing (chain termination sequencing, short gun sequencing, paired end sequencing, new generation sequencing); genome wide analysis; introduction to bioinformatics; comparative genome analysis and model organisms; proteomics; mapping of the human genome; linkage mapping; Genetic engineering in plants: cell culture, (protoplast fusion, crown gall tumors, Ti plasmids); industrial applications of recombinant DNA technology (human insulin, synthetic insulin gene, proinsulin cDNA, human growth hormones; Interferon, protein for vaccines). (*Prerequisite: BIOC 301*).

BIOC 410: Industrial Biotechnology [3.0: L(45) P(0)]

Batch and continuous fermentation systems-aeration, agitation, mass transfer, heat transfer in biological reactors, Scale up operations: laboratory result to pilot plant scale; Sterilization methods, Design and operation of a typical biological reactor, Equipment design and asepsis, Instrumentation for environmental control, Recovery of fermented products; Animal tissue culture and applications; Current trends in Industrial Biotechnology. (*Prerequisite: BIOC 305*)

BIOC 412: Advanced Laboratory Techniques [3.0: L(15) P(60)]

Biomolecule estimations - carbohydrate, lipids, qualitative and quantitative estimations of amino acids and proteins; Protein purification techniques; Protein characterization - determination of molecular weight and subunit structure; Biochemical microbiology techniques; Immunological techniques - immunoassays including hormonal assays; Analytical techniques for vitamins and trace elements determination; Molecular biology techniques: isolation of nucleic acids, cloning, preparation of plasmids for use in molecular biology.; (*Prerequisites : BIOC 203 AND BIOC 303*).

BIOC 414: Advanced Industrial Biotechnology [3.0: L(45) P(0)]

Improvement of industrial microorganisms by mutations and recombination; Plant tissue culture techniques and their applications; preparation of gene products such as human insulin, somatotropin, growth hormone;

molecular markers and their use in plant and animal breeding, determination of species and population diversity and forensic sciences; biotechnology of nitrogen fixation, nitrogenase, hydrogenase, *nif* genes and their regulation; serum fractionation and growth factors.

BIOC 417: Bioentrepreneurship [3.5: L(30) P(45)]

Innovation concept; ingredients of successful ventures; creativity and ideation for entrepreneurship and innovation; marketing; segmentation, targeting and positioning; defining a business model; creative business modeling, product design, development and manufacturing in medicine, food and agriculture, environment, value added natural products; intellectual property rights, licensing strategy and patents protection; managing growth and financing; Development and presentation of business plan.

BIOC 452: Research Project [4.0: L(0) P(120)]

Supervised individual study of a selected topic in aquatic sciences involving literature search, proposal development, field and/ or laboratory work, and culminates in written report and seminar presentation. The project begins in semester 1 and ends in semester 2.

BIOC 453: Seminar Paper [3.0: L(0) P(90)]

Each candidate shall be required to do secondary research on a topic in Biomedical Science and Technology and write a seminar paper of approximately 20 pages. The seminar paper shall have the following structures: title, table of contents/contents, introduction, main section, conclusion and references. The seminar papers shall be written according to guidance provided by instruction manual prescribed by the department. Students will present their research finding orally and in form of hard copy seminar paper.

SERVICE COURSES

BIOC 0204: Introduction to Biochemistry (30/30; CF:3.0)

Introduction to biochemistry; Water, pH and buffers; Chemistry of carbohydrates, lipids, proteins, nucleic acids; nature of enzymes and enzyme reactions; introduction to metabolism; Biological oxidation and

energy conservation – glucose and fatty acids; Krebs cycle, electron transport chain.

BIOC 0227: Medical Biochemistry (30/30; CF:3.0)

Introduction to biochemistry; Water, pH and buffers; Chemistry of carbohydrates, lipids, proteins, nucleic acids; Vitamins and Minerals; Nature of enzymes and enzyme reactions; Introduction to metabolism of biomolecules; Biological oxidation and energy conservation – glucose and fatty acids; Krebs cycle, electron transport chain. Disorders of metabolism; Clinical tests – liver, renal, adrenal, etc.

BIOC 111: Biochemistry of Biomolecules (30/45/0: C.F 3.5) (Y1T1)

Introduction to biomolecules in living systems (Carbohydrates, Proteins, Amino acids, Lipids, steroids & hormones, glycoproteins, glycolipids, Nucleic acids, Vitamins, Neurotransmitters), Structure & function relationship of biomolecules, Origins, classification, nomenclature, organization and chemical characteristics; bond formation: analytical techniques for vitamins and trace elements determination.

BIOC 112: Metabolism of Carbohydrates (45/45/0: C.F 4.5) (Y1T2)

Introduction to Bioenergetics: mitochondrial respiration and substrate and oxidative phosphorylations. Carbohydrate metabolism: Glycolysis, TCA cycle, fructose and galactose metabolism, metabolic adapter pathways, Gluconeogenesis, the HMP shunts and different shuttle pathways. Glycogen metabolism and storage diseases, C3 and C4 pathways of carbohydrate metabolism, Glycoylate cycle, Regulation of carbohydrate metabolism by hexokinase and glucokinase; covalent – noncovalent modification of phosphorylase; feedback control by allosteric enzymes; phosphofructokinase and pyruvate kinase; hormonal control of glycogen synthase and glycogen phosphorylase biochemical techniques in Biomolecules estimations: Carbohydrate, lipids, qualitative and quantitative

BIOC 115: Metabolism of Lipids (45/45/0: C.F 4.5)

Lipid metabolism and its linkage with carbohydrate metabolism, structures, nomenclature and sources of fatty acids of physiological significance, fatty acid oxidation, Lipogenesis, Triglyceride synthesis; phospholipids synthesis. Ketone bodies and propionate metabolism. Lipid storage diseases. Regulation of lipid metabolism and associated diseases. Gluconolactone pathway, Cholesterol biosynthesis. Glycolipids: sources and functions; Structures and functions of some steroids and sterols.

BIOC 204: Basic Biochemistry (30/30; CF:3.0)

Introduction to biochemistry; Water, pH and buffers; Chemistry of carbohydrates, lipids, proteins, nucleic acids; Vitamins and Minerals; Nature of enzymes, enzyme catalysis and kinetics; Metabolism of biomolecules; Photosynthesis and nitrogen fixation.

BIOC 211: Metabolism of Lipids and Nitrogenous Compounds (45/45/0: C.F 4.5) (Y1T3)

Lipid metabolism and its linkage with carbohydrate metabolism, structures, nomenclature and sources of fatty acids of physiological significance, fatty acid oxidation, Lipogenesis, Triglyceride synthesis; phospholipids synthesis. Ketone bodies and propionate metabolism. Lipid storage diseases. Regulation of lipid metabolism and associated diseases. Gluconolactone pathway, Cholesterol biosynthesis; Structures and functions of some steroids and sterols; Metabolism of amino acids – biosynthesis and catabolism; Disorders of amino acid and protein metabolism.

BIOC 212: Biochemical Endocrinology (45/30: 4.0 C.F.)

Hormones and their classification; organizational hierarchy of hormones; role of hormones in the interaction of multicellular organism; mechanisms of hormone action on target receptors; second messengers; the structure, biosynthesis, secretion, action and disorders of the principal relevant hormones - pituitary, insulin, glucagon, adrenaline, thyroid, parathyroid, steroid and gut; prostaglandins as paracrine hormones. (Y2T2)

BIOC 214: Protein & Nucleotide Metabolism. (45/30/0.4 C.F)

Chromosomal organization; structure of nucleic acids. DNA functions and replication. Mutations – length mutations and point mutations and point mutations and DNA repair. RNA – types, synthesis, structure and properties; biosynthesis of proteins, Bacterial conjugation, transformation and transduction. Introduction to genetic engineering. (Y2T3)

BIOC 215: Biochemical Endocrinology & Endocrinological Techniques (45/30/0: C.F 4.0)

Hormones and their classification, organizational hierarchy of hormones; hypothalamic regulation of endocrine secretion; the role of hormones in the interactions of multicellular organisms; mechanisms of hormone action on target receptors and the role of second messengers; the structure, biosynthesis, secretion, action and disorders of the principal relevant hormones, insulin, glucagon, adrenalin, the pituitary hormone, thyroid hormone, parathyroid hormone, steroid hormone, gut hormone etc., diabetes state; prostaglandins as paracrine; Immunological techniques: ;Immunoassays ELISA, RIA Immunodiffusion flow cytometry, Hormonal assays; molecular biology techniques: isolation of nucleic acids.

BIOC 217: Molecular Biology and Genetics (45/30/0: C.F 4.0) (Y2T3)

Introduction to heredity, Mendelian laws of inheritance, Chromosomal organization, genetic material; heredity related disorders, structures of nucleic acids. Metabolism of Nucleic acids, purines and pyrimidines, nucleoside analogues of medical importance, DNA functions and replication. Mutations – length mutations and point mutations and DNA repair. RNA – types, synthesis, structure and properties; Bacterial conjugation, transformation and transduction. Introduction to genetic engineering, application of bioinformatics, molecular biology and biotechnology in Health Sciences drug manufacture etc. cloning, preparation of plasmids for use in molecular biology; characterization of proteins- determination of molecular weight and sub- unit structure

9.2 Matrix Aligning Courses to Programme Learning Outcome (S15)

Expected Programme Learning Outcomes	YEAR 1		YEAR 2		YEAR 3		YEAR 4	
Learning Outcome	Courses	CF	Courses	CF	Courses	CF	Courses	CF
1) Have acquired necessary theoretical and practical skills in Biochemistry, Molecular Biology and Biomedical Science to enable them engage in gainful self-employment such as consultancy.	Introduction to Biochemistry and Biodiversity; Introduction to Biomedical Science and Technology; Biochemistry of Biomolecules	3.0 3.0 3.0	Biochemistry of Lipids; Structural Biochemistry; Bioenergetics and carbohydrate metabolism; Metabolism of Lipids, Proteins and Nucleic acids	3.0 3.0 3.0 3.0 3.0	Biochemistry of Nucleic Acids; Biochemical Bacteriology and Mycology; Principles of Laboratory Techniques; Basic Nutrition; Biomembranes and Cellular Signaling; Pharmaceutical Biochemistry	3.0 3.0 3.0 3.0 3.0 3.0	Biochemical Endocrinology; Metabolic regulation and integration; Reproductive Biochemistry; Molecular Cell Biology; DNA Technology; Industrial Biotechnology; Advanced Laboratory Techniques	3.0 3.0 3.0 3.0 3.0
2) Skilled manpower required by biomedical and Agro-based research and development Institutions, Institutions of higher learning and Industry; hence contributing to national economic growth.	Introduction to Biochemistry and Biodiversity	3.0	Bioenergetics and carbohydrate metabolism; Metabolism of Lipids; Biochemistry of Lipids; Structural Biochemistry	3.0 3.0 3.0 3.0	Basic Nutrition; Biochemistry of Food Processing; Biomembranes and Cellular Signaling; Pharmaceutical Biochemistry	3.0 3.0 2.0 3.0 3.0	Biochemical Endocrinology; Advanced Industrial Biotechnology; Metabolic regulation and integration ; Reproductive Biochemistry	3.0 3.0 3.0 3.0
3) Design and implement innovative biochemistry research studies and dissemination of these research findings	Introduction to Biochemistry and Biodiversity	3.0	Structural Biochemistry; Bioenergetics and carbohydrate metabolism	3.0 3.0 3.0	Biochemistry Biochemistry of Food Processing; Basic Nutrition; Biomembranes and Cellular Signaling	2.0 3.0 3.0	Biochemical Endocrinology; Metabolic regulation and integration; Reproductive Biochemistry; Molecular Cell Biology; DNA Technology; Industrial Biotechnology; Advanced Laboratory Techniques	3.0 3.0 3.0 3.0 3.0
4) Attain minimum requirements for admission to pursue advanced studies in relevant areas of Medical sciences, Biomedicine, Biotechnology, Bioinformatics, and related Disciplines.	All level One Courses		All level Two Courses		All level Three Courses		All level Four Courses	

BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE AND TECHNOLOGY

1. Philosophy of the Programme

The Bachelor of Science in Biomedical Science and Technology programme seeks to develop awareness to its graduates' in medical sciences and their applications to improve human health, additionally imparting fundamental knowledge and practical scientific skills applicable in academia, research institutions and industry.

2. Rationale

Biomedical research is a powerful tool for solving health challenges and generating knowledge for national and global development. Many countries in Africa are currently facing a difficult time in the development and application of bioscientific technologies. Thus there is a strong need to train people who will have the competence to identify such emerging technologies, be able to apply their expertise in the public and private sectors as well harness their innovativeness to start and manage their own ventures; micro and macro-enterprises. The Biomedical Science and Technology programme intends to continue providing a link between the human medicine and public health for the advancement of humanity.

3. Goal of the Programme

The programme is designed to produce biomedical scientists with sufficient competencies and scientific research skills to conduct biomedical research. This involves training students to have sufficient knowledge, learning skills and ethical standards to work as part of a multi-disciplinary team and enhance ability to carry out collaborative research; equipping students with research data management and scientific communication skills research management, entrepreneurial and innovation skills applicable in biomedical research. The training also impart sufficient knowledge for entry requirements for degree programmes in Human Medicine or Veterinary Medicine, Pharmacy, Dentistry, and related courses.

4. Programme Learning Outcomes

At the end the programme the Graduates will be expected to be able to:

PLO 1: Carry out multi disciplinary and integrated type of research and strengthen the capacity to perform health related research .

PLO 2: Be resourceful, innovative and creative in discharging professionalism in biomedical research.

PLO 3: Design and implement innovative biomedical research studies and dissemination of these research findings.

PLO 4: Attain minimum requirements for admission to pursue advanced studies in relevant areas of Medical sciences, Biomedicine, Biotechnology, Bioinformatics, and Health-care management.

5. Mode of Delivery

The programme is on a full-time basis. It will be delivered through face-to-face learning, tutorials, presentation, case studies and publication reviews.

6. Academic Regulations for the Programme

6.1 Admission Requirements

To be eligible for admission, candidates must satisfy the minimum entry requirements as set out by Egerton University Statute 36(2) on admission.

In addition, candidates must have passed the Kenya Certificate of Secondary Education or its equivalent with a minimum grade as follows:-

- Chemistry B or Physical Science B+
- Physics B or Physical Science B+
- Mathematics C+
- Biology B or Biological Science B+

Alternatively, candidates with the following minimum:

- A level passes will be considered-principal pass in each of the following subjects: Chemistry; Physics; Biology; Mathematics
- Have any other qualifications accepted by Egerton University Senate as equivalent.

6.2 Regulation on Credit Transfer

This will be as per the Egerton University Statute 36 (4) of 2013.

6.3 Course Requirements

This will be done as per Egerton University ISO Procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment policy

The Programme will be assessed as stipulated in Egerton University Statutes 36 (6) of 201 and ISO procedure on Examinations (EU/AA/OP/07 rev 3).

6.5 Grading System

All Examinations for the programme shall be conducted in accordance to the University Rules and Regulations on Examinations as stipulated in Egerton University Statutes 36 (6) of 2013.

6.6 Examination Regulations

The guidelines on examination regulations are as stipulated in Egerton University Statutes 36 (6) of 2013.

6.7 Moderation of Examination

This is undertaken in accordance with ISO Procedure EU/AA/OP/07.

6.8 Graduation Requirements

A candidate must take and pass all Credit Factors of prescribed Courses to qualify to the award of a Degree. These are stipulated in the Egerton University Statutes 36 (6) of 2013.

6.9 Classification of Degrees

The classification of degrees as stipulated in Egerton University Statute 36 (6) of 2013.

7. Course Evaluation

As stipulated in university ISO procedure for Quality Assurance of Academic programmes EU/VC/OP/05

8. Management and Administration of the Programme

8.1 Host Department and Programme academic Leader.

The programme will be hosted at the Department of Biochemistry and Molecular Biology, Faculty of Science. The programme academic leader shall be appointed according to University Standards and Guidelines (2014).

8.2 Programme Evaluation

As stipulated in university ISO procedure for Quality Assurance of Academic programmes EU/VC/OP/05

8.3 Course Coding

The Course codes used are as follows:

BMED, which stands for ‘Biomedical Science and Technology’, followed by 3 digits.

Digit 1, indicates the study year course is offered or level of the course

Digit 2, indicates nature or sub discipline of the course within the discipline.

Digit 3, indicates serial number for courses in the respective disciplines.

Level 0 Introductory Courses

Level 1 Principles Courses

Level 2 Paraclinical courses

Level 3 Biotechnology courses

Level 4 Management Courses

Level 5 Seminars, Research and industrial attachment

9.0 Courses/ Units offered for the Programme

9.1 Schedule of Courses

Year 1 Semester 1

Code	Title	L	P	CF
BMED 100	Introduction to Biomedical Science and Technology	45	0	3.0
BIOC 100	Introduction to Biochemistry and Biodiversity	30	30	3.0
CHEM 100	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
ENSC 100	Environmental Education	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
Total		270	105	21.5

Year 1 Semester 2

Code	Title	L	P	CF
BMED 110	Human Morphology and Developmental Anatomy	45	30	4.0
BMED 111	Human Physiology	45	30	4.0
BIOC 112	Biochemistry of Biomolecules	45	0	3.0
PHIL 108	Ethics, Integrity & national Values	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHYS 103	General Physics	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
Total		315	90	25.0

Year 2 Semester 1

Code	Title	L	P	CF
BMED 213	Gastrointestinal, Nervous and Renal Physiology	45	0	3.0
BMED 214	Medical Cell and Structural Biology	45	0	3.0
BMED 215	Basic Immunology	30	0	2.0
BMED 216	Microbial Physiology and Genetics	30	30	3.0
BMED 220	Pathophysiology	45	0	3.0
BMED 221	Medical Protozoology	30	30	3.0
ECON 100	Introductory Economics	45	0	3.0
ANSC 267	Laboratory Animal Science	30	30	3.0
Total		255	180	23.0

Year 2 Semester 2

Code	Title	L	P	CF
BMED 211	Cardiopulmonary and Reproductive Physiology	30	30	3.0
BIOC 201	Metabolism of Carbohydrates	45	0	3.0
BIOC 203	Introduction to Laboratory Techniques	15	45	3.0

BMED 222	Medical Histology	30	30	3.0
BMED 223	Medical Helminthology	30	30	3.0
BMED 224	Medical Virology	30	30	3.0
BMED 225	Medical and Veterinary Entomology	30	30	3.0
BMED 226	Medical Mycology	30	30	3.0
Total		225	180	21.5

Year 3 Semester 1

Code	Title	L	P	CF
BMED 317	Metabolism of Lipids and Nitrogenous Compounds	45	0	3.0
BMED 318	Molecular Physiology	45	0	3.0
BMED 327	Medical Bacteriology	30	30	3.0
BMED 328	Clinical Pathology	30	60	4.0
BMED 340	Laboratory Quality Assurance and control	30	30	3.0
BIOC 301	Biochemistry of Nucleic Acids	45	0	3.0
BIOC 304	Basic Nutrition	45	0	3.0
BOTA 302	Biostatistics	45	0	3.0
Total		315	90	25.0

Year 3 Semester 2

Code	Title	L	P	CF
BMED 310	Medical Genetics	45	0	3.0
BMED 312	Introduction to Pharmacology	30	30	3.0
BMED 319	Biomedical Research Methods	30	0	2.0
BMED 330	Radiobiology and Radiotracer Techniques	30	15	2.5
BMED 331	Forensic Science and Technology	30	30	3.0
BMED 332	Pharmacognosy and Drug Delivery Systems	30	30	3.0
BIOC	Enzymology	45	0	3.0

300				
BIOC 303	Advanced Laboratory Techniques	30	30	3.0
BMED 350	Industrial Attachment	0	120	4.0
Total		285	255	27.5

Year 4 Semester 1

Code	Title	L	P	CF
BMED 413	Immunology and Immunochemistry	30	30	3.0
BMED 433	Microbial Biotechnology	30	30	3.0
BMED 434	Techniques in Molecular Biology	30	30	4.0
BMED 435	Animal Cell Biotechnology and Tissue Culture	45	30	4.0
BMED 436	Drug Discovery, Design and Development	30	30	3.0
BMED 441	Fundamentals of Biomedical Project Management	30	0	2.0
Total		195	150	18.0

Electives for Year 4 Semester 1

Code	Title	L	P	CF
BMED 414	Introduction to Bioinformatics	30	30	2.5
BMED 452	Research Projects	0	60	2.0

Year 4 Semester 2

Code	Title	L	P	CF
BMED 415	Medical Endocrinology	30	30	3.0
BMED 416	Toxicology and Environmental Physiology	30	0	2.0
BMED 417	Biomedical Research Ethics	45	0	3.0
BMED 437	Biomedical Instrumentation	30	30	3.0
BMED 442	Fundamentals of Public Health and Epidemiology	30	0	2.0
BIOC 416	Bioentrepreneurship	15	60	3.0

Total		180	120	16.0

Electives for Year 4 Semester 2

Code	Title	L	P	CF
BMED 453	Seminar Paper	0	90	3.0
BMED 451	Current Trends in Biomedical Science and Technology	30	0	2.0
BMED 452	Research Projects	0	60	2.0

(c) COURSE DESCRIPTION

BMED 100 Introduction to Biomedical Science and Technology [CF2.5: L(30) P(15)] Y1S1

Definition and scope of biomedical science and biomedical technology; Career advising; interdisciplinary aspects of biomedicine; medical ethics and practices; properties of matter; units of measurements and scientific calculations; approaches to basic biomedical techniques; tools and instrumentations used in biomedicine; prokaryotic and eukaryotic cells; Good Laboratory Practice (GLP); problem solving in the health care and related industries (pharmaceuticals, diagnostics and food).

BMED 110 Human Morphology and Developmental Anatomy [CF4.0: L(45) P(30)] Y1S2

Medical terms; human body Orientation; Gross and Microscopic anatomy of major organ systems of the body; osteology and musculoskeletal systems; the integument, nervous system structures, respiratory, cardiovascular, digestive and genito-urinary systems; embryo genesis; the spermatozoa, ovum, fertilization and development of fertilized ovum and embryo; the growth of embryo and fetus.

BMED 112 Biochemistry of Biomolecules [CF3.0: L(45) P(0)] Y2S2

Carbohydrates: Monosaccharides and their stereochemistry, Disaccharides, Polysaccharides and their biological differences; Nucleic acids: Nucleosides and heterocyclic chemistry, including tautomerisation, Nucleotides, Oligonucleotides and their synthesis, DNA/RNA structure; peptides: amino acids and their

organic chemistry, synthesis and structural properties of peptides, protein structure and function, protein-nucleic acid recognition; Lipids: structure, hydrophobic and hydrophilic properties, lipids and proteins in membranes

BMED 211 Cardiopulmonary and Reproductive Physiology [CF3.0: L(30) P(30)] Y1S2

Introduction to human physiology; Blood composition and hematopoiesis; composition and functions of lymph; electrical activity of the heart; blood pressure measurements; cardiovascular regulatory mechanism; Rheology; Pulmonary function – properties of gases mechanism of respiration; gas exchange in the lungs; pulmonary circulation; gas transport between lungs and the tissues; regulation of respiration – respiratory activity; Lung capacities and lung volumes; Reproductive system – sexual differentiation; the menstrual and spermatogenesis cycles; the gonads and associated hormones.

BMED 213 Gastrointestinal, Nervous and Urinary Physiology [CF3.0: L(30) P(30)] Y2S1

Gastro-intestinal physiological functions and regulation; Urinary system – glomerular function; proximal and distal tubular function; renal handling of solutes; control of urinary bladder function; homeokinetic functions of the kidney; body fluids – total body water; fluid compartment; volume, regulation, estimation and composition; Integument system physiology; Nervous system-Autonomic nervous system, Central nervous system

BMED 214 Medical Cell and Structural Biology [CF3.0: L(45) P(30)] Y2S1

Introduction to the principles of cell and molecular biology as they relate to eukaryotic cells; plasma membrane and cell surfaces; cell structure and infrastructure; organelles; cell movement; cytoskeletons, microfilaments, microtubules and intermediate filaments; Vesicular traffic and endocytic pathways; The cell cycle and kinetics of cell division in development and in tumorigenesis; cell junctions; cell adhesions; Methods of visualizing cells and of demonstrating functions of subcellular organelles and supporting structures

BMED 215 Basic Immunology [CF2.0: L(30) P(0)] Y2S1

The cells and tissues of the immune system, their differentiation, anatomy and function; Natural (innate) and acquired (adaptive/specific) immunity. The cluster of differentiation (CD) nomenclature; Antigens and immunogens; Antibody synthesis, classification, basic structure and function; Antibody diversity, T cell subsets; cell trafficking; cytokines. The Major Histocompatibility Complex (MHC); Antigen presentation; T and B cell activation; Cellular and humoral immune responses. The complement system; Transplantation Immunology

BMED 216 Microbial Physiology and Genetics [CF3.0: L(30) P(0)] Y2S1

Introduction to prokaryotic physiology and genetics; bacterial morphology and architecture; bacterial genome; plasmids and transposons; bacterial growth and cultivation of bacteria; growth curve, generation time; transformation, transduction and conjugation; nutrition; microbial metabolism and metabolic regulation; production and accumulation of secondary metabolites and their relationship to bacterial growth.

BMED 220 Pathophysiology [CF3.0: L(45) P(30)] Y2S1

Definition; Clinical characteristics of inflammation: inflammation reaction and cycle, chemical mediators, infection; Basic immunology, hypersensitivity and autoimmune disorders: acquired immunity, role of lymphocytes, antibodies/immunoglobins, hypersensitivity; Etiology and diagnosis of neoplastic diseases; Basic endocrinology and endocrine disorders; Pathogenesis of blood and lymphatic disorders; Pathogenesis of cardiovascular and circulatory diseases; Etiology and pathogenesis of pulmonary diseases; Fluid, electrolyte and acid/base imbalances; Disorders in renal and respiratory control mechanisms

BMED 221 Medical Protozoology [CF3.0: L(30) P(30)] Y2S1

Life histories, taxonomy, morphology of protozoan parasites of medical importance, malaria parasites, trypanosomes, leishmania, intestinal protozoa and those found in the urinogenital system; The mode of

transmission of the parasites, human diseases caused by specific species, pathogenesis, and their control; Diagnostic methods in protozoology; Physiology and biochemistry of protozoa of medical importance; immune response to parasite infection.

BMED 222 Medical Histology [CF3.0: L(30) P(30)] Y2S2

Methods of histological study: preparation of tissues and use of microtomes, fixation and staining; Microscopic techniques including electron microscopy; Cryofracture and radioautography; Cell fractionation and differential centrifugation and cellular components; Histochemistry and cytochemistry including fluorescence and immunotechniques; Interpretation of tissue sections; Tissues: epithelial, connective, adipose, bone, cartilage, muscle, skin and haemopoietic; Histological features of major organ systems: Circulatory, lymphoid, digestive, respiratory, urinary, nervous, skeletal, endocrine and exocrine systems, reproductive systems organs.

BMED 223 Medical Helminthology [CF3.0: L(30) P(30)] Y2S2

Life histories, taxonomy, morphology of helminth parasites of medical importance in the following groups: Cestodes, trematodes and nematodes; the mode of transmission of the parasites, human diseases and pathogenesis caused by specific parasite in each group and their control; clinical diagnostic methods; Physiology and biochemistry of medically important helminthes and their Immune responses

BMED 224 Medical Virology [CF3.0: L(30) P(30)] Y2S2

Introduction to pathogenic viruses; virus morphology and architecture; classification and nomenclature; interaction of viruses with cells, subcellular organelles and target macromolecules; viral replication process; attachment, viropexis, transport, uncoating, transcription and synthesis of viral genome, assembly, packaging and release; propagation of viruses and serological tests for virus identification.

BMED 225 Medical and Veterinary Entomology [CF3.0: L(30) P(30)] Y2S2

Introduction to arthropod biology; distribution, anatomy,

physiology, life cycle, medical and economic importance; control of insects and other arthropods that serve as vectors of disease causing organisms and those that cause tissue damage in humans. These include mosquitoes, sandflies, tsetse flies, blackflies, horseflies, myiasis causing flies, ticks, flies, lice and biting midges. Non -arthropod disease vectors including snails and crustacean organisms.

BMED 226 Medical Mycology [CF3.0: L(30) P(30)] Y2S2

Classification and characteristics of fungi of medical importance; Physical and chemical structure of fungi; Occurrence, growth and cultural characteristics of fungi of medical importance; Diagnosis, isolation and laboratory identification of pathogenic fungi; infection processes and interaction of pathogenic fungi to host tissue: surface molecules, toxins and other pathological and virulence factors including molecular and genetic basics of fungal pathogenicity. Antifungal chemotherapy; Prevention and control of fungal infections.

BMED 310 Medical Genetics [3.0: L(45) P(0)] Y3S1

Human genetics: genetic basis of inheritance; genomics; Mendel's laws of inheritance and their chromosomal basis, extrachromosomal inheritance; the genetic code and chromosomes; mechanisms of phenotype gene expression; forces of gene frequencies including mutation, genetic drift and different kinds of selection pressure; speciation: the fundamental theory of natural selection; polymorphism; multifactorial traits and polygenic inheritance; population genetics; major histocompatibility (MHC) systems – components, inheritance patterns, polymorphism, linkage disequilibrium; the role of epigenetics in biological phenomena such as imprinting, X-inactivation, cellular identity, cellular reprogramming, tumorigenesis, and the onset of certain types of neurological disorders; the genetic basis of human diseases: the diseases that are inherited in a Mendelian fashion, such as sickle cell disease and cystic fibrosis; the complex trait inheritance - examples of diseases with complex and mixed inheritance patterns such as Type II diabetes, schizophrenia, obesity, and asthma; the potential for personalized medicine as well as personal genomics; the

roles played by gene regulation and rearrangement in embryonic development; diagnosis and counseling of people with genetic disorders.

BMED 312 Introduction to Pharmacology [3.0: L(30) P(30)] Y3S1

Introduction; Pharmacodynamics and Pharmacokinetics; Drug metabolism; Chemotherapeutic drugs: beta-lactam antibiotics and other cell wall synthesis inhibitors, chloramphenicol, tetracycline's, macrolides, clindamycin, streptogramins and linezolid; Aminoglycosides, sulfonamides, trimethoprim and fluoroquinolones, Antimycobacterial drugs, antiprotozoal drugs; Cancer chemotherapy; Cardiovascular agents: drugs used in hypertension, diuretic agents, drugs used in heart failure; Endocrine drugs: pancreatic hormones, antidiabetic agents and glucagon, thyroid and anti-thyroid drugs; Drugs used in gastrointestinal disorders

BMED 317 Metabolism of Lipids and Nitrogenous Compounds [3.0: L(45) P(0)] Y3S1

Introduction to metabolism: integration of metabolic pathways, regulatory mechanisms of enzyme activity; Lipid metabolism: structure of lipids, fatty acid biosynthesis, beta oxidation, regulation of fatty acid biosynthesis, cholesterol biosynthesis, regulation of cholesterol biosynthesis; Nitrogen cycle, amino acid biosynthesis, amino acid degradation, regulation of amino acid biosynthesis; Nucleic acid metabolism: purine and pyrimidine biosynthesis, biosynthesis of DNA, nucleic acids breakdown, regulation of nucleic acid biosynthesis; Urea biosynthesis; Integrated carbohydrate, lipid, amino acid and nucleic acid pathway; Metabolic defect associated medical conditions

BMED 318 Molecular Physiology [3.0: L(45) P(0)] Y3S1

Membrane transport and intracellular trafficking; membrane signaling systems; G- proteins; ion channels; the nerve (molecular) mechanisms of neurotransmission; neurotransmitters; acetylcholine, catecholamines, serotonin, glycine, GABA etc.; the concept of receptors and signal transduction; nociception; biochemistry of

vision; Muscle contraction and cell motility; Iron metabolism:- iron absorption; biosynthesis of porphyrins and heme; formation of bile pigments; jaundice; transport of oxygen and carbon dioxide; physiological buffering systems.

BMED 319 Biomedical Research Methods [2.0: L(30) P(0)] Y3S2

Scientific enquiry; concept, nature of, the process; types of research; types of research designs: descriptive, analytical, experimental; bias; confounding; research methods: qualitative- focus groups, key informants, case studies, interviews, and observation, cross-sectional, vertical or prospective and follow up, retrospective cohort, time-series, case-report, case-series, case-control, controlled exposure, monitoring and surveillance; quantitative – observational, experimental, case studies; research: operationalization of research; sampling methods: simple random, stratified, cluster; sample size determination; research instruments: questionnaires; interview guides-steps, characteristics and application; data analyses, interpretation, and presentation; proposal development including generation of hypotheses, study objectives and laying out research plans, budgeting and seeking for research funds, support and collaborations; report writing, publication including bibliography and references; dissemination of research findings: methods of dissemination-scientific papers, reports, seminars; definition of review article/seminar paper; structures of seminar paper: title, table of contents/contents, introduction, main section, conclusion, references; writing of each section of a scientific paper; plagiarism; basic guidelines to compliance with anti-plagiarism - the guidelines on use of existing literature; formatting of the text; hard copy and soft copy presentation of the seminar paper; science communication skills: oral and written; supervision.

BMED 327 Medical Bacteriology [3.0: L(30) P(30)] Y3S1

General characteristics of pathogenic bacteria; pathogenicity and virulence: hydrolytic enzymes, bacteria endotoxins and exotoxins; production of pharmaceuticals. Characteristics of selected bacteria of medical importance, Classification of bacteria, Gram-negative and Gram-positive, Mycoplasmas and

Mendosicutes, Archaeobacteria, Diagnostic techniques:- specimen collection, transport, processing and interpretations of cultures; identification of aerobic and anaerobic bacteria using cultural, microscopy, immunological and biochemical methods; antimicrobial susceptibility tests; determination of Minimum Inhibitory Concentration (MIC) and minimum bactericidal concentration (MBC). Prevention and control of bacterial infections.

BMED 328 Clinical Pathology [4.0 L(45) P(30)] Y3S1

Introduction to clinical pathology; fundamentals of Phlebotomy; theory of functional tests; histology and cytology as diagnostic methods, the comparisons between healthy and diseased tissues,; macroscopic and chemical examination of urine, renal function tests; blood transfusion and blood bank; blood groups and its application; examination, findings and interpretation of blood and bone marrow specimens; immunohematology; hepatic function tests; types of jaundice, cause and diagnosis; laboratory evaluation of pancreatic, synovial and cerebrospinal and fluid disorders; examination of gastric, duodenal contents and feces; tissue serum enzymes and their level in clinical abnormalities; blood biochemistry; cholesterol, low-density lipoproteins and high density lipoproteins; new approaches to analyze protein and metabolites in the diagnosis of inherited and acquired diseases, and the integration of investigations.

BMED 330 Radiobiology and Radiotracer Techniques [3.0: L(30) P(30)] Y3S2

Subatomic structure; types of ionizing radiation; spontaneous and induced nuclear transformation; exponential decay law; biological effects of ionizing radiation; immunological techniques; radioimmunoassay; deriving linearity from a curve; instrumentation; radiation detectors and records; Geiger Muller tube; Thermoluminescent dosimeter; analysis of labelled proteins and nucleic acids by chromatography and electrophoresis; liquid scintillation ; sample preparation, counting, quenching, analysis and problem solving; autoradiography; solution for sum and difference of exponentials; double labelling (Gamma & Beta); quantity of radionuclide. radiotracer techniques

and applications

BMED 331 Forensic Science and Technology [3.0 L(45) P(30)] Y3S2

Introduction; The nature of physical evidence; The collection and preservation of physical evidence; History of DNA typing; The scientific basis of DNA typing; An overview of forensic DNA typing; Procedures for forensic DNA analysis; Interpretation of DNA typing results; The DNA databank; Quality assurance; Admissibility standards – Science on trial in the courtroom; Forensic and microscopic examination of blood, hair, semen, saliva, sweat, vomitus, faecal material, nailclipping, bone, teeth among others; Elements of ballistics, gunshot and explosive wounds. Main and immediate causes of death. The manner of death: accidental, suicide, homicide, infanticide. Sudden unexpected natural death. Timing of death. Types of sexual crimes; Mass disasters; Mass disaster experiences and forensic nuggets

BMED 332 Pharmacognosy and Drug Delivery Systems [3.0 L(30) P(30)] Y3S2

Naturally occurring compounds as medicines; Glycosides, alkaloids, tannins, essential oils, resins, hormones, vitamins, antibiotics; Identification, preparation, distribution, biosynthesis, extraction from crude extracts; Extraction of pharmaceutical products from plants; Quantitative estimation; Production of greater quantities using biotechnology including tissue culture and genetic manipulation; Geographic distribution of medicinal plants; Habitat, collection, curing, drying, storage and conservation; Reconstitution of extracts into appropriate vehicles for oral, topical or parenteral administration; Other complementary and traditional medicines; Approaches to studies on safety and efficacy. Drug delivery systems, drug delivery to CNS, transdermal, iontophoretic delivery of therapeutic peptides/proteins; lipid emulsions and liposomes as drug delivery systems; gene therapy and delivery of oligonucleotides via viruses.

BMED 340 Laboratory Quality Assurance and Control [3.0 L(45) P(0)] Y3S1

Fundamentals of quality control and assurance in biomedical sciences and medical practice, setting goals

and standards and accreditation; Quality control and assurance of health services: making and maintenance of proper records and evaluating of quality of services, research, laboratory tests (good laboratory practice-GLP) and healthcare delivery systems (good medical practice – GMP); Interpretation of chemical laboratory test data: sensitivity and specificity, predictive value, reproducibility, normal ranges, problems with the lab specimens and effects of physiological variables, medications and hospital working procedures; Handling of specimens and their storage for quality assurance; Quality control in the production and packaging of biomedical products, chemicals, reagents, diagnostics, etc. including role of standardization agents e.g. Kenya Bureau of standards – KBS, Food and Drugs Administrations – FDA, etc.; Legislation, ethical and scientific issues relating to quality control and assurance in different countries, regions and organizations.

BMED 350 Industrial Attachment [4.0: L(0) P(60)] Y3S3

Industrial Attachment Programme is a work-based experience programme providing a real-life organizational context for students to develop specific or generic skills, valuable to their professional development. Students can apply and enhance their skills in reality, contribute to the organization, and, at the same time, obtain invaluable guidance from their mentors. During the attachment period students can design and collect data on a biomedical research project working closely with their field supervisors. The cumulative total duration of the attachment should be no shorter than 3 months, Work related to a small project, as well as specific tasks such as research, production, administration, or day-to-day operation are excellent opportunities of learning. A field/research mentor is suggested to provide supervision and feedback to the students. University departmental attachment coordinator will follow through the attachment period.

BMED 413 Immunology and Immunochemistry [3.0: L(30) P(30)] Y4S1

Introduction to immunological principles and immunity; Types of antigens; immunoglobulin classes, functions and synthesis of complement systems and their effector mechanisms; The cytokines and biological response

modifiers of the immune response; Activation of T and B cells; hypersensitivity; MHA complex and blood groups; Autoimmune disease and immunodeficiencies; vaccines and Adjuvants; emphasize tests based reactions of specific antigens/ and antibodies reaction based tests; Immunological techniques; ELISA, RIA and Flow cytometry; Monoclonal antibodies and hybridoma technology.

BMED 414 Introduction to Bioinformatics [3.0: L(45) P(0)] Y4S1

Introduction to Bioinformatics: Definition and History of Bioinformatics, Internet and Bioinformatics, Applications of Bioinformatics in Biomedical Research; Bioinformatics databases: Nucleic Acid and Protein Sequences databases, Genomes databases; Sequence and structure alignments: BLAST, FASTA, sequence and structure alignment methods and tools; Protein structure determination: X-ray crystallography, NMR, electron microscopy; Phylogenetics: maximum likelihood, Bayesian inference and maximum parsimony; Genome and Transcriptome analysis: Genome sequencing approaches, genome assembly methods, RNA sequencing and assembly.

BMED 415 Medical Endocrinology [3.0: L(30) P(30)] Y4S2

Hormones and their classification; hypothalamic regulation of hormones in the interaction of multicellular organisms; mechanisms of hormone action on target receptors, second messengers; the structure, biosynthesis, secretion, mode of action and disorders of principal hormones action and disorders of principal hormones insulin, glucagons adrenaline, the pituitary hormones, thyroid hormones, parathyroid hormone, steroid hormones, and gut hormones; prostaglandins and other miscellaneous regulatory substances; hormones in insects and other invertebrates; sex hormones in mammals; menstrual and estrous cycle and their hormone control; contraceptives, fertility and antifertility drugs and medical termination of drugs; how endocrinology can be used to understand and treat diverse medical disorders such as diabetes, infertility, abnormal sexual differentiation and puberty, and osteoporosis.

BMED 416 Toxicology and Environmental Physiology [3.0: L(45) P(0)] Y4S2

Introduction to toxicology; definition and classification of poisonous substances encountered in environments; common sources of poisoning; toxicokinetics; absorption, distribution, metabolism and elimination of xenobiotics; toxin decay curves; mechanisms of action, recognition and alleviation of various groups of plant and chemical poisoning; mutagenic, teratogenic and carcinogenic effects of toxicants; micro-organisms as biomarkers of pollution; pollution pathways in aquatic and terrestrial microbial communities; pollution pathways of chemicals in water, air and soil; biotransformation and biomagnification of pollutants; problem solving approach used to predict how chemicals behave in the environment; human P450 and their role in environmental diseases

BMED 417 Biomedical Research Ethics [3.0: L(45) P(0)] Y4S2

Introduction and overview of bioethics; definition and concepts; Ethical principles and theories of bioethics; application of ethical theories in contemporary issues in life sciences and medicine; biotechnology and bioethics; genetic testing and screening; gene therapy and eugenics; stem cell research; organ donation and xenotransplantation; human reproductive technologies; in vitro fertilization, surrogate motherhood, embryo transfer and cloning; fetuses and abortion; euthanasia, death and right to die; policy issues in governing modification and role of stakeholders; intellectual property rights and biosafety; research and professional responsibilities; Examination of biomedical research ethics; ethical and regulatory issues related to research with human and animal subjects; general issues related to ethical conduct of research; history of health research ethics; ethical principles guiding health research; ethics codes, declaration and guidelines; role of regulatory agencies in health research; responsibilities and functions of research ethics committees; the design of health research projects; standard care; ethical allocation of health resources; ethical issues in international health research

BMED 433 Microbial Biotechnology [3.0: L(30) P(30)] Y4S1

Overview of biotechnology; introduction to microbiology of water, soil, air, food, sewage, industrial process and microbiology of the rumen; microbial primary and secondary metabolites of medical, diagnostic, environmental and nutrition importance; techniques used in screening of microbes useful for production of important biotechnology products; bioreactor design: solid-state fermentations (SSF) bioreactors, submerged fermentation (SmF) bioreactors; bioreactor scale-up/down; biosensors and bioprocess control; bioreactor products downstream processing and stabilization; biosynthesis and fermentation processes involved in the production of biotechnology products: nutraceuticals, antibiotics, therapeutic proteins, food and food additives, pharmaceutical and therapeutic enzymes, and other products for biotechnology; concepts of microbial bioremediation (in situ and ex situ); microbial biotransformation of pesticides and xenobiotics; improvement of industrial microorganisms by mutations and recombination; how viral replication can be harnessed in biotechnology and therapeutics.

BMED 434 Techniques in Molecular Biology [3.0: L(30) P(30)] Y4S1

DNA isolation, purification and analysis; digestion of DNA by restriction endonucleases and analyses by gel electrophoresis; probes and probing; chemically synthesized oligonucleotides; DNA hybridization, labeling and detection of nucleic acids; southern blot analysis; RNA purification and analysis; northern blot analysis; amplification of DNA and RNA sequences by polymerase chain reaction (PCR); molecular tools of proteome analysis; microarray technology; other enzymes used in recombinant DNA technology; synthesis of ds cDNA; nucleotide sequencing (chain termination sequencing, short gun sequencing paired end sequencing); chemical synthesis of nucleotides; mutagenesis; DNA cloning and cloning vectors; transformation of bacterial cells and the industrial applications of recombinant DNA technology genetic engineering/modification, transfection, viral transduction, transgenic model organisms

BMED 435 Animal Cell Biotechnology and Tissue Culture [4.0: L(45) P(30)] Y4S1

Principle of cell culture: history, importance of cell culture, role of cell culture; cell culture Theory, principles and practical preparation in the use of vertebrate cell cultures and cell lines in biomedical research and product development; characteristics and growth of cultured cells; primary and continuous cell lines; cellular respiration and cellular response to extracellular perturbation, cell counting and viability studies; aseptic media preparation; freezing and storage of cells; bulk cell production; use and maintenance of biohazard laminar flow cabinets and CO₂ incubators; serum and its fractionation; growth factors production; genetic engineering of animal cells; protein expression and processing; hybridoma production and selection; direct isolation of antibodies from B-cells; Selected topics in antibody engineering: antibody humanization, affinity maturation, and selection of the appropriate Fc-mediated effector function; the clinical developmental pathway of monoclonal antibodies—including generation of high-titer cell lines, large-scale cell culture development, purification optimization, formulation, stability, and analytical characterization; transgenic animals; bioreactors for animal cells; monitoring and control of bioreactors; downstream processing; protein recovery; products from animal cells.

BMED 436 Drug Discovery, Design and Development [3.0: L(45) P(30)] Y4S1

Introduction to drug discovery and development: drug discovery, drug development, source of drugs, structural effects on drug action; approaches to new drug discovery: drugs derived from natural products, existing drugs as a source for new drug discovery, using disease models as screens for new drug leads, physiological mechanisms: the modern “Rational Approach” to drug design, approaches to lead optimization; enzymes as targets of drug design: enzyme kinetics, enzyme inhibition and activation, approaches to the rational design of enzyme inhibitors; receptors as targets of drug design, receptor theory, receptor complexes and allosteric modulators, second and third messenger systems, molecular biology of receptors, receptor models and nomenclature, receptor binding assay, lead

compound discovery of receptor agonists and antagonists; computer-aided drug design: lead optimization and computer-aided drug design, homology modeling, introduction to force fields and modeling, molecular dynamics, docking; emerging technologies in stem cells, gene therapy, tissue regeneration, personalized medicine, and targeted therapies; special challenges presented by emerging biomedical technologies; phases of drug development; drug regulatory controls and authorities.

BMED 437 Biomedical Instrumentation [3.0: L(30) P(30)] Y4S2

Measurement techniques applied in biomedical technology; mechanical instrumentation, interface systems and signal analysis; Electrophysiology measurements: EEG, ECG, EMG, EOG, Non-electrical parameter measurements: Measurement of blood pressure Cardiac output, Heart rate, Heart sound, Pulmonary function measurements, Blood Gas analyzers, , medical imaging procedures; conventional radiography, computer tomography, magnetic imaging (MRI), ultrasound and angiography; Assisting and therapeutic equipment: Incubators, anaesthesia machine, Pacemakers, Defibrillators, Heart & Lung machine, dialyzers installation and maintenance of medical instruments; at least one mandatory academic trip to hospital(s)

BMED 441 Fundamentals of Biomedical Project Management [2.0: L(30) P(0)] Y4S1

Essential principles and concepts of project management, its application and related technologies. Project organization, its structure, and role of the project managers, initiation, planning, implementation, monitoring and controlling; project management knowledge: integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholder management; Tools and concepts of project: charter, scope statement, work breakdown structure, project estimating, and scheduling methodologies; performance objective; financing and budgeting; risk management project sponsor and project committee, how to identify business problems that require project-based solutions, how to select and

evaluate projects, develop a business case, and manage the project at a basic level.

BMED 442 Fundamentals of Public Health and Epidemiology [2.0: L(30) P(0)] Y4S2

Key concepts in public health; Community participation, equity, access, lobbying, gender, and empowerment; Historical development of public health; Public Health concerns and determinants of health: nutrition, environment, occupational hazards, changing lifestyles, population dynamics; Public Health Strategies; surveillance, intervention, evaluation; Organization of Public Health; Impact of environmental changes on health; pollution; development and health: dams, industry, agriculture; waste disposal, climatic changes/global warming, sanitation and hygiene. Definitions and scope, variations in severity of disease, models of disease causation. Epidemiological aspects of infectious disease; Descriptive epidemiology: Person - age, sex, ethnicity, social class, occupation; place, time measures of morbidity and mortality; incidence and prevalence rates. Classification of causes of death and limitations; Screening in the detection of disease and maintenance of health.

BMED 451 Current Trends in Biomedical Science and Technology [2.0: L(30) P(0)] Y4S2

Lectures, workshops, conferences and seminars by faculty and invited guests on selected areas of current interest in biomedical sciences and technology (including genetic engineering, biotechnology, new drugs/vaccines and new diagnostic procedures).

BMED 452 Research Projects [4.0: L(0) P(120)] Y4S1 and Y4S2

Each candidate shall be required to do research on a topic in Biomedical Science and Technology. The study will be initiated in the first semester of year 4 and be concluded at the end of second semester of year 4. Students will present their research findings.

BMED 453 Seminar Paper [3.0: L(0) P(90)] Y4S2

Each candidate shall be required to do secondary research on a topic in Biomedical Science and Technology and write a seminar paper of approximately 20 pages. The seminar papers shall be written according

to guidance provided by instruction manual prescribed by the department. Students will present their research finding orally and in form of hard copy seminar paper.

9.2 Programme Learning Outcome Matrix

Programme Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
i) Carry out multi disciplinary and integrated type of research and strengthen the capacity to perform health related research	Introduction to Biomedical Science and Technology; 3.0 Introduction to Biochemistry and Biodiversity; 3.0 Biology of HIV/AIDs; 3.0 Introduction to Computer Applications; 3.0 Human Morphology and Developmental Anatomy; 3.0 Biochemistry of Biomolecules 3.0	3.0	Gastrointestinal, Nervous and Renal Physiology; 3.0 Medical Cell and Structural Biology; 3.0 Basic Immunology; 3.0 Microbial Physiology and Genetics; 3.0 Pathophysiology; 3.0 Medical Protozoology; 3.0 Laboratory Animal Science 3.0	3.0	Metabolism of Lipids and Nitrogenous Compounds; 3.0 Molecular Physiology; 3.0 Medical Bacteriology; 3.0 Clinical Pathology; 3.0 Laboratory Quality Assurance; 3.0 Biochemistry of Nucleic Acids; 3.0 Basic Nutrition; 3.0 Biostatistics 3.0	3.0	Techniques in Molecular Biology; 4.0 Animal Cell Biotechnology and Tissue Culture; 4.0 Drug Discovery, Design and Development; 2.0 Fundamentals of Biomedical Project Management; 3.0 Toxicology and Environmental Physiology; 3.0 Medical Endocrinology; 3.0 Fundamentals of Public Health and Epidemiology 3.0	4.0
ii) Be resourceful, innovative and creative in discharging professionalism in biomedical research.	Human Morphology and Developmental Anatomy; 4.0 Cardiopulmonary and Reproductive Physiology; 3.0 Biochemistry of Biomolecules 3.0	4.0	Metabolism of Carbohydrates; 3.0 Introduction to Laboratory Techniques; 3.0 Medical Histology; 3.0 Medical Helminthology; 3.0 Medical virology ; 3.0 Medical and Veterinary Entomology; 3.0 Medical Mycology 3.0	3.0	Medical Genetics; 3.0 Introduction to Pharmacology; 3.0 Biomedical Research Methods; 3.0 Radiobiology and Radiotracer Techniques; 2.0 Forensic Science and Technology; 3.0 Pharmacognosy and drug delivery systems; Enzymology; 3.0 Advanced Laboratory Techniques; 3.0 Industrial Attachment 3.0	3.0	Drug Discovery, Design and Development; 3.0 Medical Endocrinology; 3.0 Fundamentals of Biomedical Project Management; 3.0 Bioentrepreneurship; 4.0 Research project 3.0	3.0
iii) Design and implement innovative biomedical research studies and dissemination of these research findings	Introduction to Biomedical Science and Technology; 3.0 Introduction to Biochemistry and Biodiversity; 3.0 Communication Skills 3.0	3.0	Metabolism of Carbohydrates; 3.0 Introduction to Laboratory Techniques; 3.0 Medical Histology; 3.0 Medical Helminthology; 3.0 Microbial Physiology and Genetics; 3.0 Pathophysiology; 3.0 Medical Protozoology 3.0	3.0	Biochemistry of Nucleic Acids; 3.0 Basic Nutrition; 3.0 Biostatistics; 3.0 Biomedical Research Methods; 3.0 Radiobiology and Radiotracer Techniques; 2.0 Forensic Science and Technology; 3.0 Pharmacognosy and Drug Delivery System;s 3.0 Enzymology 3.0	3.0	Immunology and Immunochemistry; 3.0 Microbial Biotechnology; 3.0 Techniques in Molecular Biology; 3.0 Animal Cell Biotechnology and Tissue Culture; 3.0 Drug Discovery, Design and Development 3.0	3.0
iv) Attain minimum requirements for admission to pursue advanced studies in relevant areas of Medical sciences, Biomedicine, Biotechnology, Bioinformatics, and Health-care management.	All level One Courses		All level Two Courses		All level Three Courses		All level Four Courses	

DEPARTMENT OF BIOLOGICAL SCIENCES

BACHELOR OF SCIENCE IN APPLIED AQUATIC SCIENCES

1. Philosophy of the Programme

The Bachelor of Science in Applied Aquatic Sciences programme provides a sound, broad base for producing competitive and hands-on graduates of aquatic sciences that contribute to national and global development through sustainable use, management and conservation of aquatic systems.

2. Rationale

Freshwater and marine ecosystems are critical areas of concern world-wide. This is mainly due to the tremendous perturbation of these systems by man, coupled with a changing global climate. Anthropogenic perturbations and associated consequences have adversely affected aquatic systems and related environments. Further, the high demand for food by the ever increasing population has led to increased exploitation and harvesting of aquatic resources. The challenges arising have not been adequately addressed due to shortage of well-trained personnel in applied aquatic sciences. Therefore, there is need to increase the number of trained aquatic scientists in line with the Egerton University vision, mission and philosophy, the Kenya Vision 2030 and United Nation's Sustainable Development Goals. This is particularly urgent in view of water becoming a limiting resource in many regions of the country, the African continent and the world at large.

3. Goal of the Programme

The Bachelor of Science in Applied Aquatic Sciences programme prepares the students for employment as aquatic scientists able to teach, research, advice and formulate policies for sustainable use, better management and conservation of aquatic systems. It is designed to produce graduates who can engage in self employment (e.g. aquaculturists), consultancy, fisheries management, policy making and environmental health assessment amongst others. The training in fundamental concepts, knowledge, skills, values, attitudes, and laboratory/field techniques of aquatic sciences prepares the students for pursuit of advanced degrees in

limnology, applied ecology, marine biology, environmental science and other related fields.

4. Programme Learning Outcomes (PLOs)

On completion of the training, graduates of the programme are expected to:

PLO 1: Have acquired practical and theoretical knowledge in aquatic sciences and related science disciplines.

PLO 2: Be prepared for the social and scientific challenges in aquatic sciences, and provide practical solutions for sustainable use, management and conservation of aquatic systems.

PLO 3: Be capable of interpreting and implementing policies related to aquatic resources utilization, management and conservation.

5. Mode of Delivery

The programme will be delivered face-to-face on campus, on a full-time and/or part-time basis.

6. Academic Regulations for the Programme

6.1 Admission Requirements

(i) Candidates admitted to the degree programme of Bachelor of Science in Applied Aquatic Sciences must satisfy the minimum entry requirements as stipulated in the common university entrance regulations in the Egerton University Statutes 36 (2b) of 2013.

(ii) In addition, candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade in each of the following subjects:

Biology (B-) or Biological Science (B)

Chemistry (B-) or Physical Science (B)

Mathematics (C+)

Geography (B)

(iii) Those holding qualifications equivalent to the above from institutions recognized by the University may also be liable for admission.

6.2 Regulation on Credit Transfer

Transfer of credit shall be as stipulated in the Egerton University Statutes article 36 (3d) of 2013 may be allowed.

6.3 Course Requirements

The Bachelor of Science Applied Aquatic Sciences programme shall comprise of Supportive Basic Science courses, Basic Aquatic Sciences courses, Specialized Aquatic Sciences courses and Practical Skills Enhancement courses. In the first and second years, students will take University Common Core courses, Supportive Basic Science and Basic Aquatic Sciences courses from different faculties. All units will be compulsory at the first and second year, while in the third and fourth year, the students will take specialized core or elective applied aquatic sciences courses, provided they meet the prescribed prerequisites. ISO procedure for teaching shall apply (EU/AA/OP/06 rev 3).

6.4 Student Assessment Policy

Assessment shall be as stipulated for non-medical programmes in the Egerton University Statute 36(6) of 2013 and ISO procedure on Examinations (EU/AA/OP/07 rev 3).

6.5 Grading system

The grading of examinations for this programme shall be in accordance with the Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

Examinations in the programme shall be conducted as stipulated in the Egerton University Statutes 36(6) of 2013. The examination administration will be guided by the ISO procedure on Examinations (EU/AA/OP/07).

6.7 Moderation of Examination

Moderation of examinations shall be conducted in accordance to the examination regulations as stipulated in Egerton University Statute 36(5) of 2013 and ISO procedure EU/AA/OP/07. In addition, the examinations shall be subjected to both internal and external moderation as shall be guided by the Directorate of Examinations and Timetabling.

6.8 Graduation Requirements

To graduate, a student is required to take and pass a minimum of 149 Credit Factors which includes at least

nine (9) Credit Factors of University Common Core courses.

6.9 Classification of the Degree

The classification of Bachelor of Science in Applied Aquatic Sciences degree shall be as stipulated in the Egerton University Statutes 36(17a) of 2013.

7. Course Evaluation

Each course shall be evaluated after one full academic cycle as per ISO procedures for Quality Assurance of Academic Programmes (Ref EU/VC/OP/05).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme shall be hosted in the Department of Biological Sciences, Faculty of Science. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme shall undergo an internal programme evaluation (self-assessment) as per ISO procedure (EU/VC/OP/05).

8.3 Course coding

In the prefix AQUA stands for “Applied Aquatic Sciences” and shall be followed by 3 digits.

The **First digit** indicates the year the course is offered.

The **Second digit** indicates the nature or level or sub-discipline of the course. This digit shall be interpreted as indicated below:

- 0 - Introductory courses
- 1 - Basic aquatic sciences courses
- 2 - Physical and chemical courses
- 3 - Instrumentation and technology courses
- 4 - Ecological courses
- 5 - Resources management and applied courses
- 6 - Environmental pollution and toxicological courses
- 7 - Seminars, Research projects and Field Attachment

The **third digit** indicates the serial number of the course within a particular sub-discipline.

9.0 Courses/ Units Offered for the Programme

9.1 Schedule of Courses/units offered

a) University Common Core courses

The programme shall have the following common core courses in line with the programme philosophy, University philosophy and national values.

CODE	COURSE TITLE	L	P	CF
COMP 101	Introduction to Computer Application	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		225	15	15.5

b) Schedule of courses organized by academic year and semester

YEAR 1 SEMESTER 1 (Y1S1)

CODE	COURSE TITLE	L	P	CF
AQUA 100	Fundamentals of Hydrobiology	30	30	3.0
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0
CHEM 111	General Inorganic and Physical Chemistry	30	30	3.0
MATH 100	General Mathematics	45	0	3.0
ZOOL 101	Lower Invertebrates	30	30	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		240	150	21.0

YEAR 1 SEMESTER 2 (Y1S2)

CODE	COURSE TITLE	L	P	CF
AQUA 101	Basic Swimming and Survival Techniques	15	45	2.5
BOTA 121	Plant Anatomy and Morphology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0
COMS 111	Communication Skills	45	0	3.0

ECON 100	Introductory Economics	45	0	3.0
ZOOL 102	Higher Invertebrates	30	30	3.0
ZOOL 103	Vertebrate Zoology	30	30	3.0
SEMESTER TOTAL		225	165	20.5

YEAR 2 SEMESTER 1 (Y2S1)

CODE	COURSE TITLE	L	P	CF
AQUA 220	Water Chemistry	30	30	3.0
BOTA 232	Phycology	30	30	3.0
BOTA 241	Taxonomy of Higher Plants	30	30	3.0
COMP 101	Introduction to Computer Application	45	15	3.5
ZOOL 210	Ecology	30	30	3.0
ZOOL 231	Cell Biology	30	30	3.0
TOTAL		195	165	18.5

YEAR 2 SEMESTER 2 (Y2S2)

CODE	COURSE TITLE	L	P	CF
AQUA 210	Introduction to Aquatic Resources	45	0	3.0
AQUA 212	Fish Biology	30	30	3.0
AQUA 221	Introduction to Hydrology	30	30	3.0
AQUA 240	Fundamentals of Stream Ecology	30	30	3.0
AQUA 241	Fundamentals of Lake Ecology	30	30	3.0
BOTA 271	Plant Physiology	30	30	3.0
TOTAL		180	180	18.0

YEAR 3 SEMESTER 1 (Y3S1)

CODE	COURSE TITLE	L	P	CF
AQUA 311	Aquatic Protozoology	30	30	3.0
AQUA 312	Aquatic Invertebrates	30	30	3.0
AQUA 340	Plankton Ecology	30	30	3.0
AQUA 341	Wetlands Ecology	30	30	3.0

AQUA 350	Aquaculture	30	30	3.0
BOTA 302	Biostatistics	30	30	3.0
TOTAL		195	150	18.0

YEAR 3 SEMESTER 2 (Y3S2)

CODE	COURSE TITLE	L	P	CF
AQUA 310	Oceanography	30	30	3.0
AQUA 330	Fishery Technology	30	30	3.0
AQUA 342	Ecology of Shallow Water Marine Ecosystems	30	30	3.0
AQUA 343	Ecology of Off-shore and Deep-sea Ecosystems	30	30	3.0
AQUA 351	Mariculture	30	30	3.0
AQUA 370	Research Methods	45	0	3.0
SEMESTER CORE COURSE TOTAL		195	150	18.0
ELECTIVES				
AQUA 344	Groundwater Ecology and Management	30	30	3.0
AQUA 360	Aquatic Toxicology	30	30	3.0
AQUA 361	Marine Pollution and Environmental Change	30	30	3.0

AQUA 371	Industrial Attachment (compulsory)	0	120	4.0

YEAR 4 SEMESTER 1 (Y4S1)

CODE	COURSE TITLE	L	P	CF
AQUA 440	Aquatic Weeds Ecology	30	30	3.0
AQUA 450	Advance Fish Biology	30	30	3.0
AQUA 461	Principles of Water Quality	30	30	3.0
AQUA 462	Aquatic Microbiology	30	30	3.0
AQUA 470	Research Projects	0	60	2.0
SEMESTER CORE COURSE TOTAL		120	180	14.0
ELECTIVES				
AQUA 453	Fish Pathology and Parasitology	30	30	3.0
AQUA 455	Integrated Watershed Management	30	30	3.0

AQUA 456	Marine Resources and Ecosystem Conservation	30	30	3.0

YEAR 4 SEMESTER 2 (Y4S2)

CODE	COURSE TITLE	L	P	CF
AQUA 400	Law of the Sea and Inland Waters	45	0	3.0
AQUA 451	Aquatic Resources Economics and Management	45	0	3.0
AQUA 452	Integrated Aquaculture Systems	45	0	3.0
AQUA 464	Water-borne and Water Related Diseases	45	0	3.0
AQUA 470	Research Projects	0	60	2.0
ZOOL 452	Seminar	15	60	3.0
SEMESTER CORE COURSE TOTAL		195	120	17.0
ELECTIVES				
AQUA 410	Comparative Limnology of Lacustrine Systems	45	0	3.0
AQUA 454	Fish Nutrition	30	30	3.0
AQUA 457	Climate Change and Marine Ecosystems	45	0	3.0

	L	P	CF
OVERALL CORE COURSE TOTAL	1545	1380	149.0
OVERALL ELECTIVE COURSE TOTAL	300	210	27.0
PROGRAMME GRAND TOTAL	1845	1590	176.0

(c) COURSE DESCRIPTIONS

AQUA 100: Fundamentals of Hydrobiology (L30/P30: CF 3.0) Y1S1

Global distribution of freshwaters; hydrological cycle and global water balance. Physical and chemical properties of water. Lentic systems: lakes, ponds and reservoirs. Lotic systems: the nature of lotic habitats, the riparian habitat. Diversity of plant and animal life, and adaptations to life in water. Trophic relations and interactions: grazing, food webs and competition. Climate change and anthropogenic impacts: eutrophication, acidification of freshwater.

AQUA 101: Basic Swimming and Survival Techniques (L15/P45: CF 2.5) Y1S2

General principles and skills of survival in aquatic environment. Swimming skills and major swimming strokes. Endurance swimming. Basic survival equipment and life saving appliances. First aid and life saving techniques. Non swimming rescue and rescue breathing. Risk management and conduct during emergency. Field trip.

AQUA 210: Introduction to Aquatic Resources (L45/P0: CF 3.0) Y2S2

Introduction to aquatic resources: renewable and non-renewable aquatic resources. Marine and freshwater renewable resources; surface water, invertebrates, fishes, aquatic plants. Non renewable resources; ground water, minerals, peat. Water as a resource: exploitable water - spatial and temporal variability, water allocation principles. Water use in Agriculture, Energy generation and Industry, Environmental water requirements. Anthropogenic and Climate change impacts, and loss of biodiversity. Strategies for the sustainable utilisation of aquatic resources.

AQUA 212: Fish Biology (L30/P30: CF 3.0) Y2S2

Introduction to fish evolution and systematics; fish anatomy, morphology and physiology; physiological, behavioural, and other responses of fishes to biotic and abiotic factors; Anthropogenic and climate change impacts (species extinction, invasive/introduced species). Field trip. (**Prerequisites:** AQUA 100, ZOOL 103)

AQUA 220: Water Chemistry (L30/P30: CF 3.0) Y2S1

Characteristics of water: molecular structure and physico-chemical properties, isotopic content, the chemical composition of natural waters. Physico-chemical parameters: temperature, pH alkalinity, conductivity, salinity, the carbonate system. Solubility and dissolution (solids, ions, gases etc.). Effects of biological processes on chemical parameters. (**Prerequisites:** CHEM 111)

AQUA 221: Introduction to Hydrology (L30/P30: CF 3.0) Y2S2

Introduction to hydrology. Hydrological cycle: precipitation, evaporation, humidity and runoff phases

and processes, sub-surface water movement. Hydrological characteristics of different water systems (drainage basins, stream and channel processes, lakes and wetlands). Hydrological extremes (floods and drought). Field trip.

AQUA 240: Fundamentals of Stream Ecology (L30/P30: CF 3.0) Y2S2

The stream ecosystem. Categories of streams and rivers, the river profile and drainage patterns. Longitudinal biocoenotic zonation and the river continuum concept. Invertebrates of temporary streams, functional feeding groups and trophic guilds. Adaptations of invertebrates to flow conditions. Factors governing community structure in lotic ecosystems. Downstream transport of organics, Energetics of running waters, Stream modifications by man. Field trips. *(Prerequisite: AQUA 100)*

AQUA 241: Fundamentals of Lake Ecology (L30/P30: CF 3.0) Y2S2

Origins of lakes. Physico-chemical characteristics of lakes. Thermal stratification and classification of lakes. Lake communities: Adaptations, seasonal dynamics and production. Eutrophication. Field trips. *(Prerequisite: AQUA 100)*

AQUA 310: Oceanography (L30/P30: CF 3.0) Y3S2

Introduction to oceanography, distribution and topography of ocean basins and seas. Physical oceanography: physical properties of sea water, water movements (tides, waves and currents). Chemical oceanography; chemical composition, dissolved gases and nutrients. Biological oceanography: phytoplankton and primary production, zooplankton, energy flow and mineral cycling, nekton and fish, benthos; human impact on marine biota. Marine pollution. Field trip. *(Prerequisite: AQUA 100)*

AQUA 311: Aquatic Protozoology (L30/P30: CF 3.0) Y3S1

Taxonomy, morphology, physiology and ecology of free living aquatic protozoa. Ecological significance of protozoa in aquatic systems. Role of Protozoa in aquatic food webs. Ecology of microbial food webs.

AQUA 312: Aquatic Invertebrates (L30/P30: CF 3.0) Y2S1

Introduction to aquatic invertebrates and related terms. The ecology of lower aquatic invertebrates (Platyhelminthes, Annelids etc.). Biology of aquatic molluscs (snails, mussels). Overview of aquatic arthropods (Sub-phylum Trilobitomorpha, Chelicerata, Crustacea and Uniramia). General classification of class Insecta; biology and systematics of the major aquatic insect groups. Insect life cycles and life cycle generations (voltinism). Sampling techniques for aquatic invertebrates. Ecological and economic importance of aquatic invertebrates. *(Prerequisites: ZOOL 101 and ZOOL 102)*

AQUA 330: Fishery Technology (L30/P30: CF 3.0) Y3S2

History of fishery technology. Fishing gears, safety and handling, and crafts technology. Designs and maintenance of fishery equipment. Sources of raw materials. Current status of fishery technology in East Africa. Post harvest and other appropriate technology in fisheries. Construction and maintenance of fish holding facilities. Field trip.

AQUA 340: Plankton Ecology (L30/P30: CF 3.0) Y3S1

Biogeography and systematics, taxonomy, morphology, adaptations to the environment, seasonality, primary productivity of Phytoplankton and, their role in aquatic ecosystems. Biogeography, taxonomy, morphology, cyclomorphosis, adaptations to the environment, diel vertical migration and theories, life cycles, secondary production of zooplankton and, their role in aquatic ecosystems. Field trip. *(Prerequisites: BOTA 232, ZOOL 101 and ZOOL 102).*

AQUA 341: Wetland Ecology (L30/P30: CF 3.0) Y3S1

Introduction to wetland ecology, definitions and classification of wetlands, wetland hydrology and biogeochemistry, wetland processes. Faunal and floral adaptations and diversity. Wetland vegetation, zonation and succession in wetlands, Wetland functions, uses and values,. Wetland management, wise use and conservation. *(Prerequisites: BOTA 101, BOTA 241 and ZOOL 210)*

AQUA 342: Ecology of Shallow Water Marine Ecosystems (L30/P30: CF 3.0) Y3S2

Mangrove ecosystems: Distribution of mangroves, role of environmental factors in distribution, structure and function of mangrove swamps, zonation and succession, diversity, niche separation, mangrove flora and fauna, stability, productivity, ecological and economic importance. Tidal marshes, estuarine/delta ecosystems, muddy shores, sandy and rocky shores: characteristics, challenges and adjustment for life, environmental conditions, community composition, specialization, zonation and trophic relationships. Sea grass meadows: communities, productivity and ecological significance. Coral reef ecosystems: biology, distribution, reef habitats, productivity and ecological significance. Field trip. *(Prerequisite: ZOOL 101, ZOOL 102 and ZOOL 210)*

AQUA 343: Ecology of Off-shore and Deep-Sea Ecosystems (L30/P30: CF 3.0) Y3S2

Continental shelf, benthic, pelagic and bathypelagic habitats. Hydrothermal vents, discovery, visualization, exploring and surviving. Deep seas, marine organisms, their occurrence, distribution and adaptation; nutrition, growth and productivity. Abiotic and biotic interactions. Off-shore fisheries, resource exploitation and conservation. Field trip. *(Prerequisite: ZOOL 210)*

AQUA 344: Groundwater Ecology and Management (L30/P30: CF 3.0) Y3S2

Introduction to groundwater, groundwater reserves, the hyporheic zone. Hydrological exchange processes in the hyporheic zone. Functional importance of hyporheic zone for the biota. Importance of exfiltrated subterranean water, Adaptations of organisms in subterranean environment. Physical, chemical and biological factors of groundwater interstitial habitats. Methods for the investigation of the groundwater ecology. Energy flow and decomposition of organic matter in the groundwater ecosystem. Ground water pollution and its control. Sedimentology (basic concepts). *(Prerequisites: AQUA 100, AQUA 220 and AQUA 240)*

AQUA 350: Aquaculture (L30/P30: CF 3.0) Y3S1

History of aquaculture in East Africa. State of world aquaculture. Current status of aquaculture in Kenya. Challenges facing aquaculture in Kenya. Significance

and opportunities available in aquaculture. Pond construction and maintenance. Ecology of fish ponds. Species for culture. Natural and artificial methods of fish production. Fish seed production and live seed transportation. Fish diseases and management. Aquaculture and human health. Field trips. **(Prerequisite: AQUA 212).**

AQUA 351: Mariculture (L30/P30: CF 3.0) Y3S2

Historical aspects of mariculture. The marine and brackish water environments for mariculture. Characteristics of the Kenya's coastline relevant for mariculture. Culture of marine species: seaweed, fish, oysters, prawns, shrimps, crabs. Case studies from western Indian Ocean. Field trip. **(Prerequisite: AQUA 350).**

AQUA 360: Aquatic Toxicology (L30/P30: CF 3.0) Y3S2

Toxicants and their sources, interactions of aquatic biota with natural and synthetic toxicants; metabolism, mode of action and resistance of aquatic biota to oxidants. Principles of bioavailability and bioaccumulation of organic and inorganic chemical contaminants. Ecological problems of toxicants in aquatic ecosystems. Field trips.

AQUA 361: Marine Pollution and Environmental Change (L30/P30: CF 3.0) Y3S2

Anthropogenic pollution; nutrients, eutrophication, marine debris, and shipping waste. Marine oil pollution; oil spills; heavy metals, radioactive waste, plastics and halogenated hydrocarbons. Impacts of climate change. Combating pollution and effects of climate change. Case studies. Field trip. **(Prerequisite: ZOOL 210)**

AQUA 370: Research Methods (L45/P0: CF 3.0) Y3S2

Research and society. Importance of research in science. Problem identification. Formats and preparation of project proposals and work plans. Data collection and Analysis techniques. Information presentation methods. Preparation of scientific papers and reports. **(Prerequisite: BOTA 302)**

AQUA 371: Field/Industrial Attachment (L0/P120: CF 4.0) Y3S2

The students will be attached to public and private organizations involved in aspects of aquatic sciences:

Ministry of Water, Kenya Marine Fisheries and Research Institution, Kenya Wildlife Services, WWF, private fish farms, Municipal Councils (Water and Sewerage Section), etc. This will allow students to apply and expand their knowledge in aquatic sciences. The students will maintain records of their daily participation, observation and remarks. The students will prepare a report on their attachment. Regular supervision by the respective organization and by the departmental staff will be carried out.

AQUA 400: Law of the Sea and Inland Waters (L45/P0: CF 3.0) Y4S2

Introduction to international and national water laws, history of water laws and governance, water related problems and governance. Kenya constitution and laws related to water, the role of UN in formulation of environmental law and policy. Policies governing harvesting and management of aquatic resources under the law of the sea (jurisdiction, problems of shared stocks and marine pollution). Complex water solutions for interlocked systems, sustainable development, good governance and integrated water resource management.

AQUA 410: Comparative Limnology of Lacustrine systems (L45/P0: CF 3.0) Y4S2

Comparative aspects related to physico-chemical processes, seasonality, productivity, biodiversity and management of inland aquatic resources. Comparative limnology of the temperate and tropics will be emphasised. Case studies. **(Prerequisite: AQUA 100)**

AQUA 440: Aquatic Weeds Ecology (L30/P30: CF 3.0) Y4S1

Biogeography of aquatic weeds with emphasis on tropical aquatic weeds. Taxonomy of aquatic weeds. Morphogenesis, growth and propagation of aquatic weeds. The role of competition among aquatic weeds. Influence of aquatic weeds on aquatic fauna and flora. Strategies for survival of aquatic weeds, productivity and weed problems, control and management. Ecological Significance and economic uses. Field trip. **(Prerequisite: AQUA 341)**

AQUA 450: Advanced Fish Biology (L30/P30: CF 3.0) Y4S1

Fish population dynamics. Fish stock assessment techniques, fish acoustics and location techniques.

Fishery management practices, resource exploitation and management strategies. Economically important freshwater and marine fisheries resources. Field trips. **(Prerequisite AQUA 212, AQUA 312, AQUA 350).**

AQUA 451: Aquatic Resources Economics and Management (L45/P0: CF 3.0) Y4S2

Economics of aquatic renewable and non renewable resources. Theory of the consumer, Consumer-producer surplus, Demand and supply. Market statistics. Market equilibrium and welfare Analysis. Principles of cost and value of water. Cost Benefit Analysis. Utilisation, conservation and management of aquatic resources; Urban water use, pricing and value of supply. Appropriate case studies are to be considered. Field trip. **(Prerequisite: AQUA 100, AQUA 210)**

AQUA 452: Integrated Aquaculture Systems (L45/P0: CF 3.0) Y4S2

Introduction to integrated aquaculture production systems. Types of integrated production systems (crop-livestock-aquaculture integration, poultry-fish integration, irrigation aquaculture integration, Integrated mariculture systems). Nutrient and energy flows Analysis. Impact of integration on performance and sustainability. Case studies of integrated aquaculture systems and technologies. Field trips. **(Prerequisite: AQUA 350).**

AQUA 453: Fish Pathology and Parasitology (L30/P30: CF 3.0) Y4S1

Introduction to fish pathology. Aetiologic agents of fish diseases and susceptible fish species. Epidemiology, transmission, symptoms, diagnosis, treatment and control of fish infections and diseases. Classification, morphology, life cycle and control of common Bacterial, Fungal, Protozoan, Helminth, Acanthocephala, Crustacea and Annelid fish parasites. Fish husbandry and management in relation to disease. Field trip. **(Prerequisites: AQUA 212 and AQUA 311)**

AQUA 454: Fish Nutrition (L30/P30: CF 3.0) Y4S2

The Concept of feeding fish. Digestion and metabolism in fish, energy requirements and sources, nutrients, vitamins and minerals. Nonnutrient diet components. Feeds formulation and processing. Fish feeding experiments. Field trips.

AQUA 455: Integrated Watershed Management (L30/P30: CF 3.0) Y3S2

General ecological patterns, structure, function and dynamics of watersheds. Watershed fauna and their relationship with water systems. Water quality assessment and monitoring, habitat assessment and biological assessment. Interrelationships of human activities and water systems. Utilisation and management of riparian resources. Community participation and sustainable management strategies. Trans-boundary water use and best management practices. Climate change, Human impacts and mitigation measures. Field trips. *(Prerequisite: AQUA 220, AQUA 240, AQUA 241)*

AQUA 456: Marine Resources and Ecosystem Conservation (L30/P30: CF 3.0) Y4S1

Marine non – living resources: sand and limestone harvesting, gas, oil and other minerals exploration, tourism and other recreational activities, marine development (harbours, causeways, artificial islands etc); Marine living resources: Plant resources, animal resources, coastal and deep sea fisheries. Marine resource exploitation and conservation: Land reclamation, coastal erosion, conservation of marine biodiversity, impacts of climate change and adaptation. Field trip. *(Prerequisite: AQUA 310, AQUA 312, AQUA 342, AQUA 343)*

AQUA 457: Climate change and Marine Ecosystem (L45/P0: CF 3.0) Y4S2

Concepts of climate and climate change. Disturbance, resilience and ecosystem function. Marine Biodiversity: impacts of climate change on plankton, invertebrates, turtle, fishes and marine mammals. Marine protected areas and climate change. Mitigation and remediation measures. Case studies. *(Prerequisite: ZOOL 210, AQUA 310, AQUA 312, AQUA 342, AQUA 343)*

AQUA 461: Principles of Water Quality (L30/P30: CF 3.0) Y4S1

Water quality criteria and standards. Characteristics of portable water; and wastewaters. Municipal water treatment, supply and disposal. Sewage treatment and sanitation; water pollution; pollution control and human health. Water quantity, quality, abstraction and

conservation. Field trips. *(Prerequisites: AQUA 100 and AQUA 220).*

AQUA 462: Aquatic Microbiology (L30/P30: CF 3.0) Y4S1

Introduction to concepts of aquatic microbiology. Bacterial and viral classification, nutrition, physiology, metabolism. Microbial loop. Ecological significance of aquatic microorganisms. Field trip. *(Prerequisite: BOTA 131)*

AQUA 463: Water-Borne and Water-Related Diseases (L45/P0: CF 3.0) Y4S2

Human-water interactions, Water-borne, water-based and water-related diseases: causative agents, symptoms and epidemiology; Control and treatment of water-borne, water-based and water-related diseases, Host immune reaction against pathogens; basic concepts in immunology.

AQUA 470: Research Projects (L0/P120: CF 4.0) Y4S1 & Y4S2

Supervised individual study of a selected topic in aquatic sciences involving literature search, field and/ or laboratory work, and written report. *(Prerequisite: BOTA 302, AQUA 370).*

9.3 Matrix aligning courses/units to Programme learning outcomes

Programme Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Have acquired practical and theoretical knowledge in aquatic sciences and related science disciplines.	- Fundamentals of Hydrobiology. 3.0 - General Botany. 3.0 - General Genetics. 3.0 - Higher Invertebrates. 3.0 - Plant Anatomy and Morphology. 3.0 - Vertebrate Zoology. 3.0	3.0	- Water Chemistry. 3.0 - Ecology. 3.0 - Cell Biology. 3.0 - Phycology. 3.0 - Taxonomy of Higher Plants. 3.0 - Fish Biology. 3.0 - Plant Physiology. 3.0 - Taxonomy of Higher Plants. 3.0	3.0	- Aquatic Protozoology. 3.0 - Aquatic Invertebrates. 3.0 - Plankton Ecology. 3.0 - Wetlands Ecology. 3.0 - Oceanography. 3.0 - Ecology of Shallow Water Marine Ecosystems. 3.0 - Ecology of Off-shore and Deep-sea Ecosystems. 3.0	3.0	- Aquatic Weeds Ecology. 3.0 - Advance Fish Biology. 3.0 - Principles of Water Quality. 3.0 - Aquatic Microbiology. 3.0 - Comparative Limnology of Lacustrine Systems. 3.0	3.0
PLO 2: Be prepared for the social and scientific challenges in aquatic sciences, and provide practical solutions for sustainable use, management and conservation of aquatic systems.	- HIV/AIDS and society. 2.5 - Basic Swimming and Survival Techniques. 3.0 - Introduction to Academic Communication Skills. 3.0	3.0	- Introduction to Aquatic Resources. 3.0 - Introduction to Hydrology. 3.0 - Fish Biology. 3.0	3.0	- Plankton Ecology. 3.0 - Aquaculture. 3.0 - Wetlands Ecology. 3.0 - Fishery Technology. 3.0 - Mariculture. 3.0 - Marine Pollution and Environmental Change. 4.0 - Industrial Attachment. 3.0	3.0	- Research Projects. 3.0 - Fish Pathology and Parasitology. 3.0 - Integrated Watershed Management. 3.0 - Marine Resources and Ecosystem Conservation. 3.0 - Water-borne and Water Related Diseases. 3.0 - Seminar. 3.0 - Fish Nutrition 3.0	3.0
PLO 3: Be capable of interpreting and implementing policies related to aquatic resources utilization, management and conservation.	Introduction to Academic Communication Skills. 3.0	3.0	- Introduction to Aquatic Resources. 3.0 - Introduction to Hydrology. 3.0 - Fish Biology. 3.0 - Fundamentals of Stream Ecology. 3.0 - Fundamentals of Lake Ecology. 3.0	3.0	- Biostatistics. 3.0 - Research Methods. 3.0 - Groundwater Ecology and Management. 3.0 - Aquatic Toxicology. 3.0 - Marine Pollution and Environmental Change. 4.0 - Industrial Attachment. 3.0	3.0	- Law of the Sea and Inland Waters. 3.0 - Aquatic Resources Economics and Management. 3.0 - Integrated Aquaculture Systems. 3.0 - Seminar. 3.0 - Climate Change and Marine Ecosystems. 3.0	3.0

9.4 SERVICE COURSES OFFERED TO OTHER DEPARTMENTS

BOTANY SECTION

DIPLOMA SERVICE COURSES

Year 1 Semester 1

Code	Title	Streams	L	P	CF
BOTA 0101	Agricultural Botany	FAM, AGED, HORT	30	30	3.0
BOTA 0111	Genetics	FAM, ANHE, DAFT, AGED	30	30	3.0
BOTA 0141	Plant Taxonomy	ANHE, FAM, AGED	30	30	3.0
BOTA 0231	Microbiology	DAFT	30	30	3.0

Year 1 Semester 2

Code	Title	Streams	L	P	CF
BOTA 0171	Plant Physiology	AGED	30	30	3.0

Year 2 Semester 2

Code	Title	Streams	L	P	CF
BOTA 0251	Plant Pathology	FAM, AGED	30	30	3.0

DEGREE SERVICE COURSES

Year 2 Semester 1

Code	Title	Streams	L	P	CF
BOTA 251	Introductory Plant Pathology	BED (Sc), B. Sc	30	30	3.0

ZOOLOGY SECTION

DIPLOMA COURSES

Year 1 Semester 1

Code	Title	Streams	L	P	CF
ZOOL	Ecology and	ANSci	30	30	3.0

0110	Environmental Science				
ZOOL 0130	Basic vertebrate Anatomy and Physiology	ANSci	30	30	3.0

Year 1 Semester 2

Code	Title	Streams	L	P	CF
ZOOL 0120	Entomology	FAM, AGED, HORT	30	30	3.0

Year 2 Semester 1

Code	Title	Streams	L	P	CF
ZOOL 0240	Parasitology	AGED, ANHE	30	30	3.0

DEGREE COURSES

Year 1 Semester 1

Code	Title	Streams	L	P	CF
ZOOL 104	General Zoology	ECOT, WIEN, DAFT, AGED, ANSCI Dryland, AGRO, FOST, NARE, ENSCI	30	30	3.0

Year 1 Semester 2

Code	Title	Streams	L	P	CF
ZOOL 131	Human Anatomy and Physiology	FOND	30	30	3.0

Year 2 Semester 1

Code	Title	Streams	L	P	CF
ZOOL 240	General Parasitology	AGED	30	30	3.0

Year 2 Semester 2

Code	Title	Streams	L	P	CF
ZOOL 230	Vertebrate Anatomy and Physiology	AGED	30	30	3.0

(c) Course descriptions

BOTA 251: Introductory Plant Pathology (30/30: CF. 3.0) Y2S1

Introduction. Historic development; Economic importance. Disease concept. Causal agents of crop diseases; fungi, viruses, bacteria, nematodes, parasitic seed plants, abiotic agents. Host infection. Disease symptoms. Categories of diseases. Disease epidemics. Control methods. Plant disease clinics. Selected diseases of cereals, legumes, vegetables, coffee and industrial crops; fruits and horticultural flowers. (*Prerequisites: BOTA 101, BOTA 131*)

ZOOL 104: General Zoology (30/30: CF 3.0) Y1S1

Basic structure, function, taxonomy and ecology of groups of the animal kingdom emphasizing on organizational and evolutionary changes through the kingdom. Survey of vertebrates and ecological factors influencing animal functions. Laboratory techniques with emphasis on processing of tissues for microscopic examination. *AGED, ENSC, ANSC, AGRO, NARE, DLRM, WIEM, FOST, ECOT*

ZOOL 230: Vertebrate Anatomy and Physiology (30/30: CF 3.0) Y2S2

Vertebrate classes and evolutionary relationships. Introduction to anatomy and physiology, levels of organization in an animal's body, homeostasis and control systems. Anatomy and physiology of body systems in selected vertebrate animals and ruminants; circulatory, respiratory, digestive, nervous, endocrine, urinary and reproductive systems. *AGED*

BOTA 0101: Agricultural Botany (30/30: CF 3.0) Y1S1

A review of plant kingdom; essentials of flowering plant taxonomy, origin of crop plants; anatomy and morphology of selected crop plants; floral biology, sexual reproduction and seed/fruit formation. Physiology of plant growth and development to include the plant cell and its organelles, plant and water relations; minerals, nutrition and nitrogen metabolism, respiration, photosynthesis, carbohydrates and enzyme catalysis. *DIP AGED*

BOTA 0111: Genetics(30/30: CF 3.0) Y1S1

Genetic material and its behaviour in meiosis. Monohybrid and dihybrid crosses. The use of probability in predicting progeny types. Breeding systems and sex determination. Sex-related inheritance to cover multiple allelic and gene linkage. The genetic code and how it works: mutation and chromosome changes. Polyploidy and its importance in the processes of evolution of plant crops and animals. *DIP AGED*

BOTA 0141: Plant Taxonomy(30/30: CF 3.0) Y1S1

Plant classification – natural and artificial. The history of classification, rules of nomenclature. Evolution of species and species concept. Descriptive terms used in flowering plant classification as exemplified by Kenyan crop plants and rangeland plants with emphasis on grasses. Indicator species. Plant identification by use of analytical keys. Practicals to cover the collection, identification, annotation and preparation of plant specimens. Visit to field stations and studies in the universities arboretum. *DIP AGED*

BOTA 0171: Plant Physiology (30/30: CF 3.0) Y1S2

Introduction to structure and classifications of Carbohydrates, Proteins and lipids; Vitamins and coenzymes, Enzymes. Photosynthesis, Respiration. Physical and chemical properties of aqueous solutions; Colloidal systems. Introduction to plant physiological processes; Transpiration, Translocation. Phytohormones. Mineral nutrition and Nitrogen metabolism. (*Prerequisite: BOTA 0101*) *DIP AGED*

BOTA 0231: Microbiology(30/30: CF 3.0) Y2S1

Introduction to microorganisms. Bacteria, fungi, viruses, protozoas, algae and mycoplasmas. Their growth and metabolisms in relation to animal and human diseases. Role of microorganisms in food spoilage. Preservation and application in industry. Practicals to emphasize basic laboratory techniques in microscopy. Staining procedures, enumeration and identification of bacteria, fungi and protozoa. Media preparation and aseptic techniques. (*Prerequisite: BOTA 0101*) *DIP AGED*

BOTA 0251: Plant Pathology (30/30: CF 3.0) Y2S2

Introduction to microorganism, their characteristics in relation to common plant diseases. The concept of plant diseases. Biology and transmission of plant diseases.

Major crop diseases, their incidence and control measures. The role of pesticides in plant disease management. (*Prerequisite: BOTA 0101*) *DIP AGED*

ZOOL 0130: Basic Vertebrate Anatomy and Physiology(30/30: CF 3.0) Y1S1

Basic animal systematics and evolution. Homeostasis and control systems. Comparative anatomy and physiology of various vertebrate organ systems: digestive, nervous, respiratory, circulatory and reproductive systems in simple stomached animals and ruminants. *DIP AGED*

ZOOL 0143: HIV/AIDS and Society (45/0: CF 3.0) Y1S1

Introduction to HIV/AIDS. Epidemiology of HIV/AIDS. Impact of HIV/AIDS in Africa. Human microbial pathogens. Types and subtypes of HIV. Origin and evolutionary trends of HIV. Structure and life cycle of HIV. Signs and symptoms of HIV/AIDS. Opportunistic infections. Body's defence mechanisms; nonspecific and specific defence mechanisms. Sexually transmitted infections (STIs). Relationship between STIs and AIDS. Transmission and detection of HIV. CD4 cell count and viral load. Stages in HIV transmission. Treatment and prevention of HIV/AIDS. Voluntary counselling and testing (VCT). Community outreach and care of people living with HIV/AIDS. HIV/AIDS and Gender: HIV/AIDS and the law. *DIP COMP SCI*

ZOOL 0110: Ecology and Environmental Science (30/30: CF 3.0) Y1S2

Introduction to ecology, ecosystems, trophic levels and energy flow. Nutrient cycling and their limiting factors. Competition and other related, organism interactions. Plant communities and succession. World distribution of terrestrial biomes, climate, vegetation and adaptations to environmental conditions. The human environment and population growth. Food production, disease, medicine, and their effects on human population. Renewable and non-renewable resources. Land use and conservation of natural resources. Industrial development and its effects on the environment. *DIP AGED*

ZOOL 0120: Entomology (30/30: CF 3.0) Y1S2

Basic anatomy and physiology of insects among arthropods. Insect classification into important orders and families and the use of a key for identification. External morphology in relation to environment and habits. Arthropod pests of plants and animals. Assessment of damage to crops and livestock control methods including direct, biological and cultural methods. *DIP AGED*

ZOOL 0240: Parasitology (30/30: CF 3.0) Y2S1

Introduction to parasitism and other related phenomenon. Economic importance of parasites. Life cycles and effects of helminth, protozoan and arthropod parasites on domestic animals and man. Methods of transmission and control including pest management. *DIP AGED*

BIOL 121: Classification of Living Things (30/30: CF 3.0)

Necessity of classification; Methods of identifying living things; Units of classification and binomial nomenclature; General classification of plants and animals upto major taxa only; characteristics of living things; Differences between plants and animals. *B.ED(PRI)*

BIOL 211: Morphology of Plants and Animals (30/30: CF 3.0)

Plants: root system: different types of roots, structure and function of the root; The shoot system: Leaves, flowers, fruit and seed. The external structure and types); uses of plants to man. Animals: organs, tissues and their functions; Teeth and care of teeth's cleanliness of the human body. *B.ED(PRI)*

BIOL 221: Plant and Animal Nutrition (30/30: CF 3.0)

Plants: Various types of plant nutrition; Photosynthesis. Animals: Different types of foods; structure and function of the human digestive systems, Different types of feeding in animals and care of animals. *B.ED(PRI)*

BIOL 311: Reproduction in Plants and Animals (30/30: CF 3.0)

Plants: Asexual/vegetative reproduction; sexual reproduction: Internal structure of flowers, fruits and seeds; Pollination and fertilization; seed germination. Animals:

Asexual reproduction (e.g. in amoeba); Sexual reproduction: structure and function of the reproductive system; Fertilization, growth and development; Egg-laying versus life births in animals. Insect life cycles. *B.ED(PRI)*

BIOL 321: Personal Hygiene and Environmental Health (30/30: CF 3.0)

Common human diseases and their causative agents; Transmission of disease pathogens; Environment, environmental pollution and its effect on humans; Control of diseases: Body and environmental cleanliness, medicines and herbs. Drugs use and abuse; Handling of insecticides and other poisonous substances. HIV/AIDS and STDs: Transmission and control. *B.ED(PRI)*

BIOL 331: Gas Exchange, Excretion and Transport in Plants and Animals(30/30: CF 3.0)

Gas exchange in Plants: Internal leaf structure; stomatal closing and opening. Gas exchange in animals: structure of the respiratory system, mechanisms of breathing. Excretion in plants: types of excretory products and how they are discharged. Excretion in animals: excretory products in different animals, excretory systems in single celled animals (amoeba), invertebrates (insect) and vertebrates (man). Transport in plants: transpiration, translocation and active transport. Transport in animals: human circulatory system, blood composition and function, blood and heart diseases. Locomotion in simple and complex animals. *B.ED(PRI)*

BIOL 411: Response to Stimuli and Co-Ordination (30/30: CF 3.0)

In plants: Responses to various stimuli by the shoot and the root. In animals: human sense organs. The nervous system and co-ordination, hormones and hormonal control in humans. *B.ED(PRI)*

BIOL 431: Introduction to Genetics (30/30: CF 3.0)

Concept of genetics. Chromosomes and genes, laws of heredity; monohybrid and dihybrid. Inheritance, sex determination in man, sex linkage, mutations, practical applications of genetics e.g. in blood transfusions and plant and animal breeding. *B.ED(PRI)*

BIOL 0142: Classification of Living Things (30/30: CF 3.0)

Introduction to the Science of Taxonomy and Systematics of living things. Fundamentals of classification. Differences between plants and animals. General classification of major plant and animal taxa. The role of organic evolution in plant and animal classification. *DIP EDUC*

BIOL 0145: Morphology and Physiology of Plants (30/30: CF 3.0)

Introduction to morphology of flowering plants, roots, stems, leaves, flowers and seed. The internal and external structures of root, shoot and leaf. Root and stem modifications. Plant and water relations - imbibitions, diffusion, osmosis. Photosynthesis and respiration. Alternation of generations. Reproduction in Angiosperms sexual and asexual. Physiology of growth and regulation (nastic, tactic and cohesion movements, hygroscopic discharge and apical dominance excretory products of plants and their economic importance. *DIP EDUC*

BIOL 0245: Introduction to Cell Biology and Genetics (30/30: CF 3.0)

Introduction to genetics, mitotic and meiotic cell divisions, structures and properties of genetic materials; genes, DNA, RNA and chromosomes. Monohybrid and dihybrid inheritance – complete and incomplete dominance and co-dominance. Multiple alleles (ABO blood groups and Rhesus factor). Sex determination and sex linked genes. Mutations – causes and importance. Genetically inherited disorders. Application of genetics in agriculture and medicine. *DIP EDUC*

BIOL 0241: Morphology and Physiology of Animals (30/30: CF 3.0)

Basic animal morphology and physiology with emphasis on their functions. Mammalian tooth structure and dentition. Digestive, circulatory, respiratory, reproductive, endocrine, lymphatic systems and associated organs. Excretory organs (lungs, kidneys, liver) and sensory organs (eye, ear, skin tongue, skin). Respiratory surfaces (lungs, gills, skin etc.) Support

structures (skeletons and exoskeletons). The concept of homeostasis. Nutrition; digestion, absorption. Metabolism ingestion. Blood circulation and gaseous exchange. The role of hormones in mammalian reproduction, secretion, perception and excretion, Neurophysiology and co-ordination. *DIP EDUC*

DEPARTMENT OF CHEMISTRY

DIPLOMA IN MODERN CHEMISTRY LABORATORY TECHNOLOGY

1. Philosophy of the programme

The programme is broad-based and exposures students to learn best by doing and also understanding the principles behind. This curriculum emphasis on activity-based, project-driven approach that involves students in problem solving. The programme provides students with knowledge, skills and experience in the technological subject area. The programme prepares students for advancement in the area of technology and subject area.

2. Rationale

The Department of Chemistry recognized the importance of technical training and launched a Certificate in Science Laboratory Programme. Several graduates per year have been trained Since its inception three years ago. The Department of Chemistry has introduced Diploma in Modern Chemistry Laboratory Technology so as to address the national demand for quality-trained technicians. The Programme aims to provide practical experience in modern analytical instrumentation and procedures, graded from ba51c equipment to the most up-to-date, microprocessor-controlled devices. The Programme also aims at enabling the certificates graduates of Egerton University and those from other institutions to competitively access higher education. At the end of the second year of study the students will go for field/industrial attachment. The field placement will be an opportunity for students to practice and develop the analytical skills through work.

3. Goal of the Programme

Student should be able carry out modern chemistry laboratory analytical procedures in various research fields like agriculture, biochemistry, medicine, etc. In addition they should be able to handle and maintain basic and modern equipment in teaching, research and quality control laboratories. Students should be able to participate in the general implementation of sustainable scientific and technological developments in teaching,

research and quality control. The programme aims at imparting students in planning and administering routine Analysis and safety regulations in teaching, research and industrial environment plus pursuing further education.

4. Programme learning outcomes

1. Equip students with technical skills.
2. Equip students with skills for job opportunities.
3. Equip students with knowledge to aid in undergraduate studies.
4. Equip students with planning and managements skills

5. Mode of delivery

- i) Face - to- face (Full time)
- ii) Practicals, Tutorials, Assignments and e-learning

6. Academic regulations for the proposed programme

6.1 Admission Requirements

All candidates admitted to the Diploma programme of Diploma in Modern Chemistry Laboratory Technology must satisfy the minimum entrance requirements stipulated in the common university entrance as stipulated in University statutes 36 of 2013.

6.2 Regulation on credit transfer in a programme

Credit transfers shall be in accordance to Egerton University Statutes 36 (3). as stipulated by the University Senate.

6.3 Course requirements

The course requirement will be done as per the ISO Procedure: Doc. No. EU/AA/OP/06 rev 3

6.4 Student Assessment Criteria

Assessment of students will be done according to Egerton University statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance to the Egerton University Statute 36(6) of 2013.

6.6 Examination regulations

The examination regulations for this programme shall be conducted in accordance to the Egerton University Statute 36(5) of 2013.

6.7 Moderation of the Examinations

The examination moderation will be done as per the ISO Procedure: Doc. No. EU/AA/OP/07

6.8 Graduation Requirements

For a student to graduate, he/she shall be required to take and pass **ALL** scheduled courses within the stipulated period. To graduate, the student must have completed a minimum of Total CFs (60).

6.9 Classification of Degrees

The Diploma classification shall be in accordance with the Egerton University Statute 36(17a) of 2013.

7. Course Evaluation

The evaluation will be based on the ISO Procedure: Teaching Effectiveness Evaluation Procedure Doc. No. EU/VC/OP/04

8. Management and Administration of the Programme

8.1 Host department and Programme Academic leader

The programme shall be hosted in the department of Chemistry. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme Evaluation

Evaluation of the programme will be done according to ISO Procedure Doc. No. EU/VC/OP/05.

8.3 Course Coding

The Course codes are designated according to the university course coding policy.

Each course has been coded using an acronym and a series of figures, numbers and letters whose interpretation is as follows.

CHLT-Chemistry Modern Laboratory Technology

1st digit (0) -Indicates Diploma Programme

2nd digit-Indicates the Year the course is offered

3rd digit-Indicates the Broad category of the course: the branch of chemistry that is offered i.e. Inorganic is denoted by one (1), Physical is denoted by two (2), Organic is denoted by three (3), analytical denoted by four (4) and applied/non-chemistry courses are denoted by five (5).

4th digit-Indicates the Number of the course in the category

9.0 Course/ Units offered for the programme

Year 1 BLOCK I

Code	Course Description	L	P	T	CF
CHLT 0111	Inorganic Chemistry I	30	30	0	3.0
CHLT 0151	Heat and Thermodynamics	30	30	0	3.0
MATH 0121	General Mathematics	45	0	0	3.0
CHLT 0152	Basic Communication Skills	45	0	0	3.0
	SUB-TOTAL	150	60	0	12.0

Year 1 BLOCK II

Code	Course Description	L	P	T	CF
CIMS 0112	Human Physiology I	45	15	0	3.5
CHLT 0121	Physical Chemistry I	30	30	0	3.0
CHLT 0153	Electricity and Magnetism	30	30	0	3.0
CHLT 0154	Entrepreneurship for Technologists	45	0	0	3.0
	SUB-TOTAL	150	75	0	12.5

Year 1 BLOCK III

Code	Course Description	L	P	T	CF
BOTA 0225	Microbiology	30	30	0	3.0
CHLT 0155	First Aid	30	30	0	2.0
CHLT 0131	Organic Chemistry I	30	30	0	3.0

MATH 0122	Basic Statistics	45	0	0	3.0
	SUB-TOTAL	105	120	0	11.0

Year 2 BLOCK I

Code	Course Description	L	P	T	CF
CHLT 0212	Inorganic Chemistry I	30	30	0	3.0
CHLT 0256	Electronic circuits for technologists	30	30	0	3.0
CHLT 0241	Laboratory Practices I	30	30	0	3.0
COMP 0190	Information Technology and Society	30	30	0	3.0
	SUB-TOTAL	120	120	0	12.0

Year 2 BLOCK II

Code	Course Description	L	P	T	CF
CHLT 0222	Physical Chemistry II	30	30	0	3.0
CHLT 0232	Organic Chemistry II	30	30	0	3.0
CHLT 0242	Analytical Chemistry I	30	30	0	3.0
CHLT 0243	Laboratory practice II	30	30	0	3.0
	SUB-TOTAL	120	120	0	12.0

Year 2 BLOCK III

Code	Course Description	L	P	T	CF
CHLT 0251	Industrial Chemistry I	45	0	0	3.0
CHLT 0244	Analytical Chemistry II	30	30	0	3.0
CHLT 0257	Biochemistry I	30	30	0	3.0
CHLT 0252	Laboratory Management	45	0	0	3.0
CHLT 0253	Research and Industrial Attachment	0	120	0	4.0
	SUB-TOTAL	150	280	0	16.0

Year 3 BLOCK I

Code	Course Description	L	P	T	CF
CHLT 0313	Inorganic Chemistry II	30	30	0	3.0
CHLT	Analytical Chemistry	30	30	0	3.0

0345	III				
CHLT 0354	Project	0	60	0	3.0
CHLT 0355	Laboratory Management II	45	0	0	3.0
COMP 0110	Computer Organization	0	120	0	4.0
	SUB-TOTAL	150	120	0	14.0

Year 3 BLOCK II

Code	Course Description	L	P	T	CF
AGEN 0111	Technical Drawing	15	30	0	2.0
CHLT 0323	Physical Chemistry III	30	30	0	3.0
CHLT 0356	Industrial chemistry II	45	0	0	3.0
CHLT 0354	Project	0	60	0	2.0
	SUB-TOTAL	90	120	0	10.0

Year 3 BLOCK III

Code	Course Description	L	P	T	CF
CHLT 0333	Organic Chemistry III	30	30	0	3.0
CHLT 0346	Basic Environmental Chemistry	45	0	0	3.0
CHLT 0354	Project	0	60	0	2.0
CHLT 0358	Biochemistry II	30	30	0	3.0
	SUB-TOTAL	105	120	0	11.0

c.) Course Descriptions

CHLT 0111: Inorganic Chemistry I (30/30: CF 3.0) Y1 BI

The atom: evidence for existence of particles; atomic number/mass number; isotopes; mass spectrometry; relative atomic mass/molecular mass; mole concept; % composition calculations; RF/MF. Molarity; chemical equations, volumetric Analysis. Atomic structure: hydrogen spectrum, Rutherford's and Bohr's models; ionization energies as evidence of energy levels; Pauli's exclusion principle; Hund and Aufbau rules. Electronic configuration (s, p & d). Chemical bonding of atoms; crystal lattice; molecular lattice; Fajan's rules; hydrogen bonding; metallic bonding; Van der Waals forces;

oxidation and reduction; oxidation numbers; Born-Haber cycle; Appropriate practicals.

CHLT 0121: Physical Chemistry I (30/30 : CF 3.0) Y1 BII

The Kinetic theory of gases and the gas laws: Charles, Boyles Law and van der Waals equation of state. Thermochemistry: Enthalpy of reactions. Law of conservation of energy Hess' law. Enthalpies of neutralisation combustion, formation, atomisation and solution. Energy level diagrams. Reaction kinetics: Factors affecting rate; collision and bulk theories. Order and molecularity; half-life; reaction mechanisms; activation energy; catalysts. Chemical equilibria; equilibrium constants K_c and K_p ; degree of dissociation. Le Chatelier's principle. Electrochemistry of solutions.

CHLT 0131: Organic Chemistry I (30/30 : CF 3.0) Y1 BIII

Introduction to organic chemistry: qualitative and quantitative Analysis. Alkanes: Straight and Cyclic alkanes. Alkenes: Straight and Cyclic alkenes; Cis and trans isomerism Alkynes: Straight and Cyclic alkynes. Functional groups: Structure, qualitative Analysis and uses of the following; alkyl halides, alcohols, phenols, ethers, epoxides, aldehydes, ketones, amines and carboxylic acids. Appropriate practicals.

CHLT 0151: Heat and Thermodynamics (30/30 : CF 3.0) Y1 BI

Temperature thermal equilibrium; temperature scales, thermodynamic scale and absolute zero; practical thermometers. Thermal properties of matter specific heat capacity and heat specific latent heat and their measurements; phase transitions; work and heat and their measurements. Internal energy and the first law of thermodynamics. Thermal conductivity and its measurement. Thermal convection and Newton's law of cooling. Radiant heat and heat detection. Transmission, absorption and reflection of heat. Ideal gases: equation of state.

CHLT 0152: Basic Communication Skills (45/0 : CF 3.0) Y1 BI

Writing process, report writing, language choice and use, organization of written information, written product, referencing techniques, different types of texts

and rhetorical organization pertaining to scientific writing i.e. classification, definition, comparison and contrast, illustration, strategies for text difficulty and text attack skills, non-linear information. Listening and note-taking skills-effective listening techniques; note-taking techniques; inter-personal communication; gestures, non-verbal communication; communication in the work place- memo, minutes, curriculum vitae and teaching skills, library skills –sources of information, effective information retrieval skills, cataloguing systems.

CHLT 0153 Electricity And Magnetism (30/3: CF 3.0) Y1 BII

Electrostatics, Coulomb's law. Electrical potential and potential energy; the electron volt and the joule; high voltage breakdown; capacitors and electrometers; effect of a dielectric; energy storage; the electrostatic voltmeter; force and torques on dipoles; polarization and charge density; measurement of capacitance. D. C. circuits, current density resistance, resistivity, conductivity, Kirchhoff's laws. Circuit network. Electrostatics. Magnetostatics, magnetic fields, Hall effect. Electromagnetic induction, Faraday's law, Lenz's law; motional e.m.f.; measurement of magnetic field, coefficient of coupling of two circuits. A. C. circuits, A. C. generators; Amplitude, phase & period; resistance, capacitance & inductance in A. C. circuit; phasor diagram & complex impedance; power in A. C. circuits; A. C. circuit networks, transformers; A. C. Bridges.

CHLT 0154 Entrepreneurship for Technologists (45/0 : CF 3.0) Y2 BII

Review of characteristics of entrepreneur and implications. Succeeding in business. A self-assessment. Entrepreneurial skills. Causes of small business failure. Business idea generation. Selection of opportunities. Market research. Assessing the viability e.g. debt equity ratio, pay back period and simple rate of return. Business plan: market plan, production plan and financial plan.

CHLT 0155: First Aid (0/60 : CF 2.0) Y1 BIII

Introduction to structure and functions of body systems; skin, respiratory tract; cardio-vascular; alimentary tract; skeletal; head; neck; spinal column; assessment of accident situation; safe provision of appropriate first

aid; ethics; clinical conditions; respiratory failure; cardiac arrest; bleeding; circulatory failure; and shock; injuries of bones; joints; ligaments; and muscles; unconscious patient; wounds; infections; poisoning; mass accident; disaster management; First aid measures at site.

CHLT 0212 Inorganic Chemistry II (30/30 : CF 3.0) Y2 BI

Shapes of covalent molecules, valence electron-pair repulsion theory. Bond angles, hybridization (s and p orbitals only). The periodic Table, periodicity of physical and chemical properties across period 3 and down groups I, II and VII. Diagonal relationship of Li, and Mg; Be & Al. Catenation & comparison of group IV elements. Group VII: oxidation numbers; preparation of elements properties; stabilities and solubilities of hydrides, halides, halates and interhalogen compounds. Relationship between structure and properties of solids. Appropriate practicals.

CHLT 0222: Physical Chemistry II (30/30 : CF 3.0) Y2 SBII

Strong and weak electrolytes. Electrolytic conductance and conductivity. Molar conductivity. Ionic equilibria, Ostwald's dilution law. Degree of dissociation & Kohlrausch's law. pH ionic product of water pH and pOH. Theory of indicators, pH titrations. Buffer solutions. The Henderson equation. Electrode potentials: SHE, Emf of cells. Potentiometric measurements and cell reaction. Electrochemical series. The Nernst equation. Electrostatics and Faraday's Laws. Phase Equilibria: Colligative properties – lowering of vapour pressure, elevation of boiling point, osmotic pressure. The phase rule – phase diagrams, multicomponent systems, fractional distillation, steam distillation, Raoult's law, Henry's law, the distribution law. Appropriate practicals.

CHLT 0232: Organic Chemistry II (30/30 : CF 3.0) Y2 BII

Alkyl halides: Structure, nomenclature, preparation, physical properties, chemical reaction, qualitative Analysis and industrial uses. Alcohols and phenols: Structure, nomenclature, preparation, physical properties, chemical reaction, qualitative Analysis and industrial uses.

Ethers and epoxides: Structure, nomenclature, preparation, physical properties, chemical reaction, qualitative Analysis and industrial uses. Aromatic compounds: Structure, nomenclature, preparation, physical properties, chemical reaction, qualitative Analysis and industrial uses. Amines: Structure, nomenclature, preparation, physical properties, chemical reaction, qualitative Analysis and industrial uses. Appropriate practicals.

CHLT 0241 Laboratory Practices I (30/30 : CF 3.0) Y2 BI

General laboratory layout, types of bench top. Laboratory fittings/services. Distilled water and de-ionized water. Plant hygiene and Design. Sterilization: heat sterilization, chemical sterilization and bacteriological control. General laboratory equipment and apparatus. Storage and disposal of hazardous substances. General First-Aid and safety. Grades of laboratory chemicals. Storage and labeling of chemical solutions. Stains and buffer solutions

CHLT 0242: Analytical Chemistry I (30/30 : CF 3.0) Y2 BII

Titrimetric Analysis. Acid-base indicators, pH titration, choice of indicators, universal indicator. Redox titrations involving KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_4$ and $\text{Ce}^{2+}/\text{Ce}^{4+}$. Iodometric titrations. Complexometric titration – (EDTA). Gravimetric Analysis, theory & practice. Conductometry and Potentiometry.

CHLT 0243: Laboratory Practice II (30/30 : CF 3.0) Y2 BIII

Simple glass blowing: Definition, types, properties and uses glass. Glass blowing terminology. Methods of heating glass. Vacuum Technology. Detection and causes of leaks in vacuum. Application of vacuum. Cryogenics, definitions, types of gases and their uses. Storage and handling of cryogenics fluid hazards. Photography, camera optics and types of camera. Films. Software – slide preparation for projection, care and cleaning of slides and films, storage of prints.

CHLT 0244: Analytical Chemistry II (30/30 : CF 3.0) Y2 BIII

Separation techniques: Methods of purification and extraction. Steam and fractional distillations. Single

step and multi-step solvent extraction. Chromatography: The partition law – brief general theory. Stationary phase, mobile phase, and theoretical plates. Paper, TLC, column, gas chromatography, Reverse phase and normal phase chromatography, Gel filtration, Size exclusion electrophoresis and ion exchange chromatography.

CHLT 0251: Industrial Chemistry I (45/0 : CF 3.0) Y2 BIII

General introduction to industrial chemistry with reference to Kenya. Unit operations, Unit processes, Pilot plant. Basic chemicals plant for ammonia & sulphuric acid. Applied industries: Cement, salt (NaCl), Trona and Na_2CO_3 production. Fats and oils industries. Manufacture of sugar and sugar products. Pulp and paper manufacture. Appropriate industrial visits.

CHLT 0252: Laboratory Management I (45/0 : CF 3.0) Y2 BIII

Introduction to general management. Sources of information. Purchasing and receiving procedures. Inventory – inventory records, pin card, inventory book, stock taking, petty cash. Types of stores and their main features. Store-keeping. Stores documents and control of stock level. Security and protection of laboratory materials and records. Labour laws and industrial relations. Conditions of employment, collective bargaining, Industrial dispute and settlement, factories Act, role of federation of Kenya employers (FKE), role of COTU, role of industrial court.

CHLT 0253: Research and Industrial Attachment (0/120 : CF 4.0) Y2 BIII

Practical training in chemical based industries and laboratories in institutions of higher learning and research institutions. These will enable the student to get an exposure to instruments and management of industrial processes and laboratories. The attachment will be carried out over a period of eight weeks at the end of second year during the long vacation.

CHLT 0256: Electronic Circuits for Technologists (30/30 : CF 3.0) Y2BI

Number system and their representation, Boolean algebra. Logic gates. Map simplification and Karnaugh maps. Arithmetic building blocks. Flip-flops. Integrated circuits, registers, multiplexes, counters. Registers

transfer and micro-operations. Register transfer language (RTL), bus and memory transfer, arithmetic micro-operation. Logic micro operation, shift micro-operation, arithmetic logic and shift unit.

CHLT 0257: Biochemistry I (30/30 : CF 3.0) Y2 BIII

Carbohydrates: Structure and chemistry. Monosaccharides. Isomerism – Structural, functional and stereoisomerism. Optical activity. Amino and deoxy sugars. Important reactions of monosaccharides. Disaccharides: - Structure of reducing and non-reducing sugars. Trisaccharides. – Structure only. Polysaccharides. – Storage and structure. Cellulose. Proteins and amino acids; Properties and classification. Amino acids; Classification and properties. Electrophoresis and isoelectric point. Protein structure; fibrous, globular and conjugated proteins. Enzymes; role of enzymes as catalysts, mechanism of enzyme reactions, enzyme nomenclature and inhibitors. Appropriate practicals.

CHLT 0313: Inorganic Chemistry II (30/30 : CF 3.0) Y3 BI

Definition of transition metals; electronic configuration; general characteristics of transition metals; atomic/ionic sizes; atomic volume and density, melting and boiling points, ionization energies, reactivity, oxidation states, spectral and magnetic properties, catalytic activity, complex formation. Introduction to coordination chemistry: complexes, nomenclature, isomerism, ligands, Werner's theory of complexes; theories of bonding of complexes (valence bond, crystal field theory and molecular orbital theory). Appropriate practicals.

CHLT 0323: Physical Chemistry III (30/30 : CF 3.0) Y3 BII

Chemical Thermodynamics, the zeroth law, the first law -Hess law, heat and work, expansion work. The second law: efficiency and heat engines, entropy, free energy, enthalpy, equilibrium constant and free energy, electrode potential and free energy. The Born-Haber cycle; lattice energy and related quantities. The solid state, determination of crystal structure, X-ray diffraction, Bragg equation, van der Waals and powder methods. Crystal systems, allotropy and polymorphism. Surface Chemistry, adsorption, activated carbon,

colloids. Electrophoresis and dialysis. Appropriate practicals.

CHLT 0333: Organic Chemistry III (30/30 : CF 3.0) Y3 III

Aldehydes and ketones: Structure, nomenclature, preparation, physical properties, simple chemical reaction and qualitative Analysis. Carboxylic acids and derivatives (Esters, Amides, acid halides, anhydrides and nitriles): Structure, nomenclature, preparation, physical properties, simple chemical reaction and qualitative Analysis. Amino Acids and carbohydrates: Structure, class, physical properties and commercial uses. Introduction to heterocyclic compounds: Definition, structure and commercial uses. Appropriate practicals.

CHLT 0343: Analytical Chemistry III (30/30 : CF 3.0) Y3 BI

Instrumental methods, sources of radiant energy, sample cells & detectors for UV-Visible & Infra red. Beer – Lambert law, deviation from the law. Atomic emission and atomic absorption spectroscopy, principles of flame emission, flame & flameless atomic absorption. Basic principles & applications of refractometry. Appropriate practicals.

CHLT 0346: Basic Environmental Chemistry (45/0 : CF 3.0) Y3 BIII

Concept of environmental contamination/pollution. Toxic chemicals in the environment: air, soil and water e.g. industrial solvents, detergents, petroleum, heavy metals, fertilizers e.g. nitrate etc. chemical interaction of toxic chemicals with soil, water and air, Associated health hazards. Introduction to atmospheric chemistry; greenhouse gases; global warming. Alternative fuel sources. Chemical sources of food. Health hazards associated with food additives and chemicals formed during food processing.

CHLT 0354: Project (0/60 : CF 2.0) Y3 BI, BII & BIII

The student will do literature survey, write up a proposal and undertake a supervised practical work in some aspect of physical, inorganic, organic, industrial or analytical chemistry; the student will write a report and give a seminar.

CHLT 0355: Laboratory Management II (45/0 : CF 3.0) Y3 BI

Definition, principles and meaning of management. Functions of management, planning and forecasting, organizing, controlling, leading/directing, staffing, coordinating, motivating and delegation. Management styles, by objectives and by exception. Planning and Forecasting. Principles, types and relationships of organization. Leadership. Principles, types, techniques and limitations of co-ordination, control and delegations. Staffing and motivation.

CHLT 0356: Industrial Chemistry II (45/0 : CF 3.0) Y3 BII

Recent development in local manufacturing sector e.g. Export processing zones, pharmaceutical, petroleum and mining industries. Petrochemical industry. Pharmaceuticals : conventional and traditional production of pharmaceuticals, formulations, packaging and storage. Basic uses and dangers of pain-killers and anti-malarials, Antibiotics. Agro-chemicals : ingredients, additives and stabilizers for fertilizers, fungicides, and insecticides. Processing, toxicology, quality control and packaging, and storage of the chemicals. Colour and paints. Appropriate industrial visits.

CHLT 0358: Biochemistry II (30/30 : CF 3.0) Y3 BIII

Lipids; Structure and properties. Steroids and sterols. Terpenes. Vitamins and Co-enzymes. Water soluble vitamins; Thiamine, riboflavin, niacin, pyridoxine, pantothenic acid, lipid acid biotin, folic acid group, cyanocobalamin) and vitamin C. Fat-soluble vitamins; Vitamin A, D, E, K – sources and importance. The relationship between vitamins and co-enzyme should be emphasized. Biochemical energetics; with reference to muscle, biological oxidation and reduction, and respiration. Appropriate practicals

9.2 Matrix aligning courses/units to Programme learning outcomes

Diploma in Modern Chemistry Laboratory Technology

	YEAR 1		YEAR 2		YEAR 3	
PROGRAMME LEARNING OUTCOMES (PLO)						
	COURSES	CF	COURSES	CF	COURSES	CF
PLO 1: Equip students with technical skills	Heat and Thermodynamics	3.0	Laboratory Management I	3.0	Technical Drawing	3.0
	General Mathematics	3.0			Inorganic Chemistry II	3.0
	Basic Physical Chemistry	3.0	Laboratory practice II	3.0	Project	4.0
	Human Physiology I	3.5			Biochemistry II	3.0
	Electricity and Magnetism	3.0	Electronic circuits for technologists	3.0		
	Microbiology	3.0	Industrial Chemistry I	3.0		
	First Aid	3.0	Biochemistry I	3.0		
PLO 2: Equip students with skills for job opportunities.			Research and Industrial Attachment	4.0		
	Communication Skills	3.0			Analytical Chemistry III	3.0
					Laboratory Management II	3.0
PLO 3: Equip students with knowledge to aid in undergraduate studies.	Inorganic Chemistry I	3.0	Inorganic Chemistry I	3.0	Organic Chemistry III	3.0
	Organic Chemistry I Basic	3.0	Analytical Chemistry I	3.0	Basic Environmental Chemistry	3.0
	Statistics	3.0	Analytical Chemistry II		Physical Chemistry III	3.0
PLO 4: Equip students with planning and managements skills			Physical Chemistry II	3.0		
			Organic Chemistry II	3.0		
	Entrepreneurship for Technologists	3.0	Laboratory Practices I	3.0	Computer Organization	3.0
			Information Technology and Society	3.0	Industrial chemistry II	3.0

*SERVICE COURSES OFFERED BY CHEMISTRY DEPARTMENT

Diploma Service Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	T	CF
CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	-	3.0

YEAR 1 SEMESTER II

CODE	TITLE	L	P	T	CF
CHEM 0131	Basic Organic Chemistry	30	30	-	3.0

DIPLOMA IN EDUCATION (PRIMARY)

Year 1

CODE	TITLE	L	P	T	CF
CHEM 0112	Basic Inorganic Chemistry	45	0	-	3.0
CHEM 0151	Environmental Chemistry	45	0	-	3.0

Year 2

CHEM 0121	Basic Physical Chemistry	30	30	-	3.0
CHEM 0131	Basic Organic Chemistry	30	30	-	3.0

CHEM: 0111 BASIC INORGANIC AND PHYSICAL CHEMISTRY (30/30 HRS C.F. 3.0) Y1S1

Atomic Structure: Introduction to atomic structure, constituents of the atom, atomic number, mass number, atomic orbitals, mole concept, electronic configurations of Z=1 to =25, arrangement of elements in the periodic table. Ionization energies across and down the periodic table. Trends in physical and chemical properties of elements in the period table: melting point, boiling point, electron affinity, electronegativity, density etc. Chemical Bonding: Ionic and covalent bonding. Chemical kinetics: rates of reactions, factors affecting rate of reactions (temperature, pressure, catalysts and concentration). Chemical Equilibrium: Reversible reactions, equilibrium constant (K_c) rates of chemical reactions. Acids and bases, K_a & K_b, pH of solutions, Stoichiometric calculations: molarity and dilution of solutions, buffer systems. Thermochemistry: Enthalpy changes (ΔH_c, ΔH_{rxn}, ΔH_f) simple calculations of enthalpy changes,

Hess's law and its application to simple enthalpy changes, Born-Haber cycle. Phase diagrams: Phase rule, Heating and cooling curves, phase diagrams for one-component and two-component liquid-liquid systems; distillation of miscible liquids. Electrochemistry: Faraday's laws of electrolysis and applications. Redox reactions (balancing the half reactions), Electrochemical cell Zn²⁺/Cu²⁺, standard electrode potentials (displacement, reduction and corrosion).

CHEM 0112: Basic Inorganic Chemistry (45/0 HRS C.F. 3.0) Y1S1

The atom: evidence for existence of particles; atomic number/mass number; isotopes; mass spectrometry; relative atomic mass/molecular mass; mole concept; % composition calculations; RF/MF. Molarity; chemical equations, volumetric analysis. Atomic structure: hydrogen spectrum, Rutherford's and Bohr's models; ionization energies as evidence of energy levels; Pauli's exclusion principle; Hund and Aufbau rules. Electronic configuration (s, p & d). Chemical bonding of atoms; crystal lattice; molecular lattice; Fajan's rules; hydrogen bonding; metallic bonding; Van der Waals forces; oxidation and reduction; oxidation numbers; Born-Haber cycle; Appropriate practicals.

CHEM 0121: Basic Physical Chemistry (30/30 HRS C.F. 3.0) Y1S2

The Kinetic theory of gases and the gas laws: Charles, Boyles Law and van der Waals equation of state. Thermochemistry: Enthalpy of reactions. Law of conservation of energy Hess' law. Enthalpies of neutralisation combustion, formation, atomisation and solution. Energy level diagrams. Reaction kinetics: Factors affecting rate; collision and bulk theories. Order and molecularity; half-life; reaction mechanisms; activation energy; catalysis. Chemical equilibria; equilibrium constants K_c and K_p; degree of dissociation. Le Chatelier's principle. Electrochemistry of solutions.

CHEM: 0131: BASIC ORGANIC CHEMISTRY (30/30 HRS C. F. 3.0) Y1S2

Introduction to organic chemistry. Bonding and hybridization in carbon. Empirical and molecular formulae. **Alkanes:** Sources, nomenclature, and structural isomerism (C₁ to C₈). Combustion as fuels. **Alkenes and alkynes:** nomenclature, preparation,

structure, E-Z isomerism of alkenes; reactions: addition (hydrogen, halogens (X₂) and hydrogen halides (HX)) and oxidation, **Aromatics:** structure and reactions (nitration, alkylation, & acylation) **Alcohols ethers and phenols:** nomenclature, typical reactions and uses. **Alkylhalides, (RX):** Preparation from alkanols, elimination and substitution reactions of alkanols. **Alkanals and alkanones:** preparation, nomenclature, & typical reactions. **Carboxylic acids and their derivatives:** Preparation of carboxylic acids, characteristic reactions; preparation and properties of acid derivatives. Introduction to amino acids, organophosphorus and organosulphur compounds.

CHEM 0151 BASIC ENVIRONMENTAL CHEMISTRY (45/0 : CF 3.0) Y1 S2

Concept of environmental contamination/pollution. Toxic chemicals in the environment: air, soil and water e.g. industrial solvents, detergents, petroleum, heavy metals, fertilizers e. g. nitrate etc. chemical interaction of toxic chemicals with soil, water and air, Associated health hazards. Introduction to atmospheric chemistry; greenhouse gases; global warming. Alternative fuel sources. Chemical sources of food. Health hazards associated with food additives and chemicals formed during food processing

SERVICE COURSES FOR UNDERGRADUATE PROGRAMMES

BACHELOR OF EDUCATION (PRIMARY)

Year 1

CODE	TITLE	L	P	T	CF
CHEM 113	Introduction to Inorganic Chemistry	30	30	-	3.0

Year 2

CHEM 213	Structure and Bonding	30	30	-	3.0
CHEM 214	Chemical Families	30	30	-	3.0

Year 3

CHEM 320	Introduction to Physical Chemistry	15	15	-	1.5
CHEM 321	Thermo Chemistry and Electro Chemistry	15	15	-	1.5

Year 4

CHEM 420	Chemical Thermodynamic	30	30	-	3.0
CHEM 430	Organic Chemistry	30	30	-	3.0

Degree Service Courses**YEAR 1 SEMESTER I**

CODE	TITLE	L	P	T	CF
CHEM 111	General Inorganic and Physical Chemistry	30	30	-	3.0
CHEM 110	Introduction to Inorganic Chemistry	30	30	-	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	-	3.0
CHEM 150	Chemistry for Health Sciences	45	45	-	4.5

YEAR 1 SEMESTER II

CODE	TITLE	L	P	T	CF
CHEM 130	Introduction to Organic Chemistry	30	30	-	3.0

YEAR 3 SEMESTER I

CODE	TITLE	L	P	T	CF
CHEM 351	Environmental Chemistry I	45	0	-	3.0

YEAR 3 SEMESTER II

CODE	TITLE	L	P	T	CF
CHEM 341	Analytical Chemistry I	30	30	-	3.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	T	CF
CHEM 457	Electrochemical Analysis and Measurements	30	30	-	3.0

YEAR 4 SEMESTER II

CODE	TITLE	L	P	T	CF
CHEM 458	Special Analytical Measurements	30	30	-	3.0

(c) Course Descriptions:**CHEM 113: Introduction to Inorganic Chemistry (30/30 HRS C. F. 3.0) Y1B1**

Combustion of elements in oxygen. Reactivity series. Compounds of carbon, Nitrogen, Sulphur and Chlorine i.e. Carbon: oxides and their properties and uses. Carbonates and hydrogen carbonates. Action of heat and dilute acids. Carbon cycle; Nitrogen: Oxides of nitrogen. Ammonia (preparation, solubility), fertilizers, nitric acid (preparation and manufacture, reaction of dilute nitric acid with metals, carbonates and hydroxides), action of heat on nitrates, test for nitrates; Sulphur: oxides of sulphur (preparation and properties), sulphuric acid (manufacture, reactions), test for sulphites and sulphates, hydrogen sulphide (properties, precipitation of sulphides); Chlorine: preparation and properties. Reaction with metals, non metals and, hydrogen chloride (preparation and properties); Molar quantities. Mole, Avogadro's number, molar mass, empirical and molecular formulae, calculations of percentage composition from experiments and data, determination of formulae of ionic compounds; molar gas volume, molar solutions; stoichiometry of chemical reactions; acid/base titrations. Relevant practicals.

CHEM 213: Structure and Bonding (30/30 HRS C. F. 3.0) Y2B1

Atomic structure; Atomic number, Atomic Mass; Relative atomic mass; Isotopes Dalton's Atomic theory, Rutherford and Bohr atomic models; electronic configuration, atomic models, energy levels and pairing of electrons. Atomic spectrum of hydrogen and Ionization energies in relation to energy levels. Origin of bonding forces; chemical bonding: Ionic and covalent chemical bond formation. Bond polarity; Molecular orbitals and hybrid orbitals. Hydrogen bonding; other bond types in metallic and molecular structures; delocalized electrons (conjugated and aromatic hydrocarbons).

CHEM 214: Chemical Families (30/30 HRS C. F. 3.0) Y2B3

Periodic Table; electronic configuration in relation to the Periodic Table. Group Chemistry: general properties of the S block elements; metallic and ionic radius, polarizing power, ionization energy, hydration energy,

electrode potential. Diagonal relationships with reference to ionization potential, electron affinities and electronegativity. Reactions with oxides, halides, hydroxides, oxyanion salts. Organometallic compounds. Major uses of the S block elements. General properties of the P block elements (groups III – VIII)

CHEM 320: Introduction to Physical Chemistry (15/15 HRS C. F. 1.5) Y3B2

Kinetic theory and states of matter, gas laws, reversible chemical reactions. Physical Equilibrium Raoult's Law and the ideal solution. Henry's Law – non-ideal solutions. Applications of Raoult's Law to dilute solutions; Freezing Point Depression and Boiling Point Elevation Applications of Henry's Law: the distribution coefficient. Chemical Equilibrium; Le- Chateliers principle, interconversion of equilibrium constants K_p, K_c and K_x, calculations using equilibrium constant. Equilibrium in ionic solutions: solubility product. Acid-base equilibria: dissociation of acids and bases in water, pH pK. Calculations of pH during acid-base titrations, indicators, buffer solutions. Chemical Kinetics: rates of reactions, order of reactions.

CHEM 321: Thermo Chemistry and Electro Chemistry (15/15 HRS C. F. 1.5) Y4S1

Chemical changes and energy changes. Single calculations of enthalpy changes. Introduction to electrochemistry; oxidation – reduction (redox) reactions; half reactions, balancing of chemical equations. Electrolysis: simple electrode reactions, Faraday's Law of electrolysis; Electrochemical cells; standard electrode potential and cell e.m.f. Relevant practicals.

CHEM 430: Organic Chemistry (30/30 HRS C. F. 3.0) Y4B1

Introduction to organic chemistry alkanes, alkenes, alkynes. Functional groups: alcohols, aldehydes and ketones. Carboxylic acids and alkylhalides. Aliphatic amines, phenols and ethers. Isomerism. Reaction mechanisms of nucleophilic substitution and elimination reactions. Aromatic compounds: mechanisms of electrophilic substitution. Phenols. Relevant practicals.

CHEM 420: Chemical Thermodynamic (30/30 HRS C. F. 3.0) Y4B2

Introduction to chemical thermodynamics. Heat and work: the First Law of Thermodynamics- applications of the first law to chemical reactions, enthalpies of reactions. Pressure, volume, work and reversible processes. Energy and heat capacity of an ideal gas. Heat and work of ideal Gas Expansion. Entropy: The second law of thermodynamics; Gibbs Free Energy, Entropies of expansion and mixing of ideal gases. Temperature dependence of the equilibrium constant.

CHEM 111: General Inorganic and Physical Chemistry (30/30 HRS C. F. 3.0) Y1S1

Atoms and Elements: Dalton's atomic theory, atomic number, mass number, Nucleides and isotopes, Relative atomic mass, Avagadro's number, the mole concept, Chemical calculations: Empirical formulae, (its calculation from percentage composition and from combustion analysis), molecular formula, percentage composition, weight percent (w/w), volume percent (v/v), weight volume percent (w/v). Stoichiometric calculations involving solutions: Molarity, Normality, parts per million (ppm), parts per billion (ppb) dilution calculations. Modern periodic table: Electron configurations and the periodic table: A general survey of representative elements: trends across periods and down the groups. Chemical bonding: covalent and ionic bonding, Lewis dot structures of molecules and ions. Kinetic theory and states of matter: Gas laws: pressure-volume and Temperature-volume relationships; partial pressure relationships, ideal gas law; kinetic theory and gas laws; real gases Chemical equilibrium and reaction rates: reversible reactions; rates of chemical reaction, activation energy, factors affecting reaction rates (temperature, concentration and catalysts), Equilibrium constants, k_c and k_p , simple calculations involving k_c and k_p . Acids and bases; K_a and K_b ; indicators, pH of solutions, hydrolysis of salt, solubility and solubility products; Buffer solutions. Electrochemistry: concepts of oxidation and reduction; balancing redox equations, simple electrode reactions, electrochemical cells, standard electrode potentials and cell emf (simple calculations) Thermochemistry: Basic definition of enthalpy changes, standard enthalpies of combustion, formation, and solution Hess's law of heat summation; calculations of enthalpies of combustion of fuels and carbohydrates. Introduction to separation techniques.

CHEM 150: Chemistry for Health Sciences (45/45 HRS C. F. 4.5) Y1S1

Kinetic theory and states of matter, Gas laws; ideal and real gases. Chemical equilibrium: reversible reactions; equilibrium as a state of balance for reversible chemical reactions Ionic equilibrium: self-ionization of water and ionic product (K_w); acids and bases; ionization constants for weak acids and bases (K_a and K_b); indicators; pH (detailed calculations of pH of solutions); buffer solutions. Electrochemistry: redox reactions; electron transfer; half reactions (oxidation and reduction reactions); balancing of redox reactions; types of electrodes and simple electrode reactions; electrolysis; Faradays laws of electrolysis (quantitative treatment); electrochemical cells; standard electrode potential and electromotive force. Introduction to organic chemistry: electronic configuration of carbon; hybridization, sp^3 , sp^2 and sp . Catenation, Elemental analysis (qualitative). Functional groups alcohols, alkyl halides, aldehydes and ketones, carboxylic acids, aliphatic amines, phenols, ethers (their nomenclature and qualitative analysis). **Alkanes:** Sources; preparations; nomenclature. **Structural isomerism:** physical properties; chemical reactions, mechanism for free radical substitution. **Cycloalkanes:** nomenclature, geometric isomerism. **Alkenes and alkynes:** sources; preparation; nomenclature; structural isomers (E-Z); physical properties, reactions: identification and analysis (addition and oxidation). Polymerization

CHEM 457: Electrochemical Analysis and Measurements (30/30 HRS C. F. 3.0) Y4S1

Electrochemical and Ionic measurements; conductance of ionic solutions, molar and equivalent conductance, Electrochemical cells: Galvanic and electrolytic cells, cell diagrams, cell potentials. Effect of concentration on cell potentials; Nernst's equation. Thermodynamics of cells. Electrochemistry in industry; Electrolysis, electrodeposition and electroplating of metals; corrosion and corrosion protection. Potentiometry: reference electrodes, liquid junction potentials, potentiometric titrations and end point determination. (*Pre-requisite CHEM 111*)

CHEM 458: Special Analytical Measurements (30/30 HRS C. F. 3.0) Y4S1

Classical methods of analysis; gravimetric, volumetric analysis and precipitation techniques. Spectral

measurements; AAS, UV-VIS, IR, X-rays and their instrumentation and applications. Chemical surface studies; SIMs, ESR etc. Chromatography; GSC, GLC, LLC, HPLC, TLC; instrumentation and applications. Radiological measurements; statistics/counting of radioactivity, instrumentation and applications to industry and research. Summary of health and safety requirements. Thermal analysis; differential thermal analysis and differential scanning calorimetry (DTA & DSC), thermomechanical analysis, dynamic analysis, instruments applications. (*Pre-requisite CHEM 457*)

DEPARTMENT OF COMPUTER SCIENCE

DIPLOMA IN COMPUTER SCIENCE

1. Philosophy of the Programme

Computer Science Department innovatively influences human development through generation, presentation and dissemination of knowledge and skills with emphasis on practical application of scientific and technological skills in computing.

2. Rationale

Information Technology continues to change rapidly, creating new opportunities and challenges. The discipline is relatively new and areas thought not possible to apply computer technology continue to provide new opportunities. Therefore there is a global demand for human resource to work in the Information Technology industry. To meet the current demand, improvements on old technology continue to occur and new areas of application are constantly discovered. The aim of this programme is to;

- prepare students that can fit into the world market having entered at the middle level;
- arm the students with adequate skills that would allow them advance their careers into computer profession;
- equip the students with necessary skills to be able to work independently or in teams in managing Information Systems and solving Information Technology related problems;
- equip graduates with necessary skills to enable them join undergraduate degree program in computer science or related disciplines at senior level;

Upon successful completion of the Diploma course, the graduates should be prepared to handle other professional certification examinations.

3. Goal of the programme

The goal of the programme is to prepare students that can fit into the Information technology market having entered at the middle level with the ability to analyse, design, implement, test software and trouble shoot computer hardware related problems.

4. Programme Learning Outcomes

Upon completion of the program learners are expected to:-

- PLO 1: Arm the students with adequate skills that would allow them advance their careers into computer profession;
- PLO 2: Compare the major programming paradigms and be able to learn new programming languages.
- PLO 3: Equip the students with necessary skills to be able to work independently or in teams in managing Information Systems and solving Information Technology related problems;
- PLO 4: Apply Computer Science skills in safeguarding data and network infrastructure from malicious attacks.
- PLO 5: Recognize and be guided by professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology.
- PLO 6: Equip graduates with necessary skills to enable them join undergraduate degree program in computer science or related disciplines at senior level.

5. Mode of delivery

The program is designed to be delivered in a full time face-to-face.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Egerton University rules and regulations Statute 36(2b) for admission into Diploma studies shall apply. In addition;

- a) A candidate must have passed KCSE or an equivalent examination in the following subjects at minimum grades as indicated:: Candidates must have KCSE certificate with a minimum of C, with at least the following grades:
Physics C or Physical Science C Mathematics C
Kiswahili C and English C
OR

- b) Candidates must have KCE/EACE certificate with a minimum of Division Three(3) with at least the following grades;

Physics or Physical Science Credit Five (5)
Mathematics Credit Four (4) English Language Credit Six (6) or Kiswahili Credit (6)

OR

- c) A relevant certificate offered by Egerton University or equivalent. Those with weak grades in Mathematics and Physics may do a Certificate course preparing them for the Diploma.

6.2 Regulation on Credit Transfer

Egerton University regulations for credit transfer, Statute 36 (3d) shall apply.

6.3 Course Requirements

Course requirements are as per the ISO procedure for teaching (EU/AA/OP/06 rev3).

6.4 Student Assessment

The system and rules of undergraduate assessment are set forth in accordance with the examination regulations as stipulated in the prevailing Egerton University Statutes 36 (6).

6.5 Grading System

The grading system will be as per the guidelines in Statutes 36 (6) of Egerton University.

6.6 Examination regulations

Examination regulations stipulated in Egerton University Statutes 36 (5) shall apply. The examination schedule for all courses is provided regularly by the Directorate of Examinations and Timetabling at the beginning of each semester.

6.7 Moderation of Examination

Examinations will be moderated as per Egerton University ISO Procedure –EU/AA/OP/07.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass eighty five (85) Credit Factors within the stipulated period including 8 weeks of Industrial attachment.

6.9 Classification of Degrees

Degree classification shall be in accordance to Statutes 36 (17a).

7. Course Evaluation

Course evaluation will be as per the ISO procedure for course evaluation Teaching Effectiveness Evaluation EU/VC/OP/04 .

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

This programme will be hosted by Computer Science Department in the Faculty of Science. The Programme academic Leader shall be appointed in according to University Standards and Guidelines (2014).

8.2 Programme evaluation

Programme evaluation will be as per the ISO procedure for programme evaluation (EU/VC/OP/05). The programme will undergo an internal self-assessment at the end of its academic cycle. The programme will be bench marked with similar programmes at highly ranked universities recognized by the Commission for University Education.

8.3 Course coding

The programme will adopt the code COMP (Computer) followed by four digits.

The first digit will be is zero (0) indicating it is a Diploma course, the second digit refers to the year of study.

The third digit will denote the sub-discipline as follows:
0 - Introductory Courses

1 - Computer Architecture and Computer Hardware

2 - Operating Systems and Programming Languages

3 - Basic Computer Science

4 - Desktop Applications and Human Computer Interface

5 - Database Systems

6 - Software Engineering

7 - Computer Networks and Distributed Systems

8 – Management, Entrepreneurship

9 – Other application areas

The fourth digit signifies the sequential position of the course in a specific sub-discipline.

9. Courses/Units Offered for the Programme

9.1 A summary of the number of courses and credit hours

YEAR I SEMESTER I

Code	Course Description	L	P	C.F.
COMP 0113	Computer Organisation	45	30	4.0
COMP 0120	Principles of Operating Systems	30	45	3.5
COMP 0190	Information Technology and the Society	45	15	3.5
COMP 0191	Mathematics for Computing	45	0	3.0
COMP 0192	Business Communication and Customer Care	45	0	3.0
ZOOL 0143	HIV/AIDS and Societ	45	0	3.0
	TOTAL	255	90	20.0

YEAR I SEMESTER II

COMP 0114	Digital Electronics	45	30	4.0
COMP 0130	Requirement Analysis and Design	45	15	3.5
COMP 0140	Fundamentals of Programming	45	30	4.0
COMP 0150	Database Design and Implementation	45	15	3.5
COMP 0161	E-Systems	30	30	3.0
COMP 0170	Data Communication	30	45	3.5
	TOTAL	240	155	21.5

YEAR II SEMESTER I

COMP 0231	Desktop Application Development	30	45	3.5
COMP 0232	Object Oriented Analysis and Design	45	15	3.5
COMP 0234	Software Systems Projects	15	60	3.0

COMP 0260	Introduction to Web Based Programming	30	30	3.0
COMP 0271	Local Area Networks	30	60	4.0
COMP 0280	Entrepreneurship and Business Management	45	15	3.5
	TOTAL	195	225	20.5

YEAR II SEMESTER II

COMP 0234	Software Systems Projects	15	60	3.0
COMP 0241	Data Structures and Analysis of Algorithms	45	15	3.5
COMP 0242	Fundamentals of O-O Programming	30	45	3.5
COMP 0251	Database Administration	30	45	3.5
COMP 0262	Distributed Systems	45	15	3.5
COMP 0294	Emerging Technologies in Computer Science	45	15	3.5
	TOTAL	210	195	20.5
COMP 0399	Industrial Attachment	0	120	4.0
	GRAND-TOTAL	900	785	86.5

c) Course Descriptions

COMP 0113: COMPUTER ORGANISATION (45/30: CF 4.0) Y1S1

Machine languages. Language levels and virtual memory. Hardware and software. Milestones in computer architecture. Processors: Memory management. Bits. Byte ordering. Addresses. Cache memory. Electronic circuits: Current, voltage, Power, Circuit Components: Passive, resistance, Impedance; Active Components; Integrated circuits, Decoders, Multiplexers Registers, Binary counters, Memory units, Register transfer and micro operations: register transfer language (RTL), Bus And Memory Transfer. Disk operating systems, Boot process. DOS and Window based Utilities and commands/switches.

COMP 0114: DIGITAL ELECTRONICS (45/30: CF 4.0) Y1S2

Electronic Circuits and their components: current, voltage, power, passive and active components; integrated and binary counters. Combinational Circuits: Half and Full Adders. Flip-flops. Sequential circuits. Flip-flops input equations. Data representation

Numbering system and their Representation. Alphanumeric representations. Complements. Subtraction of unsigned numbers. Overflow and underflow. Number codes. Arithmetic Micro operations: Binary Adder, Binary adder-subtraction, binary incrementor, Arithmetic circuit; logic micro operations, shift micro operations, Arithmetic logic and shift Units.

COMP 0120: PRINCIPLES OF OPERATING SYSTEMS (30/45: CF 3.5) Y1S1

Introduction. Types of Operating Systems. Installation and Configuration of Operating Systems. Operating Systems Architecture. User and Kernel Mode. Systems Environment Settings and The Registry. Editing Registry. System Policy. Editing Policy Files. File Systems. Typical File Systems. Compact Disk (CD) File System. Distributed File System, Digital Versatile Disk (DVD) File System. Managing Partitions. Primary and Extended Partitions. Volume Set. Stripe Set. Managing Fault Tolerance. Redundant Array of Inexpensive Disks (RAID). Supporting Applications. 32-Bit and 64-Bit Applications. Legacy Applications. Managing Applications. Running Applications. Parity. Using Control Panel. Managing Printing.

COMP 0140: FUNDAMENTALS OF PROGRAMMING (45/15: CF 3.5) Y1S2

Introduction. Project Files. Structure of a Source File. Forms. Language Fundamentals. Control Flow. Identifiers and Naming Conventions. Programming for Graphical User Interface (GUI). Windows Controls. Button. Label. Text Box. Menu. Creating Simple GUI. Introduction to Methods and Events. (*PREREQUISITE: COMP 0190*)

COMP 0150: DATABASE DESIGN AND IMPLEMENTATION (45/15: CF 3.5) Y1S2

Introduction to Databases and Database Management Systems; Data Model (Schema) E.F. Codd's Relational Model; Relational Database; Database Concepts: Data Types, Data Independence, File, Table, Relation, Record, Tuple, Field; Constraints: Primary Key and Foreign Key; Composite Key, Defaults and Rules. Organizing Records: Sorting, Index Architecture: Clustered and Non Clustered Indices. Applications of Database Management; Transactions and Durability;

Practical Work in Access; Introduction to Structured Query Language

COMP 0161: E-SYSTEMS (30/30 CF 3.0) Y1S2

Transaction processing, network infrastructure, bandwidth issues, network connectivity and access, Supply chain management: traditional supply chains, intelligent supply chains, supply chain optimization, process reengineering, and e-market; Payment systems and gateways. Smart Cards: Credit and debit cards, e-banking. Other payment options. E-Commerce: B2B, B2C, C2C, G2C etc. M-Commerce and Wireless applications, Wireless Application Protocol (WAP), GSM and m-commerce, Security issues. Online transaction technologies. Bar-coding systems. E-Government issues. Extensible Markup Language (XML), XML and HTML, XML and Electronic Data Interchange (EDI). Legal issues. Use ASP to implement simple E-system. (*PREREQUISITE: COMP 0120*)

COMP 0170: DATA COMMUNICATION (30/30: CF 3.0) Y1S2

TCP/IP networks: Architecture, packet structure, addressing, flow codes, CIDR, DNP, database structures, name servers. Dynamic host configuration protocol. Routing protocol & mutable protocol, SNMP. Data codes. Digital data communication: ISDN, DSC, ATM, and OSI. Wider data counter system IEE 801.11.5, GMS. Synchronous/ Asynchronous. Demodulation & Modulation/serial and parallel, Half and Full duplex, digital and analogue, LAN- physical, logical methodologies, network architecture. WAN. LAN- Os peer to peer & client/server.

COMP 0190: INFORMATION TECHNOLOGY AND SOCIETY (45/15: CF 3.5)Y1S1

Fundamental concepts in Information Technology. Information Technology contribution towards Development. Reasons for the introduction of the computer into an organization/ business. Data representation. Computer hardware for different environments. Data organization. Requirement for computer room. Preserving data security and integrity. Organization of Information Technology department. Functions of staff employed in Information Technology. Application of Information Technology in various

fields. Word processing, spreadsheet applications, database management, presentations, etc.

COMP 0191: MATHEMATICS FOR COMPUTING I (45/0: CF 3.0) Y1S1

Set theory: Definition and basic set operations. Elementary mathematical logic; Number systems; elementary properties. Absolute values and inequalities. Relations and functions. Quadratic equations: Solutions and functions. Permutation and combination. Elementary geometry: equation of straight lines and circles. Differentiation of simple functions and gradient to a curve. Census and Sampling. Questionnaire design and data presentation. Measures of central tendencies and dispersion. Elementary probability concepts. Algebraic equations and Signed numbers. Polynomials: Addition, Subtraction and Multiplication. Factorisation of polynomials. Graphs. Systems of linear equations: Solutions and application. Linear inequalities. Matrices: Matrix operations. Inverse matrices. Application of matrices to systems of linear equations.

COMP 0192: BUSINESS COMMUNICATION AND CUSTOMER CARE (45/0: CF 3.0) Y1S1

Information access for the Business Environment: Information presentation. Use of communication equipment. Vertical and Horizontal Communication. Communication by way of groups and Networks. Barriers to Communication in an Organization. Arranging and conducting Meetings. How to carry out effective presentation. How to create and understand an Organizational Structure Diagram. Impacts of groups within Organizations. Communicating and Listening. Responding to the Customer's Technical Level. Establishing Personal Rapport with the Customer. Communication methods available through the Internet.

COMP 0230: REQUIREMENT ANALYSIS AND DESIGN (45/15: CF 3.5) Y1S2

Identification of problems, opportunities and objectives of systems, data gathering and analysis methodologies preparation of requirement specification document. Design process and preparation of design specification document. Documenting software. Testing and software Implementation strategies.

COMP 0231: DESKTOP APPLICATION DEVELOPMENT (30/45 CF 3.5) Y2S1

Planning the Design of an Application; Creating a User Interface; Validation and Processing User Input; Debugging Tools; Exception and Error Handling, Data Access Technologies and Tools, Introduction to Class Modules, ActiveX Controls, Advanced Data Access issues. Introduction to Component Object Model (COM) Components, Optimizing and Distributing Applications, Internet Applications.

(PRE-REQUISITE: COMP 0140)

COMP 0232: OBJECT ORIENTED ANALYSIS AND DESIGN (45/15: CF 3.5) Y2S1

Unified Modeling Language (UML): Notations and Meta Models, Inception, Elaboration, Construction, Refactoring, Patterns, Transition, Iterative development, Use Cases; User goals and System instructions, Use case diagrams; Class diagrams; Sequence Diagrams, Collaboration Diagrams, Package Diagrams; State Diagrams; Concurrent State Diagrams, Activity Diagrams, Activity Diagrams for Use Cases, Swimless, Decomposing activity; Deployment Diagrams UML and Programming: Domain Model, Specification Model, Moving to Code. *(PRE-REQUISITE: COMP 0230)*

COMP 0234: SOFTWARE SYSTEM PROJECT (30/120: CF 4.0) Y2S1&S2

Identifying computing problem of small-medium size, providing solution to the problem under supervision of the department of Computer Science. System project analysis and specifications, Project design and implementation. Mentoring students and preparing them for the job market. *(PRE-REQUISITE: COMP 0150, COMP 0120, COMP 0231)*

COMP 0241: DATA STRUCTURES AND ANALYSIS OF ALGORITHM (45/15: CF 3.5) Y2S2

Data Structure. Records and Structures. Arrays and Array Manipulation: Linear Arrays, Traversing Linear Arrays, Multidimensional Arrays and Sparse Matrices. Pointers and Pointer Arrays. Stacks Queues and Recursion. Linked Lists. Trees. Understanding of how several fundamental algorithms work. Sorting and Table Look up Algorithms. Analyze the efficiency in terms of Space and Time of most Algorithms Design new Algorithms or Modify existing ones for new applications. *(PRE-REQUISITE: COMP 0193)*

COMP 0242: FUNDAMENTAL OF OBJECT ORIENTED PROGRAMMING (30/45: CF 3.5) Y2S2

Source Files, Declaration, Directories and Paths; Environment Setting; Packages/Libraries, Pre-processor Keywords, Identifiers, Variables and Constant's; Arrays; Access Control: Class Modifiers and directive Access control, Variables and Access control; Constructors; Return Types; Operators and Assignments; Passing variables to a method; Flow control; Overloading and Overriding; Strings; Applets and Graphics. *(PRE-REQUISITE: COMP 0232)*

COMP 0251: DATABASE ADMINISTRATION (30/45: CF 3.5) Y2S2

Database Server Architecture: Communication, Data, Administrative and Application Architectures; Server Security: Login Authentication, Permission Validation, Database User Accounts and Roles; Database Management Systems Setup; Database Management Systems Configuration; Creating, Dropping and Managing a Database, Data Transfer: Transformation Services and Linked Servers; Full Text Indexing and Web Publishing, Backing up and Restoring Databases: Backup Types, Backup Devices, Monitoring and Maintaining a Database Server; Database Replication: Distributed Data, Replication Types, Physical Replication Models. *(PRE-REQUISITE: COMP 0120, COMP 0150)*

COMP 0260: INTRODUCTION TO WEB BASED PROGRAMMING (30/30: CF 3.0) Y2S1

Internet principles: servers and clients, protocols, security, services, applications of the Internet, Hyper Text Markup Language (HTML), stylesheets, JavaScript: syntax, using JavaScript in HTML, declaring and using variables, constants and operators, functions, decision structures, repetition structures (loops), timers, events and event handling, using objects, using frames, dates and time, handling graphics, handling user input, handling form processing, determining browser properties, Introduction to Active Server Pages (ASP) and database technologies (ActiveX Data Objects- ADO, Open Database Connectivity - ODBC), proprietary and open systems, Web-based database access project. *(PRE-REQUISITE: COMP 0140)*

COMP0262: DISTRIBUTED SYSTEMS (45/15: CF 3.5) Y2S2

Distributed Systems Models and Architectures. The application layer. Client server model. Concurrent and distributed programming. TCP and UDP. Internetwork layering. Processes and threads. Sockets and ports. Middleware communication: Remote Procedure calls, Remote Method Invocation, Messaging and streams. *(PRE-REQUISITE: COMP 0120, COMP 0271)*

COMP 0271: LOCAL AREA NETWORKS (30/30: CF 3.0) Y2S1

Introduction to computer network LANs: OSI Reference model in details, LANs and MANs and. Transmission media – copper, fibre, radio. Network hardware: wiring, hubs, switches, routers, servers, LAN topologies and protocols, LAN design, LAN administration and troubleshooting. Configuring LAN devices. Operating system network services installation and configuration. Practical in network installation and configuration. *(PRE-REQUISITE: COMP 0170)*

COMP 0280: ENTREPRENEURSHIP AND BUSINESS MANAGEMENT (45/15: CF 3.5) Y2S1

Sources of business ideas. Feasibility studies: Evaluation business ideas. Mobilizing resources and planning a business. Business models and strategies. Principles of sales and marketing, Customer cares. Time management. Managing people. Leadership and strategy Simple business planning project. Professional ethics Organizational structure and fundamentals of organizational behaviour. Power in organizations. Basic economic principles; Trade: managing import and export, distribution, purchasing. Financing and financial management basics. Organizational records.

COMP 0294: EMERGING TECHNOLOGIES IN COMPUTER SCIENCE (45/15: CF 3.5) Y2S2

The course is designed to be open ended. The lecturer develops course scope. Students learn new/emerging technologies in Computer Science that the curriculum does not cover. At the end of the course, the students are expected to be abreast with Information Technology trends. They will also be required to write a short term paper on typical issue in Information Technology.

COMP 0399: INDUSTRIAL ATTACHMENT**(0/120: CF 4.0) After Y2**

Practical training covering twelve weeks in computer departments of suitable firms at the end of year II. Expectations: exposure to the current business, Scientific and educational applications of the computer. Opportunity to implement acquired knowledge in Industrial setup. Participation: routine office work, systems development, maintenance, and hardware related tasks. Develop the abilities and attitudes needed for organizations.

9.2 Matrix aligning courses to the programme learning outcomes

LEARNING OUTCOME	YEAR 1		YEAR 2	
PROGRAMME LEARNING OUTCOMES				
	Courses	CFs	Courses	CFs
PLO 1: Demonstrate a theoretical understanding of Computer systems and its organization.	Computer Organisation	4.0	Digital Electronics	4.0
	Principles of Operating Systems	3.5		
PLO 2: Demonstrate practical skills in design, coding and testing software and hardware systems to meet clients' specifications.	Mathematics for Computing	3.0	Object Oriented Analysis and Design	3.5
	Requirement Analysis and Design	3.5	Software Systems Projects	3.5
	Database Design and Implementation	3.5	Introduction to Web Based Programming	3.5
			Database Administration	3.5
			Data Structures and Analysis of Algorithms	3.5
PLO 3: Understand major programming paradigms and be able to learn new programming languages.	Fundamentals of Programming	4.0	Fundamentals of O-O Programming	3.5
PLO 4: Apply computer science skills in safeguarding data and network infrastructure from malicious attacks	Data Communication	3.5	Local Area Networks	4.0
	E-Systems	3.0	Distributed Systems	3.5
PLO 5: Recognize professional, economic, social, environmental and ethical issues involved in sustainable exploitation of computer technology.	Information Technology and the Society	3.5	Entrepreneurship and Business Management	3.5
	Business Communication and Customer Care	3.0	Emerging Technologies in Computer Science	3.5
	Biology of HIV/AIDS and Society	3.0	Industrial Attachment	4.0

BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE

1. Philosophy of the Programme

Bachelor of Science in Applied Computer Science is designed innovatively to influence human development through generation, presentation and dissemination of knowledge and skills with emphasis on practical application of scientific and technological skills in computing for national and global development

2. Rationale

As Information and Communication Technology (ICT) continues to change, new opportunities and challenges keep emerging. The discipline is relatively new and has found new areas of application. To meet the current demand of specialists in this area it is necessary to train adequate professionals, who will allow us keep in pace with the rest of the world. In order to train competitive personnel, various challenges need to be addressed. These include the need for

- A dynamic curriculum that quickly adapts to new technology.
- Qualified Applied Computer Science and ICT professionals.
- Coping with the current fast growing technological trends among other

Despite efforts made to address these problems, there is still a challenge. Proper design and development of the curriculum would facilitate the delivery of the intended learning outcomes and the required standards. This programme has taken these challenges and introduced new course units that integrate academic and professional training. The programme is designed to produce problem solving graduates who are able to design, develop and analyze software and hardware in a variety of business, scientific, social and economic spheres to advance the course of humanity nationally and globally from an interdisciplinary perspective. In addition to helping achieve the government's vision 2030 social pillar that states “... *provide globally competitive quality education, training and research for sustainable development, which will position Kenya as a regional centre of research and development in new technologies*”.

3. Goal of the Programme

The goal is to produce graduates with professional competency in computing considering ethical responsibilities in a collaborative environment as well as fostering passion for lifelong learning for creativity and critical thinking.

4. Programme Learning Outcomes

Upon completion of the programme graduates are expected to:-

- PLO 1: Design and implement software and hardware systems to meet clients' desired specifications.
- PLO 2: Compare the major programming paradigms and be able to learn new programming languages.
- PLO 3: Apply computer science skills in safeguarding data and network infrastructure from malicious attacks.
- PLO 4: Employ appropriate theory, practices and tools to design and implement computer networks for small and medium sized businesses.
- PLO 5: Recognize and be guided by professional, economic, social, environmental, moral and ethical issues in the sustainable exploitation of computer technology.
- PLO 6: Examine current and proposed computer systems standards and protocols and apply them in the software development process.

5. Mode of delivery

The programme is designed to be delivered on a full time face-to-face mode. .

6. Academic Regulations for the Programme

6.1 Admission Requirements

Egerton University rules and regulations as stipulated in Statute 36(2b) for admission into undergraduate studies shall apply. In addition;

- a) A candidate must have passed KCSE or an equivalent examination in the following subjects at minimum grades as indicated;
 - i. Mathematics C+
 - ii. Physics or Physical Science C+
 - iii. B- (Minus) grade in one humanities subject and one language subject.

- b) Candidates who have done A' Levels (Mathematics, Physics and another Science subjects) and passed with at least **ONE** principle and **TWO** Subsidiaries passes or equivalent examination can also apply.
- c) Holder of a diploma with credit passes and above in Computer Science or equivalent from institutions recognised by Egerton University. Students admitted with Diploma in Computer science may transfer credits according to Egerton University regulations.

6.2 Regulation on Credit Transfer

Egerton University regulations for credit transfer, Statute 36 (3d) shall apply.

6.3 Course Requirements

Course requirements are as per the ISO procedure for teaching (EU/AA/OP/06 rev3).

6.4 Student Assessment Criteria

The assessment shall be done in accordance with the examination regulations as stipulated in the Egerton University Statutes 36 (6) of 2013.

6.5 Grading System

The grading system will be as stipulated in Egerton University Statutes 36 (6) of 2013.

6.6 Examination regulations

Examination regulations stipulated in Egerton University Statutes 36 (5) shall apply.

6.7 Moderation of Examination

Examinations will be moderated as per Egerton University ISO Procedure –EU/AA/OP/07.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated period. This will include Industrial attachment of 8 weeks.

6.9 Classification of Degrees

Degree classification shall be in accordance to Egerton University Statutes 36 (17a) of 2013.

7. Course Evaluation

Course evaluation will be as per the ISO procedure for course evaluation Teaching Effectiveness Evaluation (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

This programme will be hosted in Computer Science Department in the Faculty of Science. The programme Academic Leader shall be appointed as per the University Standards and Guidelines (2014).

8.2

8.3 Course coding

The programme code will be ACMP (Applied Computing) followed by three digits. The first digit will refer to the year of study. The second digit will denote the sub-discipline as follows:

0 - Introductory Courses

1 - Computer Architecture and Computer Hardware

2 - Operating Systems and Programming Languages

3 - Basic Computer Science

4 - Desktop Applications and Human Computer interface

5 - Database Systems

6 - Software Engineering

7 - Computer Networks and Distributed Systems

8 - Management, Entrepreneurship

9 - Other application areas

The third digit signifies the sequential position of the course in a specific sub-discipline. Courses that are taken by both Computer and Applied Computer Science students will adopt the Computer Science code (COMP)

9. Courses offered for the Programme

The course units offered shall include:

9.1 Schedule of Courses

a) University Common Core courses

Code	Title	L	P	CF
PHIL 108	Ethics, Integrity and National Values	45	0	3
ZOOL 143	HIV/AIDS and Society	45	0	3

COMS 111	Communication Skills	45	0	3
ECON 100	Introductory Economics	45	0	3

b) Schedule of Courses per Semester

YEAR 1 SEMESTER 1

CODE	COURSE TITLE	L	P	CF
ACMP 102	Computer Systems	45	15	3.5
ACMP 180	Community Informatics	45	0	3.0
COMP 100	Information Technology and National Development	30	30	3.0
COMP 121	Programming Methodology	45	15	3.5
MATH 110	Discrete Mathematics for Computer Science	45	0	3.0
STAT 131	Introductory Statistics	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
	TOTAL	300	60	22.0

YEAR 1 SEMESTER 2

ACMP 122	Structured Programming	30	45	3.5
ACMP 150	Principles of Database systems	45	15	3.5
COMS 111	Communication Skills	45	00	3.0
PHIL 108	Ethics Integrity and National Values	45	00	3.0
ECON 100	Introductory Economics	45	00	3.0
PHYS 102	Physics for Computer Scientists	45	15	3.5
	TOTAL	255	75	19.5

YEAR 2 SEMESTER 1

ACMP 224	Web Page Construction	30	30	3.0
ACMP 233	Mathematical Methods for Computer Scientists	45	15	3.5
COMP 211	Basic Circuit Design	30	45	3.5
COMP 223	Object Oriented Programming	45	15	3.5
COMP 224	Operating System	45	15	3.5
COMP	Entrepreneurship and	45	15	3.0

280	Computing Ethics			
PHYS 212	Electricity & Magnetism 1	30	30	3.0
PHYS 210	Physics Practicals	0	30	2.0
	TOTAL	270	185	25.5

YEAR 2 SEMESTER 2

ACMP 220	Visual Programming	30	30	3.0
ACMP 251	Database Administration	30	30	3.0
ACMP 271	Data Communication and Networks	45	15	3.5
COMP 225	UNIX and Systems Programming	45	15	3.5
COMP 231	Fundamentals of Computer Security	45	15	3.5
STAT 233	Bivariate Probability and Statistics	45	0	3.0
	TOTAL	240	95	19.5

YEAR 3 SEMESTER 1

COMP 341	Web Design and Development	30	30	3.0
ACMP 351	File Structures and Database Systems	45	15	3.5
ACMP 372	Client/Server Systems	45	15	3.5
ACMP 381	E-Commerce	45	15	3.5
COMP 326	Data Structures and Analysis of Algorithms	45	15	3.5
COMP 361	Software Engineering	45	15	3.5
COMP 381	Software Project Management	45	15	3.5
	TOTAL	300	120	24.0

YEAR 3 SEMESTER 2

ACMP 334	Artificial Intelligence	45	15	3.5
ACMP 340	Digital SignalProcessing	45	15	3.5
COMP 351	Database Systems	30	30	3.0
COMP 371	Computer Networks	45	15	3.5
COMP 390	Teamwork project	15	30	2.0
COMP	Research Methods in	45	15	3.5

391	Computer Science			
	TOTAL	300	165	19.0
COMP 492	Industrial attachment	0	120	4.0

YEAR 4 SEMESTER 1

ACMP 427	Mobile Application Development	45	15	3.5
ACMP 431	Multimedia Systems	45	15	3.5
ACMP 473	Grid and Cloud Computing	45	15	3.5
ACMP 441	Desktop Application and Development	45	15	3.5
ACMP 452	Data Mining	45	15	3.5
COMP 493	Computer Systems Project	15	60	3.5
	TOTAL	240	135	21.0

Y4S1 OPTIONS

ACMP 428	Semantic Web	30	30	3.0
ACMP 429	Software Architecture	45	15	3.5
		75	45	7.5

YEAR 4 SEMESTER 2

ACMP 446	Human Computer Interaction	45	15	3.5
ACMP 483	Techno-Entrepreneurship and Career choices	30	30	3.0
ACMP 491	Emerging Technologies in Computing	45	15	3.5
COMP 437	Computer Security Systems	45	15	3.5
COMP 493	Computer Systems Project	15	60	3.5
	TOTAL	180	135	17.0
	Optional			
COMP 442	User Interface Design	45	15	3.5
COMP 435	Advanced Data Structures	45	15	3.5
		90	30	7.0
	GRAND-TOTAL	2250	1165	1665

c) `Course Descriptions

YEAR 1 SEMESTER 1

ACMP 102: COMPUTER SYSTEMS (45/15/00; CF 3.5) Y1S1

Digital concepts and number systems; Design and operation of the Stored Program Digital Computer; Introduction to computer architecture; Computer operation and assembly language programming; Designing and testing of combinational and sequential logic systems; Number and coding systems; Boolean Algebra and Karnaugh maps; Implementation of digital logic systems; Detailed operation of the CPU, memory and input/output of a digital computer; Writing and testing assembly language programs; Basic data structures. (*Prerequisite: none*)

ACMP180: COMMUNITY INFORMATICS (45/00/00; CF 3.0) Y1S1

Introduction to Community Informatics and community networking in Kenya, Regionally and globally; community practice, the digital divide, virtual communities/social networking; and Community Informatics and economic and social development in rural and remote communities. Use of information systems for information dissemination and distributed knowledge. Cultural differences in attitudes to and use of technology. Diversity in access and use of information systems by region and sectors of the population. Technological changes that have influenced information use in geographically-based communities. Differences in community norms, practices, and perspectives that influence adoption and adaptation of information systems. The use of ICTs to enable and empower local as well as virtual communities. Students will be required to write term papers on the ICTs to enable and empower locals as well as virtual communities. (*Prerequisite: none*)

YEAR 1 SEMESTER 2

ACMP 122: STRUCTURED PROGRAMMING (30/45/00; CF 3.5) Y1S2

An introduction to structured programming using C. Topics include: input, output, data types, control structures, subprograms, arrays and structures, pointers, recursion, queues, stacks, linked lists and trees(*Prerequisite: COMP 121*)

ACMP 150: PRINCIPLES OF DATABASE SYSTEMS (45/15/00; CF 3.5) Y1S2

Design and development of Database Management Systems (DBMS) to obtain integrity and availability of data; Relational data models and relational query operations with SQL for data definitions and queries; Design methods including the Entity-Relationship (ER) model and relational normalization theory; Data storage, indexing, optimization and processing of queries; A semester project that includes the design and implementation of a database system to be undertaken. (*Prerequisite: COMP 121*)

YEAR 2 SEMESTER 1

ACMP 233: MATHEMATICAL METHODS FOR COMPUTER SCIENTISTS (45/15/00; CF 3.5) Y2S1

Differentiation: Limits and continuity. The derivative. Differentiation rules; Sum rule, Product rule, Quotient rule, Chain rule, Implicit and parametric differentiation. Inverse trigonometric functions. Applications of differentiation; Tangents and normals, Optimization problems, Curve sketching, Rates of change. Anti-derivatives.Integration: Integration rules; Substitution method, Partial fractions, Integration by parts, Reduction formulae. Applications of Integration; Area, Volume and areas of revolution, Length of a curve. Numerical Integration; Trapezoidal and Simpson's rules. First order differential equations. Linear Algebra: Vector Algebra; Sum, Scalar products, Vector Products. Matrices; Matrix algebra, Solution of systems of Linear equations by matrix methods. Matrices as mappings. Determinants. Eigenvalues and Eigenvectors. Series: Taylor polynomials, Convergence, Ratio Test, Radius of convergence of Power series. (*Prerequisite: None*)

ACMP 224: WEB PAGE CONSTRUCTION (30/30/00; CF 3.0) Y2S2

Introduction to the concepts and techniques of web page construction. Basic protocols and standards; Exploring design issues and techniques; Examining the use of multimedia; Individual project: Interaction with a 'client' to design and implement a web site; Fundamentals of the World Wide Web, HTML, HTTP and Web browsers; Multimedia formats: including sounds and images; Choice of appropriate formats for particular applications; Designing and constructing web pages using techniques such as Cascading Style Sheets (CSS),

JavaScript and Server Side Includes (SSI).
(*Prerequisite:* COMP 121)

YEAR 2 SEMESTER 2

ACMP 220: VISUAL PROGRAMMING (30/30/00; CF 3.0) Y2S2

Introduction to Visual basic environment; building user interface; data types; variables; control structures; functions and procedures; arrays; menus; database development with C#. (*Prerequisite:* COMP 121).

ACMP 251: DATABASE ADMINISTRATION (30/3000; CF 3.0) Y2S2

Database Server Architecture: Communication, Data, Administrative and Application Architectures; Server Security: Login Authentication, Permission Validation, Database User Accounts and Roles; Database Management Systems Setup; Database Management Systems Configuration; Creating, Dropping and Managing a Database, Data Transfer: Transformation Services and Linked Servers; Full Text Indexing and Web Publishing, Backing up and Restoring Databases: Backup Types, Backup Devices, Monitoring and Maintaining a Database Server; Database Replication: Distributed Data, Replication Types, Physical Replication Models. Transactions and locking ; Security and user management. (*Prerequisite:* ACMP150)

ACMP 271: DATA COMMUNICATIONS AND NETWORKS (45/15/00; CF 3.5) Y2S2

Communication concepts. Bit and Baud rates. Synchronous, parallel and serial transmission modes. Modulation and modulation. Communication protocols and architecture. Network topologies; bus, star, ring and hierarchical set ups. Basic TCP/IP, Messages, circuit and packet switching. Examples of standard network architecture. (*Prerequisite:* COMP 211)

YEAR 3 SEMESTER 1

ACMP 326: WEB PROGRAMMING AND ADMINISTRATION (30/30/00; CF 3.0) Y3S1

Introduction to Programming with PHP:Creating Web Pages with HTML and JavaScript, FTP, Telnet, and WYSIWYG editors: Intermediate Programming with PHP & MySQL:forms, MySQL databases, E-mail, cookies, standard often-used libraries: Advanced Programming with PHP:object orientation, threads,

shared memory, and semaphores. User Accounts; web security; web Servers; web software; log analysis; content management. (*Prerequisite:* ACMP 224)

ACMP 351: FILE STRUCTURES AND DATABASE SYSTEMS (45/15/00; CF 3.5) Y3S1

Implementation of database systems; Introduction to emerging database technologies; Information retrieval and spatial databases; File structures and indexing; Analytical details of file structures; Efficiency in query evaluation; Concept of transaction; Concurrency control and serialisability; Backup and recovery for databases; Principles of database organisation and querying; Query optimization; Implementation and retrieval; Query processing algorithms; Recovery and security; Describing transactions; Necessity of serialisability; Locking and time stamping for achieving concurrency control; Introduction and foundation knowledge of modern and emerging database technologies. (*Prerequisite:*ACMP 251)

ACMP 372: CLIENT/SERVER SYSTEMS (45/15/00; CF 3.5) Y3S1

The course covers concepts and practical applications of client server systems, a common form of distributed system in which software is split between server tasks and client tasks. Both central and distributed server models will be studied, with particular focus on middleware, systems planning, and data access. The course includes hands-on development of client-server applications in database systems. (*Prerequisite:* ACMP 271)

ACMP 381:E-COMMERCE (45/15/00; CF 3.5) Y3S2

Introduction to E-Commerce; The Digital Economy; E-Governance Principles; Web Evolution and Trends; E-Commerce Models; E-Business Strategy; E-Business Planning; Conducting a Market Analysis; Organizational Transformation by e-Business; Conducting a Competitor Analysis; E-Commerce Enabling Technologies; E-Commerce Case Studies: Amazon.com, E-Bay; E-Commerce Principles: Collaborative Filtering, Shopping Cart Technology; Electronic Marketing Techniques; Electronic Security Systems: Digital Signatures, Digital Certificates, Cryptography, Security Protocols: SET, Kerberos; Electronic Payment Systems; Electronic Supply Chain

Management; M-Commerce; Legal, Ethical Issues in E-Commerce (*Prerequisite:*ACMP 326)

YEAR 3 SEMESTER 2

ACMP 334 ARTIFICIAL INTELLIGENCE (45/15/00; CF 3.5) Y3S2

Study of the problem of making computers act in ways that can be considered “intelligent” Topics: Domain analysis involve; Introduction to Artificial intelligence; Knowledge representation; Problem solving using search; informed search; uninformed searchand their implementations; Constraint satisfaction problems; Knowledge Representation of uncertainty; Planning and Natural Language Processing (NLP). Laboratory exercises in the selected programming language. Writing small project that involve designing simple expert systems. (*Prerequisite:* COMP 130, STAT 131, ACMP 233,STAT 233)

ACMP 340: DIGITAL IMAGE PROCESSING (45/15/00; CF 3.0) Y3S2

Digital Image Fundamentals,Psychophysical Vision Properties, continuous image mathematical characterization, Image Enhancement in Sspatial Domain, Image Enhancement in Frequency Domain, Imaging Restoration and Reconstruction, Colour Image Processing, Wavelets and Multiresolution Processing, Morphological Processing, Image Segmentation, Representation and Description, Object Representation and Description, Object Recognition . (*Prerequisite:* ACMP 233,MATH 110)

YEAR 4 SEMESTER 1

ACMP 427: MOBILE APPLICATION DEVELOPMENT (45/15/00; CF 3.5) Y4S1

Differences between mobile and desktop computing; Analysis of sample mobile application; Tool suites for the development of mobile applications including programming languages and frameworks; Libraries and integrated development environments; Memory management; user interface design; user interface building; input methods; data handling; network techniques and URL loading; GPS and motion sensing; Project to be undertaken

(*Prerequisite:* PHY 212, COMP 225, ACMP 271)

ACMP 431: MULTIMEDIA SYSTEMS (45/15/00; CF 3.5) Y4S1

This course digs deep into the world of Multimedia Systems describing the main characteristics of media types associated in multimedia systems such as static images, text, sound and video. The course further explains the main techniques associated with analogue and digital conversion of media types, and their storage requirements as well as multimedia compression. The course continues to explore the various tools, techniques and technologies needed to authoring multimedia systems. (*Prerequisite:* ACMP 340)

ACMP 491: EMERGING TECHNOLOGIES IN COMPUTING (45/15/00; CF 3.5) Y4S1

Topics on current application of Computer Science. Topics may include: e-Governance e-Learning and Game Development. Highlight on current state of ICT in the country and its role in national development; Promote awareness of current (local) research activities in key areas; and encourage research collaboration between industry, academe, government and private institutions. (*Prerequisite:* COMP 391)

ACMP 441: DESKTOP APPLICATION AND DEVELOPMENT (30/30/00; CF 3.0) Y3S1

Object Oriented concepts in Java; Threads; Exceptions; GUI programming using AWT/Swing; Input/Output; Client-Server Programming; Applets; Database Access via JDBC. (*Prerequisite:* COMP 227)

OPTIONS

ACMP 428: SEMANTIC WEB (30/30/00; CF 3.0) Y4S2

The Semantic Web Activity of W3C: Overview of techniques and standards; XML with Document Type Definitions and Schemas; Transformation/Inference rules in XSLT, RuleML and RIF; Metadata with RDF (Resource Description Framework); Metadata taxonomies with RDF Schema; The W3C ontology language OWL 2; Integrating these techniques for ontology/rule-based multi-agent systems; (*Prerequisite:* ACMP 326)

ACMP 429: SOFTWARE ARCHITECTURE (45/15/00; CF 3.5) Y4S1

This course provides participants with a structured overview of the process of architecting a software-intensive system. It describes the tasks in which the architect is involved throughout the life of a project in conjunction with different approaches (waterfall, iterative, agile). It will discuss the specific concerns of the architect such as the definition of architecture, the characteristics of the architect, the benefits of architecting, documenting a software architecture, reuse, the relationship between requirements and architecture, and architecting at both a logical and physical level. (*Prerequisite:* COMP 260, ACMP 225)

YEAR 4 SEMESTER 2

ACMP 446 HUMAN COMPUTER INTERACTION (30/30/00; CF 3.0) Y4S1

Human-computer interaction and user-centred design examines the fundamental principles of human-computer interaction. Includes evaluating a system's usability based on well-defined criteria. Includes user and task analysis, as well as conceptual models and metaphors. The use of prototyping for evaluating design alternatives. Physical design of software user-interfaces, including windows, menus, and commands. (*Prerequisite:* COMP 260, ACMP 326)

ACMP 452: DATA MINING (45/15/00; CF 3.5) Y4S2

An introduction to Knowledge Discovery in Databases (KDD) and Data Mining. Data integration techniques; Discovery, interpretation and visualization of patterns in large collections of data. Data warehousing and mediation techniques; Data mining methods: rule-based learning, decision trees, association rules and sequence mining; Data visualization; Preview of artificial intelligence, machine learning, statistical data analysis, data visualization, databases, and information retrieval. Several scientific and industrial applications of KDD. (*Prerequisite:* COMP 334, COMP 351).

ACMP 483: TECHNO-ENTREPRENEURSHIP AND CAREER CHOICES(30/30/00; CF 3.0) Y4S2

Importance of Entrepreneurship in National development; Characterisation of entrepreneurship; entrepreneurship behaviour; Technology and technology

transfer; Innovation and technology development. National policy initiatives in entrepreneurship, small enterprise development, and technology; Challenges in starting an enterprise. Business organisation types; Business plan preparation; Financing option; Standards: KBS, ISO900x; Subcontracting, collaboration and franchising; Recent approaches to management (system approach, learning organizations etc). (*Prerequisite:* ACMP 482)

9.2 Matrix aligning courses to Programme learning outcomes

Year 1			Year 2		Year 3		Year 4	
Program Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Design and implement software and hardware systems to meet clients' desired specifications.	• Computer Systems • Physics for Computer Scientists	3.5 3.5	• Mathematical Methods for Computer Scientists • Basic Circuit Design • Software Engineering • Web Design and Development • Electricity and Magnetism • Physics Practical's	3.0 3.5 3.5 3.5 3.0 2.0	• Desktop Application & Development, • Software Engineering • Digital Image Processing • Teamwork project	3.0 3.5 3.5 3.5	• Mobile Application Development, • Computer Systems Project • Multimedia Systems, • Human Computer Interface	3.5 3.0 3.5 3.5
PLO 2: Compare the major programming paradigms and be able to learn new programming languages	• Programming Methodology • Structured Programming	3.5 3.5	• Object Oriented Programming I • Visual Programming • Database Administration Fundamentals • Object Oriented Programming II • Software Engineering	3.5 3.0 3.0 3.0 3.5	• Web Design and Development, • Desktop Application & Development • UNIX and System Programming	3.0 3.0 3.5	• Software Architecture with Java	3.5
PLO 3: Apply computer science skills in safeguarding data and network infrastructure from malicious attacks.	• Principles of Database systems	3.5	• Fundamentals of computer security	3.5	• File Structures and Database Systems	3.5	• Computer Security	3.5
PLO 4: Employ appropriate theory, practices and tools to design and implement computer networks for small and medium sized businesses.			• Data Communication and Networks •	3.5	• Client/Server Systems, • Database Systems • Data Communication and Networks	3.5 3.0 3.5	• Grid and Cloud Computing,	3.5
PLO 5: Recognize and be guided by professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology.	• Information Technology and National Development • Community Informatics Ethics, Integrity and National Values • HIV/AIDS and Society/Introduction to Academic Communication Skills • communication skills • Ethics Integrity and National Values • Introduction to Economics	3.5 3.0 3.0 3.0 3.0 3.0	• Entrepreneurship and Computing Ethics • Bivariate Probability and Statistics	3.0 3.0	• E-Commerce • Teamwork project • Research Methods in Computer Science	3.5 3.5 3.5	• Emerging Technologies in Computing • Techno-Entrepreneurship and Career choices • Industrial attachment	3.0 3.0 4.0
PLO 6: Examine current and proposed computer systems standards and protocols and apply them in the software development process.	Computer Systems	3.5	Operating Systems	3.5	Artificial Intelligence	3.5	Emerging Technologies in Computing Data Mining	3.0 3.5

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

1. Philosophy of the Programme

Bachelor of Science in Computer Science is designed to innovatively influence human development through generation, presentation and dissemination of significant knowledge and skills to steer them in Computer science and related fields for global challenges, while keeping in view the social, ethical and national norms

2. Rationale

Computer Science encompasses technologies that change rapidly over time, creating new opportunities and opening up to challenges. The discipline is relatively new and areas formally thought not possible to apply computer technology continue to provide new opportunities. These two issues create insatiable global demand for human resource to work in Information and Communication Technology industry. Proper design and development of the curriculum facilitates the delivery of the intended learning outcomes and the required standards. This is in line with the government's vision 2030 social pillar that states; "provide globally competitive quality education, training and research for sustainable development, which will position Kenya as a regional centre of research and development in new technologies."

In order to train competitive personnel, various challenges need to be addressed. These include the need for:

- a dynamic curriculum that adopts to new technology.
- incorporation of all needs for a computer science graduate within reasonable time.
- High demand for qualified computer science and ICT professionals.
- coping with the current fast growing technological trends

Whereas various efforts have been made to address these problems, there are still challenges. In order to provide quality education for advancement of humanity the department introduces new courses, which integrate academic and professional training.

To achieve this, the curriculum is reviewed regularly in consultation with stakeholders to assess its suitability and make improvements in response to market demands.

3. Goal of the Programme

Develop students with the ability to analyse problems in computational terms, design, develop, test software and hardware in business, scientific, and social spheres to advance the course of humanity. Students are trained not only in the technical areas of specialization but also in personal development, communication skills and entrepreneurship.

4. Programme Learning Outcomes

Upon completion of the programme, the graduates are expected to:-

PLO 1: Design and implement software and hardware systems to meet clients' desired specifications.

PLO 2: Compare the major programming paradigms and be able to learn new programming languages.

PLO 3: Apply computer science skills in safeguarding data and network.

PLO 4: : Employ appropriate theory, practices and tools to design and implement computer networks for small and medium sized businesses.

PLO 5: Recognize and be guided by professional, economic, social, environmental, moral and ethical issues in the sustainable exploitation of computer technology.

PLO 6: Examine current and proposed computer systems standards and protocols and apply them in the software development process.

5. Mode of delivery

The programme is designed to be delivered on a full time face-to-face mode.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Egerton University Statute 36(2b) for admission into undergraduate studies shall apply.

In addition, a candidate must have passed KCSE or an equivalent examination in the following subjects at minimum grades as indicated;

i. Mathematics	B
Physics	B
OR	
ii. Mathematics	
Physical Science	B
iii. B- (Minus) grade in one humanities subject and one language subject.	

Candidates who have done A' Levels (Mathematics, Physics and another Science subjects) and passed with at least **ONE** principle and **TWO** Subsidiaries passes or equivalent examination can also apply.

Holder of a diploma with credit passes and above in Computer Science or equivalent from institutions recognised by Egerton University can also apply.

6.2 Regulation on Credit Transfer

Egerton University regulations on credit transfer as stipulated in Statute 36 (3d) shall apply.

6.3 Course Requirements

Course requirements are as per the ISO procedure for teaching (EU/AA/OP/06 rev3).

6.4 Student Assessment Criteria

Egerton University Statutes 36 (6) on examination assessment shall apply.

6.5 Grading System

The grading system shall be as stipulated in Egerton University Statutes 36 (6) of 2013.

6.6 Examination regulations

Examination regulations stipulated in Egerton University Statutes 36 (5) of 2013 shall apply.

6.7 Moderation of Examination

Examinations will be moderated as per Egerton University ISO Procedure –EU/AA/OP/07.

6.8 Examination Regulations

Examination regulations stipulated in Egerton University Statutes 36 (6) shall apply.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass ALL scheduled courses within the stipulated time.

6.9 Classification of Degrees

Degree classification shall be in accordance to Statutes 36 (17a).

7. Course Evaluation

Course evaluation will be as per the ISO procedure for course evaluation Teaching Effectiveness Evaluation EU/VC/OP/04 .

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

This programme will be hosted in Computer Science department in the Faculty of Science. The programme academic leader shall be appointed as per the University Standards and Guidelines (2014).

8.2 Programme evaluation

Programme evaluation shall be as per the ISO procedure (EU/VC/OP/05). The programme will undergo an internal self-assessment at the end of its academic cycle. The programme will be bench marked with similar programmes at a highly ranked university.

8.3 Course coding

The programme will adopt the code COMP followed by three digits. The first digit will refer to the year of study. The second digit will denote the sub-discipline as follows:

0 - Introductory Courses

1 - Computer Architecture and Computer Hardware

2 - Operating Systems and Programming Languages

3 - Basic Computer Science

4 - Desktop Applications and Human Computer Interface

5 - Database Systems

6 - Software Engineering

7 - Computer Networks and Distributed Systems

8 – Management, Entrepreneurship

9 – Other application areas

The third digit signifies the sequential position of the course in a specific sub-discipline. Courses that are

taken by both Computer and Applied Computer Science students will adopt the Computer Science code (COMP).

9.0 Courses offered for the Programme

9.1 Schedule of Courses

a) Common Core courses

PHIL 108	Ethics, Integrity and National Values	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0

b) Schedule of Courses per Semester

YEAR 1 SEMESTER 1

CODE	COURSE TITLE	L	P	CF
COMP 100	Information Technology	30	30	3.0
COMP 121	Programming Methodology	45	15	3.5
COMP 110	Computer Architecture	45	15	3.5
PHY 102	Physics for Computer Scientists	45	15	3.5
MATH 110	Discrete Mathematics for Computer Science	45	0	3.0
MATH 132	Analytical Geometry	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
	TOTAL	300	75	22.5

YEAR 1 SEMESTER 2

ACMP 122	Structured Programming	45	30	3.5
ACMP 150	Principles of Database systems	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
STAT 131	Introductory Statistics	45	0	3.0
MATH 111	Differential Calculus	45	0	3.5
	TOTAL	315	45	22.5

YEAR 2 SEMESTER 1

COMP 211	Basic Circuit Design	30	45	3.5
COMP 222	Assembly Language Programming	45	15	3.0
COMP 223	Object Oriented Programming	45	15	3.5
COMP 224	Operating Systems	45	15	3.5
MATH 212	Integral Calculus	45	0	3.0
STAT 230	Probability & Statistics	45	0	3.0
PHYS 212	Electricity& Magnetism	45	0	3.0
PHYS 210	Physics Practical III	0	30	2.0
	TOTAL	300	120	24.5

YEAR 2 SEMESTER 2

ACMP 271	Data Communication and Networks	45	15	3.5
COMP 225	UNIX and Systems Programming	45	15	3.5
COMP 231	Fundamentals of Computer Security	45	15	3.5
COMP 260	Introduction to Software Engineering	30	30	3.0
COMP 280	Entrepreneurship and Computing Ethics,	45	0	3.0
STAT 233	Bivariate Probability and Statistics	45	0	3.0
	TOTAL	255	75	19.5

YEAR 3 SEMESTER 1

ACMP 381	E-Commerce	45	15	3.5
COMP 312	Components and Design Techniques for Digital Systems	30	60	4.0
COMP 325	Logic Programming	45	15	3.5
COMP 326	Data Structures and Analysis of Algorithms	45	15	3.5
COMP 332	Theory of Computation	45	15	3.5
COMP 371	Computer Networks	45	15	3.5
COMP 381	Software Project Management	45	15	3.5

	TOTAL	300	150	25.0

YEAR 3 SEMESTER 2

COMP 334	Artificial Intelligence	45	15	3.5
COMP 340	Computer Graphics & Visualization	45	15	3.5
COMP 341	Web Design and Development	30	30	3.0
COMP 351	Database Systems	30	30	3.0
COMP 361	Advanced Software Engineering	45	15	3.5
COMP 390	Teamwork project	15	30	2.0
COMP 391	Research Methods in Computer Science	45	15	3.5
	TOTAL	255	150	22.0
COMP 492	Industrial attachment	0	120	4.0

YEAR 4 SEMESTER 1

COMP 413	Microprocessor Based System Design	45	15	3.5
ACMP 452	Data Mining	45	15	3.5
ACMP 473	Grid and Cloud Computing	45	15	3.5
COMP 428	Programming Language Design	45	15	3.5
ACMP 472	Wireless and Mobile Computing	45	30	4.0
COMP 493	Computer Systems Project	15	60	3.5
	TOTAL	240	135	21.5

OPTIONS

COMP4 29	Compiler Construction	45	15	3.5
COMP 435	Advanced Data Structures	45	15	3.5
ACMP 429	Software Architecture with Java	45	30	4.0
COMP 442	User Interface Design	45	15	3.5
ACMP 340	Digital Signal Processing	45	15	3.5
		225	90	18.0

Hardware

COMP 414	Real-time Applications	30	60	4.0
COMP 429	Micro-Controller Based Design	45	15	3.5
COMP 499	Project in Real-Time Applications	15	60	3.0
		90	135	10.5

YEAR 4 SEMESTER 2

ACMP 446	Human Computer Interaction	45	15	3.5
COMP 437	Computer Security Systems	45	15	3.5
COMP 473	Distributed systems	30	30	3.0
COMP 493	Computer Systems Project	15	60	3.0
COMP 494	Simulation and Model Building	45	15	3.5
COMP 496	Special Topics in Computer Science	30	30	3.0
	TOTAL	210	165	19.5

Y4S2 Optional Courses

Knowledge Based Systems

COMP 438	Knowledge Based Systems	45	15	3.5
ACMP 497	Project in Artificial Intelligence	45	15	3.5
COMP 498	Combinatorics and Graph Theory with applications in Computer Science	45	15	3.5
	GRAND-TOTAL	135	45	10.5

Distributed Systems

COMP 429	Advance Operating Systems II	45	15	3.5
ACMP 463	Formal Specification	45	15	3.5
COMP 436	Decision Support Systems	45	15	3.5
		135	45	10.5
GRAND TOTAL		2760	1320	216

c) Course Descriptions

YEAR 1 SEMESTER 1

COMP 100: INFORMATION TECHNOLOGY AND COMPUTER PROGRAMMING FUNDAMENTALS(45/15; CF 3.5) Y1 S1

Definition of; Information technology, national development, Information Technology contributions towards Nation Development. Computer technology; Basic hardware components, Computer software, The concept of the system software, Application software, Business Application Software, Use of generic software to capture data, generate, store and display information, Acquiring software. Exploration of the nature of information; sources of information, characteristics of information, Levels of information, Uses of information, Types of information. Creating information; Data, Knowledge and wisdom. Economics of information; Information as a resource, commodity, and constitutive force. Information Technology and organizations/businesses; Introduction to information systems. Introduction to Programming, Problem identification, analysis, algorithm development; Various algorithm representation techniques; History of programming; Programming paradigm; Programming Logic; Program structure; In-built and User-defined data types; Programming constructs; Program development methods; Functions, Objects and Classes; Coding; Debugging; Testing; Documentation.. (*Prerequisite: none*)

COMP 110: COMPUTER ARCHITECTURE (45/15; CF 3.5) Y1 S2

Modern computer architecture, Internal structure of digital computers. Evolution of computer hardware. Organization of the processor and other computer components. Digital concepts. Introduction to Basic Logic Gates, Combinational logic, truth tables and Boolean expressions. Design of Combinational logic circuits, Boolean algebra and Karnaugh maps minimization techniques. SOP and POS. Sequential logic circuits. Number systems: Binary and Decimal Arithmetic; Hexadecimal, Octal and two's complement arithmetic. Arithmetic Circuits, Floating Point Format. Coding; ASCII, EBCDIC and Unicode. Error handling codes: Parity, Hamming codes, CRC, Design and

operation of the stored program concept, CPU diagram, Instruction sets, Fetch Execute cycle. Memory operation and function, Input/Output and peripherals. (Prerequisite: none)

YEAR II SEMESTER I

COMP 211: BASIC CIRCUIT DESIGN (30/45; CF 3.5) Y2S1

Introduction to standard integrated circuit gates and logic families. Combinational Logic circuits design, Boolean algebra, Karnaugh Maps, Sequential Logic circuits, Flip-flops and latches, counters, registers, Shift Registers. Introduction of Hardware Description Languages. Data representations, number system representation, codes for character representation. An Introduction to the internal structure of digital computers, Memory and storage; processor versus memory speed. Types of memory systems. Cost performance gaps. System requirements. RAM organization. Digital magnetic recording principles. Sequential access storage systems. Direct access storage systems. Memory hierarchies and virtual memory systems. Input/Output processing. The I/O problem. Computer resident I/O processors. System resident I/O processors. (*Prerequisite: COMP 110,*)

COMP 222: ASSEMBLY LANGUAGE PROGRAMMING (45/15; CF 3.5) Y2S1

The course covers low level programming and debugging techniques, the functions of assemblers, linkers, and loaders, representations of numbers in computers, CPU operation and instruction cycle, basic assembly language instruction sets, addressing modes, stacks and procedures computer architecture, interfacing with high level language programs, interrupts, memory caching ,and input/output management. (*PREREQUISITE: COMP 110, COMP 130*)

COMP 223: OBJECT ORIENTED PROGRAMMING (45/15; CF 3.5)Y2S2

Data abstraction in object-oriented programming. Comparison with traditional programming techniques. Emphasizes object-oriented design and programming in Java or other OOPs, an effective modern technique for producing modular, reusable, internet-aware programs. Also introduces interactive computer graphics, user interface design, and some fundamental data structures

and algorithms. Concepts of classes, messages, instances, methods, inheritance, polymorphism, encapsulation, collections, generics, lambda expression, class and instance variables in the context of an OO programming languages. (*Prerequisite: COMP 122*)

COMP 224: OPERATING SYSTEMS (45/15; CF 3.5) Y2S1

This course is an introduction to operating systems structures and design. The class will be implementation intensive. Four programming Laboratory Assignments/projects will be implemented. Lectures will cover Overview of Operating Systems, Process management, CPU scheduling and synchronization, deadlock avoidance, and memory management, Input Output systems, File systems, Systems Security along with design decision making. Unix/Linux case studies will be discussed and the implemented topics will include system calls, memory management, process management, parallel programming, libraries, interprocess communication and network programming.. (*Prerequisite: COMP 110*).

YEAR II SEMESTER II

COMP 225: UNIX AND SYSTEMS PROGRAMMING (45/15; CF 3.5) Y2S2

This course provides an introduction to software tools and systems level programming. Topics include: understanding how programs run (compilation, linking, and loading), an introduction to a complex operating system (UNIX), scripting languages, file system programming and the C programming language. Other topics will include system calls, memory management, process management, parallel programming, libraries, interprocess communication and network programming. (*Prerequisite: COMP 110, COMP 130, COMP 224*)

COMP 231 COMPUTER SECURITY (45/15; CF 3.5) Y2S2

Overview of Security: Protection versus security; aspects of security–data integrity, data availability, privacy; security problems, user authentication, Security Threats: Program threats, worms, viruses, Trojan horse, trap door, stack and buffer overflow; system threats–intruders; communication threats- tapping and piracy. Cryptography: Substitution, transposition ciphers,

symmetric-key algorithms–Data Encryption Standard, advanced encryption standards, public key encryption - RSA; Diffie-Hellman key exchange, ECC cryptography, Message Authentication- MAC, hash functions. Digital signatures: Symmetric key signatures, public key signatures, message digests, public key infrastructures. Security Mechanisms: Intrusion detection, auditing and logging, tripwire, system-call monitoring. (*Prerequisite:COMP 100*)

COMP 280: ENTREPRENEURSHIP AND COMPUTING ETHICS (45/00; CF 3.0) Y2S2

Sources of business ideas. Feasibility studies such as Evaluation business ideas, Mobilising resources and planning a business, Business models and strategies, Principles of sales and marketing, Customer care, Time management, Managing people, Leadership and strategy Simple business planning project as well as Professional ethics. Organizational structure and fundamentals of organizational behaviour, Power in organizations, Basic economic principles; Trade: managing import and export, distribution, purchasing, Financing and financial management, basics and Organizational records. Social, ethical, and professional issues facing computing professionals; ethical principles; discussion of case studies. Contract and privacy law, Ethics and protection of intellectual property rights, IS society and ethics, SWOT analysis(*Prerequisite: COMP 100*)

YEAR III SEMESTER I

COMP 312: COMPONENTS AND DESIGN TECHNIQUES FOR DIGITAL SYSTEMS (30/60/00: CF 4.0) Y3S1

Review of basic circuit design techniques, Detailed components of digital systems. Design of digital systems using LSI, MSI and VHSI components. Boolean algebra and its representations. Introduction to structural and flow modeling in VHDL, Programmable arrays, Practical implementation of circuits in laboratory environment using modeling languages or printed circuit boards. Design and implementation of arithmetic circuits, displays, counters, and registers. High level Design and Optimization, Finite State Machines, Formal design processes and Logic synthesis. Memory application and expansion. (*Prerequisite: COMP 110,COMP 211, COMP 222.*)

COMP 325 LOGIC PROGRAMMING (45/15/00; 3.5) Y3S1

Principles of declarative specification, and its relation to procedural realisations propositional logic, syntax and semantics, natural deduction proofs, decision procedures Horn fragment, predicate calculus, syntax and semantics, natural deduction proofs, undecidability and incompleteness, Logic Programming, Horn fragment of predicate logic, unification and top-down operational semantics, use of a logic programming language, Datalog and bottom up operational semantics, Reasoning about sequential programs, Construct well-crafted Prolog programs of moderate size and sophistication. *(Prerequisite: COMP 100)*

COMP 326: DATA STRUCTURES AND ANALYSIS OF ALGORITHM (45/15/00: CF 3.5) Y3S1

Computer representation of character strings. Multiple linked structures, algorithms for manipulation. Introduction to garbage collection and dynamic storage allocation. Developing the skills of analysing the behaviour of algorithms. Detailed study of the basic notions of the design of algorithms and the underlying data structures. Major topics: the analysis with respect to average and worst case behaviour and correctness of algorithms for internal sorting, pattern matching on strings, graph algorithms and methods such as recursive elimination, dynamic programming and program profiling. It will also cover Complexity problem, Structure, complexity and efficiency of algorithms. Examples are taken from numerical computations. *(Prerequisite: COMP 100, MATH 211)*

COMP 332: THEORY OF COMPUTATION (45/15/00; CF 3.5) Y3S1

Computer working Foundation; Basic theory of computation. Computable and recursive functions. Complexity and Cryptography, Introduction to automata, formal languages and the notion of computability, Sequential machines as language acceptors, Context free and context sensitive grammars, Universal Turing Machines, Introduction to unsolvable problems, primitive recursive functions, recursive enumerated sets, NP-completeness and Chomsky Hierarchy. *(Prerequisite: COMP 100, MATH 211)*

COMP 371: COMPUTER NETWORKS (45/15: CF 3.5) Y3S1

Introduction to the principles and current trends in computer networks; Introduction to networks and digital communications. The OSI reference model functions and protocols of the seven layers: physical, data link, network, transport, session, and presentation layers. An overview of network architecture, layered architectures, performance analysis, virtual circuits, datagrams, routing control, internetworking, end-to-end communication, virtual terminal, file transfer protocols and client server programming. Nyquist and Shannon results, modulation and encoding techniques, transmission media and network topologies, switching techniques; Overview of TCP/IP, LANS, MANS, WANS, CSMA/CD, token bus, token ring, DQBD, FDDI and B-ISDN; Internetworking; bridges, routers, gateways. Network security. The Course also introduce wireless, pervasive, ubiquitous and mobile computing. Design and implementation of projects such as simulation of network/transport layer functions, routing, congestion control, Ethernet controller, applications using TCP/IP or remote procedure calls *(Prerequisite: COMP 100, ACMP 271)*

COMP381: SOFTWARE PROJECT MANAGEMENT (45/30/00: CF 4.0) Y3S1

The software process. Human factors in software management. Software project team organisations. Software metrics. software planning and scheduling. Software cost estimation. Configuration management. Maintenance management. *(Prerequisite: COMP 260)*

YEAR III SEMESTER II**COMP 334: ARTIFICIAL INTELLIGENCE (45/15/00; CF 3.5) Y3S2**

Study of the problem of making computers act in ways that can be considered "intelligent" Topics: Domain analysis involve; Introduction to Artificial intelligence; Knowledge representation; Problem solving using search; informed search; uninformed search and their implementations; Constraint satisfaction problems; Planning systems, Knowledge Representation of uncertainty; Machine Learning; Natural Language Processing (NLP). Laboratory exercises in the selected programming language. Writing small project That

involve designing simple expert systems. *(Prerequisite: COMP 130, MATH 141, ACMP 233, MATH 240)*

COMP 340: COMPUTER GRAPHICS (45/15; CF 4.5) Y3S2

The course covers the graphics pipeline. Colour systems. Geometrical objects. Matrix algebra for transformations, projections and coordinate systems in 2D and 3D. Clipping and hidden surface removal. Lighting models for polygon based graphics. Rasterization. Line drawing. Polygon filling. Texture mapping and bump mapping. Global rendering. Low level graphics libraries for 3D programming (OpenGL). Shader programming on GPU. Graphics display hardware architecture. Structure of device independent graphic systems. Two and three dimensional viewing pipelines. Transformations and projections. Hidden line and hidden surface removal algorithms. Rasters graphics techniques and colour space models, traditional animation concepts, keyframing systems, kinematics, motion of articulated figures, and procedural and behavioural systems, project concentrating on an area of a student's choice.. *(Prerequisite: COMP 224)*

COMP 341: WEB DESIGN AND DEVELOPMENT (30/30/00: CF 3.0) Y4S1

Overview of existing web technologies. Design and architecture in JavaEE (Java Enterprise Edition). Installation and administration of Apache Tomcat Server. Software that is needed when using JavaEE. How to use JavaEE components such as Servlets, JSP, EJB, XSLT and Web Services and how they function and Security issues. Tools for software development such as Struts and JSF (Java Server Faces). A project work is part of the course .Web page planning, basic design, layout and construction, and set up and maintenance of a Web site. HTML/XHTML, Cascading Style Sheets, Dreamweaver, Fireworks, Flash, Photoshop, Illustrator, In-Design, PHP, MySQL and various other Web page and image creation tools. PC environment learning, with skills being transferable to the any other machines available in the market for testing student Web sites. Develop a portfolio of sites during the training. Knowledge required: Ability to type, being familiar with Windows, word processing, and the Internet knowledge. *(Prerequisite: COMP 121)*

COMP 351: DATABASE SYSTEMS (30/30: CF 3.0) Y4S1

Internals of database management systems: Principles and theories of physical storage management; Advanced query languages, query processing and optimisation; Index structures for relational databases; Transaction processing; Concurrency control; Design of database systems; network, hierarchical, relational and object-oriented approaches, Security and integrity of databases, distributed database systems, database recovery, client server and transaction processing system; Design and implementation of software components that make up modern database systems. *(Prerequisite: COMP 150 , COMP 260, COMP 326)*

COMP 361: ADVANCED SOFTWARE ENGINEERING (45/15; CF 3.5)

Review of software development life-cycle. Human factors in software development. Comparative study of requirement engineering methods, design methods. CASE environments. Software testing techniques. Safety critical systems. Distributed software engineering. *(Prerequisite: : COMP 260)*

COMP 390: TEAMWORK PROJECT (15/30: CF 2.0) Y3S2

This is a group project in which the candidate develops a business system as group as designed by the staff concerned that can be implemented, using the techniques introduced in the courses already undertaken. Each project will be supervised by a member of the teaching staff and will run in one semester. Students will be expected to attend a series of seminars on contemporary issues and problems. They will also be expected to give oral presentations of their projects within a semester so as to demonstrate their progress in the project. The deliverables are the developed information system and its related documentation. *(Prerequisite: COMP 326, COMP 260)*

COMP 391: RESEARCH METHODS IN COMPUTER SCIENCE (30/30: CF 3.0) Y3S2

Research on a topical issue in computer science, nature of scientific systems and their relation to research methodology; information theory and methods of research and general systems. Research techniques - concepts, paradigms and models; measurement; analysis

methods as applied to computer science Student present a written report as well as a seminar paper on the selected topic at the end of the semester. Topics to be covered: Computer applications in various non computer fields e.g. Bioinformatics, Medicine, forensics, education, engineering etc.*(Prerequisite: COMP 326, COMP 260)*

YEAR IV SEMESTER I**COMP 413 : MICROPROCESSOR BASED SYSTEM DESIGN (30/60; CF 4.0) Y4S1**

Microprocessor architecture, hardware modules and interfaces. Programming. Software tools. Development systems and applications. Microprocessor system design methodology. *(Prerequisite: COMP 110, COMP 211, COMP211, COMP 312)*

COMP 428: PROGRAMMING LANGUAGE DESIGN (45/15: CF 3.5) Y4S1

Design concepts for high-level programming languages. Topics: Study of syntax and semantics, data structures for representing programming languages, implementing control structures, garbage collection, and type systems and a detailed study of Parsing techniques. Students implement several small languages using a functional programming language. *(Prerequisite: : COMP 227, COMP 326)*

COMP 492: INDUSTRIAL ATTACHMENT (0/120; CF 4.0) AFTER Y3S2

Practical training covering eight weeks in computer departments of suitable firms at the end of year III. Exposure to the current business, scientific and educational applications of computers. Application of learnt skills under natural and industrial conditions. Participation in all activities related to: routine office work, systems development and maintenance as well as undertaking computer hardware related tasks. Develop the abilities and attitudes needed for organizing, managing and manning a computer project or organization.

COMP 493: COMPUTER SYSTEMS PROJECT(15/60: CF 3.5) Y4 S1&Y4S2

This is a two semester project work in which the candidate develops a business system that can be implemented, using the techniques introduced in the

courses already undertaken. Each project will be supervised by a member of the teaching staff and will run in one semester. Students will be expected to attend a series of seminars on contemporary issues and problems. They will also be expected to give oral presentations of their projects within a semester so as to demonstrate their progress in the project. The deliverables are the developed information system and its related documentation. *(Prerequisite: COMP 260,COMP 326,COMP 351)*

OPTIONS Y4S1**COMP 429: COMPILER CONSTRUCTION (45/15; CF 3.5) Y4S1**

Modern compiler techniques applied to general-purpose programming language. Working knowledge of the foundations, tools, and engineering approaches used in developing formal language translators. Construction of compilers to position students to build translators for little languages in their careers: Attribute grammars. Syntax-directed translation. Lex, Yacc, LR(I), parsers, symbol tables, semantic and analysis and peep-hole optimization. Lexical analysis; syntax analysis; type checking; syntax-directed translation; implications of computer architecture; mapping of programming language concepts; intermediate code generation; code generation and optimization.*(Prerequisite: COMP 326, COMP 332)*

COMP 435: ADVANCED DATA STRUCTURES (45/15: CF 3.5) Y4S1

Basic list operations. Recursive functions and list processing. LISP and its implementations. Symmetric lists. Threaded lists. Symbol manipulation. String handling language. Applications of list processing. *(Prerequisite: COMP 326)*

COMP 429: SOFTWARE ARCHITECTURE (45/15; CF 3.5) Y4S1

This course provides participants with a structured overview of the process of architecting a software-intensive system. It describes the tasks in which the architect is involved throughout the life of a project in conjunction with different approaches (waterfall, iterative, agile). It will discuss the specific concerns of the architect such as the definition of architecture, the characteristics of the architect, the benefits of

architecting, documenting a software architecture, reuse, the relationship between requirements and architecture, and architecting at both a logical and physical level.

Prerequisite: COMP 227, COMP 260)

Hardware

COMP 414: REAL TIME APPLICATIONS(30/60: CF 4.0) Y4S1

Theory and operation of real-time applications; interfacing digital and analogue systems. Real time data acquisition. (**Prerequisite:** : COMP 110, COMP 211, COMP 222.)

COMP 429: MICRO-CONTROLLER BASED DESIGN (30/30; CF 3.0) Y4 S1

Study of modern micro-controller architecture and its subsystems. Wired and wireless protocols for vehicular networking applications. Design and implementation of real-time embedded systems (**Prerequisite:** COMP 312)

COMP 499: PROJECT IN REAL-TIME APPLICATIONS (15/60; CF 3.0) Y4S1

The implementation of a project in real-time applications. Projects will be drawn from such areas as laboratory data gathering/analysis and computer control of scientific experiments and equipment. (**Prerequisite:** : COMP 334)

YEAR IV SEMESTER II

COMP 437: COMPUTER SECURITY (45/15: CF 3.5) Y4S2

Topics will include introduction to mathematical principles of data security, information security, various developments in security, advanced cryptography, security protocols, network, firewalls, intrusion detection and prevention systems, vulnerability assessment, and other security technologies. There is special emphasis on application and software security issues . In addition, this course includes hands -on exercises using a Linux virtual machine that reinforce the material, and covers weekly current events in computer security.. (**Prerequisite:** STAT 232)

COMP 473: DISTRIBUTED SYSTEMS (45/15: CF 3.5) Y4S2

Characterization of distributed systems. Design goals. Computer networks revisited. Messaging. Remote

procedure calling. Remote Method Invocation. Sockets and socket programming using a preferred O-O programming language (small talk, C++ or Java), File Service; design issues, interfaces, implementation, consistency and replication, fault recovery, tolerance, Shared data and transactions. Concurrency Control. Time and coordination. Case studies such as sun network file system, andrew file system, coda file system, Jini. Introduction to distributed operating systems and Applications. Case study of CORBA. (**Prerequisite:** COMP 332, COMP 225, COMP 371, COMP 428)

COMP 493: COMPUTER SYSTEMS PROJECT(15/60: CF 6.0) Y4S2

This is a two semester project work in which the candidate develops a business system that can be implemented, using the techniques introduced in the courses already undertaken. Each project will be supervised by a member of the teaching staff and will run in one semester. Students will be expected to attend a series of seminars on contemporary issues and problems. They will also be expected to give oral presentations of their projects within a semester so as to demonstrate their progress in the project. The deliverables are the developed information system and its related documentation. (**Prerequisite:** COMP 260, COMP 326, COMP 351)

COMP 494: SIMULATION AND MODEL BUILDING (45/15: CF 3.5) Y4S1

Introduction to modelling and simulation concepts. System analysis and classification. Abstract and simulation models. Continuous, discrete, and combined models. Heterogeneous models. Using Petri nets and finite automata in simulation. Pseudorandom number generation and testing. Queuing systems. Monte Carlo method. Continuous simulation, numerical methods, Modelica language. Simulation experiment control. Visualization and analysis of simulation results. Manipulation of real data in order to extract information about model mechanisms of the population from which the data was collected. Statistical data file organization and processing. Statistical software systems for exploratory data analysis. Simulation of random variables and simple stochastic structures.

(**PREREQUISITE:** COMP 326, COMP 332, MATH 241)

COMP 496: SPECIAL TOPICS IN COMPUTER SCIENCE (30/30: CF 3.0) Y4S2

The content of this Course will be chosen from various application areas in computer science. Such topics shall be current and relevant to the market.

YEAR 4 S2 OPTIONAL COURSES

COMP 438: KNOWLEDGE-BASED SYSTEMS (45/15: CF 3.5) Y4S2

Knowledge representation schemes. Predicate logic. Heuristic search. Illustrative problems in knowledge based systems; natural language and images understanding, robotics, learning. Introduction to expert systems. (**Prerequisite:** ; COMP 334).

COMP 497: PROJECT IN ARTIFICIAL INTELLIGENCE (15/60: CF 3.0) Y4S2

A selected project in artificial intelligence and such as game playing, or a knowledge based system. Students will simulate their projects using an AI language studied in the AI unit (**Prerequisite:** : COMP 334)

COMP 498: COMBINATORICS AND GRAPH THEORY WITH APPLICATION IN COMPUTER SCIENCE (45/15: CF 3.5) Y4S2

Directed and undirected graphs. Paths, circuits, trees, colouring, partitioning, vector spaces and matrices of graphs. Computer representations and graph algorithms. applications. (**Prerequisite:** : COMP 130)

COMP 429: OPERATING SYSTEMS II (45/15: 3.5) Y4S2

Basic understanding of advanced components of the Operating System.; Design and function of specific multi-programming system, General-purpose Operating systems, Command and job control languages, System comparisons, Performance evaluation, System interface with hardware and Distributed operating systems. Laboratory exercises are based on the topics and covers hand on experience in analysis of systems performance, identifying bottlenecks and solving problems related to system interfaces and job control. (**PREREQUISITE:** COMP 225, COMP 326)

COMP 436 : DECISION SUPPORT SYSTEMS (45/15: CF 3.5) Y4S2

Introduction to the concept of systems that support decision making. The characteristics of decision support systems. Introduction to operations research, principals of optimality, decision analysis, Problem formulation, Linear programming and parametric programming, and their applications including transport and assignment problems; Inventory problems; Replacement, maintenance and reliability problems; Dynamic programming; Principle of optimality; Decision trees; Critical path planning, and Software tools. *(Prerequisite: COMP 326, COMP 332)*

COMP 463: FORMAL SPECIFICATION (45/15: CF 3.5) Y4S2

Overview of formal methods. Building blocks on model-based specification; set theory and predicate calculus. Introduction to Z. Structuring specifications using Z schema calculus. Precondition investigation and reification. *(Prerequisite: : COMP 260)*

UNDERGRADUATE SERVICE COURSES**COMP 101: INTRODUCTION TO COMPUTER APPLICATIONS (45/15: CF 3.5) Y1&Y2**

Nature and functions of computers; Introduction to basic components of a modern computer system; Hardware, Firmware and Power. Identification and description of the functions of the basic components of a computer system: Processor, Motherboard, RAM/ROM, Hard Drive, Input/Output Adaptors and Removable Storage Devices. Data processing. Software; System software, Application software, software acquisition. Introduction to information systems. Computer networks and the Internet. *(Prerequisite: none)*

COMP 121: PROGRAMMING METHODOLOGY (45/15/00; CF 3.5) Y1S1.

Problem identification, analysis, algorithm development; Various algorithm representation techniques; History of programming; Programming paradigm; Programming Logic; Program structure; In-built and User-defined data types; Data Structures; Programming constructs; Program development methods; Functions, Objects and Classes; Coding;

Debugging; Testing; Documentation*(Prerequisite: none)*

ACMP 122: STRUCTURED PROGRAMMING (30/45/00; CF 3.5) Y1S2

Developing Programming principles; Use of defensive programming, debugging, testing, coding standards and practices. C programming language. Use of the C programming language in the development of nontrivial programs; Performing comparative analysis of algorithmic solutions to a specified problem; Present coded implementations in the C programming language; Algorithmic solutions to problems that demonstrate professionally acceptable coding and performance standards; Utilisation of the UNIX operating system and/or Windows environment as a skilled end-user *(Prerequisite: COMP 121)*.

COMP 223: FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING (45/15/00; CF 3.5) Y2S1

Introduction; Basic C++ Programming Concepts: C Language Overview, C Program Structure, Data Types, Basic I/O Operations, Variables and Constants, Operators, Expressions and Statements, Comments and Type Casting; Control Structures: Decision Making, Repetition; Functions: User defined functions, pre-defined functions; Arrays: Declarations, Indexing, 1-dimension and 2-dimension arrays; Files: C++ Streams, Persistence to Files; Introduction to Object Oriented Programming in C++: Classes, Inheritances, Polymorphism, Operator Overloading; Introduction to Microsoft Foundation Classes: UI in C++, Windows Programming in C++. *(Prerequisite: ACMP 122)*

COMP 326: DATA STRUCTURES AND ANALYSIS OF ALGORITHMS (45/15/00; CF 3.5) Y3S1

Computer representation of character strings. Arrays queues, stacks, linked lists and trees. Multiple linked structures, algorithms for manipulation. Introduction to garbage collection and dynamic storage allocation. Developing the skills of analysing the behaviour of algorithms. Analyze time and space complexity of programs, solve nontrivial programming problems using algorithmic techniques, and prove correctness of solution derived. evaluating time and space complexity and designing solutions by using appropriate data structures as

well as analysing with respect to average and worst case behaviour and correctness of algorithms for internal sorting, searching, pattern matching on strings, and methods such as recursive elimination, dynamic programming and program profiling. Complexity problems, Structure, complexity and efficiency of algorithms considered too. Emphasise on developing the practical skills of analysis and design.: *(Prerequisite: COMP 130, MATH 212)*

9.2 Matrix aligning courses to Programme Learning Outcomes

	Year 1		Year 2		Year 3		Year 4	
Program Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO1: Deploy appropriate theory, practices, and tools for the specification, design, implementation, maintenance and evaluation of computer-based systems.	Physics for Computer Scientists	3.5	Probability and Statistics	3.0	Data structures and analysis of algorithm Theory of computation		Combinatorics and Graph Theory with applications in Computer Science.	3.5
	Discrete Mathematics for Computer Science	3.0	Integral Calculus	3.0			Formal Specification	3.5
	Introductory Statistics	3.0	Electricity & Magnetism 1	3.0				
	Analytical Geometry	3.0	Bivariate Probability and Statistics	3.0				
	Differential Calculus	3.0						
PLO 2: Recognize and be guided by professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology.	Information Technology and National Development	3.0	Entrepreneurship and Business Management	3.0	E-Commerce	3.5	Professional Computing Ethics	3.0
	Ethics, Integrity and National Cohesion	3.0					Industrial attachment	4.0
	HIV/AIDS and Society	3.0						
	Introduction to Academic Communication Skills	3.0						
	Introduction to Economics	3.0						
PLO 3: Design and implement software and hardware systems to meet clients' desired specifications.	Principles of Database systems	3.5	Basic Circuit Design	3.5	Components and Design Techniques for Digital Systems Theory of Computation Software Project Management, Database Systems Teamwork project	4.0 3.5 4.0 3.0 2.0	Computer Systems Project Project in Artificial Intelligence	3.5
	Computer Architecture	3.5	Introduction to Software Engineering	3.0				3.5
		3.5						
PLO 4: Understand multiple programming paradigms and learn to program in more than one.	Programming Methodology	3.5	Operating Systems Fundamentals of Object Oriented Programming Assembly Language Programming Object Oriented Programming • UNIX and Systems Programming	3.5	Web design and development Logic Programming	3.0 3.5	Programming Language Design	4.0
	Structured Programming	3.5		3.5			Wireless and Mobile Computing	4.0
	Principles of Database Systems	3.5		3.0			Computer Animations Advance Operating Systems II Human Computer Interaction	3.5 3.5 3.5
				3.0				
				3.5				
PLO 5: Apply computer science skills in safeguarding data and network infrastructure from malicious attacks		3.5	• Fundamentals of Computer Security	3.5		3.5	Computer Security Systems	3.5
							Grid and Cloud Computing	3.5

PLO 6: Employ appropriate theory, practices and tools to design and implement computer networks for small and medium sized businesses		3	Fundamentals of Data Communication and Networks	4.0	Computer Networks	3.5	Distributed Systems	3.5
PLO7: Examine current and proposed computer systems standards and protocols and apply them in the software development process.					Research Methods in Computer Science	3.5	Special Topics in Computer Science Seminar Decision Support Human computer interaction.	3.0 2.0 3.5 3.5
PLO8: Employ appropriate tools to gain knowledge about system and its behaviour for simulation purpose					Digital Image Processing Computer Graphics Artificial Intelligence	3.5 3.5 3.5	Data Mining & Warehousing Simulation and Model Building Knowledge Based Systems	3.5 3.5 3.5

DEPARTMENT OF MATHEMATICS

BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE

1. Philosophy of the Programme

The bachelor of Science in actuarial science is designed to provide knowledge and skills in solving problems in risk, insurance and asset finance.

2. Rationale of the Programme

Actuarial science is a discipline that applies mathematical and statistical methods to assess risk and insurance, finance and other industries and professions. Actuaries are professionals who are qualified in this field with intense training and experience. The world of business has a serious shortage of managers in areas of financial and life insurance forecasting. Few institutions that have made advance in this area have not given reasonable attention to the management aspect, thus not business oriented. This course will focus not only on quantitative aspects but also on management aspect. The programme intends to train personnel to work in Insurance firms, Pension departments of various organizations, Banks and other Financial Institutions. Stakeholders hold that the programme require inclusion of Marketing courses to make the programme user focused.

3. Goals of the Programme

To produce a bachelor of science in Actuarial science graduate who can apply financial and actuarial knowledge in solving problems in finance and insurance industries.

4. Programme Learning Outcomes

The Bachelor of Science in Actuarial science programme is to produce graduates that are able to:

- 1: Demonstrate a solid foundation in mathematics by their ability to solve variety of basic and advanced mathematical problems
- 2: Accurately solve a wide variety of actuarial science problems using both basic and advanced mathematical technique

- 3: Apply actuarial mathematics to problems in a variety of fields including insurance, finance, investment and other businesses.
- 4: Communicate effectively both clearly in written and oral forms
- 5: Gain practical experience in actuarial science through internships, independent projects or research.

5. Mode of Delivery

Mode delivery for this programme is Full time face to face.

6. Academic Regulations for the Programme

6.1 Admission Requirements for the Programme

The candidates to be admitted to this degree programme should have obtained a minimum mean grade of C+ at KCSE (or its equivalent) with grade B- or above in Mathematics. In addition, eligible candidates should have grade B- in any two science subjects taken at KCSE level or its equivalent.

6.2 Regulations on Credit Transfer in the Programme

The general university rules on credit transfers as stipulated in the Egerton University Statute of 2013 shall apply.

6.3 Course Requirements

All students are required to attend face to face lectures and adhere to ISO procedures for teaching (EU/AA/OP/06 rev 3) of Egerton University.

6.4 Student Assessment Criteria

The assessment shall be as per the Egerton University Statute 36(6) of 2013.

6.5 Grading System

Each taught course will be graded as per the Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

University examination rules and regulations will apply as stipulated in the Egerton University Statute 36(6) of 2013.

6.7 Moderation of Examinations

Examinations to be moderated as per the Egerton University ISO teaching procedures(EU/AA/OP/07)

6.8 Graduation Requirements

This is a four year programme and students are required to take a minimum prerequisite credit factors for each programme before graduation

6.9 Classification of Degrees

The Bachelor of science in Actuarial science degree will be classified in accordance with the Egerton University Statute 36(17a) of 2013.

7.0 Course Evaluation

Course evaluation shall be conducted as per the teaching effectiveness evaluation procedure EU/VC/OP/04.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic leader

The programme will be hosted and managed in the Department of Mathematics. The programme Academic leader shall be appointed as per University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will undergo an internal programme evaluation (self-assessment) at the end of each academic cycle. This programme shall be benchmarked with at least one public highly ranked University.

8.3 Course coding

The course code shall have the prefix BACS standing for Bachelor of Actuarial Science.

This shall be followed by 3 digits.

The First digit standing for the year of study, 1,2,3,4.

The Second Digit standing for the Sub-discipline as follows.

0 - General Actuarial Science Courses

- 1 - Mathematical Courses
- 2 - Finance courses
- 3 - Risk and insurance courses
- 4 - Statistical courses

The Third digit stands for the sequence of the course- Even (semester one) and odd digits for semester two

9. Courses Offered for the Programme

(a) Distribution Table of Courses offered

Category of Courses	Number of Courses	Credit Factors	Lecture Hours
Core Courses	53	3.0	159
Elective	6	3.0	18.0
Common courses	4	3.0, 3.5	12.5
Total	37	64	189.5

Summary of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F.
BACS 102	Introduction to Actuarial Science	45	0	3.0
COMP 101	Introduction To Computer For Scientific Applications	45	15	3.5
ECON 111	Principles of Microeconomics	45	0	3.0
MATH 112	Basic Mathematics	30	0	3.0
MATH 132	Analytic Geometry	30	0	3.0
STAT 130	Introduction to Statistics	30	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
TOTAL		315	15	21.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	C.F.
BACS 113	Theory of Interest And Its Applications	30	0	3.0
BACS 122	Financial Mathematics	30	0	3.0
COMP 121	Programming methodology	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
ECON 121	Principles of Macro-economics	45	0	3.0
MATH 111	Differential Calculus	30	0	3.0

PHIL 108	Ethics, Integrity and National Values	45	0	3.0
STAT 131	Introduction to Probability and Statistics	30	0	3.0
TOTAL		315	0	21.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	C.F.
BACS 233	Elements of Risk and Insurance	45	0	3.0
BACS 212	Fundamentals of Actuarial Mathematics	30	0	3.0
COMP 122	Structured programming	45	15	3.5
ECON 212	Intermediate Microeconomic Theory	45	0	3.0
MATH 210	Linear Algebra I	30	0	3.0
MATH 212	Integral Calculus	30	0	3.0
STAT 230	Probability and Statistics	30	0	3.0
TOTAL		315	0	21.0

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	C.F.
BACS 213	Actuarial Mathematics	30	0	3.0
BACS 222	Advanced Financial Mathematics	30	0	3.0
BACS 243	Linear Models And Forecasting	30	0	0
ECON 222	Intermediate Macroeconomic Theory	45	0	0
MATH 225	Multivariable calculus	30	0	3.0
STAT 231	Mathematical Statistics	30	0	3.0
STAT 245	Operations Research	30	0	3.0
TOTAL		315	0	21.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F.
BACS 303	Information System Analysis and Design	45	0	3.0
BACS 306	Stochastic Processes for Actuarial Science	45	0	3.0
BACS 312	Advanced Actuarial Mathematics	45	0	3.0
BACS	Principles of Financial	45	0	3.0

324	Management			
BACS 333	Risk Theory for Actuarial Science	45	0	3.0
STAT 330	Mathematical Statistics II	45	0	3.0
STAT 332	Theory of Estimation	45	0	3.0
TOTAL		315	0	21.5

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F.
BACS 313	Life Contingencies	45	0	3.0
BACS 342	Statistics for actuarial Science	45	0	3.0
BACS 332	Life and Health Insurance	45	0	3.0
BACS 343	Econometric models	45	0	3.0
STAT 347	Sample Survey Techniques	45	0	3.0
BACS 399	Internship in Actuarial Science	0	120	4.0
ELECTIVE (1)		45	0	3.0
TOTAL		270	120	22.0

Electives

BACS 325	Principles of Actuarial Investigations	45	0	3.0
MATH 332	Ordinary differential equations	45	0	3.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F.
BACS 400	Organization Theory & Behaviour	45	0	3.0
BACS 412	Higher Life Contingencies	45	0	3.0
BACS 422	Pensions and Pension Mathematics	45	0	3.0
BACS 442	Mathematics of Demographic & Graduation	45	0	3.0
BACS 444	Survival Models and Analysis	45	0	3.0
STAT 432	Test for Hypothesis	45	0	3.0
STAT 441	Statistical Computing	45	0	3.0
ELECTIVE (1)		45	0	3.0
TOTAL		315	0	21.0

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F.
BACS 403	Contemporary Issues in Actuarial Science	45	0	3.0
BACS 409	Actuarial Science Project	0	90	3.0
BACS 423	Computational Finance	45	0	3.0
BACS 425	Investment and Asset Management	45	0	3.0
BACS 427	Stochastic Financial Modelling	45	0	3.0
STAT 440	Time Series Analysis and Forecasting	45	0	3.0
ELECTIVE (2)		45	0	3.0
TOTAL		225	90	21.0

Electives

BACS 402	Theory of Business Decisions	45	0	3.0
BACS 443	Econometrics	45	0	3.0
BACS 446	Bayesian Inference & Methods	45	0	3.0
MATH 420	Partial Differential Equations	45	0	3.0

c) COURSE DESCRIPTIONS**BACS 102: Introduction to Actuarial Studies (30/0/30: CF3.0) Y1S1**

Overview of the field of Actuarial Science, understanding of Actuarial Science, elementary mathematics, statistics and multistage models, Survival Models and the Life Table, Financial mathematics, risk assessment and management practice of investments (profit and surplus), life insurance, general insurance and retirement provision, and current topics: Life insurance, Non-life insurance, Superannuation and Health, Professionalism in Actuarial Science.

BACS 113: Theory of Interest and its Applications (30/0/30: CF3.0) Y1S2

Various rates of simple and compound interest; present and accumulated values, annuity functions and their application to Amortization, sinking funds and bond values; depreciation methods; introduction to life tables, life annuity and life-insurance values.

BACS 122: Financial Mathematics (30/0/30: CF3.0) Y1S1

Interest rates; Simple interest rates, Present value of a single future payment, Discount factors; Effective and nominal interest rates, Real and money interest rates, Compound interest rates, Relation between the time periods for compound interest rates and the discount factor, Compound interest functions; Annuities and perpetuities, Loans; Introduction to fixed-income instruments, Generalized cash-flow model; Net present value of a sequence of cash-flows, Equation of value, Internal rate of return. Investment project appraisal; Elementary compound interest problems.

BACS 212: Fundamentals of Actuarial Mathematics (30/0/30: CF3.0) Y2S1

The single decrement model and calculations based on select and ultimate mortality; present values and accumulations of stream of payments based on a single decrement model; equation of value for payments based on a single decrement model; annuity and assurance commutation functions and their relationships; assurance and annuity contracts; the stationary population model

BACS 213: Actuarial Mathematics (30/0/30: CF3.0) Y2S2

Multiple decrement models; Multiple Decrement Tables and the Associated single decrement tables, Net Premium Valuation; Insurer's net random future loss; Equivalence principle for computing net premiums; Discrete premiums; True m-thly and p-thly payment premiums; Net premiums and gross premiums and provisions for with-profit and without profits contracts; Further Analysis of Premium Reserves; Prospective and Retrospective calculation of reserves; Types of bonuses; Methods of graduating experience rights, mortality variation with respect to social economic and regional factors, and heterogeneity within a population.

BACS 222: Advanced Financial Mathematics (30/0/30: CF3.0) Y2S1

Introduction to financial investments, financial assets; Forward contracts. No-arbitrage pricing of forward and futures contracts (without and with dividends); Term structure of interest rates, discount factors, zero-coupon

bonds; Present value of a cash-flows sequence, Coupon bonds; Duration; convexity of a cash-flow sequence; Portfolio immunization; Stochastic interest rate models

BACS 233: Elements of Risk and Insurance (30/0/30: CF3.0) Y2S1

Concept of risk and risk management, uncertainty and risk, Classification of risk, Business risk, Definition and nature of insurance, Insurance terminologies, Evolution of insurance, Scope and subject matter of Insurance, Significance of insurance, Principles of insurance, Insurance agency, Classes of insurance, underwriting, claim management, Insurance rate and premium, Insurance market, Insurance company organization, Public attitude towards insurance, Evidence of current risk management activities and functions, Elements of organizational risk management, The strategic, operations and risk management model, Risk retention and transfer management, Ethics and risk management

BACS 243: Linear Models and Forecasting (30/0/30: CF3.0) Y2S1

Simple linear regression - matrix formulation; parameter estimation by least squares, maximum likelihood, method of moments; hypothesis tests; confidence and prediction intervals. multiple regressions; Testing of hypotheses; multiple regressions and mathematical model building; multiple regressions applied to analysis of variance problems, One- and two- way fixed effects ANOVA; parameter estimation by least squares, maximum likelihood, and the method of moments; use of residuals in diagnostic plots. One-way random effects model. Post-hoc testing - orthogonal contrasts; multiple comparisons.

BACS 303: Information System Analysis (45/0/0: CF3.0) Y3S2

Fundamentals of information systems, Effect of information systems on organizations. Technical and Organizational Foundations of information systems, building information systems, managing information system resources. Analysis and design of business information systems; Analysis phase of systems development, Systems development life cycle, feasibility studies, analysis of user requirements, and development of logical system models.

BACS 312: Advanced Actuarial Mathematics (45/0/0: CF3.0) Y3S1

Joint life, last survivor, independent survival models
Premium calculation: present value of future loss random variable, equivalence principle, net premium, gross premium, portfolio percentile premium principle, future loss random variable, policy values for policies with annual cash flows, recursive formulae for policy values, policy values for policies with continuous cash flows, Thiele's differential equation, Multiple states models: discrete time Markov processes, continuous time Markov processes, Kolmogorov's forward equations, multiple decrement models; Discounting emerging cost techniques: determining premiums using a profit test, profit criterion, determining reserves using a profit test

BACS 313: Life Contingencies (45/0/0: CF3.0) Y3S2

Survival distributions and life tables, Construction of mortality, sickness, Multiple, decrement and other similar tables for graduated data, Determination of the probability and monetary functions based on mortality, sickness, multiple decrement and other similar rates, Values for premiums for single life annuities and assurances, determination of policy values, surrender values and paid up policy values, Mathematical models of actuarial reserving, introduction to the applications, moving weighted average, Bayesian, parametric and smooth function, interpolation methods, statistical considerations, two dimensional graduation, tests of graduation.

BACS 323: Introduction to Pension Mathematics (45/0/0: CF3.0) Y3S2

The theory and practice of pension plan funding. Assumptions, basic actuarial functions and population theory applied to private pensions. Concepts of normal cost supplemental liability, unfunded liability arising from individual accrued benefit and projected benefit cost methods. Defined benefit plans, defined contribution plan and hybrid plans, concept of present value in retirement funding, funding unfunded liabilities.

BACS 324: Principles of Financial Management (45/0/0;CF:3.0) (Y3S1)

Objective of financial management. The annual financial statements; content, interpretation and application for planning and control. Budgets as a management tool. The time value of money, risk and return. Company structure and financing. Basic principles of taxation. Different types of taxation. The role of the main institutions in financial markets. Basic principles of group accounts. Calculation and use of accounting ratios. Limitations of company accounts.

BACS 325: Methods of Actuarial Investigations (45/0/0: CF3.0) Y3S2

Capital redemption policies; determination of the rate of interest in a given transaction. Valuation of securities; effect of income and capital gains taxes. Cumulative sinking funds; yield curves; discounted mean terms; matching and immunization; consumer credit. Introduction to stochastic interest models. Decremental rates and other indices; analysis of data and derivation of exposed to risk formulae. **(Prerequisite BACS 100)**

BACS 332: Life and Health Insurance (45/0/0: CF3.0) Y3S1

Introduction to life and health insurance, Perspective analysis, basic concepts related to the structure of coverage and types of contracts, moral hazards and health insurance, Types of life and health insurance, term insurance, the investment element in life insurance, risk borne by parties to a life insurance contract, allocations of mortality risks, policy conversions, Evaluation of life insurance contract, insurance for health care services, events covered, form of recovery and types of insuring organizations, Medical expense reimbursement and service coverage, Issues in life and health insurance.

BACS 346: Stochastic Processes for Actuarial Science (45/0/0: CF3.0) Y3S1

Difference between deterministic and stochastic models. The role of models, Definitions of stochastic processes, state space and time, mixed processes, the Markov property, Actuarial applications, Random walks; transition probabilities, first passage time, recurrence, absorbing and reflecting barriers, gambler's ruin problem. Examples, eg financial indexes. General

theory of Markov chains: transition matrix, Chapman-Kolmogorov equations, classification of states, stationary distribution, convergence to equilibrium. Application of Markov chain models; eg no-claims discount, sickness, marriage. Estimation of probabilities; simulation and assessing goodness-of-fit. Continuous time processes. Jump processes; Poisson process, inter-event times, Kolmogorov equations; Time-inhomogeneous processes with generalization of earlier examples (sickness, death, marriage models). Use of maximum likelihood for estimating transition intensities. Binomial and Poisson models of mortality, Maximum likelihood estimators for the probability of death. Simulation of random walk, Markov chain and Markov jump processes with both time homogeneous and inhomogeneous examples.

BACS 399: Internship in Actuarial Science (0/120/0;CF:3.0) (Y3S2)

An opportunity for students to participate in individual job experiences, domestic and international, under the supervision of an on—site manager and a department faculty member, Internship must be within an Actuarial Science or Insurance Organization, Products of the internship will include an evaluation by the on-site manager, a log of the internship experience, and a paper describing the experience, A comparison-contrast between academic learning and the internship experience will be conducted, To be undertaken during the long holiday break.

BACS 400: Organisation Theory and Behaviour (45/0/0: CF3.0) Y4S1

Nature of organization theories, Organization theories, Organization structure and design, Groups and individuals in the organization, Organization change and development, Organization effectiveness, Power and politics in organizations, Conceptual framework of Behavioural Sciences, Individual and groups dynamics, Organisation Structure and management Practices, Individual and Group work behaviour, Motivation and leadership behaviour, Influence of informal work groups on members behaviour, Decision-making process.

BACS 402: Theory of Business Decisions (45/0/0: CF3.0) Y4S1

Applications of linear programming in business decision making, shadow prices and their use in schemes of decentralization. Expected utility, decision rules for problems involving risk, with applications to insurance and investment problems. Random processes, information structures, trees and sequential decisions, uncertainty analysis; Bayes and Minimax solutions of games against nature and zero – sum two person games. Organizations considered as games and as teams, survey of information organization theory. Markov models in business management, consumer behavior; selecting a portfolio of credit risks

BACS 403: Contemporary Issues in Actuarial Science (45/0/0;CF:3.0) Y4S2

Construction and Evaluation of Actuarial Models given by the Casualty Actuarial Society and the Society of Actuaries(Kenya and the World), Severity, frequency and aggregate models of insurance losses, and statistical methods to estimate parameters of such models from sample data, Legal and Ethical Issues in Actuarial Science. Field trip – students to undertake a guided field visit to an organisation where they can gather and write reports on contemporary issues in actuarial science.

BACS 405: Econometric Models II (45/0/0: CF3.0) Y4S2

Nature of econometrics, the general linear model (GLM), extensions of the GLM: dummy variables, seasonal adjustment and covariance analysis; multicollinearity. Generalized least squares, heteroscedastisity, autocorrelation in linear models

BACS 409: Actuarial Science Project (0/90/0: CF3.0) Y4S2

Critically review a research paper, Carry out a literature review for a research topic, identifying relevant articles and summarising major contributions as well as constructing a literature map.

Prepare and present a research proposal covering research aim and motivation, literature review, approach and methodology and expected outcomes. Carry out a survey to solve the problem, Analyze data, Write a report, Plan and writing a thesis (introduction, research

questions, research methods, results, conclusions), Write a research paper and get it published.

BACS 412: Higher Life Contingencies (45/0/0: CF3.0) Y4S1

Multiple life models, joint life, last survivor, contingent insurance, values of premium for multiple life annuities and assurances and reversionary annuities and compound statuses, Multiple decrement on models: disability, withdraws retirement etc. and reserving models for life insurance, The control circle, Introduction to the stochastic approach to life and other contingencies.

BACS 422: Pensions and Pension Mathematics (45/0/0;CF:3.0) Y4S1

Principles of pension funds. Mathematical models for; retirement income, retiree medical benefits, disability benefits and survivor benefits. Computer applications, simulation. Guarantees and options. Principles of pension valuation; actuarial cost methods, asset valuation methods; market value and smoothed market values, actuarial assumptions, gain and loss analysis.

BACS 423: Computational Finance (45/0/0: CF3.0) Y4S2

Computational methods in finance and financial modelling; interest rate models and interest rate derivatives; derivative securities; Black-Scholes theory; no-arbitrage and complete markets theory; Hull and White models; Heath-Jarrow-Morton models; Hedging and immunization; the stochastic differential equations and martingale approach, multinomial tree and Monte Carlo methods, the partial differential equations approach, finite difference methods.

BACS 425: Investment and Asset Management (45/0/0: CF3.0) Y4S2

Principles underlying legislation, regulations and taxation, valuation of assets and portfolios, capital projects, risk control techniques and performance monitoring. Interest rate, risk minimization; duration analysis; cash flow matching; fundamental theorem of asset pricing; term structure of interest rate models.

BACS 427: Stochastic Financial Modelling (45/0/0;CF:3.0) Y4S2

Economic background; Markets, options, portfolios, arbitrage. Discrete time stochastic processes; Conditional expectation, Markov chains, measure theory, filtrations, martingales. Discrete time finance; Asset pricing in a risky market, viability, discrete Black-Scholes formula, equivalent martingale measure. Continuous time stochastic processes; Brownian motion, stochastic integrals, Ito calculus, Cameron-Martin-Girsanov theorem. Continuous time finance; Geometric Brownian motion, asset prices, volatility, continuous Black-Scholes theorem

BACS 433: Risk Mathematics (45/0/0;CF:3.0) Y4S2

Decision theory, Bayesian statistics, Loss Distributions, re-insurance, credibility theory, ruin theory, run off triangle, risk models.

BACS 442: Mathematics of Demography and Graduation (45/0/0;CF:3.0) Y4S1

Meaning of demography, birth and death rates. Collection of demographic statistics, sources of errors and their corrections, measures of mortality and fertility. Construction of life tables from large databases such as census data. Analysis of experience data. Estimation of mortality and other decremental rates. Graduation methods and their applications: moving weighted average, Bayesian, parametric and smooth-function interpolation methods; statistical considerations; two dimensional graduation; tests of graduation.

BACS 444: Survival Models and Analysis (45/0/0;CF:3.0) Y4S1

The nature of survival data; censoring mechanisms, Survival (failure) times as random variables; functions used to describe the survival distributions. Actuarial notation. Non-parametric estimation of the survival function and hazard functions; the Kaplan-Meier (product-limit) and the Nelson-Aalen estimators, and their life-table analogues. Comparison of survival curves; the log-rank tests. Estimation of the variance (Greenwood's formula); the delta method. Parametric survival models; exponential, Weibull, gamma, Gompertz, Makeham, log-logistic; different time dependence of the hazards. Maximum likelihood estimation in the presence of censoring; exposed to risk.

Parametric hazard regression models; graphical methods; selection of significant covariates. The Cox proportional hazards model; the partial likelihood. The accelerated failure time (AFT) model. Actuarial applications: complete and curtate future lifetimes; crude estimates; the principle of correspondence; graduation (smoothing) and statistical tests for comparison with a standard life table.

BACS 446: Bayesian Inference theory and methods (45/0/0;CF:3.0) Y4S1

Review of Bayesian inference for single parameter model. Inference for two and three parameter model with conjugate and unconjugated priors: for the mean and variance a normal random sample, for the parameters of a simple linear regression. An introduction to Markov chain Monte-Carlo methods; Gibbs sampling, metropolis-Hastings sampling, mixing and convergence. Applications such as regression and generalized linear models, missing data problems, random effects models

9.2 Matrix Aligning Courses/Units to Learning Outcomes

BACHELOR OF SCIENCE IN ACTUARIAL SCIENCELEARNING OUTCOMES	YEAR 1		YEAR 2		YEAR 3			YEAR 4		
Programme Learning Outcomes										
	Courses	CF	Courses	CF	Courses	CF	Courses		CF	
PLO1		3.0			Life and Health Insurance	3.0				
PLO2	Theory of Interest And Its Applications	3.0	Fundamentals of Actuarial Mathematics Actuarial Mathematics	3.0	Advanced Actuarial Mathematics Life Contingencies	3.0	Higher Life Contingencies		3.0	
PLO3			Advanced Financial Mathematics	3.0	Principles of Financial Management Principles of Actuarial Investigations	3.0	Pensions and Pension Mathematics Computational Finance Investment and Asset Management Stochastic Financial Modeling		3.0 3.0 3.0 3.0	
PLO4	Introduction to Actuarial Science	3.0			Information System Analysis and Design	6.0	Contemporary Issues in Actuarial Science Theory of Business Decisions		3.0 3.0	
PLO5					Internship in Actuarial Science	4.0	Actuarial Science Project		6.0	

BACHELOR OF SCIENCE IN STATISTICS

1. Philosophy of the Programme

The Bachelor of Science in Statistics is designed to provide knowledge and skills in statistical techniques that are appropriate in decision making and policy formulation. The programme develops the capacity of the individual to be able to manage and analyze huge volumes of information generated by organizations for their development.

2. Rationale

Many a times, there is disconnect between statistical theory and statistical application. Most statisticians produced have a flare in the theory but have difficulty in to analyze the statistical data, especially one that requires application of statistical software's. This limits their analysis of many fields such as in Biological and Physical Sciences, Agricultural, Business, Finance, Economics, Engineering, and many other fields.

Statistics deals rationally and objectively with the uncertainty that accompanies variation phenomena as highly complex as the interplay of many factors that affects our environment.

The statistician's main task is to determine what type of data to collect how to collect it and how to analyze it. These problems are solved by designing Experiments or carrying out Sample Surveys. Since statistical inference is concerned with inferring what the population is like on basis of the sample, the link between population and sample is provided by Probability Theory, which forms an important part of the curriculum. Developing and assessing statistical models to describe the variation in some response in terms of other explanatory variables and applications of these models is also incorporated.

We apply concepts in Pure and Applied Mathematics such as calculus, Linear and Abstract Algebra, Combinatory, Difference and Differential equations in advance analysis of data. Since a statistician requires a strong application background, computer programming and application courses such as Economics, Accounting, and Finance are included.

This degree programme shall therefore equip the students with knowledge, skills and attitudes that will enable them to work as Statisticians in diverse fields. A

part from teaching, the graduates could work in Ministry of Planning, Kenya National Bureau of Statistics, Research institutions, pharmaceutical industry and non-governmental organizations such as public opinion pollsters.

In addition, this programme will produce graduates who can undertake postgraduate studies in statistics world over.

3. Goal of the Programme

The general aim of the programme is to provide students with a wide range of skills, knowledge, and attitudes to respond to their need for effective management of surveys and data analysis.

4. Programme Learning Outcomes

The graduates of the programme should be able to:

PLO 1: Understand and explain specific concepts applicable to statistical theory;

PLO 2: Design statistical experiments and surveys for collecting appropriate data;

PLO 3: Identify appropriate methods for data analysis and make valid inferences;

PLO 4: Design and implement algorithms to solve statistical problems;

PLO 5: Produce graduates who can pursue post-graduate studies in this area.

5. Mode of Delivery

Both full time and part time modes of study shall apply in the programme.

6. Academic Regulations for the Programme

6.1 Admission Requirements for the Programme

Candidates admitted to this degree programme should have obtained a minimum mean grade of C+ at KCSE (or its equivalent) with grade B- or above in Mathematics. In addition, eligible candidates should have grade B- in any two science subjects taken at KCSE level or its equivalent.

6.2 Regulations on Credit Transfer

The general university rules governing the issues of credit transfers as stipulated in Egerton University Statute 36 of 2013 shall apply.

6.3 Course Requirements

Course requirements shall adhere to ISO procedures for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment Criteria

The assessment shall be as per the Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading system shall as per the Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

University examination rules and regulations will apply as stipulated in the undergraduate statute 36(5) of Egerton University

6.7 Moderation of Examinations

Examinations to be moderated as per the Egerton University ISO teaching procedures(EU/AA/OP/07)

6.8 Graduation Requirements

This is a four year programme and students are required to take a minimum prerequisite credit factors for each programme before graduation

6.9 Classification of Degrees

The Bachelor of Science in statistics degree will be classified in accordance with statute 36(17a) of Egerton University.

7. Course Evaluation

Course evaluation shall be conducted as per the teaching effectiveness evaluation procedure EU/VC/OP/04 of Egerton University.

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the Department of Mathematics, Faculty of Science. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will undergo an internal programme evaluation (self-assessment) at the end of each academic cycle. This programme shall be benchmarked with at least one public highly ranked University.

8.3 Course Coding

The course code is four capital letters STAT standing for statistics. The STAT code is followed by three digits:

The first digit indicates year or level the course is offered

The second digit indicates the nature of sub-discipline of the course within the discipline as follows:

- 3Mathematical Statistics
- 4 and 5- Applied Statistics

The third digit indicates the sequencing of the course.

9.0 Courses/units offered for the programme

9.1 Schedule of Courses

Year 1, Semester 1

CODE	TITLE	L	P	CF
BACS 102	Introduction to Actuarial Science	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
ECON 111	Principles of Microeconomics	45	0	3.0
MATH 112	Basic Mathematics	30	0	3.0
MATH 132	Geometry and Linear Algebra	30	0	3.0
STAT 130	Introduction to Statistics	30	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
		255	0	21.0

Year 1, Semester 2

CODE	TITLE	L	P	CF
BACS 122	Financial Mathematics I	30	0	3.0
COMP 102	Introduction to Computer for Scientific Applications	45	0	3.0
ECON 121	Principles of Macroeconomics	45	0	3.0
MATH 111	Differential Calculus	30	0	3.0

STAT 141	Introduction to Computer Interactive Statistics	45	15	3.5
STAT 131	Introduction to Probability and Statistics	30	0	3.0

Year 2, Semester 1

PHIL 108	Ethics, Integrity and National Values	45	0	3.0
COMP 122	Structured programmemeing	45	15	3.5
MATH 213	Linear Algebra	30	0	3.0
MATH 212	Integral Calculus	30	0	3.0
MATH 230	Vector Analysis	30	0	3.0
STAT 230	Probability and Statistics	30	0	3.0
STAT 240	Principles of Sample Survey	30	0	3.0
		195	15	18.5

Year 2, Semester 2

MATH 213	Linear Algebra	30	0	3.0
MATH 225	Multivariate Calculus	30	0	3.0
STAT 231	Mathematical Statistics	30	0	3.0
STAT 241	Statistical Computer Programming	30	30	3.0
STAT 243	Introduction to Time series Analysis	30	0	3.0
STAT2 45	Operations Research	30	0	3.0
		180	30	18.0

Year 3, Semester 1

COMP 326	Data Structures and analysis	45	15	3.5
MATH 312	Real Analysis	45	0	3.0
MATH 332	Ordinary Differential Equations	45	0	3.0
STAT 330	Advanced Mathematical Statistics	45	0	3.0
STAT 332	Theory of Estimation	45	0	3.0
STAT 340	Statistical Quality Control	45	0	3.0
One Elective		45	0	3.0
		315	15	21.5

Year 3, Semester 2

MATH 311	Group Theory	45	0	3.0
MATH 315	Complex Analysis	45	0	3.0
STAT 341	Regression and Correlation Analysis	45	0	3.0
STAT 343	Categorical Data Analysis	45	0	3.0
STAT 345	Design Analysis of Experiments	45	0	3.0
STAT 347	Sample Surveys Techniques	45	0	3.0
One Elective		45	0	3.0
		315	0	21.0

Industrial Attachment

STAT 399	Industrial Attachment	0	120	4.0

Elective Courses

MATH 316	Advanced Linear Algebra	45	0	3.0
MATH 331	Numerical Analysis	45	0	3.0
STAT 331	Non-Parametric Methods	45	0	3.0
STAT 342	Statistical Demography	45	0	3.0
STAT 344	Econometric Models	45	0	3.0

Year 4, Semester 1

COMP 351	Database Systems	30	30	3.0
MATH 434	Partial Differential Equations	45	0	3.0
STAT 430	Introduction to Measure and Probability	45	0	3.0
STAT 432	Testing of Hypotheses	45	0	3.0
STAT 440	Applied Time Series Analysis	45	0	3.0
STAT 499	Project in Statistics	15	60	3.0
One Elective		45	0	3.0
		270	90	21.0

Year 4, Semester 2

STAT 431	Bayesian Inference	45	0	3.0
STAT 433	Stochastic Processes	45	0	3.0
STAT 441	Statistical Computing	45	0	3.0
STAT 443	Applied Multivariate Analysis	45	0	3.0
STAT 445	Advanced Design and Analysis of	45	0	3.0

	Experiments			
One Elective		45	0	3.0
		270	0	18.0

Elective Courses

STAT 446	Biometric Methods	45	0	3.0
STAT 447	Survival Models and Analysis	45	0	3.0
STAT 448	Advanced Operations Research	45	0	3.0

c) COURSE DESCRIPTIONS

STAT 130: Introduction to Statistics (30/0/30: CF3.0) Y1S1

Definition of basic statistical concepts. Data collection techniques. Data presentation; graphical and tabular. Measures of central tendency and measures of dispersion. Moments, Skewness and kurtosis. Index Numbers: Definition, construction of index numbers by different methods, Problems faced in their construction, criterion of a good index number.

STAT131: Introduction to Probability and Statistics (30/0/30: CF3.0) Y1S2

Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem. Concept of random variable; discrete and continuous probability functions of a random variable. Introduction to binomial, Poisson and Normal distributions. Regression analysis and correlation (*Prerequisite: STAT 130*).

STAT 141: Introduction to Computer Interactive Statistics (45/15/0: CF3.5) Y1S2

Basic concepts of modern statistics, understanding of statistical reports, recognition of accuracy or misleading quantitative information, exploratory data analysis, statistical graphics, sampling variability, point and confidence interval estimation, hypothesis testing. S-Plus/R will be used throughout. (*Prerequisite: STAT 130*).

STAT 230: Probability and Statistics (30/0/30: CF3.0) Y2S1

Random variables; discrete and continuous, probability functions of random variables, Expectations and

Variance; moments and moment generating functions. Probability distributions and distribution functions; Bernoulli, Binomial Poisson, Uniform, Normal, Exponential, Negative Binomial, Hyper geometric, Beta, Gamma, etc. (*Prerequisite: STAT 131*).

STAT 231: Mathematical Statistics (30/0/30: CF3.0) Y2S2

Bivariate probability distributions: continuous and discrete: Bivariate moment generating functions. Bivariate distribution functions, Joint, Marginal and conditional distributions. Stochastic independence. Bivariate expectations, Independence of sample mean and variance of Normal distribution. Regression and correlation coefficients for Bivariate data. (*Prerequisite: STAT 230*).

STAT 240 : Principles of Sample Surveys (30/0/30: CF3.0) Y2S1

General principles of a sample survey. Sources of errors in survey. Sample Size determination. Sampling techniques; Simple random sampling, stratified random sampling, systematic. Estimation of means, total, variance and proportions for all the sampling designs.. (*Prerequisite: STAT 131*).

STAT 241 :Statistical Computer Programming (30/30/0: CF3.0) Y2S2

Basic knowledge of high level programming languages; C++, S+, R. Computer arithmetic, algorithm for mean and standard deviation, error analysis. Pseudo-random number generators, generation of random variates. Discrete and continuous distribution. Monte Carlo simulation. Power of a test. Confidence interval. (*Prerequisite: COMP 221*).

STAT 243: Introduction to Time Series Analysis (30/0/30: CF3.0) Y2S2

Overview of time series; terminology, objectives of time series analysis. Simple descriptive methods of analysis; types of variations, time plots, analysis of series with trend and seasonality, sample autocorrelation. Time series models; white noise, random walk, AR, MA, and ARMA models. Stationary processes in frequency domain. Introduction to Forecasting. (*Prerequisite: STAT 230*).

STAT 245: Operations Research (30/0/30: CF3.0) Y2S2

Introduction to OR, linear programming: Simplex Algorithms, duality, Transportation, Assignment, and Network: CPM/PERT techniques, sensitivity Analysis, network flow models. (*Prerequisite: MATH 213*).

STAT 330: Advanced Mathematical Statistics (45/0/0: CF3.0) Y3S1

Multivariate distributions theory; marginal and conditional distributions. Characteristic function. Distributions of functions of random variables. Order statistics. Sampling distributions; t, F and Chi-squared distributions. Probability generating function; definition and properties, moments, pgf of Binomial, geometric, Poisson and Negative binomial. Limit theorems; convergence of random variables, convergence in probability and distribution, weak law of large numbers and central limit theorem. (*Prerequisite: STAT 231*).

STAT 331: Non-Parametric Methods (45/0/0: CF3.0) Y3S2

Overview of nonparametric inference. One sample tests; sign test, run test, large sample application. Two sample tests; sign test, Wilcoxon signed rank test, Wilcoxon rank sum test, large sample application. Test of independence. One way ANOVA; Kruskal Wallis test. Two way ANOVA; Friedman test. Confidence intervals for quantiles. (*Prerequisite: STAT 231*).

STAT 332: Theory of Estimation (45/0/0: CF3.0) Y3S1

Methods of point and interval estimation. Properties of point estimators; unbiasedness, sufficiency, consistency and efficiency. Unbiased estimation; Cramer-Inequality, Lehmann-Scheffe Theorem. Exponential family and completeness. Bayesian estimation. Interval estimation. (*Prerequisite: STAT 231, MATH 212*).

STAT 340 : Quality Control Methods (45/0/0: CF3.0) Y3S1

Theoretical basis for quality control charts. Tolerance limits, Process control; $\bar{X}$, R, P, C charts. Cusum charts. Acceptance sampling for attributes. Sampling plans and their selection. Field trip to organisations dealing with quality assurance. (*Prerequisite: STAT 240*).

STAT 341:Regression and Correlation Analysis (45/0/0: CF3.0) Y3S2

Simple linear regression. Multiple linear regression. Model adequacy checking. Polynomial regression models. Indicator variables. Logistic and Poisson regression. Variable selection methods. *(Prerequisite: STAT 230).*

STAT 342: Statistical Demography (45/0/0: CF3.0) Y3S1

Meaning of demography, birth and death rates. Dependency ratio, population trend and projections. Sources of demographic data; Demographic concepts and measures; applications of principles of statistical sampling to demographic surveys; types of demographic sample survey designs; Measurements of fertility, mortality and nuptiality; construction of life tables; statistical properties of life table estimators; Models of population growth. *(Prerequisite: STAT 230).*

STAT 343 : Categorical Data Analysis (45/0/0: CF3.0) Y3S2

Introduction; Categorical response data, sampling models, inference for a proportion Two-Way contingency tables: Probability structure for contingency tables, comparing proportions in Two-by-Two tables, The odds Ratio, chi-squared tests of independence, testing independence for ordinal data, exact inference for small samples. Three-Way contingency tables; partial association, Cochran – Mantel-Haenszel methods. *(Prerequisite: STAT 330).*

STAT 344 :Econometric Models (45/0/0: CF3.0) Y3S1

Nature of econometrics, the general linear model (GLM), extensions of the GLM: dummy variables, seasonal adjustment and covariance analysis; multicollinearity. Generalized least squares, heteroscedastisity, and autocorrelation in linear models. *(Prerequisite: STAT 231).*

STAT 345: Design And Analysis of Experiments (45/0/0: CF3.0) Y3S2

Definition of concepts and principles of experimental designs. Design and analysis of single factor experiments; CRD, RCBD, Latin square design, Graeco Latin square design. Mean comparison procedures;

DMRT, LSD and Turkey. Contrasts. Design and analysis of experiments with several factors; two factor Factorial experiments. Split plot designs. Missing plot techniques. *(Prerequisite: STAT 230).*

STAT 347: Sample Survey Techniques (45/0/0: CF3.0) Y3S2

Ratio and regression estimates for simple random sampling and stratified sampling. Cluster sampling. Sub-sampling. Multistage sampling. Double sampling. Sampling on successive occasions. Current advances in the theory and application of sampling. Other selected topics.*(Prerequisite: STAT 240).*

STAT 399: Industrial Attachment (0/120/0: CF4.0) Y3S2

The student will undertake an eight week supervised placement in a selected work environment in the field of statistics. The student will be required to participate in the research, technical activities and operations of the work station. The student will be assessed by both university supervisor and work station supervisor. The supervisor at the selected station is required to submit a confidential report on the student's performance during the period of attachment.

STAT 430 : Introduction to Measure and Probability Theory (45/0/0: CF3.0) Y4S1

Measure theory concepts needed for probability (and metric spaces, including compactness, Riemann integral. Knowledge of Lebesgue integral). Expectation, distributions. Modes of convergence of sequences of random variables and their relationships. Convergence theorems, Laws of large numbers and central limit theorems for independent random variables. Characteristics function methods, weak convergence. *(Prerequisite: MATH 312).*

STAT 431: Bayesian Inference Theory (45/0/0: CF3.0) Y4S2

Review of Bayesian inference for single parameter model. Inference for two and three parameter model with conjugate and unconjugated priors: for the mean and variance a normal random sample, for the parameters of a simple linear regression. An introduction to Markov chain Monte Carlo methods; Gibbs sampling metropolis-Hastings sampling, mixing

and convergence. Applications such as regression and generalized linear models, missing data problems, random effects models *(Prerequisite: STAT 332).*

STAT 432:Testing of Hypotheses (45/0/0: CF3.0) Y4S1

Concept of statistical hypothesis and statistical test. Most powerful tests and uniformly most powerful tests. Generalized likelihood ratio tests. Sequential tests. Properties of tests. Chi-squared tests. Test of hypothesis when sampling from the normal distribution. *(Prerequisite: STAT 332).*

STAT 433: Stochastic Processes (45/0/0: CF3.0) Y4S2

Review of probability. Random Phenomena in time and space. Markov chains. Bernoulli process and Poisson Model. Continuous-time process; Poisson process. pure birth, pure death and Birth and death processes. Stationary distributions. Queuing models. Recurrent events, Introductory Branching processes. Renewal Theory. *(Prerequisite: STAT 230).*

STAT 440 : Applied Time Series Analysis (45/0/0: CF3.0) Y4S1

Linear time series models; Invertibility and Stationarity conditions. Model identification and estimation. Seasonal models. Spectral analysis and harmonic analysis. Forecasting with time series models. Non-linear time series models: Bilinear, ARCH, GARCH etc. *(Prerequisite: STAT 243).*

STAT 441: Statistical Computing (45/0/0: CF3.0) Y4S2

The design of statistical software including special techniques for probability distributions. Introduction to simulation; Building and validation of stochastic simulation models useful in computing, operations research, engineering and sciences. Methods of linear models and multivariate analysis, and methods of nonlinear models. Related design and estimation problems. Variance reduction. The implementation and analysis of simulation results. Application of computer simulation programmes. *(Prerequisite: STAT 241).*

STAT 499: Project in Statistics (15/60/0: CF3.0) Y4S1

A research project based on specific application of statistical techniques to practical problems should be conceived and implemented. This is a supervised project for which a proposal must be submitted before the project is undertaken. The proposal should be submitted before the end of first semester of the fourth year of study. The project will be assessed by oral presentation and written report. The student will present the finding before a departmental committee and the written report will be assessed independently by at least two academic members of the department excluding the student's supervisor.

STAT 443 : Applied Multivariate Analysis (45/0/0: CF3.0) Y4S2

Introduction and examples of multivariate data. Random and vectors, covariance matrix and its properties, linear combinations of random variables. Matrix algebra and p-variate random variables. Sampling from multivariate normal; bivariate and trivariate distributions, MLE and testing of hypothesis. Test about mean vector; when covariance matrix is known or unknown. Test about two mean vectors; comparing two mean vectors. MLE of partial and multiple correlations. Multinomial distribution and its properties. *(Prerequisite: STAT 330, STAT 332).*

STAT 445: Advanced Design and Analysis of Experiments (45/0/0: CF3.0) Y4S2

Analysis of covariance. Nested designs; two-stage and three-stage designs. Balanced and incomplete block designs and partially Balanced and incomplete block designs. Analysis of 2^k and 3^k fractional experiments. Confounding; complete and partial confounding in of 2^k and 3^k fractional experiments. Fractional factorial designs. Field trip to organisations dealing with design of experiments. *(Prerequisite: STAT 345).*

STAT 446: Biometry Methods (45/0/0: CF3.0) Y4S1

Measures of effectiveness, sample size, randomization, data collection and monitoring. Experimental designs for randomized clinical trial, sources of bias in clinical studies, Informed consent and other ethical issues, logistics, interim monitoring procedures (group sequential and Bayesian methods). *(Prerequisite: STAT 345).*

STAT 447: Survival Models and Analysis (45/0/0: CF3.0) Y4S2

Lifetime distributions, hazard functions, competing-risks, proportional hazards, censored data, accelerated-life models, Kaplan-Meier estimator, stochastic models, renewal processes, Bayesian methods for lifetime and reliability data analysis. *(Prerequisite: STAT 230).*

STAT 448: Advanced Operations Research (45/0/0: CF 3.0) Y4S1

Shortest path problem. Dijkstra algorithm, Floyd's algorithm. Maximal flow problem. Maximum flow - minimum cut theorem, Ford Fulkerson algorithm. Optimization in network. Minimal cost flow problem. Critical method. Critical path method and PERT. Dynamic Programming. *(Prerequisite: STAT 245).*

SERVICE COURSES OFFERED TO OTHER DEPARTMENTS**STATISTICS SERVICE COURSES****(a) Diploma Service Courses****STAT 0130 : Fundamentals of Statistics (30/0/30: CF 3.0) Y1S1**

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem.

STAT 0131: Quantitative Techniques (30/0/30: CF 3.0) Y1S1

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem. Discrete distributions;

binomial, Poisson. Continuous distributions; Normal distributions.

STAT 0230: Elementary Probability and Statistics (30/0/30: CF 3.0) Y2S1

Concept of random variable; discrete and continuous probability functions of a random variable, Expectation. Discrete distributions; binomial, Poisson, geometric. Continuous distributions; uniform, exponential and Normal distributions. Regression analysis and correlation. *(Prerequisite: STAT 0130).*

STAT 0231 : Probability and Statistics (30/0/30: CF 3.0) Y2S2

Bivariate probability distributions; Joint, marginal and conditional distributions. Independence of random variables. Bivariate normal distribution. Distribution of functions of one random variable. Application of derived distributions; t, chi-square and F distributions. Central limit theorem; state and applications. *(Prerequisite: STAT 0230).*

(b) Degree Service Courses**STAT 133 : Introductory Statistics (30/0/30: CF 3.0) Y1S2**

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem.

STAT 232 : Principles of Probability and Statistics (30/0/30: CF 3.0) Y2S1

Random variables; discrete and continuous, probability functions of random variables, Expectations and Variance; moments and moment generating functions. Probability distributions and distribution functions; Bernoulli, Binomial, Geometric, Negative binomial, Poisson, Hypergeometric Uniform, Normal, Exponential, Beta, Gamma, etc. *(Prerequisite: STAT 133).*

STAT 233: Bivariate Probability and Statistics (30/0/30: CF 3.0) Y2S2

Bivariate probability distributions. Joint marginal and conditional distributions. Independence of random variables. Bivariate expectations and generating functions. Distribution of functions of random variables. Derived distributions such as the t, chi-square and F distributions. Characteristic functions. The independence of $\bar{x}$ and S in normal samples. Order statistics. Bivariate normal distributions, limit and convergence theorems. Law of large numbers. **(Prerequisite: STAT 232).**

STAT 349: Sampling Methods (45/0/0: CF 3.0) Y3S1

General principles of a sample survey. Sources of errors in survey. Simple Size determination. Sampling techniques; Simple random sampling, stratified random sampling, systematic, selection with probability proportional to Size. Estimation of means, total, variance and proportions for all the sampling designs. Ratio and regression estimation for simple random sampling. **(Prerequisite: STAT 232).**

STAT 351: Applied Statistics (30/0/30: CF 3.0) Y3S2

Introduction to statistical inference; concepts of estimation and hypothesis testing. Application of the z, t, chi-square and F-statistics in statistical inference. Simple and Multiple linear regression inference and estimation. Polynomial regression. Model selection procedures. Goodness of fit tests. Application of chi-square tests in contingency tables. **(Prerequisite: STAT 233).**

STAT 435: Non-Parametric Methods (30/0/30: CF3.0) Y3S

Overview of nonparametric inference. Empirical distributions. One sample tests; sign test, run test, large sample application. Two sample tests; sign test, Wilcoxon signed rank test, Wilcoxon rank sum test, large sample application. Test of independence. One way ANOVA; Kruskal Wallis test. Two way ANOVA; Friedman test. Confidence intervals of for quantiles. **(Prerequisite: STAT 231).**

STAT 444: Design And Analysis of Experiments (45/0/0: CF3.0) Y3S2

Definition of concepts and principles of experimental designs. Design and analysis of single factor experiments; CRD, RCBD, Latin square design, Graeco-Latin square design. Mean comparison procedures; DMRT, LSD and Turkey. Contrasts. Design and analysis of experiments with several factors; two factor Factorial experiments. Split plot designs. Missing plot techniques. **(Prerequisite: STAT 230).**

STAT 449: Time Series Analysis (30/0/30: CF 3.0) Y4S2

Overview of time series; terminology, objectives of time series analysis. Simple descriptive methods of analysis; types of variations, time plots, analysis of series with trend and seasonality, sample autocorrelation. Time series models; AR, MA, and ARMA models. Stationary processes in frequency domain. Forecasting. **(Prerequisite: STAT 233).**

9.3 Matrix aligning Courses to the Programme Learning Outcome

Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1: Understand and explain specific concepts applicable to statistical theory	Introduction to Statistics Introduction to Probability and Statistics I	3.0 3.0	Introduction to Probability and Statistics II Mathematical Statistics I Introduction to Time series Analysis	3.0 3.0 3.0	Mathematical Statistics II Theory of Estimation Regression and Correlation Analysis	3.0 3.0 3.0	Bayesian Inference Testing of Hypotheses Stochastic Processes	3.0 3.0 3.0
PLO 2: Design statistical experiments and surveys for collecting appropriate data			Principles of Sample Survey	3.0	Design Analysis of Experiments I Sample Surveys Techniques	3.0 3.0	Design and Analysis of Experiments II	3.0
PLO 3: Identify appropriate methods for data analysis and make valid inferences			Introduction to Time series Analysis Operation Research I	3.0 3.0	Regression and Correlation Analysis Categorical Data Analysis	3.0 3.0	Applied Multivariate Analysis Biometric Methods Survival Models and Analysis Operations Research II	3.0 3.0 3.0 3.0
PLO 4: Design and implement algorithms to solve statistical problems	Introduction to Computer Interactive Statistics	3.0	Statistical Computer Programming	3.0			Statistical Computing	3.0

MATHEMATICS SERVICE COURSES

DIPLOMA SERVICE COURSES

Year 1 Semester 1

Code	Title	L	P	CF
MATH 0102	Basic Mathematics	30	0	3.0
STAT 0130	Fundamentals of Statistics	30	0	3.0

Year 1 Semester 2

Code	Title	L	P	CF
STAT 0131	Quantitative Techniques	30	0	3.0

Year 2 Semester 1

Code	Title	L	P	CF
STAT 0230	Elementary Probability and Statistics	30	0	3.0

Year 2 Semester 2

Code	Title	L	P	CF
STAT 0231	Probability and Statistics	30	0	3.0

DEGREE SERVICE COURSES

Year 1 Semester 1

Code	Title	L	P	CF
MATH 100	General Mathematics	30	0	3.0
MATH 116	Introduction to Pure Mathematics	30	0	3.0
MATH 118	Applied Geometry	30	0	3.0

Year 1 Semester 2

Code	Title	L	P	CF
MATH 117	Differential Calculus for Engineering	30	0	3.0
STAT 133	Introductory Statistics	30	0	3.0

Year 2 Semester 1

Code	Title	L	P	CF
MATH 222	Integral Calculus for Engineering	30	0	3.0
STAT 232	Principles of Probability and Statistics	30	0	3.0

Year 2 Semester 2

Code	Title	L	P	CF
MATH 221	Vector Calculus and Algebra for Engineering	30	0	3.0
MATH 223	Multivariable Calculus for Engineering	30	0	3.0
STAT 233	Bivariate Probability and Statistics	30	0	3.0

Year 3 Semester 1

Code	Title	L	P	CF
MATH 340	Differential Equations for Engineering	30	0	3.0

Year 3 Semester 2

Code	Title	L	P	CF
MATH 341	Analytical Methods for Engineering	45	0	3.0
STAT 349	Sampling Methods	45	0	3.0
STAT 351	Applied Statistics	45	0	3.0

Year 4 Semester 1

Code	Title	L	P	CF
MATH 456	Engineering Statistics	45	0	3.0
STAT 444	Design and Analysis of Experiments	45	0	3.0

Year 4 Semester 2

Code	Title	L	P	CF
MATH 439	Numerical Methods For Engineering	45	0	3.0
STAT 435	Non-Parametric Methods	45	0	3.0
STAT 449	Time Series Analysis	45	0	3.0

(c) COURSE DESCRIPTIONS

Diploma service courses

MATH 0102: Introductory Mathematics (30/0/30: CF 3.0) Y1S1

Set Theory : definitions, Venn diagrams, basic set operations. Equations; linear equations, simultaneous equations, quadratic equations. Matrices: definitions, matrix algebra, determinants, transpose adjoint matrix, inverses, applications to solving linear functions, limits. Calculus: differentiation higher order integration (definite integrals).

STAT 0130 :Fundamentals of Statistics(30/0/30: CF 3.0) Y1S1

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem.

STAT 0131 :Quantitative Techniques (30/0/30: CF 3.0) Y1S2

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of counting techniques in probability, conditional probability and Bayes Theorem. Discrete distributions; binomial, Poisson. Continuous distributions; Normal distributions.

STAT 0230 : Elementary Probability and Statistics(30/0/30: CF 3.0) Y2S1

Concept of random variable; discrete and continuous probability functions of a random variable, Expectation. Discrete distributions; binomial, Poisson, geometric. Continuous distributions; uniform, exponential and Normal distributions. Regression analysis and correlation.(Prerequisite: STAT 0130).

STAT 0231 :Probability and Statistics (30/0/30: CF 3.0) Y2S2

Bivariate probability distributions; Joint, marginal and conditional distributions. Independence of random variables. Bivariate normal distribution. Distribution of functions of one random variable. Application of derived distributions; t, chi-square and F distributions. Central limit theorem; state and applications. (Prerequisite: STAT 0230).

DEGREE SERVICE COURSES

MATH 100: General Mathematics (30/0/30: CF 3.0) Y1S1

Elementary properties of real numbers. Law of indices. Expansion and factorization of algebraic and quadratic expressions. Solutions of quadratic formulae. Relations and functions; dependent and independent variables. Composite and inverse functions. Polynomial functions, factor and remainder theorem. Exponential and logarithmic functions. Differentiation of simple functions and gradient to a curve. Turning points and curve sketching. Raw data organisation, measures of central tendency; mean, median and mode. Measures of dispersion; standard deviation.

MATH 116: Introduction To Pure Mathematics (30/0/30: CF 3.0) Y1S1

Review of algebra ; Laws of arithmetic and algebra; simple, modulus, quotient, square and quadratic inequalities; Multiplication, division and factorization of algebraic polynomials; quadratic functions; Partial fractions; Trigonometric functions, sine and cosine rules, trigonometric identities, compound and double angle formulae. Trigonometric wave forms. Hyperbolic functions logarithmic and exponential functions. Series, arithmetic and geometric progressions, infinite series, convergent and divergent series, test for convergence. Binomial and Maclaurin's series. Elementary Boolean algebra and logic circuits. Cartesian and polar coordinates. Permutations and combinations.

MATH 117: Differential Calculus For Engineering (30/0/30: CF 3.0) Y1S2

Functions, Limits and continuity, Slope of a curve at a point, differentiation of simple functions from first principles, Derivative of $\sin x$, $\cos x$ and $\tan x$ using first principles, Basic rule of differentiation, Differentiation of polynomial functions, chain rule, Functions of a function. Derivative of trigonometric functions. Derivative of hyperbolic functions ($\sinh f(x)$, $\cosh f(x)$ and $\tanh f(x)$),

Derivatives of trigonometric and hyperbolic functions using function of a function. Derivative of logarithmic functions and Derivative of Eigen functions ($e^{f(x)}$).

Product rule and Quotient rule. Implicit differentiation,

Derivative of exponential functions. Derivatives of inverse trigonometric and hyperbolic functions. Parametric functions. L'Hospitals rule. Applications; turning points and curve sketching, rates of change, practical problems involving maximum and minimum values and Rectilinear motion.

MATH118: Applied Geometry (30/0/30: CF 3.0) Y1S1

The geometry of straight line, circle, sphere, parabola, ellipse, and hyperbola. Vector geometry: Introduction to vectors; addition, subtraction and resolution of vectors; Vectors and area of a parallelogram. Vector equation, parametric equation and Cartesian equation of a line. Vector equation and Cartesian equation of a plane. Complex number, Argand diagram, complex numbers addition, subtraction, multiplication and division of complex numbers. De Moivre's theorem. Powers and roots of complex numbers.

MATH 221: Vector Calculus And Algebra for Engineering (30/0/30: CF 3.0) Y2S2

Matrices; notation, addition subtraction and multiplication; determinants; solutions to simultaneous equations using Cramer's rule and Gaussian elimination. Eigen values and eigenvectors. Vector calculus: Gradient, divergence and curl. Line Integrals, Greens theorem, Surface integrals, Divergence theorem, Volume integrals, Stokes theorem. Curvilinear coordinate systems. Applications; Evaluation of flux i.e fluid and current using surface integrals, work done using line integrals, Conservative force fields, Finding area using Greens theorem, Compressible and incompressible fluids using divergence theorem. Rotational and irrotational fluids using curl.

MATH 222: Integral Calculus for Engineering (30/0/30: CF 3.0) Y2S1

Introductory integral calculus; Integration process (anti-derivatives), standard integral i.e integrals of $\sin x$, $\cos x$, $\sec^2 x$, e^x , $\sinh x$, $\cosh x$, $\operatorname{sech}^2 x$. Definite integral. Integration using algebraic substitution, trigonometric and hyperbolic substitutions. Integrating rational functions by partial fractions. Integration by parts. Reduction formulae. Integrations of rational functions where degree of numerator is greater or equal to degree of denominator. Improper integrals. Taylor's

series and Maclaurin's series. Applications; Arc length, area of a region, mean values, Moments, centres of gravity and centroids. Fluid pressure and force.

MATH 223: Multivariable Calculus For Engineering (30/0/30: CF 3.0) Y2S2

Partial Derivatives, Directional derivatives and gradient, Tangent planes and normal vectors to a surface given in [i] Monge's form $z = f(x, y)$ and [ii] Gauss form $x = x(u, v)$, $y = y(u, v)$ and $z = z(u, v)$.

Maxima, minima and saddle points of functions of two variables, Lagrange multipliers. Double integrals. Polar double integrals, converting double integrals from rectangular to polar, Surface area for surfaces of the form $z = f(x, y)$. Triple integrals, finding volume using triple integrals, Triple integrals in cylindrical and spherical coordinates. Converting triple integral from rectangular to cylindrical coordinates, Converting triple integral from rectangular to spherical coordinates, Change of variables in multiple integrals [Jacobians]. Applications: Partial derivatives and rates of change and slope, applications of gradient in heat seeking particle, optimization, Polar integrals and the volume of a sphere. determination of moment of inertia, center of gravity, centroid, radius of gyration, second moment of area and centre of pressure; proof of parallel axes and perpendicular axes theorems

MATH 340: Differential Equations for Engineering (45/0/0: CF 3.0) Y3S1

Differential equations: First order differential equations. Solutions to first order differential equations: direct integration; separation of variables; Equations separable by making substitution, homogenous equations, linear equation, Equations reducible to linear [Bernoulli equations], Regrouping/Inspection method: Second order differential equations; homogeneous o.d.e with constant coefficients, Non-homogeneous o.d.e with constant coefficients. Power series methods (Leibniz-Maclaurin method, Frobenius method. Bessel's equations and functions. Legendre's equation and polynomials). Partial differential equations of order two and their solutions by direct integration. Homogeneous second order p.d.e with constant coefficients. Non-homogeneous second order p.d.e with constant coefficients. Separation of variables method.

Applications; the wave, heat conduction and Laplace's equations.

MATH 341: Analytical Methods For Engineering (45/0/0: CF 3.0) Y3S2

Fourier series; periodic functions, odd and even functions. Expansion of functions in Fourier series over a full range and half range. Dirichlet's conditions. Differentiation and integration of Fourier series. Fourier integrals. Applications; Frequency response and oscillating systems. Fourier transforms; Fourier integral, Fourier integral pair, Fourier sine and cosine transform. Properties of Fourier transform, Transform of simple functions, Transform of step and impulse functions, convolution theorem. Application; Design of analogue filters Laplace transforms; properties, differentiation and integration, inverse transforms, transform of periodic functions, application to solution of differential equations, convolution theorem. Applications; Electrical circuits and mechanical vibrations.

MATH 439: Numerical Methods for Engineering (45/0/0: CF 3.0) Y4S2

Numerical analysis: Linear interpolation, graphical interpolation, Gregory-Newton interpolation using forward and backward finite difference, Lagrange interpolation. Numerical solutions to equations by iteration; bisection, Newton-Raphson, modified Newton-Raphson and Gauss central difference methods. Numerical Differentiation and Integration: Trapezoidal rule. Simpson's rule. Newton-Cotes formulae. Romberg integration, numerical integration using Maclaurin's series. Numerical Solution to Ordinary Differential Equations: Taylor's series, Euler's and Runge-kutta methods for first order differential equations. Applications; Motion in a viscous fluid, heating of an electrical fuse and pendulum oscillations.

STAT 133 : Introductory Statistics (30/0/30: CF 3.0) Y1S2

Overview of statistics: definitions and division of statistics, role of statistics, scope and limitations. Data collection and presentation. Measures of central tendency and measures of dispersion. Simple linear regression and correlation. Elementary probability; rules of probability and their application, application of

counting techniques in probability, conditional probability and Bayes Theorem.

STAT 232 : Principles of Probability and Statistics (30/0/30: CF 3.0) Y2S1

Random variables; discrete and continuous, probability functions of random variables, Expectations and Variance; moments and moment generating functions. Probability distributions and distribution functions; Bernoulli, Binomial, Geometric, Negative binomial, Poisson, Hypergeometric Uniform, Normal, Exponential, Beta, Gamma, etc. **(Prerequisite: STAT 133).**

STAT 233: Bivariate Probability and Statistics (30/0/30: CF 3.0) Y2S2

Bivariate probability distributions. Joint marginal and conditional distributions. Independence of random variables. Bivariate expectations and generating functions. Distribution of functions of random variables. Derived distributions such as the t, chi-square and F distributions. Characteristic functions. The independence of x and S in normal samples. Order statistics. Bivariate normal distributions, limit and convergence theorems. Law of large numbers. **(Prerequisite: STAT 232).**

STAT 349: Sampling Methods (45/0/0: CF 3.0) Y2S2

General principles of a sample survey. Sources of errors in survey. Simple Size determination. Sampling techniques; Simple random sampling, stratified random sampling, systematic, selection with probability proportional to Size. Estimation of means, total, variance and proportions for all the sampling designs. Ratio and regression estimation for simple random sampling. **(Prerequisite: STAT 232).**

STAT 351: Applied Statistics(45/0/0: CF 3.0) Y3S2

Introduction to statistical inference; concepts of estimation and hypothesis testing. Application of the z , t , chi-square and F-statistics in statistical inference. Simple and Multiple linear regression inference and estimation. Polynomial regression. Model selection procedures. Goodness of fit tests. Application of chi-square tests in contingency tables. **(Prerequisite: STAT 233).**

STAT 435: Non-Parametric Methods(45/0/0: CF3.0) Y3S2

Overview of nonparametric inference. One sample tests; sign test, run test, large sample application. Two sample tests; sign test, Wilcoxon signed rank test, Wilcoxon rank sum test, large sample application. Test of independence. One way ANOVA; Kruskal Wallis test. Two way ANOVA; Friedman test. Confidence intervals of for quartiles. **(Prerequisite: STAT 231).**

STAT 444: Design And Analysis of Experiments (45/0/0: CF3.0) Y3S2

Definition of concepts and principles of experimental designs. Design and analysis of single factor experiments; CRD, RCBD, Latin square design, Graeco Latin square design. Mean comparison procedures; DMRT, LSD and Turkey. Contrasts. Design and analysis of experiments with several factors; two factor Factorial experiments. Split plot designs. Missing plot techniques. **(Prerequisite: STAT 230).**

STAT 449: Time Series Analysis 45/0/0: CF 3.0) Y4S2

Overview of time series; terminology, objectives of time series analysis. Simple descriptive methods of analysis; types of variations, time plots, analysis of series with trend and seasonality, sample autocorrelation. Time series models; AR, MA, and ARMA models. Stationary processes in frequency domain. Forecasting. **(Prerequisite: STAT 233).**

STAT 456 : Engineering Statistics (45/0/0: CF 3.0) Y4S1

Tabular and graphical representation of samples: frequency, relative frequency, absolute frequency, distribution function, sample mean, sample variance and standard deviation. Sampling methods. Concepts in probability. Discrete random variables: probability function, probability distribution. Continuous random variables: continuous distributions, Binomial distribution, poison and normal probability distribution. Derived distributions such as the t, chi-square and f distributions. Elementary treatment for large and small samples, chi squared, f and t tests. Correlation and regression analysis: Linear and multiple regression.

Method of least squares, curve fitting. Estimation. Testing of significance. Confidence bounds. Basics of Engineering experimentation and analysis. Use of non-parametric methods and goodness of fit tests in statistical inference. Hands on experience using statistical packages: Excel, SPSS.

DEPARTMENT OF PHYSICS

SERVICE COURSES OFFERED BY DEPARTMENT OF PHYSICS

Course Schedules

YEAR 1 SEMESTER 1

COURSE CODE	COURSE TITLE	L	P	CF
PHYS 104	Physics for Engineers I	30	30	3.0

YEAR 1 SEMESTER 2

COURSE CODE	COURSE TITLE	L	P	CF
PHYS 102	Physics for Computer Scientists	30	30	3.0
PHYS 103	General Physics	45	0	3.0
PHYS 102	Physics for Engineers II	30	30	3.0

Course Descriptions

PHYS 102: Physics for Computer Scientists (45/15: CF 3.5) Y1S2

Measurements and standards; Translational and projectile motion; Newton's laws of motion; Rotational and circular motion. Semiconductors; p-n junctions; junction diodes and applications; junction transistors and applications; Metal-Oxide-Semiconductor devices;

Energy storage devices (electric, magnetic, optical); JFETs; Op-Amps. Reflection, refraction, diffraction and polarization of light; holography; optical materials; lasers; light modulators. Optical Fiber Links and components; Microwave Communications and radar; Antennas; Power generation and transmission. Classical theory of the atom; Wave –particle duality; De Broglie wavelength; Heisenberg uncertainty principle; Pauli exclusion principle; position, momentum and energy operators. Quantum theory of the atom.

PHYS 103: General Physics (45/0: CF: 3.0) Y1S2

Mechanics: Units and dimensions, Standard symbols. Linear motion, Equations of linear motion. Newton's laws, work and energy. Mechanics of extended bodies. Mechanics of elastic bodies. Simple machines. Heat: Temperature, Gas laws, Equation of state, First law of thermodynamics, Thermal conduction and insulation, Latent heat, calorimetry, specific heat and thermal equilibrium of systems, thermocouple, thermal expansion of solids, gases and liquids. Electrostatics: Electric charge, Coulomb's law, Electric field, Electric potential. Capacitance and dielectrics. D.C current: Ohm's law, Simple D.C. circuits, Energy and power, Power calculations and costs, Electrical measuring instruments. Magnetism: magnetic field, magnetic force, electromagnetic induction. Optics: Nature and propagation of light. Laws of reflection and refraction. Spherical mirrors and lenses: Dispersion, aberrations. Optical instruments. Introduction to interference and

diffraction. Natural and Artificial Radioactivity (its uses and hazards). X-rays.

PHYS 104: Physics for Engineers I (30/30: CF 3.0) Y1S1

Introduction to measurements-Units and Dimensions. (Standard International (SI) Units). Newton's laws, Mechanics, Mechanics of rigid bodies. Dynamics, Circular Motion, Simple Harmonic Motion. Waves and Oscillation. Surface Tension: Elasticity. Kinetic and Static Friction. Viscosity. Heat and thermodynamics: Calorimetry, gases, thermal expansion, change of state. Basic Optics: Reflection through prisms, dispersion spectra, reflection through lenses, optical instruments, velocity of light, photometry, and light interference, diffraction, polarization, Quantum concepts.

PHYS 105: Physics for Engineers II (30/30: CF 3.0) Y1S2

Particle wave duality of matter: De Broglie waves, Uncertainty principle, Structure and properties of atoms. The Bohr's model of the atom. Nucleus radioactivity-rays and gamma rays for material testing. Nuclear energy isotopes and their uses in Industry. Electricity: Electric and Magnetic quantities. Magnetic field; force on conductor; Magnetic circuits. Ohm's, Kirchhoff's, Superposition, Mesh. DC/AC circuits laws and analysis. Electrostatics: Capacitance, electric fields, electric field density. Electrolysis: Chemical effect of current, electroplating, cathode protection.

BACHELOR OF SCIENCE (BIOCHEMISTRY/ BOTANY/ZOOLOGY/ CHEMISTRY/ MATHEMATICS/ PHYSICS AND GEOGRAPHY MAJORS SYLLABUS)

1. Philosophy of the programme

The programme influences human development through innovative education and training in Science and Technology by generation, acquisition and transfer of knowledge, skills and attitudes in natural science and related disciplines to produce competitive and pragmatic graduates that contribute to national and global development.

2. Rationale

The Bachelor of Science degree programme is a flexible course designed for students who require further exposure to various subject areas offered at university level before making decisions regarding their area(s) of specialization. Students begin their studies in three subject areas and eventually narrow to one or two specialities. Students undertaking this programme are able to pursue a wide range of careers. They will gain concepts, knowledge, skills and practical techniques necessary for employment in science related field in industry, research institutions, government agencies and Non-Governmental Organisations. They will also be able to advance their education in science disciplines.

3. Goal of the Programme

The programme is designed to equip the students with the necessary knowledge, skills and attitudes that will enable them work in diverse fields of science with specialisations in Botany, Chemistry, Mathematics, Biochemistry and Geography. Further, the programme will produce scientists able to provide advice and/or guidance on matters related to natural, physical and life sciences. In the long term perspective, an important goal shall be to produce a cadre of qualified scientists to tackle the multitude of challenging problems in life sciences.

4. Programme Learning Outcomes

(a) Botany/Zoology Majors

By the end of the programme, the graduates should be able to:

- LO 1: Articulate and innovatively apply relevant and accurate scientific principles to solve problems.
- LO 2: Create jobs or be employed in institutions, industries and other related organizations based on the acquired biological scientific competencies.
- LO 3: Assess the impact of biological sciences in society and value ethical conduct in scholarship and professional development.

(b) Chemistry Majors

The Bachelor of Science Chemistry Majors are expected to be:

- LO 1: Equipped with strong analytical skills for data analysis and report writing.
- LO 2: Able to demonstrate knowledge, skills and competency for job opportunities in industries.
- LO 3: Prepared for post-graduate studies in chemistry and related disciplines.

(c) Mathematics Majors

By the end of the programme, the graduates should be able to:

- LO1: Perform Mathematical operations with confidence and speed;
- LO2: Comprehend, analyse, interpret and predict abstract mathematical ideas.
- LO3: Apply Mathematical knowledge to physical situations and draw conclusions.
- LO4: Pursue postgraduate studies in any mathematics related discipline.

(d) Physics major

By the end of the programme, the graduates should be able to:

- LO 1: Engage in analytical and critical thought and expression.
- LO2: Apply the acquired experimental and technical skills for proficiency in a chosen career.
- LO 3: Exploit opportunities and experiences as a creative and productive member of society
- LO 4: Advance in the study of Physics and other related applied sciences.

(e) Biochemistry option

By the end of the programme, the Biochemistry Majors should be able to

- LO 1: Have acquired necessary theoretical and practical skills in Biochemistry, Molecular Biology and Biomedical Science to engage in gainful self-employment such as consultancy.
- LO 2 Demonstrate skills required by biomedical and Agro-based research and development Institutions, Institutions of higher learning and Industry; hence contributing to national economic growth.
- LO 3 Communicate knowledge acquired and research work in oral and written forms.
- LO 4 Equipped with the necessary theoretical and practical competencies in Biochemistry to enable them undertake post-graduate studies.

(f) Geography major

By the end of the programme, the graduates should be able to

- LO 1. Demonstrate the place of Geography in contemporary society
- LO 2. Apply the skills acquired in resource planning and management in rural and urban contexts
- LO 3. Employ effective communication skills through report writing and power point presentation
- LO 4. Critique the nexus between society and the physical environment and offer realistic pathways to sustainable development.

5. Mode of Delivery

The mode of study will be on full-time basis, through lectures, practicals, assignments, seminars, field trips, industrial attachment and research reports.

- i) Face - to- face (Full time)
- ii) Practical, Tutorials, Assignments and e-learning

6. Academic Regulations for the Programme

6.1 Admission Requirements

Admission of students into this programme will follow the Egerton University statute 36 (2) of 2013 and ISO Procedure for Admission and Registration of students DOC No. EU/AA/OP/03. Those holding qualifications equivalent to the above from institutions recognized by Egerton University Senate may also be admitted.

In addition, candidates MUST have passed the Kenya Certificate of Secondary Education (KCSE) with a minimum grade B- in the MAJOR subject combinations or B in Physical Sciences and C+ in Mathematics. Those who want to major in Mathematics must have passed the Kenya Certificate of Secondary Education (KCSE) with the minimum grades as indicated for the following subjects: Physics B- or Physical Science B and Mathematics B-. Those intending to major in Geography needs to have acquired at least grade B minus (B-) in Geography; a C Plus (C+) in one of the following subjects: Business Studies, Biology, Agriculture or Physical Science; and a C plain (C) in Mathematics.

Candidates who apply to study a programme combining Geography with any other subject, must have obtained at least grade B minus (B-) in Geography and a C plain (C) in Mathematics in KCSE or its equivalent.

6.2 Regulation on Credit Transfer

Egerton University Statute 36 (4) of 2013 shall apply.

6.3 Course Requirements

The Programme shall be administered by coursework, examination and thesis as stipulated in Egerton University statute 36 (3) of 2013 and according to ISO Procedures on work Instruction for course Registration DOC. No. EU/AA/WI/03

The Bachelor of Science degree students will do some courses from other science programmes both in year 1 and 2. These subjects are: Mathematics, Chemistry, Geography and Biochemistry in order to strengthen their science foundation. All units are compulsory at the first and second years plus University Common Core Courses, while in year 3 and 4, students will have opportunity of majoring either in Botany or Zoology, Chemistry, Mathematics, Physics, Biochemistry or Geography.

6.4 Student Assessment policy

All examinations for this Programme shall be conducted in accordance with examination regulations as stipulated in the Egerton University Statute 36 (6) of 2013 and ISO procedure on Examinations EU/AA/OP/07.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination Regulations

Examinations for all courses in Bachelor of Science shall be conducted in accordance with examination regulations as stipulated in Egerton University statute 36(6) of 2013. The examination administration will be guided by the ISO procedure on Examinations EU/AA/OP/07.

6.7 Moderation of Examinations

Moderation of examinations shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36(5) of 2013 and ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate a student shall be required to take and pass at least 120 CFs which shall include at least 9 CFs of University Common Core Courses.

The Bachelor of Science degree shall normally take four academic years each of two 17-week semesters. Each semester will comprise of fifteen (15) and two (2) weeks of teaching and examination respectively, during which the student will register for a minimum of 18 CFs per semester. The student will take courses from a combination of three subjects selected from Botany/Zoology, Chemistry, Mathematics, Physics, Biochemistry and Geography in both first and second years of study. Subsequently the student will choose two (2) subjects for third and fourth year of study leading to a 3:3:2:2 programme or a 3:3:1:1 programme.

6.9 Classification of Degree

Degree classification shall be in accordance with Egerton University Statutes as stipulated in the Egerton University Statutes of 2013, Article 36(18a).

7. Course Evaluation

All courses in the programme will be evaluated according to ISO Teaching Effectiveness and Evaluation Procedure EU/VC/OP/04 of Egerton University.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the Departments of Biochemistry, Biological Sciences, Chemistry, Mathematics and Physics within the Faculty of Science of Egerton University.

The programme will be managed by Programme Academic leaders for each subject area who shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme shall be evaluated using an evaluation tool, which will be developed for evaluating the programme at the end of the academic cycle as stipulated in ISO Procedure EU/VC/OP/05 of Egerton University

8.3 Course Coding

The Course codes are designated according to the university course coding policy. The Course codes shall be designated as follows:

a) Course Coding for Botany Courses

BOTA stands for Botany; followed by three digits.

First digit indicates the year of study.

Second digit indicates the nature or sub-discipline of the Course and shall be interpreted according to the following levels:

0 – Basic Course

1 – Genetics/Biotechnology

2 – Anatomy and Morphology

3 – Microbiology

4 – Taxonomy/Economic Botany

5 – Plant Pathology/Crop Protection

6 – Ecology

7 – Physiology/Biochemistry

8 – Research/Seminars

Third digit indicates the serial number of the Course within a sub-discipline.

b) Course Coding for Zoology Courses

ZOOL stands for Zoology followed by three digits.

First digit indicates the year or level the Course is offered.

Second digit indicates the nature or sub-discipline of the Course and shall be interpreted as follows:

0 - Basic Zoology

1 – Ecology

2 – Entomology

3 - Anatomy/Physiology

4 – Parasitology

5 - Seminars/ Research

Third digit indicates the serial number of the Course within a sub-discipline.

c) Course coding for Chemistry units

The course code used is CHEM, standing for Chemistry, followed by 3 digits. **First digit** indicates the year of study the course is offered. The **second digit** indicates the branch of chemistry that is offered *i.e.*

1–denotes Inorganic chemistry

2–denotes Physical chemistry

3–denotes Organic chemistry

4–denotes Analytical chemistry

5–denotes Applied chemistry course

The third digit indicates the advanced level of the course.

d) Course coding for Mathematics units

The course codes consist of two parts:

‘MATH’ or ‘STAT’ which means the course is offered by Mathematics department.

Three digits. The first digit indicates the level of the course. For ‘MATH’ units, the second digit indicates the sub discipline of the course as follows:

0,1 or 2 represent Pure Mathematics unit

3,4 or 5 represent Applied Mathematics unit

In the case of ‘STAT’ courses, the second digit represents the sub discipline of the unit within the area of statistics.

The third digit is the course’s serialization where even digit stands for first semester unit while odd digits stand for second semester units.

e) Course coding for Physics units

The course codes consist of two parts:

‘PHYS’ which stands for “Physics” (and means it is a Physics course) followed by three digits.

The **first digit** indicates the year the course is being offered or the level of the course, the **second digit**

indicates the semester the course is offered and the third digit is the course’s serialization.

For example ‘PHYS 221’ means that it is a Physics course offered in second year in the second semester with a serial ‘1’. If the second digit is a “zero”, it means the course is a Physics project or a service course offered to other departments. If the third digit is a “zero”, it means the course is a practical course.

f) Course coding for Biochemistry Units

The course coding BIOC, standing for Biochemistry, followed by 3 digits..

Digit 1, indicates the year of study the course is offered or level of the course

Digit 2, indicates nature or sub discipline of the course within the discipline.

Level 0 Introductory courses

Level 1 Principles courses

Level 3 advanced

Molecular Biology-1;

Techniques-2;

Immunology-3;

Genetics -4;

Digit 3, indicates serial number for courses in the respective disciplines.

g) Course coding for Geography Units

The letters in the Code GEOG reflect Geography followed by a three digit figure:

The **first digit** represents the year in which the course is offered to undergraduate students.

The **second digit** represents the semester within which the course is offered, and

The **third digit** represents the serial number of the course.:

9. Courses offered in the programme

9.1 Schedule of Courses

a). Common Core Courses

CODE	COURSE TITLE	L	P	CF
COMP 101	Introduction to Computer Application	45	15	3.5
COMS 111	Communication Skills	45	0	3.0
ECON 100	Introduction to Economics	45	0	3.0
MATH 100	General Mathematics	45	0	3.0

ZOOL 143	HIV/AIDS and Society	45	0	3.0
CORE COURSE TOTAL		225	15	15.5

b) Courses by Department of Biological Sciences

9.1.2. BOTANY COURSES

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
BOTA 101	General Botany	30	30	3.0
BOTA 111	General Genetics	30	30	3.0

YEAR 1 SEMESTER 2

BOTA 121	Plant Anatomy and Morphology	30	30	3.0
BOTA 131	General Microbiology	30	30	3.0

YEAR 2 SEMESTER 1

BOTA 232	Phycology	30	30	3.0
BOTA 241	Taxonomy of higher plants	30	30	3.0

YEAR 2 SEMESTER 2

BOTA 233	Mycology	30	30	3.0
BOTA 271	Plant Physiology	30	30	3.0

YEAR 3 SEMESTER 1

BOTA 302	Biostatistics	30	30	3.0
BOTA 322	Plant growth and development	30	30	3.0

*ELECTIVES

BOTA 303	Bryology and Pteridology	30	30	3.0
BOTA 341	Ethnobiology	30	30	3.0
BOTA 342	Economic Botany	30	30	3.0
BOTA 352	Principles of crop protection	30	30	3.0
BOTA 372	Ecophysiology	30	30	3.0

YEAR 3 SEMESTER 2

BOTA 335	Advanced Microbiology	30	30	3.0
BOTA 361	Plant Ecology	30	30	3.0

*ELECTIVES

BOTA 304	Biology of Gymnosperms	30	30	3.0
BOTA 312	Plant genetic resource management	30	30	3.0
BOTA 334	Techniques of mushroom production	30	30	3.0
BOTA 381	Research methods	45	0	3.0
BOTA 382	Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER 1

BOTA 453	Plant Pathology	30	30	3.0
BOTA 473	Plant Biochemistry	30	30	3.0

*ELECTIVES

BOTA 412	Plant Biotechnology	30	30	3.0
BOTA 435	Plant Virology	30	30	3.0
BOTA 474	Advanced Plant Physiology	30	30	3.0
BOTA 481	Botany Seminars	15	60	3.0
BOTA 482	Research Projects	0	60	2.0

YEAR FOUR SEMESTER 2

BOTA 413	Molecular and Microbial genetics	30	30	3.0
BOTA 436	Industrial Microbiology	30	30	3.0

*ELECTIVES

BOTA 405	Plant Evolution	30	30	3.0
BOTA 437	Plant Bacteriology	30	30	3.0
BOTA 438	Plant Nematology	30	30	3.0
BOTA 482	Research Projects	0	60	2.0
	OVERAL CORE COURSES TOTAL	480	480	48
	OVERALL ELECTIVE COURSES TOTAL	480	720	56
	PROGRAMME GRAND TOTAL	960	1200	104

*Students to take at least one elective per semester in Year 3 and Year 4.

9.1.3. ZOOLOGY COURSES

YEAR 1 SEMESTER 1

ZOOL 101	Lower Invertebrates	30	30	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0

YEAR 1 SEMESTER 2

ZOOL 102	Higher Invertebrates	30	30	3.0
ZOOL 103	Vertebrate Zoology	30	30	3.0

YEAR 2 SEMESTER 1

ZOOL 210	Ecology	30	30	3.0
ZOOL 231	Cell Biology	30	30	3.0

YEAR 2 SEMESTER 2

ZOOL 220	Arthropod Biology	30	30	3.0
ZOOL 232	Histology	30	30	3.0

YEAR 3 SEMESTER 1

ZOOL 321	Fundamentals of Entomology	30	30	3.0
ZOOL 330	Animal Physiology	30	30	3.0

*ELECTIVES

ZOOL 301	Animal Systematics and Evolution	30	30	3.0
ZOOL 302	History and Philosophy of Biology	30	30	3.0
ZOOL 311	Freshwater Biology	30	30	3.0
ZOOL 351	Research Methods	45	0	3.0

YEAR 3 SEMESTER 2

ZOOL 331	Developmental Biology	30	30	3.0
ZOOL 341	Helminthology	30	30	3.0

*ELECTIVES

ZOOL 303	Ornithology and Mammalogy	30	30	3.0
ZOOL 312	Marine Biology	30	30	3.0
ZOOL 313	Terrestrial Ecology	30	30	3.0
ZOOL 352	Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER 1

ZOOL 430	Comparative Animal Physiology	30	30	3.0
ZOOL 440	Protozoology	30	30	3.0

*ELECTIVES

ZOOL 410	Ichthyology	30	30	3.0

ZOOL 431	Endocrinology	30	30	3.0
ZOOL 441	Immunology	30	30	3.0
ZOOL 451	Research Projects	0	60	2.0

YEAR 4 SEMESTER 2

ZOOL 412	Population Biology	30	30	3.0
ZOOL 452	Zoology Seminars	15	60	3.0

*ELECTIVES

ZOOL 451	Research Projects	0	60	2.0
ZOOL 413	Animal Behaviour	30	30	3.0
ZOOL 420	Applied Entomology	30	30	3.0
ZOOL 432	Cancer Biology and Society	30	30	3.0
	OVERAL CORE COURSES TOTAL	480	480	48
	OVERALL ELECTIVE COURSES TOTAL	405	600	47
	PROGRAMME GRAND TOTAL	885	1080	95

*Students to take at least one elective per semester in Year 3 and Year 4.

c) COURSE DESCRIPTIONS

i) BOTANY COURSES

BOTA 101: General Botany (30/30: CF 3.0)Y1S1

General characteristics of the various divisions of the plant kingdom covering, Bacteria, Algae, Fungi, Lichens, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. Anatomy and morphology of Angiosperms. Floral biology to include the structure of the flower and inflorescence. A general introductory study of the life processes of plants including photosynthesis, respiration and movement of materials.

BOTA 111: General Genetics (30/30: CF 3.0) Y1S1

Background to the Science of genetics, heredity and variation; Cytogenetics: chromosomes and genes and their role in heredity, mechanisms of cell division and their genetic importance; Qualitative genetics: Pre-Mendelian concepts on heredity, Mendelian principles of inheritance, departures from Mendelian phenotypic ratios and their causes- incomplete dominance, co-

dominance, lethal genes, gene epistasis, gene linkage and gene mapping; Quantitative genetics and associated principles; Population genetics: The Hardy-Weinberg equilibrium, factors that affect this equilibrium; Molecular heredity: identifying the molecule of heredity, types of nucleic acids, the genetic code, gene expression.

BOTA 121: Plant Anatomy and Morphology (30/30: CF 3.0) Y1S2

Morphology and anatomy of Pteridophytes and Tracheophytes with emphasis on the different levels of organization in each. Include detailed structures of cells, tissues and tissue systems (i.e. collenchymas, parenchyma, sclerenchyma and vascular tissues. Characteristics of mesophytes, halophytes and hydrophytes. *(Prerequisite: BOTA 101)*

BOTA 131: General Microbiology (30/30: CF 3.0) Y1S2

Introduction. Economic importance. Bacteria, viruses, fungi. Algae, protozoa, prion, mycoplasmas, Chlamydia and rickettsia. Microorganisms in industrial fermentation, sanitation, water purity. Public health and emerging diseases. Microbes in agriculture. Microbial growth, cultures, Control methods and strategies. *(Prerequisite: BOTA 101)*

BOTA 232: Phycology (30/30: CF 3.0) Y2S1

Introduction and classification of the algae. Range of vegetative structures (phallus organisation) and habitat. Structure and reproduction of selected algae from the following divisions; Cyanophyta, Chlorophyta, Euglenophyta, Xanthophyta, Bacillariophyta, Phaeophyta, Dinophyta, Cryptophyta, Life cycles and alternation of generations. Ecology, physiology and economic importance of algae. Cultivation and preservation of algae. Field trip *(Prerequisites: BOTA 101 and BOTA 131)*

BOTA 233: Mycology (30/30: CF 3.0) Y2S2

Introduction. Historic development and economic importance. General characteristics of fungi. Classification: criteria, schemes, role of recombinant DNA technology (rDNA). Reproductive systems. Genetic variability mechanisms. Life cycle of selected fungal groups and species. Fungal ecology: Lichens,

mycorrhizae, pathogenic fungi. Commercial fungi, edible and poisonous fungi, yeast and role in fermentation. Field trip. *(Prerequisites: BOTA 101, BOTA 131)*

BOTA 241: Taxonomy of Higher Plants (30/30: CF 3.0) Y2S1

The Significance and relationship of plant taxonomy to other botanical disciplines. Plant hierarchy and intra-specific classification. Nomenclature. Sources of phylogenetic evidence. Biosystematics and modern taxonomy. Taxonomic resources; identification techniques, plant variation and evolution. Survey of selected angiosperm families of East Africa flora. Field trip. *(Prerequisite: BOTA 101)*

BOTA 271: Plant Physiology (30/30: CF 3.0) Y2S2

An introduction of physical and chemical properties of aqueous solutions. Colloidal state. Structure, classification and function of carbohydrates, lipids, amino acids and proteins. Enzymes and coenzymes. Diffusion and osmosis. Soil water-plant relationships. Path of water and solutes through soil water-plant system. Phloem transport. Mineral nutrition. Plant growth, development and hormones. Photosynthesis and respiration. *(Prerequisites: BOTA 101, BOTA 121)*

BOTA 302: Biostatistics (45/0: CF 3.0) Y3S1

Common statistical terminology. Sampling, Data presentations; tables, diagrams. Measures of Central tendency and dispersion. Probability. Binomial, Poisson and normal probability distributions, 2-scores. Hypothesis, significance test and level. Confidence intervals and limits. Data transformations. Parametric statistical methods: Students t-test; F-tests, ANOVA I; ANOVA II, Non parametric statistical methods: Chi square tests, Sign test; Wilcoxon's Rank test, Kruskal-Wallis test. Correlation and Regression Analysis. Computer statistical Programmes.

BOTA 303: Bryology and Pteridology (30/30: CF 3.0) Y3S1

The basic life-cycles of bryophytes and pteridophytes, gametophytic generation, sporophytic generation; asexual reproduction, sexual reproduction, apogamy and capogamy, steler system of the filicophyta, broad classification and their global distribution, their

evolution and development, interrelationships of Bryophytes and pteridophytes to the other cryptogams, economic importance and ecology. *(Prerequisite: BOTA 101)*

BOTA 304: Biology of Gymnosperms (30/30: CF 3.0) Y3S2

Characteristic features and classification of gymnosperms and their past and present distribution. Morphology, anatomy, life history, phylogeny and relationships of CYCAS, PINUS, EPHEDRA and GNETUM. A brief account of fossil gymnosperms. Evolutionary tendencies. Field trip *(Prerequisite: BOTA 101)*

BOTA 312: Plant Genetic Resource Management (30/30: CF 3.0) Y3S2

The concepts of genetic resources; types of genetic resources, legumes, cereals, tuber crops, cut-flowers and others. Genetic resource variability and diversity; methods and techniques of handling resources, propagation, maintenance and conservation, application of biotechnology in resource management; facilities for genetic resources, international institutions on genetic resources; operations and roles in management, conservation and distribution, law, genetic resources. Transfer of biotechnology with genetic resources. Utilization of resources for bio-diversity in agriculture. *(Prerequisites: BOTA 101, BOTA 111)*

BOTA 322: Plant Growth and Development (30/30: CF 3.0) Y3S1

Definition of plant growth and development in angiosperms; male and female gametophytes, fertilization, endosperm development and embryology, structure and development of shoot and root apices, morphogenesis, juvenility, maturation and senescence. Endogenous hormones bioassay, mode of action and economic importance; flowering process and phytochrome involvement; development of bulbs and tubers, growth movement; abnormal plant growth. Tissue culture studies. *(Prerequisites: BOTA 121, BOTA 271)*

BOTA 334: Techniques of Mushroom Production (30/30: CF 3.0) Y3S2

Economic importance of mushrooms. Somatic structures, morphology of basidiocarp. Edible and poisonous mushrooms. Types of edible mushrooms under cultivation, pests and diseases. Techniques involved in cultivation; preparation of culture and spawn, preparation of compost, pasteurization, spawning the compost, casing – sterilization of soil, control of environmental factors. Growth and production of mushrooms. Harvesting and preservation. Packaging and marketing procedures. Field trip. *(Prerequisites: BOTA 131, BOTA 233)*

BOTA 335: Advanced Microbiology (30/30: CF 3.0) Y3S2

Fundamental concepts of microbiology including nutrition, ecology, physiology, genetic and molecular biology of microorganisms, their role in nature, infection and immunity. *(Prerequisite: BOTA 131)*

BOTA 341: Ethnobiology (30/30:3.0)Y3S2

Useful and poisonous plants: plant products and their derivatives used in medicine, pesticides and industries. Research and development of African Traditional Medicine (ATM). Identification of common medicinal and poisonous plants. Animals and their products used in ethno- medicine. Extraction, isolation and identification of common plant secondary products. Bioassays for activity. Bioprospecting, bioethics, quality assurance and drug legislation procedures. In-situ and ex-situ medicinal plants conservation, sustainable harvesting methods; International Conventions and Treaties. Field trip. *(Prerequisites: BOTA 101, BOTA 121, BOTA 241)*

BOTA 342: Economic Botany (30/30: CF 3.0) Y3S1

The importance and nature of common plant products. Centres of diversity of the major cultivated plants. A brief account of plant products and derivatives used in nutrition, textiles, dyes, beverages, spices, perfumes and insect controls. Identification and use of common medicinal/poisonous plants of East Africa. In Situ and ex-Situ germplasm conservation. Field trip. *(Prerequisites: BOTA 101, BOTA 241)*

BOTA 352: Principles of Crop Protection (30/30: CF 3.0) Y3S1

Introduction. Economic importance. Pest concept. Pest management, causal agents of crop diseases. Major crop diseases. Disease epidemics. Control methods. Disease diagnostic, molecular technology. Arthropod invertebrate pests. Life cycles. Population dynamics. Pest injury, damage, crop losses. Storage pests. Control methods and strategies. Insecticides. Weeds, weed physiology and ecology. Control methods; cultural, herbicides. Synergism Mycoherbicides. Pesticides: technology, registration, regulation. Use and safety. Role of gene cloning and biotechnology in pest management and control. Field trip. *(Prerequisites: BOTA 131, BOTA 233)*

BOTA 361: Plant Ecology (30/30: CF 3.0) Y3S2

Introduction; principles and concepts of ecosystems, communities, populations and individual species. Terrestrial ecology, terrestrial environment, general structure of terrestrial communities, soil and vegetation, distribution of major terrestrial communities. Vegetation ecology, concepts of life form community hypothesis, vegetation community structure, classification, limits and systems, vegetation patterns, succession and climax. Population dynamics and causal factors. East African vegetation, types and history. Field trip. *(Prerequisite: BOTA 101)*

BOTA 372: Ecophysiology (30/30: CF 3.0) Y3S1

Water relations in plants. The ascent of sap and mineral elements. Organic translocation. Plant stress physiology; effects of water salts, light, temperature stress on plant growth and development. Essentiality of mineral elements. Uptake and transport of mineral nutrients. Foliar nutrition and leaching. Mineral metabolism; deficiencies. Ecological and genetic aspects of mineral nutrition. Plant responses to the environment. Dormancy and phytochrome involvement. Growth movements. *(Prerequisites: BOTA 101, BOTA 271)*

BOTA 381: Research Methods (45/0: CF 3.0) Y3S2

Research and society. Importance of research in science. Problem identification. Formats and preparation of project proposals and work plans. Data collection and Analysis techniques. Information presentation methods.

Preparation of scientific papers and reports. *(Prerequisite: BOTA 302)*

BOTA 382: Industrial Attachment (0/120: CF 4.0) Y3S2

The students will be attached to public and/or private organisations involved in aspects of life sciences like Kenya Agricultural and Livestock Research Organization (KALRO), Kenya Breweries Limited, Kenya Medical Research Institute, International Centre for Insect Physiology and Ecology (ICIPE), Kenya Plant Health Inspectorate Service (KEPHIS), Kenya Forestry Institute, Museums, Primate Research Institute, Kenya Wildlife Service, Water and Sewage services, Ministry of Water (quality control section), Agrochemicals, Kenya Veterinary Laboratories, among others.

BOTA 405: Plant Evolution (30/30: CF 3.0) Y4S2

Major geological time scales and their major events regarding plant evolution. Processes and mechanisms of variation and evolution. Genotypic and phenotypic patterns. Chemosystematics. Adaptation, breeding systems. Polyploidy, hybridization, apomixis and polymorphisms. An introduction to the morphology stratigraphic occurrence and evolutionary relationships of fossil plants, microfossils and macrofossils. Rates of evolution and origin of angiosperms. Emphasis should be on evolution of E. African flora. *(Prerequisite: BOTA 101)*

BOTA 412: Plant Biotechnology (30/30: CF 3.0) Y4S1

Applications of biotechnology principles to agriculture practices. Critical examination of the use of molecular genetics and tissue culture techniques in agricultural production of plant cell and tissue culture. Recombinant DNA and molecular cloning techniques. Transgenic plants and genetic engineering. *(Prerequisites: BOTA 111, BOTA 271, BOTA 313).*

BOTA 413: Molecular and Microbial Genetics (30/30: CF 3.0) Y4S1

Structure and function of the genetic material, DNA synthesis, transcription and protein synthesis. The genetic code. Molecular basis of mutations. Genetic recombination, transformation, conjugation and transduction in Bacteria. Plasmids. Recombinant DNA

technology. Regulation of gene expression in microorganisms. (*Prerequisites: BOTA 111, BOTA 131*)

BOTA 435: Plant Virology (30/30: CF 3.0) Y4S1

Introduction, morphology, structure and chemical composition of plant viruses. Classification and nomenclature. Virus transmission methods. Effects of viral infection, properties of viruses. Virus identification. Electron microscopy, test plant reactions, Serological tests, molecular diagnostic techniques. Important virus diseases of food crops in Kenya. Control of virus diseases. Field trip. (*Prerequisite: BOTA 131*)

BOTA 436: Industrial Microbiology (30/30: CF 3.0) Y4S2

The relationship of microorganisms to food manufacture and preservation, industrial fermentation and processing, sanitation. The potential role of genetic engineering in fermentation. Field trip. (*Prerequisite: BOTA 131, BOTA 335*)

BOTA 437: Plant Bacteriology ((30/30: CF 3.0) Y4S2)

Historic development of bacteriology; Classification and characteristics of bacteria; morphology, reproduction and ecology. Bacterial physiology and genetics. Phytopathogenic bacteria. Identification and biochemical tests. Symptomatology of bacterial diseases of important crops in Kenya. Field trip. (*Prerequisites: BOTA 131, BOTA 335*)

BOTA 438: Plant Nematology (30/30: CF 3.0) Y4S2)

Historic development of plant nematology. Classification and characteristics of nematodes, morphology, anatomy and reproduction, nematodes ecology. Host parasite relationships, interrelationship between nematodes and other plant pathogens (Fungi, Bacteria, and Viruses). Important nematode diseases of crop plants in Kenya. Nematodes control methods, cultural, biological, physical and chemical methods. Field trip. (*Prerequisites: BOTA 131, BOTA 335*)

BOTA 453: Plant Pathology (30/30: CF 3.0) Y4S1

The concept of plant diseases and significance of crop losses. History of plant pathology. Disease causal agents, fungi, bacteria, viruses, mycoplasmas,

nematodes, seed plants and adverse environmental conditions. Epidemiology and disease forecasting. Principles and practices of disease control, quarantines, cultural, biological, varietal resistance, physical and chemical methods. Disease of important crops in Kenya, symptoms, pathogens, transmission, disease cycle and control. Methods of assessing diseased crop losses. Techniques for diagnosing plant disease. (*Prerequisites: BOTA 131, BOTA 352*)

BOTA 473: Plant Biochemistry (30/30: CF 3.0) Y4S1

The chemistry and metabolism of carbohydrates, lipids, amino acids, and proteins. Photosynthesis. Chemistry and uses of natural plant products; Plant phenolics, alkaloids, terpenes and terpenoids. N-Fixation, NO₃ and NO₂ reduction. Vitamins and Co-enzymes. Influence of climate change on production secondary metabolites by plants. Field trip. (*Prerequisites: BOTA 101, BOTA 271*)

BOTA 474: Advanced Plant Physiology (30/30: CF 3.0) Y4S1

Photosynthesis: light as a driving energy source; photosynthetic types and structure of the photosynthetic apparatus; electron transport and photophosphorylation reactions; carbon dioxide fixation and reduction; environmental factors that limit photosynthesis and the nature of damage to photosynthesis; leaf and canopy photosynthesis. (*Prerequisites: BOTA 101, BOTA 271*)

BOTA 481: Botany Seminars (15/60: CF 3.0) Y4S2

The seminars will consist of oral presentations, discussions and written report based on recent advances and trends in Botany as a discipline. Seminars which integrate various areas of Botany showing progress made in the discipline, future trends and challenges.

BOTA 482: Research Projects (0/120 : CF 4.0) Y4S1 and 2

Supervised individual study of a topic in botany involving literature review, research and culminating in a written report. (*Prerequisite: BOTA 381*)

ii) ZOOLOGY COURSES

ZOOL 101: Lower Invertebrates (30/30: CF 3.0) Y1S1

General introduction to the invertebrates; Principles of Animal Systematics; Anatomy, physiology and classification of: Protozoa, Porifera, Cnidaria and Ctenophora, Acoelomates (Platyhelminthes, Nermertea) Pseudocoelomates (Nematoda, Rotifera, Nematomorpha, Acanthocephala, Entoprocta, Gastrotricha).

ZOOL 102: Higher Invertebrates (30/30: CF 3.0) Y1S2

Introduction to coelomate phyla; Anatomy, physiology and classification of: Annelida, Mollusca, Arthropoda, Echinodermata, the minor coelomate phyla. (*Prerequisite: ZOOL 101*)

ZOOL 103: Vertebrate Zoology (30/30: CF 3.0) Y1S2

Introduction to Phylum Chordata. The classification, evolution, morphology, structural and functional adaptations of lower chordata, modern fish, amphibians, reptiles, birds and mammals.

ZOOL 143: HIV/AIDS and Society (45/0: CF 3.0) Y1S1

Introduction to HIV/AIDS. Epidemiology of HIV/AIDS. Impact of HIV/AIDS in Africa. Human microbial pathogens. Types and subtypes of HIV. Origin and evolutionary trends of HIV. Structure and life cycle of HIV. Signs and symptoms of HIV/AIDS. Opportunistic infections. Body's defence mechanisms; nonspecific and specific defence mechanisms. Sexually transmitted infections (STIs). Relationship between STIs and AIDS. Transmission and detection of HIV. CD4 cell count and viral load. Stages in HIV transmission. Treatment and prevention of HIV/AIDS. Voluntary counselling and testing (VCT). Community outreach and care of people living with HIV/AIDS. HIV/AIDS and Gender: HIV/AIDS and the law.

ZOOL 210: Ecology (30/30: CF 3.0) Y2S1

Introduction to Ecology, scope of ecology. The biotic and abiotic factors influencing distribution and abundance of organisms. Ecosystem, Competition and

niche concepts. Ecological methods. Energy flow, nutrient recycling and biogeochemical cycles. Structural and functional aspects of ecosystems and communities. Trophic structure and production. Structure and dynamics of populations. Introduction to terrestrial, aquatic and wet-land ecology Ecotone. Palaeoecology. Human impact on ecosystem. Resiliency and resistance of ecosystems. Field trips.

ZOOL 220: Arthropod Biology (30/30: CF 3.0) Y2S2
Introduction to Phylum Arthropoda. Economic significance of Arthropods. Anatomy and physiology of arthropods. Arthropod growth and development. General classification of Arthropoda. Arthropod ecology and behaviour. (*Prerequisites: ZOOL 101, ZOOL 102*)

ZOOL 231: Cell Biology (30/30: CF 3.0) Y2S1
Cell and its history, cell theory, prokaryotic and eukaryotic cells, typical animal cell, cell structure and infrastructure; movement of materials across plasma membrane, cell organelles, cell junctions, cell cycle. Membrane structure and composition.

ZOOL 232: Histology (30/30: CF 3.0) Y2S2
Types of tissue; epithelial, connective, muscle, nervous. Classification; structure, location and function of the types of tissue. Histology of selected organ systems: digestive, circulatory, endocrine glands, integumentary. (*Prerequisites: ZOOL 103, ZOOL 231*)

ZOOL 240: General Parasitology (30/30: CF 3.0) Y2S2
Introduction to parasitism and other related phenomena. Economic importance of parasites. Life cycles and effects of helminth, protozoan and arthropod parasites in domestic animals and man. Methods of transmission and control measures including pest management. (*Prerequisite ZOOL 100*)

ZOOL 301: Animal Systematics and Evolution (45/0: CF 3.0) Y3S1
Geological time scale; origin of life; systematic of selected animals, early theories of evolution, modern theories of evolution, Evidence for evolution and mechanisms of evolution, Primate and human evolution, phylogenetic relationships between animals;

Adaptations and distribution of animals. (*Prerequisites: ZOOL 101, ZOOL 102, ZOOL 103*)

ZOOL 302: History and Philosophy of Biology (30/0: CF 2.0) Y3S1

The developments in Biological Sciences from the days of Hippocrates to date; the scientific nature of Biology; moral and ethical implications, the role of Biological Sciences in modern Science and Technology. The Course will also include discussions on contemporary controversial biological practices such as genetic engineering, cloning, surrogate motherhood, In vitro fertilization, morality of birth control and abortion.

ZOOL 303: Ornithology and Mammalogy (30/30: CF 3.0) Y3S2

Ornithology: external anatomy and organ system of birds. Avian classification, migration, behaviour, reproduction. Origin, evolution and domestication of birds. **Mammalogy:** characteristics and classification of mammals and Zoogeography. Adaptations of mammals for survival in diverse habitats. Primate morphology, anatomy, and social life. Adaptive radiation, hominoids and hominids: phylogenetic relationships and adaptive radiation. (*Prerequisite: ZOOL 103*)

ZOOL 311: Freshwater Biology (30/30: CF 3.0) Y3S1

The abundance and distribution of water. Origin, classification and ecology of lakes. Structure of freshwater ecosystems. Physical, chemical and biological properties of water. Energy flow and nutrient budgets. Primary and secondary production. Decomposition, detritus processing in streams, River Continuum Concept (RCC). Groundwater ecology, economic importance of man-made lakes. Adaptation of aquatic fauna. Pollution, management, exploitation and conservation of freshwater resources. Field Course and practicals. (*Prerequisite: ZOOL 210*)

ZOOL 312: Marine Biology (30/30: CF 3.0) Y3S2

Distribution of oceans and seas, topography of the ocean basin. Instrumentation. Physical and chemical properties of sea water. Water movements and their biological significance. Habitat ecology i.e. sandy/muddy shores, Rocky shores and Mangrove swamps. Biology of corals and estuaries. Deep sea

biology. Marine pollution. Management, exploitation and conservation of marine resources. Field Course and practicals. (*Prerequisite: ZOOL 210*)

ZOOL 313: Terrestrial Ecology (30/30: CF 3.0) Y3S2

The concept of dry land ecology with special emphasis on the survival strategies of organisms inhabiting arid and semi-arid ecosystems. Distribution of plant and animal communities. Foraging habits of arthropods, reptiles, ungulates and birds and others that inhabit terrestrial biomes. Predatory and herbivorous pressure observed in terrestrial organisms. Reproductive patterns of terrestrial organisms. Field trip (*Prerequisite: ZOOL 210*)

ZOOL 321: Fundamentals of Entomology (30/30: CF 3.0) Y3S1

Introduction to Entomology. Definition of relevant entomological terms. Insect Morphology and Anatomy. General classification of Class Insecta. Insect physiology. Food and feeding habits of insects. The role of insects in the ecosystem. (*Prerequisite ZOOL 220*)

ZOOL 330: Animal Physiology (30/30: CF 3.0) Y3S1

Introduction to animal physiology. Levels of structural organization in animal body, Body fluids, homeostasis and control systems. Structure and functions of body organ systems: circulatory, respiratory, digestive, nervous, endocrine, urinary, reproductive, musculoskeletal. (*Prerequisites: ZOOL 103, ZOOL 232*)

ZOOL 331: Developmental Biology (30/30: CF 3.0) Y3S2

Introduction to developmental biology. Landmark theories of development. Gametogenesis, egg polarity, vitellogenesis, types of eggs. Early embryonic development; fertilization, cleavage, blastulation. Late embryonic development; gastrulation, neurulation and organogenesis. Morphogenetic movements and fate maps. Postembryonic development; metamorphosis, regeneration, and aging. Teratology and congenital malformations. (*Prerequisite ZOOL 231, ZOOL 232*)

ZOOL 341: Helminthology (30/30: CF 3.0) Y3S2

Introduction to parasitism and related phenomena. Adaptation to parasitic modes of life, host/parasite relationships and methods of transmission.

Classification, morphology and medical/veterinary importance. Physiology and biochemistry of helminth parasites. Immunology of helminth infections. Epidemiology, diagnosis, treatment and control of helminth infections. *(Prerequisites: ZOOLOGY 101, ZOOLOGY 102)*

ZOOLOGY 351: Research Methods (45/0: CF 3.0) Y3S2

Research and society. Importance of research in science. Problem identification. Formats and preparation of project proposals and work plans. Data collection and Analysis techniques. Information presentation methods. Preparation of scientific papers and reports. *(Prerequisite: BOTANY 302)*

ZOOLOGY 352: Industrial Attachment (0/120: CF 4.0) Y3S2

The students will be attached to public and/or private organisations involved in aspects of life sciences like Kenya Agricultural and Livestock Research Organization (KALRO), Kenya Breweries Limited, Kenya Medical Research Institute (KEMRI), Centre for Disease Control (CDC), Walter Reed Project (WRP), International Livestock Research Institute (ILRI), International Centre for Insect Physiology and Ecology (ICIPE), Kenya Plant Health Inspectorate Service (KEPHIS), Kenya Forestry Institute, Museums, Primate Research Institute, Kenya Wildlife Service, Water and Sewage services, Ministry of Water (quality control section), Agrochemicals, Kenya Veterinary Laboratories, among others.

ZOOLOGY 410: Ichthyology (30/30: CF 3.0) Y4S1

A study of fish biology, systematic, ecology and evolution. Fish populations, distribution and migration patterns. Field studies of local species. Fishery techniques, management and conservation. Fish culture and pathology, legal aspects of fisheries. *(Prerequisites: ZOOLOGY 103, ZOOLOGY 210)*

ZOOLOGY 412: Population Biology (30/30: CF 3.0) Y4S2

Topics in animal and plant population and community ecology stressing an analytical and interpretation approaches. The ecosystem approach to ecology, to include mathematical modelling of ecological systems, spatial and temporal heterogeneity in ecosystems, the

interaction of community structure and function. *(Prerequisite: ZOOLOGY 210)*

ZOOLOGY 413: Animal Behaviour (30/30: CF 3.0) Y4S2

Scope, methods and importance of animal behaviour studies. Ethological theories and adaptive nature of behaviour in animals. The ethogram, social organization and communication in animals. Biological mediation of behaviour. Reproductive and parental behaviour/care in animals. Principles of animal learning and motivation. Innate behaviour. Play behaviour in animals. Ontogeny and evolution of behaviour. Behaviour genetics. Animal emotions and behaviour disorders. Anomalous behaviour in animals. Behavioural therapy in animals. Laboratory and field work includes guided visits to Zoos and relevant research centres. *(Prerequisite: ZOOLOGY 210)*

ZOOLOGY 420: Applied Entomology (30/30: CF 3.0) Y4S1

Pests of field crops, fruits and vegetables, pests of stored products: identification of pests and recognition of their damage on the crops. Insects (and related arthropods) of medical and veterinary importance; their role in disease transmission. Pest control methods. Beneficial/economic insects. Field trips of relevant research centres. *(Prerequisites: ZOOLOGY 220, ZOOLOGY 321)*

ZOOLOGY 430: Comparative Animal Physiology (30/30: CF 3.0) Y4S1

A comparative study of the physiology of the circulatory system, gaseous exchange, thermoregulation, excretion and reproduction in both vertebrates and invertebrates. *(Prerequisite: ZOOLOGY 330)*

ZOOLOGY 431: Endocrinology (30/30: CF 3.0) Y2S2

Hormones: classification, mechanism of action. Structure, location and disorders of the endocrine organs; hypothalamus, pituitary, thyroid glands, parathyroid glands, thymus, adrenal glands, pancreas, gonads and pineal body. Other hormones and hormone like substances; prostaglandins. Hormones in insects and other invertebrates. *(Prerequisite: ZOOLOGY 330)*

ZOOLOGY 432: Cancer Biology and Society (45/0: CF 3.0) Y2S2

Introduction to cancer biology, prevalence and impact. Overview of cancer pathology. Introduction and classification of causes of cancer and kinds of cancer. Relationship between cancer and the immune system. Signs and symptoms of cancer and related risk factors. Hallmarks of cancer; angiogenesis and metastasis; mutagens, carcinogens and mutations; cell cycle and development of cancer, DNA repair mechanism, defects and its relationship to cancer. Diagnosis, prevention and treatment of cancer. Strategies for management of cancer; community outreach, care and awareness. Socio-economic impacts of cancer. Field trip. *(Prerequisite BOTANY 111, ZOOLOGY 231)*

ZOOLOGY 440: Protozoology (30/30: CF 3.0) Y4S1

Classification, morphology and life cycles of protozoan parasites of medical and veterinary importance. Methods of transmission and major arthropod vectors of parasitic protozoa. Physiology and biochemistry of protozoan parasites. Immunology of protozoan infections. Epidemiology, diagnosis, treatment and control of protozoan infections. *(Prerequisites: ZOOLOGY 101, ZOOLOGY 102)*

ZOOLOGY 441: Immunology (30/30: CF 3.0) Y4S1

Basic Concepts in immunology; Antigens, Immunogen and hapten. Fate of antigens and the response of the organisms to functions of immunoglobins. Antigen antibody reaction, in vitro and in vivo. Complement and its interactions. Lymphoid organs. The thymus and immunological competence. T and B cells. Humoral and cell mediated immunity. Hypersensitivity. Transplantation immunology, tolerance, immunosuppression and immunoenhancement. Applications of immunological techniques to biological research. *(Prerequisites: ZOOLOGY 101, ZOOLOGY 102, ZOOLOGY 103)*

ZOOLOGY 451: Research Projects (0/120: CF 4.0) Y4S1 and S2

The students will be required to select an area of interest in Zoology and carry out a search of literature then write a proposal of a research project explaining the problem they want to work on, materials required, methodology, duration of the project, and usefulness of

project. This will be done under supervision of a lecturer(s) competent in the chosen study area. The students will be expected to present seminars on their project and to write progress reports of their work. A complete written report of the research work will be submitted to the department at the end of the second semester for assessment.

ZOOL 452: Zoology Seminars (15/60: CF 3.0) Y4S2

The seminars will consists of oral presentations, discussions and written report based on recent advances and trends in Zoology as a discipline. Seminars which integrate various areas of Zoology showing progress made in the discipline, future trends and challenges.

c) Chemistry Option

YEAR 1 SEMESTER I

CODE	TITLE	L	P	CF
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
Total		120	30	9.0

YEAR 1 SEMESTER II

CODE	TITLE	L	P	CF
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
PHIL 108	Ethics, Integrity and National values	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0
Total		120	30	9.0

YEAR II SEMESTER I

CHEM 211	Quantum and Bonding Theories	30	30	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms I	45	0	3.0
Total		75	30	6.0

YEAR II SEMESTER II

CHEM 212	Comparative Study of s & p Block Elements	30	30	3.0
CHEM 221	Gases and Phase Equilibria	45	0	3.0
Total		75	30	6.0

YEAR III SEMESTER I

CORE COURSES

CHEM 322	Chemical Thermodynamics	30	30	3.0
CHEM 323	Chemical Kinetics	30	30	3.0
CHEM 332	Carbonyls, their derivatives and Amines	45	0	3.0
Total		105	60	9.0

ELECTIVE COURSES

CHEM 314	Bioinorganic Chemistry	30	30	3.0
CHEM	Chemistry of Lipids	45	0	3.0

333				
CHEM 355	Industrial Chemistry I	30	30	3.0
CHEM 351	Environmental Chemistry I	45	0	3.0
Total		150	60	12.0

YEAR III SEMESTER II

CORE COURSES

CHEM 313	Coordination Chemistry	30	30	3.0
CHEM 324	Physical Methods of Structure Determination	45	0	3.0
CHEM 341	Analytical Chemistry I	30	30	3.0
Total		105	60	9.0

ELECTIVE COURSES

CHEM 315	Chemical Applications of Group Theory	45	0	3.0
CHEM 334	Polyaromatics and Protein Chemistry	45	0	3.0
CHEM 335	Chemistry of Carbohydrates	30	30	3.0
CHEM 352	Industrial Attachment	0	120	4.0
Total		120	150	10.0

YEAR IV SEMESTER I

CORE COURSES

CHEM 425	Electrochemistry	30	30	3.0
CHEM 436	Stereochemistry & Reaction Mechanisms II	45	0	3.0
CHEM 443	Analytical Chemistry II	30	30	3.0
Total		105	60	9.0

ELECTIVE COURSES

YEAR IV SEMESTER I

CHEM 426	Statistical Thermodynamics	45	0	3.0
CHEM 453	Industrial Chemistry II	30	30	3.0
CHEM 454	Research Project	0	120	3.0
CHEM 444	Environmental Chemistry II	45	0	3.0
CHEM 437	Chemistry of Natural Products	45	0	3.0
Total		165	150	15.0

YEAR IV SEMESTER II

CORE COURSES

CHEM 416	Comparative Study of d &	30	30	3.0

	f Block Elements			
CHEM 417	Radiation & Nuclear Chemistry	45	0	3.0
CHEM 455	Organic Spectroscopy	45	0	3.0
Total		120	30	9.0

ELECTIVE COURSES

CHEM 427	Quantum Chemistry	45	0	3.0
CHEM 438	Heterocyclic Chemistry	45	0	3.0
CHEM 439	Introduction to Organic Synthesis	45	0	3.0
CHEM 454	Research Project	0	120	4.0
CHEM 446	Polymer Chemistry	45	0	3.0
CHEM 445	Instrumental Techniques	30	30	3.0
Total		210	150	19.0

* Students to take at least two electives for 3:3:2:2 and all electives for 3:3:1:1 programme

b) CHEMISTRY UNITS

The courses/units offered should include courses from any three subject combinations. These subjects are: **Mathematics, Physics, Chemistry, Botany, Zoology, Geography and Biochemistry**, in addition to common university courses, in both 1st and 2nd year of study. Subsequently the students will choose either Chemistry (1) or Chemistry and one other subject (2) for 3rd and 4th year of study leading to a 3:3:1:1 or 3:3:2:2 programme

CHEM 110: Inorganic Chemistry (30/30 C. F. 3.0) Y1S1

The atom: Dalton's atomic theory. Atomic & Mass number. Nucleides and isotopes. Relative atomic mass. **Stoichiometry:** Avogadro's number the mole concept, molar mass; molarity, parts per million (ppm), parts per billion (ppb), dilution calculations. Empirical and molecular formulae; calculations of percentage composition. **Atomic Structure and the Periodic Table:** Review of atomic structure; Rutherford and Bohr atomic models; electronic configuration (Z=1 to Z=30); filling of electronic levels qualitative treatment of atomic orbitals, energy levels and pairing of electrons, atomic spectrum of hydrogen and ionization energies as

evidence of energy levels; periodic table development; electronic configuration in relation to periodic table; general trends in chemical and physical properties in period 3 and group I, II and VII. **Chemical Bonding:** Review of covalent and ionic chemical bond formation. **Intermolecular forces:** Van der Waals, dipole-dipole, hydrogen bonding, hydrates and clathrates; Lewis structures.

CHEM 111: General Inorganic and Physical Chemistry (30/30 C. F. 3.0) Y1S1

Atoms and Elements: Dalton's atomic theory, atomic number, mass number, Nucleides and isotopes, Relative atomic mass, Avogadro's number, the mole concept, Chemical calculations: Empirical formulae, (its calculation from percentage composition and from combustion analysis), molecular formula, percentage composition, weight percent (w/w), volume percent (v/v), weight volume percent (w/v). Stoichiometric calculations involving solutions: Molarity, Normality, parts per million (ppm), parts per billion (ppb) dilution calculations. Modern periodic table: Electron configurations and the periodic table: A general survey of representative elements: trends across periods and down the groups. Chemical bonding: covalent and ionic bonding, Lewis dot structures of molecules and ions. Kinetic theory and states of matter: Gas laws: pressure-volume and Temperature-volume relationships; partial pressure relationships, ideal gas law; kinetic theory and gas laws; real gases. Chemical equilibrium and reaction rates: reversible reactions; rates of chemical reaction, activation energy, factors affecting reaction rates (temperature, concentration and catalysts), Equilibrium constants, K_c and K_p , simple calculations involving K_c and K_p . Acids and bases; K_a and K_b ; indicators, pH of solutions, hydrolysis of salt, solubility and solubility products; Buffer solutions. Electrochemistry: concepts of oxidation and reduction; balancing redox equations, simple electrode reactions, electrochemical cells, standard electrode potentials and cell emf (simple calculations). Thermochemistry: Basic definition of enthalpy changes, standard enthalpies of combustion, formation, and solution Hess's law of heat summation; calculations of enthalpies of combustion of fuels and carbohydrates. Introduction to separation techniques

CHEM 120: Physical Chemistry I (45/0 C. F. 3.0) Y1S1

Kinetic theory and states of matter, Gas laws; ideal and real gases. Chemical kinetics: Rates of reactions, Factors affecting rates of reactions Chemical equilibrium: reversible reactions; equilibrium as a state of balance for reversible chemical reactions; law of mass action; equilibrium constants (K_c and K_p); factors affecting equilibrium, Le-Chatelier's principle; effect of concentration, pressure, temperature, and catalysts. Ionic equilibrium: self-ionization of water and ionic product (K_w); acids and bases; ionization constants for weak acids and bases (K_a and K_b); indicators; pH (detailed calculations of pH of solutions); buffer solutions. Thermochemistry: Chemical reactions and energy changes; exothermic and endothermic reactions (simple energy level diagram); types of heat changes (ΔH); Hess's law of constant heat summation and its application to simple calculations of enthalpy changes (ΔH). Electrochemistry: redox reactions; electron transfer; half reactions (oxidation and reduction reactions); balancing of redox reactions; types of electrodes and simple electrode reactions; electrolysis; Faradays laws of electrolysis (quantitative treatment); electrochemical cells; standard electrode potential and electromotive force.

CHEM 130: Organic Chemistry I: (30/30 C. F. 3.0) Y1S2

Introduction to organic chemistry: electronic configuration of carbon; hybridization, sp^3 , sp^2 and sp . Catenation, Elemental analysis (qualitative). Functional groups alcohols, alkyl halides, aldehydes and ketones, carboxylic acids, aliphatic amines, phenols, ethers (their nomenclature and qualitative analysis). **Alkanes:** Sources; preparations; nomenclature. **Structural isomerism:** physical properties; chemical reactions, mechanism for free radical substitution. **Cycloalkanes:** nomenclature, geometric isomerism. **Alkenes and alkynes:** sources; preparation; nomenclature; structural isomers (E-Z); physical properties, reactions: identification and analysis (addition and oxidation). Polymerization. **Prerequisite:** CHEM 110 or CHEM 111.

CHEM 211: Quantum and Bonding Theories (45/0 HRS: C. F. 3.0) Y2S1

Quantum theory: The wave nature of light, Black body radiation, Photoelectric effect, Bohr atom wave-particle dualism, Compton effect, dual nature of matter, de Broglie's relation and the uncertainty principle; Schrödinger equation and its application to hydrogen atom and other one electron species; orbitals, probability distributions and charge clouds; particle in a box the quantum theory and the periodic table; derivation of free ion ground state term symbols. Theories of covalent bonding: Valence bond and molecular orbital theories; and molecular orbital configurations for homonuclear and heteronuclear diatomic molecules, molecular orbitals and delocalized bonding; hybridization, multicentre bonding; shapes of simple molecules. Ionic bonding: occurrence, crystal lattice packing. Born-Haber cycle. Fajan's rules. Band theory of metals. Prerequisite: CHEM 110.

CHEM 212: Comparative Study of S and P Block Elements (30/30 C. F. 3.0) Y2S2

General trends in physical and chemical properties down the group, along the period and diagonal relationship with reference to size, melting points, boiling points, density, ionization potentials, electron affinities and electronegativities. Hydration and Lattice energies, Occurrence, extraction and uses of s & p – block elements. Synthesis, structures, properties and uses of compounds of s & p – block elements. (Oxides chlorides and hydroxides). (Organometallic compounds of s & p block elements with special reference to Beryllium, Magnesium, Aluminium silicon and Tin. Hydrides of Boron, Oxoacids of phosphorus, and sulphur interhalogen compounds fluorine chemistry. Prerequisite: CHEM 110.

CHEM 221: Gases and Phase Equilibria (45/0 C. F. 3.0) Y2S2

Gaseous state: kinetic theory of gases and gas laws (derivation of ideal gas equation $PV = \frac{1}{3}mnc^2$ and its application to explain gas laws). Real gases and Van der Waal's equation and other equations Boltzman's distribution (qualitative treatment only); Critical phenomena; Ionic equilibria: salt hydrolysis; hydrolysis constant (qualitative treatment only); (K_b , K_a , K_b , and K_w); solubility product, common ion effect, weak and

strong electrolytes-Arrhenius theory of dissociation, solutions; properties; ideal and non-ideal solutions; Henry's and Raoult's laws; colligative properties (vapour pressure lowering, boiling point elevation, and freezing point depression); deviations from Raoult's laws. Phase equilibrium; phase rule: one component and two components systems; phase diagrams; vapour pressure diagrams (liquid/vapour composition diagrams); boiling point composition diagrams; distillation; miscible, partially miscible, partially miscible and immiscible liquids. Colloidal state: Preparations and purifications of sols; electrical and other properties, gels and emulsions. Prerequisite: CHEM 120.

CHEM 231: Stereochemistry and Reaction Mechanisms I (30/30 C. F. 3.0) Y2S1

Isomerism and stereoisomerism, R and S nomenclature, chirality and asymmetric carbon atom. Optical activity, resolution, racemization, multichiral centred compounds. Conformation of ethane and butane. Alkyl halide nomenclature, preparation, uses. Mechanisms and stereochemistry of nucleophilic substitution (S_N1 and S_N2) and elimination reactions ($E1$ and $E2$). Rearrangement of carbocations. Alcohols: structure, preparation and reactions. Ethers and epoxides structures, physical properties, synthesis and reactions. Thiols, thioether (mention). Aromatic compounds: nomenclature, mechanism of electrophilic substitution, directing effects of a group to an incoming second group. Phenols: physical properties industrial sources, preparations and reactions. Thiophenol (mention). Prerequisite: CHEM 130

CHEM 313: Coordination Chemistry (30/30 C. F. 3.0) Y3S2

Trends in physical and chemical properties of transition elements along the periods and down the groups; historical development of coordination compounds, Werner's and Sidgwick's theories; Chelate and macrocyclic effects. Stability constants of coordination complexes; nomenclature of coordination compounds, coordination numbers and isomerisms; valence bond theory, ligand field theory, crystal field theory, molecular orbital theory; spectrochemical series, ligand field stabilization energy, Jahn-Teller effect; electronic spectra: Russell-Saunders terms and terms arising in ligand fields, selection rule, correlation diagrams and

their application the interpretation of spectra; theoretical basis of magnetochemistry; determination of magnetic susceptibility by Gouy and Faraday's methods; application of complexes in practical processes. Prerequisite: CHEM 211.

CHEM 314: Bioinorganic Chemistry (45/0 C. F. 3.0) Y3S1

Perspectives of occurrence, of metals in Biological systems: Concepts of metal essentiality and toxicity, abundance and availability, sequestering and storing of essential elements, Antagonism among essential elements, ion pumps. Sodium/potassium pumps: Metalloporphyrins and related systems: Oxygen carriers haemoglobin and myoglobin, dioxygen activating copper proteins. Ferredoxins, cytochromes Iron carriers: transferrins and ferritins., Nitrogen fixation nitrogenase; nitrogen fixation through metal complexes. Photosynthesis: chlorophyll, its structure and function Role of Manganese in photosynthesis. Inorganic chemistry and medicine: inorganic body chemistry. Anticancer drugs. Diagnostic medicine, Bioinorganic activity of Technetium, Radiopharmaceutical, gold drug.

CHEM 315: Chemical Application of Group Theory (45/0 C. F. 3.0) Y3S2

Symmetry elements and symmetry operations. Properties of a group multiplication table Representation of group-character tables. "Great orthogonality theorem". Reduction formula. Direct product. Simple applications of symmetry to hybridization, molecular orbitals, vibrational and electronic spectra; Integrals spectral and energy of interaction. Selection rules.

CHEM 322: Chemical Thermodynamics (30/30 C. F. 3.0) Y3S1

Introduction to chemical thermodynamics: systems; states; state functions. First law of thermodynamics: internal energy; enthalpy; constant volume and constant pressure. Pressure, volume, work and reversible processes. Isothermal and adiabatic expansion of an ideal gas. Heat capacities and temperature dependence of entropy. Free energy and equilibrium constant. Second law of thermodynamics: Spontaneous isolated systems; the efficiency of transformations of heat into work. Calculations of entropy, free energy and equilibrium constant. Clausius-Clapeyron equation and

phase equation. Third law of thermodynamics. Appropriate practicals. Prerequisite: CHEM 221

CHEM 323: Chemical Kinetics (30/30 C. F. 3.0) Y3S1

The scope of kinetics. Elementary and complex reactions. Molecularity of elementary reactions. Order of reaction. Rate of reaction. Dependence of rate on temperature. Reversible reactions. Consecutive reactions. Equilibrium constant and specific reactions rate Photochemistry. Chain reactions. Branched chain reactions. Theories of reaction rates. Heterogeneous catalysis. **Prerequisite:** CHEM 120.

CHEM 324: Physical Methods of Structure Determination (45/0 C. F. 3.0) Y3S2

The electromagnetic spectrum. General introduction to spectroscopy. Electronic absorption spectroscopy (UV/VIS). Vibration and rotation spectroscopy (IR). Nuclear Resonance Spectrometry (NMR), Mass spectrometry. Basic introduction and general application in structure determination.

CHEM 332: Carbonyls, Their Derivatives and Amines (45/0 C. F. 3.0) Y3S1

Chemistry of carbonyl compounds: occurrence, nomenclature, physical properties, synthesis of carbonyl compounds, reactions of carbonyl compounds: Addition reactions, oxidation reactions, reactions via enols and enolate ions: Haloform, Aldol reactions, Claisen condensation, acetoacetic ester synthesis, Malonic ester synthesis, alkylation of 1,3-dithianes, Knoevenagel condensation, Michael additions, a stork enamine reaction and Barbiturates; carboxylic acids and derivatives: occurrence, nomenclature, physical properties, preparation and reactions; Aromatic sulphonic acids: mechanism of sulphonation, sulphonic and sulphinic acids. Amines: Nomenclature, physical properties, and biological importance of amines, preparation, and reactions including coupling reactions of Diazonium salts. Prerequisite: CHEM 130 & CHEM 231.

CHEM 333: Chemistry of Lipids (45/0 C. F. 3.0) Y3S1

Definitions, classification and nomenclature of Fatty acids: Physical Properties (Crystal Structure, Melting point, Refractive index Solubility, film formation,

micelles formation, optical activity, Infrared Spectroscopy (IR), Ultraviolet Spectroscopy (UV), Nuclear Magnetic Resonance (NMR), Mass Spectrometry); Chemical properties: (Heterogenous and Homogenous Catalytic hydrogenation), production of aliphatic alcohols, Auto-Oxidation and photo-oxidation, chemical oxidation; Chemical Synthesis of fatty acids; Industrial applications (surfactants and paints). Triglycerides: Structure and composition; physical properties (optical activity, polymorphism, melting point). Synthesis and chemical properties of triglycerides Physical and chemical properties of monoglycerides and diglycerides. Processing of fats and oils for Edible use.

CHEM 334: Polyaromatics and Protein Chemistry (45/0 C. F. 3.0) Y3S2

Alicyclic compounds: nomenclature; bonding; preparation of small rings. Polynuclear aromatic hydrocarbons and their derivatives-biphenyls, naphthalene, phenanthrene and anthracene. Non-benzenoid aromatic systems. $4n$ and $4n + 2$ annulenes. Bifunctional molecules: amino acids: nomenclature structure, naturally occurring amino acids and methods of extraction, synthesis. Peptides: bonding, structure, synthesis. Proteins: structure, classification and general properties. Ketoacids, dicarbonyls, acids, hydroxyketone, hydroxyaldehydes, hydroxycarboxylic acids.

Prerequisite: CHEM 332.

CHEM 335: Chemistry of Carbohydrates (30/30 C. F. 3.0) Y3S2

Monosaccharides: Introduction; nomenclature: configuration, Haworth and chair conformation of D-glucose; reduction to glyketals: reactions in base, Ruff degradation; Kiliani-Fisher synthesis: Osazone formation: hemiacetal formation; determination of the ring size of glucose. Disaccharides and polysaccharides: characterization acids. **Prerequisite:** CHEM 332.

CHEM 355: Industrial Chemistry I (30/30 C. F. 3.0) Y3S1

Unit operations, Chemical conversions, Industrial processes compared to laboratory preparations. Basic chemical data. Batch versus continuous processes; research and development. Process selection patents. Pilot plants. Chemical plant locations. Ceramic

industries (refractories, glass, Portland cement). Production and uses of primary chemicals-sodium chloride, ammonia, sulphuric acid, caustic soda, soda ash, chlorine and products based thereon. Rubber industry. Fat and fatty acid industries. Fermentation industry: ethanol production by fermentation, manufacture of beer. Starch industry. Sugar processing in Kenya. The wood - paper industry. Selected industrial visits.

CHEM 351: Environmental Chemistry I (45/0 C. F. 3.0) Y3S1

Structure and composition of the atmosphere; introduction to atmospheric photochemistry involving O_2 , O_3 , SO_x , NO_x ; Organic compounds. Greenhouse effect/global warming. Air quality and pollution by CO_2 , NO_x , & SO_x gases, aerosols; (**particulates**; photochemical smog. Acid rain. Radioactive emissions. Indoor air pollution and associated health effects and control measures. Water quality & pollution by organic pollutants e.g. biocides, detergents, petroleum heavy metals /inorganic pollutants e.g. Pb, Cd, Hg, Ni, fluoride and carbonates etc and inorganic pollutants e.g. Pb, Cd, Hg, nitrites, phosphate, fluoride, radioactive materials etc. Soil pollution by fertilizers pesticides and toxic heavy metals. Associated health hazards. Combustion and control of noxious emissions from petroleum based fuels. Lead based fuel additive and associated health hazards. Alternative fuel sources. Biomass based fuels including biogas, gasohol & oil producing plant species. Hydrogen as a fuel. Synthesis and properties of environmentally degradable chemicals e.g. detergents & polymers. An introduction to novel food supplies including simple cell protein. Health hazards arising from food additives and chemicals formed during food processing. Health hazards arising from food additives and chemicals formed during food processing. Food contamination by natural chemicals e.g. mycotoxins. **Selected industrial visits.**

CHEM 352: Industrial Attachment (0/120 C. F. 4.0) AFTER Y3S2

Students are to be attached in a busy industrial setup, research institutes, pharmaceuticals, established laboratories approved by the department.

CHEM 341: Analytical Chemistry I (30/30 C. F. 3.0) Y3S2

Introduction to nature, scope and literature of analytical chemistry. Collection and treatment of analytical data: representative samples, accuracy, precision and presentation of data statistics; dispersion of data and elimination tests. Theory and application of the following analytical methods; Chromatography: mechanisms of separation, column efficiency, qualitative and quantitative analysis. Introduction to Gas and Liquid chromatography. Electroanalytical techniques: Electrochemical cells, electrode potentials, potentiometry; ion selective electrodes. Polarography (DME). Introduction to Absorption and Emission spectroscopy. Practicals to emphasize the basic methodology of analytical chemistry with particular reference to industrial and environmental problems.

CHEM 416: Comparative Study of d and f Block Elements (30/30 C. F. 3.0) Y4S2

General trends in physical and chemical properties along the period and down the group; organometallic compounds: organometallic compounds: Metal carbonyls and other related compounds e.g. metal nitrosyls, cyanocomplexes (Bonding, structure, synthesis, properties and reactions etc. valence electron count (the 16 and 18 electron rule); organometallic compounds of pi-extended ligand systems; (e.g. metallocenes, polyenecomplexes etc); Bonding, synthesis and reactions; organometallic catalytic reactions; (hydrogenation of alkenes, hydroformylation, Wacker process; Ziegler -Natta polymerization catalysis); spectral analysis and characterization of organometallic compounds; metal-metal bonding and introduction to metal clusters; cluster valence electron count. **Prerequisite:** CHEM 313.

CHEM 417: Radiation and Nuclear Chemistry (45/0 C. F. 3.0) Y4S2

An introduction to radioactivity and nuclear reactions. Different kinds of ionising radiations and their properties. Interaction of radiation with matter. Detection of radiation; Gas-filled detectors, Scintillation counters and semiconductor detectors. Radiological safety and exposure. Biological effects of radiation. Waste disposal. Applications of radiochemistry in chemistry, industry, biology, geology, medicine and agriculture.

CHEM 427: Quantum Chemistry (45/0 C.F. 3.0) Y4S2

Schrodinger wave equation. Hamiltonians for molecular systems. Particles in a box. Rigid rotor harmonic oscillator, Hydrogen atom, Angular momentum, Fine structure in atomic spectra. Term symbols. Electron spin, Helium atom, Antisymmetric wave function. Slater determinants, Molecular wave function, Born Oppenheimer approximation, Hydrogen molecule valence and molecular orbital (M.O.) treatments, Determining bases for irreducible representations. Symmetry of quantum mechanical operators. Matrix element selection. Selection rules in IR and Raman spectroscopy. **Prerequisite:** MATH 210, CHEM 315.

CHEM 425: Electrochemistry (30/30 C. F. 3.0) Y4S1

Conductance of electrolytes; specific resistance and conductance; cell constant; molar and equivalent conductance and their units; variation of conductance with concentration; conductance of strong and weak electrolytes. The Onsager equation; Kohlrausch; law of independent migration of ions and its applications (conductometric titrations); determination of dissociation constant of weak acid. Transference number. Reversible electrodes; electrode potentials; measurement of activity and activity coefficients; equilibrium constant and pH; solubility product from e.m.f. measurements. Free energy, enthalpy, and entropy from e.m.f. measurements. Concentration cells with and without liquid junction. Potentiometric titrations, amperometry, chronopotentiometry, coulometry; decomposition potentials and discharge of ions; over-voltage; polarography and cyclic voltametric methods. **Prerequisite:** CHEM 322.

CHEM 426: Statistical Thermodynamics (45/0 C. F. 3.0) Y4S1

Introduction to probability. Phase space. Distribution functions. Normalization. Method of average. Introduction to statistical mechanics. Distribution of configuration among micro-states. Derivation of Boltzmann factor. Distribution numbers. Partition functions. Assemblies of independent localized systems. Vibrational partition functions. The Einstein heat capacity function, non-localized systems. Partition functions of transitional vibrations and rotations. Heat capacities of gases - Sackur-Tetrode equation.

Calculation of statistical thermodynamic functions of an ideal gas, vapour pressure, chemical potential. The grand partition function. **Prerequisite:** MATH 241, CHEM 427.

CHEM 436: Stereochemistry and Reaction Mechanisms II (45/0 C. F. 3.0) Y4S1

Review of stereochemistry of saturated carbon compounds (molecules with one and multiple centres). Dynamic stereochemistry: Conformational analysis of cyclohexane: boat and chair forms; energy profile of chair/chair inversion. Monosubstituted cyclohexane: equatorial and axial groups; relative stabilities. Effect of conformations on reaction rates. Theory of concerted reactions using frontier orbital approach HOMO and LUMO). Electrocyclic reactions: conrotatory and disrotatory modes of ring closure and opening using specific examples e.g. dimerization of alkenes; allowed and disallowed reactions. Photochemistry. Classical and nonclassical carbonium ions. **Prerequisite:** CHEM 231.

CHEM 455: Organic Spectroscopy (45/0 C.F. 3.0) Y4S2

Infrared spectroscopy; review of infrared process; sampling techniques and instrument design: Interpretation of some simple IR spectra of organic molecules. Ultraviolet Spectroscopy: Fundamental electronic transitions; position of chromophores of some simple organic molecules; bathochromic and hypsochromic shifts; Calculation of λ_{max} for conjugated dienes and dienones; quantitative analysis by ultraviolet spectroscopy. Nuclear magnetic resonance: a description for the nuclear process in connection with ^1H ; chemical shifts and coupling constant; temperature dependent NMR spectra; shift reagents, ^{13}C NMR; the interpretation of NMR spectra. Mass spectrometry: a description of the equipment; sampling techniques; the molecular ion; satellite peaks; high resolution and fragmentation patterns; metastable peaks and their use in structure elucidation. (Instrumentation to be undertaken in various institutions) **Prerequisite:** CHEM 324.

CHEM 438: Heterocyclic Chemistry (45/0 C. F. 3.0) Y4S2

Introduction. Nomenclature, aromaticity, reactivity, preparation, basicity, and acidity of heterocyclic

compounds (e.g. furan, pyrrole, thiophene, and pyridine). Reactions include addition, electrophilic, nucleophilic and radical substitutions. Degradation. Derivatives and uses. Fused rings (e.g. indole, quinolines, benzothiophene, carbazole, dibenzothiophene, acridine, etc), their reactions, and derivatives. **Prerequisite:** CHEM 130, CHEM 231, CHEM 332.

CHEM 439: Introduction to Organic Synthesis (45/0 C.F. 3.0)

Introduction: synthetic strategies, criteria for evaluating synthetic routes, synthetic terminology; chemoselectivity, regioselectivity, stereoselectivity, retrosynthesis; disconnection approach, synthons, synthetic equivalent(s), target molecule and learning to apply synthetic methods. Methods of carbon-carbon bond formation: Organometallic and ylide methods, carbonyl activation and enolate chemistry, kinetics vs thermodynamic control, aldol condensation and Michael additions; carbocations, carbanions, free radical and pericyclic reactions; Diels-Alder reaction. Methods of making carbon-nitrogen bonds: Electrophilic methods, nucleophilic methods, rearrangement methods, synthesis of amino acids and synthesis of nitrogen heterocycles. Functional group transformations: Oxidation, reduction and halogenation. Protecting groups: Protection of hydroxyl, carboxyl, carbonyl, and amino acid groups, peptide synthesis and introduction to combinatorial synthesis. Some examples of total synthesis e.g. β -eudesmol, thiamine (vitamin B1) and geraniol. **Prerequisite:** CHEM 332.

CHEM 453: Industrial Chemistry II (30/30 C. F. 3.0.) Y4S1

Clay moulding and glazing of ceramic products, isolation of meat by-products, making of matches, bleaches. Petrochemicals - types of petrochemicals, constituents of petroleum, petroleum refining and major outlets for petrochemical e.g. ethene to oxirane, ethylene, glycol, PVC, polystyrene, diethylene, glycol, triethyl glycol etc. Propene and its uses e.g. production of polymers. Butenes. Agrochemicals; pesticides (herbicides, fungicides) and fertilizer. Dyes. Pharmaceuticals-sulphur drugs, antibiotics, penicillins and Cephalosporins, anti-malaria drugs, Arsenical drugs, Aspirin and Acetonminophene. Selected industrial visits. **Prerequisite:** CHEM 332, CHEM 341.

CHEM 454: Research Project (0/120 C.F. 4.0) Y4S1 and Y4S2

Students who intend to take chemistry as a single subject in third and fourth years of study will be allowed to do a research project. Students will be introduced to scientific research methods and are expected to perform library literature search from which they will write a research proposal. Research proposal must be presented to the department in form of a seminar before actual laboratory experiments are started. At the end of laboratory work students are expected to write neatly typed and bound reports on their research findings and submit their reports to the department for examination.

CHEM 444: Environmental Chemistry II (45/0 C. F. 3.0) Y4S1

Chemical assessment methods for air, water and soil pollutants of Organic & Inorganic origin. **Noise pollution an physical assessment methods.** Physical assessment methods for noise pollution; monitoring and modelling for water quality management; Biological water quality monitoring. Microorganisms and degradation processes. **Chemical speciation for water, soil and air pollutants, chemical toxicology.** Prevention and abatement of pollution: air pollution abatement technologies, waste water treatment technologies. Management, legislation, economic instruments for environmental policy, and environmental impact assessment. Selected industrial visits.

CHEM 437: Chemistry of Natural Products (45/0 C. F. 3.0) Y4S1

Introduction to the chemistry of some classes of natural products (terpenoids, alkaloids, Lactams, steroid hormones, polyketides, shikimates and antibiotics), structure, stereochemistry and reactivity. Isolation and synthesis of natural products. Determination of structure by oxidation and spectral methods. Chemistry of vitamins. Survey of selected locally available biologically active compounds. **Prerequisite:** CHEM 231, CHEM 332 & CHEM 436.

CHEM 456: Polymer Chemistry (45/0 C.F. 3.0) Y4S2

Polymer molecule; high polymers, natural, synthetic (linear and branched). Molecular weight, degree of polymerization and monomer requirements. Physical properties and stereochemistry. Polymerization

mechanisms: Addition (free radical, cationic, anionic, co-ordination) and condensation. Copolymers, phase systems and classification of polymers. Examples: Rubber (Natural and Synthetic) - manufacture of natural rubber, synthetic rubbers (examples, nomenclature, syntheses, properties, and uses; fibres (natural and synthetic) - examples, nomenclature, syntheses properties and uses) Terylene (Dacron, Tetron, Cronar, Mylar)-examples, nomenclature, syntheses properties and uses; plastics and resins (Thermoplastics, thermosetting resins, polyvinyl plastics) examples, nomenclature, syntheses properties, and uses.

CHEM 443: Analytical Chemistry II (30/30 C. F. 3.0) Y4S1

Statistical treatment of analytical data: regression and correlation analysis. Application of radioisotopes to analytical chemistry: NAA and IDA. Thermal analysis: thermogravimetry, differential thermal analysis and differential scanning calorimetry: Infrared absorption fluorescence and phosphorescence spectrophotometry. X-ray methods, electron spin resonance and nuclear magnetic resonance spectroscopy. Mass spectrometry; structure determination. Chromatographic techniques: Instrumentation, High performance Liquid Chromatography (HPLC) and High Performance Thin Layer Chromatography (HPLTC). Ion-exchange and size-exclusion chromatography. **Prerequisite:** CHEM 341.

CHEM 445: Instrumental Techniques (30/30 C. F. 3.0) Y4S2

A survey of the principles and application of modern instrumentation techniques in chemical analysis: **Chromatographic instrumentation, to include:** Supercritical Fluid Chromatography (SFC), Gel Permeation Chromatography (GPC), Capillary Zone Electrophoresis (CZE), Micellar Electrokinetic Chromatography (MECC). **Spectrometric instrumentation, including** Flame atomic spectrometry, Graphite Furnace Atomic Absorption Spectrometry (GFAAS), Plasma Atomic spectrometry: Direct Current Plasma (DCP-AES), Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). Interphase between chromatography and spectrometry techniques for speciation studies of

transition metals. **Electroanalytical instrumentation:** Polarography, differential pulse and anodic stripping voltametric methods. **Mass Spectrometry (MS):** Components of MS, resolution. Interfacing chromatography and MS analysis of mixtures & stable isotope uses Correlation of MS with molecular structure. **Nuclear Magnetic Resonance Spectroscopy (NMR):** Basic principles, Continuous Wave and Fourier Transform-Nuclear Magnetic Resonance (FT-NMR) Spectrometers. Quantitative Analysis/Examples/Problems in Infrared Spectrophotometry Introduction Instrumentation, sample handling Correlation of infrared (IR) spectra with nuclear structure. Quantitative Analysis/Problems. X-ray analysis methods. **Prerequisite:** CHEM 341, CHEM 455, & CHEM 443.

d) Mathematics Units

Distribution Table of Courses offered

Category of Courses	Number of Courses	Credit Factors	Lecture Hours
Core Courses (Mathematics)	20	60	900
Electives (Mathematics Majors)	29	87	1305

YEAR 1 SEMESTER 1

CODE	COURSE TITLE	L	P	CF
MATH 112	BASIC MATHEMATICS	30	0	3.0
MATH 132	ANALYTICAL GEOMETRY	30	0	3.0
COMS 111	COMMUNICATION SKILLS	30	0	3.0
ZOOL 143	HIV/AIDS AND SOCIETY	45	0	3.0

YEAR 1 SEMESTER 2

CODE	COURSE TITLE	L	P	CF
MATH 111	DIFFERENTIAL CALCULUS	30	0	3.0
STAT 133	INTRODUCTORY STATISTICS	30	0	3.0
PHIL 108	ETHICS, INTEGRITY AND NATIONAL VALUES	45	0	3.0
COMP 101	INTRODUCTION TO COMPUTER APPLICATIONS	45	15	3.5

ELECTIVE COURSE (RECOMMENDED FOR STUDENTS INTENDING TO MAJOR IN MATHEMATICS)

CODE	COURSE TITLE	L	P	CF
MATH 131	VECTORS AND MECHANICS	30	0	3.0

YEAR 2 SEMESTER 1

CODE	COURSE TITLE	L	P	CF
MATH 212	INTEGRAL CALCULUS	30	0	3.0
STAT 232	PRINCIPLES OF PROBABILITY & STATISTICS	30	0	3.0

ELECTIVE COURSE (RECOMMENDED FOR STUDENTS INTENDING TO MAJOR IN MATHEMATICS)

CODE	COURSE TITLE	L	P	CF
MATH 230	VECTOR ANALYSIS	30	0	3.0

YEAR 2 SEMESTER 2

CODE	COURSE TITLE	L	P	CF
MATH 213	LINEAR ALGEBRA	30	0	3.0
STAT 233	BIVARIATE PROBABILITY & STATISTICS	30	0	3.0

ELECTIVE COURSES (RECOMMENDED FOR STUDENTS MAJORING IN MATHEMATICS)

CODE	COURSE TITLE	L	P	CF
MATH 231	GENERAL MECHANICS	30	0	3.0
MATH 225	MULTIVARIABLE CALCULUS	30	0	3.0
STAT 241	OPERATIONS RESEARCH	30	0	3.0

YEAR 3 SEMESTER 1 CORE COURSES

CODE	COURSE TITLE	L	P	CF
MATH 316	ADVANCED LINEAR ALGEBRA	45	0	3.0
MATH 334	DYNAMICS	45	0	3.0
MATH 336	FLUID MECHANICS	45	0	3.0
STAT 332	THEORY OF ESTIMATION	45	0	3.0
STAT 340	STATISTICAL QUALITY CONTROL	45	0	3.0

YEAR 3 SEMESTER 2 CORE COURSES

CODE	COURSE TITLE	L	P	CF
MATH 311	GROUP THEORY	45	0	3.0
MATH 315	COMPLEX ANALYSIS	45	0	3.0
MATH 331	NUMERICAL ANALYSIS	45	0	3.0

ELECTIVES

CODE	COURSE TITLE	L	P	CF
MATH 313	ADVANCED REAL ANALYSIS	45	0	3.0
MATH 333	METHODS OF APPLIED MATHS	45	0	3.0
STAT 343	CATEGORICAL DATA ANALYSIS	45	0	3.0
STAT 342	STATISTICAL DEMOGRAPHY	45	0	3.0
STAT 345	DESIGN AND ANALYSIS OF EXPERIMENTS	45	0	3.0

**YEAR 4 SEMESTER 1
CORE COURSES**

CODE	COURSE TITLE	L	P	CF
MATH 422	GENERAL TOPOLOGY	45	0	3.0
MATH 434	PARTIAL DIFFERENTIAL EQUATIONS	45	0	3.0

ELECTIVES

CODE	COURSE TITLE	L	P	CF
MATH 402	RING THEORY	45	0	3.0
MATH 432	DIFFERENTIAL GEOMETRY	45	0	3.0
MATH 436	ADVANCED FLUID MECHANICS	45	0	3.0
MATH 438	ADVANCED NUMERICAL ANALYSIS	45	0	3.0
STAT 432	TESTING OF HYPOTHESIS	45	0	3.0
STAT 446	BIOMETRIC MODELS	45	0	3.0

**YEAR 4 SEMESTER 2
CORE COURSES**

CODE	COURSE TITLE	L	P	CF
MATH 411	FUNCTIONAL ANALYSIS	45	0	3.0
MATH 431	ADVANCED ORDINARY DIFFERENTIAL EQUATIONS	45	0	3.0

ELECTIVES

CODE	COURSE TITLE	L	P	CF
MATH	ADVANCED COMPLEX	45	0	3.0

407	ANALYSIS			
MATH 413	ADVANCED GENERAL TOPOLOGY	45	0	3.0
MATH 421	MEASURE THEORY	45	0	3.0
MATH 433	ADVANCED PARTIAL DIFFERENTIAL EQUATIONS	45	0	3.0
MATH 435	NUMERICAL METHODS	45	0	3.0
MATH 437	ADVANCED METHODS OF APPLIED MATHEMATICS	45	0	3.0
STAT 433	STOCHASTIC PROCESSES	45	0	3.0
STAT 443	APPLIED MULTIVARIATE ANALYSIS	45	0	3.0

Total credit factors, lecture hours and courses required for graduation

For graduation, students majoring in mathematics will require a minimum of 120 credit factors. The students must register and pass all the core courses in Mathematics. In addition students in the 3:3:1:1 system should take a minimum of 9.0 credit factors from the electives while those in the 3:3:2:2 system will need to take at least 3.0 credit factors from the electives per semester.

c). MATHEMATICS UNITS**MATH 111: Differential Calculus (30/0/30;CF:3.0) Y1S2**

Limits, continuity and differentiability. Differentiation of function of single variable. Parametric Implicit differentiation. Anti-derivatives and its applications to areas .Application of differentiation.

PREREQUISITE: MATH 112

MATH 112: Basic Mathematics (30/0/30;CF:3.0) Y1S1

Elementary logic. Sets. Number systems. Relations and functions. Trigonometry permutation and combinations .Sequences and series.

MATH 131: Vectors and Mechanics (30/0/30;CF:3.0) Y1S2

Vectors, Motion in a straight line. Relative motion. Connected bodies. Friction, Moment and couples. Statistics

of particles and rigid bodies. Centre of gravity and linear equations.

MATH 132: Analytical Geometry (30/0/30;CF:3.0) Y1S1

Plane analytic geometry. Polar coordinates and polar equations. Complex numbers. Vectors in two and three dimensions Lines and planes. Central Quadratics. Matrices and linear equations.

STAT 133: Introductory Statistics (30/0/30;CF:3.0) Y1S2

Basic steps conducting a survey. Introduction to questionnaire design. Data presentation. Measure of central tendency and measures of dispersion. Elementary probability application to combinatorial analysis. Concept of random variable; discrete and continuous probability functions of a random variable. Introduction to binomial, Poisson and Normal.

MATH 212: Integral Calculus (30/0/30;CF:3.0) Y2S2

Taylor's Theorem. Mean value theorems of differential calculus. Integration. Methods of integration. Application of integration. Mean value theorems of integral calculus. Numerical integration. Function of several variables. Partial differentiation. Multiple integral.

PREREQUISITE: MATH 111

MATH 213: Linear Algebra (30/0/30;CF:3.0) Y2S1

Vector spaces over $\mathbb{R}$. subspace. Linear independence Basis and dimension. Linear transformation and the matrices. System of linear equations. Equivalence and similarity inner product spaces.

MATH 225: Multivariable Calculus (45/0/0; CF:3.0)Y2S2

Infinite series. Convergence tests. Improper integral and their convergence. Differential and integral calculus of several variables. Taylor's theorems. Stationary points .Lagrange's multipliers. Calculus of variations.

PREREQUISITE: MATH 212

MATH 230: Vector Analysis (30/0/30;CF:3.0) Y2S1

Vector calculus and application. Gradient, Divergence and curl. Green's Stock's and divergence theorem's, and related theorems. Curvilinear coordinates.

MATH 231: General Mechanics (30/0/30;CF:3.0) Y2S2

Newton's Law of motion. Work, energy and power. Conservatives and impulsive forces. Rectilinear motion. Uniform acceleration. Resisting media. Simple harmonic motion. Damped and forced vibrations. Projectiles. Angular momentum of a particle. Motion of a particle under a central force. Newton's law of gravity.

MATH 233: Bivariate Probability and Statistics (30/0/30;CF:3.0)Y2S2

Distribution of functions of random variables. Derived distributions such as the t, chi-square and F distributions. Characteristic functions. The independence of $\bar{X}$ and S in normal samples. Order statistics. Bivariate normal distributions, limit and convergence theorems. Law of large numbers. **PREREQUISITE: STAT 232**

STAT 232: Principles of Probability and Statistics (30/0/30;CF:3.0) Y2S1

Random variable and probability distributions; Exponential, hypergeometric, Beta, gamma etc. Moments and moment generating functions. Markov and Chebychev inequality. Special univariate distributions. Bivariate probability distributions. Joint marginal and conditional distributions. Independence of random variables. Bivariate expectations and generating functions. **PREREQUISITE: STAT 133**

STAT 245: Operation Research (45/0/0;CF:3.0) Y3S2

Formulation of linear models. Convex analysis in En. The simple algorithm. Two phase method. Duality. Graph theory fundamentals. Classical transportation models.

MATH 311: Group Theory(45/0/0;CF:3.0)Y3S2

Set Theory Review. Group Theory introduction, Subgroups and normal subgroups, Cyclic groups, Permutation groups, factor (quotient) groups, Slow theorems for groups. **PREREQUISITE: MATH 112**

MATH 312: Real Analysis (45/0/0;CF:3.0)Y3S1

The real number systems, Sequences, Functions, Limits, Sequence of functions, Continuity. Uniform continuity. Differentiation. Application of differentiation. **PREREQUISITE: MATH 112**

MATH 313: Advanced Real Analysis ((45/0/0;CF:3.0)Y3S2

Riemann integration. Riemann-Stieltjes integral and its properties. Exponential and logarithmic functions. Infinite series, Sequences and series of functions. Uniform convergence. Fourier series. **PREREQUISITE: MATH 312**

MATH 315: Complex Analysis (45/0/0;CF:3.0) Y3S2

Functions of complex variables. Analytic functions. Mapping. Complex integration. Power and Laurent series. Singularities, residues and poles. **PREREQUISITE: MATH 211**

MATH 316: Advanced Linear Algebra (45/0/0;CF:3.0)Y3S2

Determinants. Minimal polynomials. Eigen values and eigenvectors. Canonical forms. Linear functionals. Bilinear and quadratic forms. Orthogonal matrices and operators. **PREREQUISITE: MATH 213**

MATH 331: Numerical Analysis (45/0/0;CF:3.0) Y3S2

Number system. Introduction to errors. Lagrange interpolation. Finite differences. Interpolation based on finite differences. Iterated interpolation. Numerical differentiation, extrapolation to the limit.. Numerical integration. Newton-Cotes, Romberg formulae. Solution of nonlinear equation $f(x) = 0$. Systems of nonlinear equation.

MATH 332: Ordinary Differential Equations (45/0/0;CF:3.0) Y3S1

First order equations and applications. Second order equations. Homogenous equations with constant coefficients. Equations with variable coefficients. Non-homogeneous equations. Undetermined coefficients. Variation of parameters. Inverse Differential Operators.

MATH 333: Methods of Applied Maths (45/0/0 ; CF:3.0) Y3S2

Special functions. Series solution of second order linear ordinary differential equations. Bessel, Legendry and Hypergeometric functions. Fourier series and applications. Methods of separation applied to second order partial differential equations. Laplace transformation and applications.

MATH 334: Dynamics (45/0/0; CF:3.0)Y3S1

Motion of particles in two and three dimensions. System of particles. Problem involving moving coordinate axes. Rigid body dynamics. Lagranges equations. Hamilton's principle. Hamilton-Jacobi equation. **PREREQUISITE: MATH 131**

MATH 336: Fluid Mechanics (45/0/0;CF:3.0)Y3S1

Fluid and their properties. Continuum model. Hydrostatics and its applications. Kinematics of fluid flow. Introductory thermodynamics. Equation of continuity. Conservation of mass and stream function for two-dimensional flows and stokes stream function for asymmetric flows. Euler's equation. Bernoulli's and its application. Irrational flow.

MATH 349: Sampling Methods (45/0/0;CF:3.0)Y3S2

General principles of a sample survey. Sources of errors in survey. Simple size determination. Sampling techniques; Simple random sampling, stratified random sampling, systematic, selection with probability proportional to size.

STAT 332: Theory of Estimation ((45/0/0;CF:3.0) Y3S1)

Population parameters and sample statistics. Properties of point estimators. Sufficiency and completeness. Methods of estimation. Efficiency in estimators. Bayesian estimation. Interval estimation.

STAT 340: Statistical Quality Control (45/0/0;CF:3.0)Y3S1

Theoretical basis for quality control charts. Tolerance limits, Process control; $\bar{X}$, R, P, C charts. Cusum charts. Acceptance sampling attributes. Sampling plans and the selection.

STAT 347 : Sample Survey Techniques (45/0/0 ; CF:3.0) Y4S1

Relation and regression estimates. Cluster sampling. Sub-sampling. Multistage sampling. Current advances in the theory and application of sampling. Other selected topics.

STAT 351: Applied Statistics (45/0;CF:3.0)Y3S2

Introduction to statistical inference; concepts of estimation and hypothesis testing. Application of the z,t chi-square and F-statistics in statistical inference. Simple and Multiple linear regression; inference and estimation. Polynomial regression. Model selection procedures. Goodness of fit tests. Application of chi-square tests in contingency tables.

MATH 402: Ring Theory (45/0/0;CF:3.0) Y4S1

Rings and sub-rings. Integral domains, ideals and quotient rings, polynomial rings. Euclidean rings. Isomorphism theorems for rings. Finitely generated abelian groups. Modules over align. Finitely generated modules over Euclidean - ring. Composition series and simple groups.

PREREQUISITE: MATH 311

MATH 407: Advanced Complex Analysis (45/0/0 ; CF:3.0) Y4S2

Calculus of residues and application, more advanced treatment of power series, Laurent of the residue theorem, improper integral, definite integral of trigonometric functions integration around branch point. Analytic continuation. Conformal mapping; rotation of tangents, conjugate harmonic functions, transformations of harmonic functions, transformation of boundary conditions, application to heat and fluid. The Schwartz-Christoffel transformation and its application. **PREREQUISITE: MATH 315**

MATH 411: Functional Analysis (45/0;CF:3.0)Y4S2

Normed linear spaces, Banach spaces, equivalent norms, Subspaces, factor spaces. Bounded linear transformations in normed spaces, closed linear transformations in normed spaces, closed transformations. Linear functionals. Strong and weak convergence in normed linear spaces. Open mapping theorem, closed graph theorem, uniform spaces, parseval's identities, complete orthogonal sets, closed subspace and projection theorem, Riesz's representations theorem. **PREREQUISITE: MATH 312**

MATH 413: Advanced General Topology (45/0/0 ; CF:3.0) Y4S2

The standard relation between T_1 , T_2 , regular, normal Lindeloff and compact spaces. Compactness, the finite inter-section property and sequential compactness. Subspaces and images of connected spaces. Connected spaces and connected components. Closure, union and images of compact series. Characterisation of connected subspaces of $\mathbb{R}$ and the compact subspaces of $\mathbb{R}^n$. Induced topologies, products and quotient spaces. Products of connected spaces. Tychonoff's theorem. The imbedding lemma, Urysohn's lemma and metrisation theorem. Introduction to Homotopy theory; Construction properties of the fundamental group.

MATH 421: Measure Theory (45/0/0;CF:3.0)Y4S2

Lebesgue measure of the real line. Outer lebesgue Measurable function, Integral, Monotone convergence theorem. Fatou's Lemma. Lebesgue Dominate convergence theorem. Relation between Riemann and Lebesgue integral. **PREREQUISITE: MATH 313**

MATH 422: General Topology (45/0/0;CF:3.0) Y4S1

Review of set-theoretic concepts, De Morgans. Morgan's law. Direct and inverse images of functions. Basic properties of countable sets. Metric space. The Cauchy-Schwartz inequality and the usual metric in $\mathbb{R}$. Convergence and continuity in the metric spaces in terms of open and closed sets. Introduction of topological spaces as general set-up in which to study complete metric spaces, the contraction mapping theorem and Baire's theorem Fundamental properties of closure, interiors, derived sets and neighbourhoods in general topological spaces. Bases, subbases, and continuity Convergency and Hausdorff and separable spaces. The equivalence of these notions in metric spaces and closed maps and homeomorphisms. Relative topologies.

MATH 431: Advanced Ordinary Differential Equations (45/0/0;CF:3.0) Y4S2

Systems of equations; Matrix method; reduction of the n -th ordinary differential equations to first order systems and applications. Solutions near regular points and applications. **PREREQUISITE: MATH 332**

MATH 432: Differential Geometry (45/0/0; CF:3.0)Y4S1

Introductory to differential geometry, Review of vector algebra, triple products and vector quantities. Vector functions of real variables. Concept of curves curvature, torsion and general theory curves. Concepts and general theory of surfaces. First and second differential forms. **PREREQUISITE: MATH 230**

MATH 434: Partial Differential Equations (45/0/0;CF:3.0)Y4S1

Surface and curves in the three dimensions. Simultaneous differential equations of the first order. Methods of solution of $D_x P = dy/Q = Dz/R$, Orthogonal trajectories of systems of curves on a surface. Pfaffian differential equations, linear, semi-linear equations of the first order. Integral

surfaces passing through a given curve. Set of the methods of Cauchy, Charpit and Jacobi in solving non-linear partial differential equations of the first order.

MATH 436: Advanced Fluid Mechanics (45/0/0; CF:3.0)Y4S1

Potential flow; complex potential, method of images, Blasius theorems, application of potential flow theory of water waves or sound waves in fluids. Dimensional analysis; dimensions, some important dimensionless numbers and their physical significance, the Buckingham Pi theorem, dimensional matrix, similarity and the use of models and prototypes. Dynamics of real fluids; viscosity and Reynold's number, stress and rate of strain tensors, Navier-stokes equations for an incompressible fluid. Some exact solutions of the Navier-Stokes equation for an incompressible fluid. Elementary boundary-layer theory.

MATH 433: Advanced Partial Differential Equations (45/0/0 ;CF:3.0)Y4S2

Characteristics of linear and semi-linear partial differential equations of the second order. Boundary value and initial value problems. Equations of the hyperbolic type. Riemann's method. The equations of wave motions. Equations of elliptic type. The heat equations.

MATH 435: Numerical Methods(45/0/0 ;CF:3.0)Y4S1

Hermite interpolation. Newton's fundamental formula. Iterated interpolation. Inverse interpolations. Approximation by asymptotic series. Approximation by Tchebychev series. Least squares approximation. Gaussian quadrature formulae. Linn's and Baistows methods for complex roots of polynomials. Eigen values and eigenvectors of matrices.

STAT 432: Testing of Hypotheses (45/0/0;CF:3.0) Y4S2

Concept of statistical hypothesis and statistical test. Optimal tests. Neyman Person Lemma. Properties of tests. Confidence sets and tests. Generalized likelihood ratio tests. Tests for correlation and regression. Sequential probability ratio test. Stein width confidence intervals.

STAT 433: Stochastic Processes (45/0;CF:3.0)Y4S2

Random Phenomena in time and space. Markov chains. Review of Bernoulli process; continuous - time process; Poisson process. Birth and death process. Stationary

distributions. Queuing models. Recurrent events, Introductory of Branching processes. Renewal Theory.

STAT 435: Non-Parametric Methods (45/0/0;CF:3.0) Y4S1

Non-parametric inference, Tests of goodness of fit. Tests based on runs. Tests and confidence interval for population quantities. The sign test and signed-rank test. General two-sample problem. Linear rank tests. Measure of association of bivariate samples. Analysis of contingency tables. Robust estimation. Practical problems.

STAT 443: Applied Multivariate Analysis (45/0/0;CF:3.0) Y4S2

Practical examples of multivariate data. Summarising multivariate data not exceeding order 3. Sampling from the multi-normal distribution (Bivariate and trivariate). MLE's and Tests on covariance known and unknown. Maximum likelihood estimates of partial and multiple correlations. Use of statistical packages.

STAT 444: Design and Analysis of Experiments (45/0/0 ;CF:3.0)Y4S1

Principles of experimentation. Construction and analysis of common designs in research; CRD, RCBD, Latin square design, Factorial experiments. Split plot designs. Missing plot techniques.

MATH 445: Advanced Design and Analysis of Experiments (45/0/0;CF:3.0) Y4S2

Fraction and factorial experiments. Confounding. BIB and PBIB designs. lattice designs. Response surface designs. Advanced topics in the construction of designs.

STAT 448: Advanced Operations Research (45/0/0;CF:3.0)Y4S1

Shortest path problem. Dijkstra algorithm, Floyd's algorithm. Maximal flow problem. Maximum flow - minimum cut theorem, Ford Fulkerson algorithm. Optimization in network. Minimal cost flow problem. Critical method. Critical path method and PERT. Dynamic Programming.

STAT 449: Time Series Analysis (45/0/0 ; CF:3.0) Y4S2

Introductory concepts in time series. Stationary process, autocovariances, autocorrelation, cross correlation, spectral

density. Time series models; Stationarity and invertibility, estimation, identification and forecasting. Spectra analysis. Other selected topics

(PREREQUISITE: STAT 332)

e)Physics Units

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
PHYS 110	Physics Practical I	0	60	2.0
PHYS 111	Mechanics	45	0	3.0
PHYS 112	Heat and Thermodynamics	45	0	3.0
PHIL 108	Ethics, Integrity, and National Values	45	0	3.0
TOTAL		135	60	11.0

YEAR 1 SEMESTER 2

PHYS 120	Physics Practical II	0	60	2.0
PHYS 121	Geometrical Optics	45	0	3.0
PHYS 122	Introduction to Quantum Mechanics	45	0	3.0
COMS 111	Communication Skills	45	0	3.0
TOTAL		135	60	11.0

YEAR 2 SEMESTER 1

PHYS 210	Physics Practical III	0	60	2.0
PHYS 211	Waves and Oscillations	45	0	3.0
PHYS 212	Electricity and Magnetism I	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
TOTAL		135	75	11.5

YEAR 2 SEMESTER 2

PHYS 220	Physics Practical IV	0	60	2.0
PHYS 221	Introduction to Materials Science	45	0	3.0
PHYS 222	Electricity and Magnetism II	45	0	3.0
TOTAL		135	60	11.0

YEAR 3 SEMESTER 1

PHYS 310*	Physics Practical V	0	60	2.0
PHYS 311*	Quantum Mechanics I	45	0	3.0
PHYS 312*	Basic Electronics	45	0	3.0
PHYS 313*	Statistical Physics	45	0	3.0
PHYS 314#	Astrophysics	45	0	3.0
PHYS 315#	Biophysics	45	0	3.0
PHYS 316#	Mathematical Physics I	45	0	3.0
TOTAL		270	60	20.0

YEAR 3 SEMESTER 2

PHYS 320*	Physics Practical VI	0	60	2.0

PHYS 321*	Atomic Physics	45	0	3.0
PHYS 322*	Physical Optics	45	0	3.0
PHYS 323*	Classical Mechanics	45	0	3.0
PHYS 324 [#]	Communications Electronics	45	0	3.0
PHYS 325 [#]	Geophysics	45	0	3.0
PHYS 326 [#]	Molecular Physics	45	0	3.0
PHYS 327*	Industrial attachment	0	120	4.0
TOTAL		270	180	24.0

YEAR 4 SEMESTER 1

PHYS 401 ⁺	Physics Project	0	120	4.0
PHYS 410*	Physics Practical VII	0	60	2.0
PHYS 411*	Digital Electronics	45	0	3.0
PHYS 412*	Nuclear Physics	45	0	3.0
PHYS 413*	Quantum Mechanics II	45	0	3.0
PHYS 414 [#]	Applied Geophysics	45	0	3.0
PHYS 415 [#]	Environmental and Renewable Energy Physics	45	0	3.0
TOTAL		225	180	21.0

YEAR 4 SEMESTER 2

PHYS 420*	Physics Practical VIII	0	60	2.0
PHYS 421*	Solid State Physics	45	0	3.0
PHYS 422*	Electromagnetic Theory	45	0	3.0
PHYS 423 [#]	Mathematical Physics II	45	0	3.0
PHYS 424 [#]	Laser Physics	45	0	3.0
PHYS 425 [#]	High Energy Physics	45	0	3.0
PHYS 426 [#]	Plasma Physics	45	0	3.0
PHYS 427 [#]	Paleomagnetism	45	0	3.0
PHYS 428 [#]	Microprocessors	45	0	3.0
COMP 280 ⁺	Entrepreneurship and Business Management	30	30	3.0
TOTAL		390	90	29.0

KEY: * Indicates that the course is core for all Physics students.

+ Indicates that the course is core for Physics majors and specialists only.

Indicates that the course is optional.

PHYSICS UNITS

PHYS 110: Physics Practical I (0/60; CF: 2.0) Y1S1

Measurements and uncertainties, Normal distribution of errors, Experimental Determination of, Acceleration due to gravity, Moment of inertia, Young's modulus, Specific heat capacity of a solid and a liquid. Measurement of thermal conductivity of a poor conductor; Newton's law of cooling; Thermocouple

PHYS 111: Mechanics (45/0; CF: 3.0) Y1S1

Vectors; Composition and resolution of coplanar vectors. Forces and equilibrium. Free-body diagram techniques. Moments, couple and torque. Particle kinematics. Newton's laws and particle dynamics. Circular motion of particles. Work and Energy. Linear and angular momenta. Conservation laws. Potential energy. Central forces. Planetary motion. Mechanics of systems of particles and rigid bodies.

PHYS 112: Heat and Thermodynamics (45/0; CF: 3.0) Y1S1

Temperature and temperature scales. Thermal expansion of solids. Quantity of heat. Heat transport. Thermal equilibrium and Zeroth law. Heat and Work. First law of Thermodynamics. Thermodynamic processes. Ideal gas laws. Van der Waal's equation of state. Carnot heat engines and refrigerators. Second law of thermodynamics. Entropy.

PHYS 120: Physics Practical II (0/60; CF: 2.0) Y1S2

Reflection at flat and curved surfaces, Verification of Snell's Law, Measurement of focal length of a lens, Investigation of liquid lenses, spectrometer table levelling. Measurement of specific charge of an electron using deflection and fine-beam tubes, Investigation of photoelectric effect, Millikan's experiment, Observation of hydrogen spectrum. **(PREREQUISITE: PHYS 110).**

PHYS 121: Geometrical Optics (45/0; CF: 3.0) Y1S2

Rectilinear propagation of light. Laws of reflection and refraction. Fermat's principle. Plane surfaces and prisms. Spherical surfaces. Lenses. Spherical mirrors. Lens aberration. Optical equipment (Microscopes, telescopes, prism binoculars, camera and prism spectrometer).

PHYS 122: Introduction to Quantum Mechanics (45/0; CF: 3.0) Y1S2

Failure of classical theories and experimental basis for quantum theory (black body radiation, heat capacity, Photoelectric effect, Compton effect, etc). Development of modern atomic theory. Particle-wave duality of matter. De Broglie waves. Uncertainty principle. Structure and properties of atoms. The Bohr model of the atom. Emission and absorption spectra. Radioactivity. X-rays.

PHYS 210: Physics Practical III (0/60; CF: 2.0) Y2S1

Resonance tube experiment, Melde's experiment, Free and damped oscillations, Inertia table, Velocity of sound in air using interference. (A simple method of) determining the resistance of a voltmeter. (Investigation of the) field due to a long current-carrying conductor using a tangent magnetometer. Calibration of cathode ray oscilloscope as a.c voltmeter. Norton's and Thevenin's Theorems, Absolute measurement of current, induction field on a coil, determination of the horizontal component of earth's magnetic flux density using the tangent galvanometer, use of oscilloscope for frequency measurement. Investigation of discharge of a capacitor. Comparison of EMFs of two cells using a potentiometer, Magnetic field of Helmholtz coils; Hysteresis, Laws of electromagnetic induction. **(PREREQUISITES: PHYS 110, PHYS 120).**

PHYS 211: Waves and Oscillations (45/0; CF: 3.0) Y2S1

The simple harmonic oscillator. Periodic motions. Superposition of periodic motions. Damped harmonic oscillator. Forced oscillations and resonance. Coupled oscillations, normal co-ordinates, degrees of freedom and normal modes of vibration. Transverse waves. The wave equation. Characteristic impedance of waves on a string. Reflection and transmission coefficients. Longitudinal waves. Acoustic phenomena; interference and beats. Standing waves and Eigen frequencies. Acoustic measurements and applications. Doppler Effect. Group and phase velocity. Introduction to Fourier analysis.

PHYS 212: Electricity and Magnetism I (45/0; CF: 3.0) Y2S1

Electrostatics: electric charge, coulomb's law, Electric field, lines of Electric force and Electric flux. Gauss's law, Electric potential and Electric Potential Energy. Capacitors and Capacitance, Energy storage in Capacitors, Effect of Dielectrics on Capacitance. D.C circuits; current, Resistance, Ohm's law. Kirchhoff's laws, Network theorems. Voltage measurement, Potentiometer, Wheatstone bridge. Magnetic field, Magnetic flux, force on moving charge in a magnetic field, torque on a current loop, Magnetic dipole. Magnetic induction: Faraday's laws of magnetic induction, Self and Mutual induction. Hysteresis. Energy in magnetic fields

PHYS 220: Physics Practical IV (0/60; CF: 2.0) Y2S2

Young's modulus, Elastic constants of a thick wire by Searle's method, Energy in a spring, Viscosity of liquids. Magnetic susceptibility, specific heat capacity of solids, liquids. Coefficient of expansivity, Bragg's constant on x-rays, diffraction of x-rays, Fluid mechanics experiment. Resistance measuring bridge, LC measuring bridge, Series resonance, RC Filters, Inductance of a solenoid, AC circuits, (PREREQUISITE: PHYS 210).

PHYS 221: Introduction to Material Science (45/0; CF: 3.0) Y2S2

Molecules and bonding, Inter-atomic forces, States of matter, Crystalline and Amorphous structures, liquids and liquid crystals. Gases (ideal and nearly ideal), Inter-atomic Potentials, Kinetic theory, Maxwell's distribution, rms speed and Gas Pressure, Gas laws, Equation of state, Specific heat, Thermal conductivity. Crystal structures: symmetry, Bravais Lattice. Miller indices. X-ray diffraction.. Cohesion of ionic crystals, Madelung's constant. Elastic properties of solids. Radial distribution functions. Surface tension and Surface energy of liquids. Application to convex surfaces, Capillarity and Suction. Viscosity: Poiseuille's formula, Stoke's method. Laminar flow and Bernoulli's equation. Static flow properties of fluids.

PHYS 222: Electricity and Magnetism II (45/0; CF: 3.0) Y2S2

Gauss's law and its applications. Electric dipoles. Dielectrics. Modified Gauss's law. Solutions to Laplace's and Poisson's equations. Maxwell's electromagnetic equations. Electromagnetic Radiation. A.C. circuits: generation of sinusoidal waveforms, rms value. AC in resistors, capacitors and inductors. Series and parallel LCR circuits. Resonance. Power in AC circuits. AC bridges, impedance and admittance. Filters. Delay lines. Transformers. Transmission lines. (PREREQUISITE: PHYS 212)

PHYS 310: Physics Practical V (0/60; CF: 2.0) Y3S1

Harmonic oscillator, Tunnelling – alpha-particle decay, Investigation of intrinsic and extrinsic semiconductors (Hall Effect), semi-conductor diode characteristics, rectification, Transistor characteristic. Simple biasing of Junction Transistors. (PREREQUISITE: PHYS 220).

PHYS 311: Quantum Mechanics I (45/0; CF: 3.0) Y3S1

Hamiltonian operators. Schrödinger equation. Born's probability density. Potential barriers and tunneling. Square well potential. Harmonic oscillator. Particle in a box and in a sphere. Hydrogen atom and atomic orbitals. Postulates of quantum mechanics. Hermitian operators. Complementarity. Uncertainty principle. Matrix mechanics. Angular momentum operators. Eigen values and Eigen functions of angular momentum and spin. Clebsch-Gordon series. (PREREQUISITE: PHYS 111, PHYS 122, PHYS 211).

PHYS 312: Basic Electronics (45/0; CF: 3.0) Y3S1

Introduction to semiconductors: Energy bands, Electrons and Holes. Intrinsic semiconductors. Doping of semiconductors, donors and acceptors, carriers and doped semiconductors. Mobility of charge carriers. The P-N junction, carrier transport by diffusion and drift, generation and recombination of charge carriers. The diffusion length. The P-N junction diode, and diode biasing, minority and majority currents, high voltage effects in diodes. Application of diodes – rectifier circuits and wave shaping circuits. Bipolar junction transistor, conceptual operation, characteristics, current flow, operating modes, static performance parameters (emitter Injection Efficiency, Base transport

Factor, collector efficiency, current gain). Applications of BJT in circuits, switching, amplifiers, other types of transistors; JFET, and applications. (PREREQUISITE: PHYS 122, PHYS 221, PHYS 222)

PHYS 313: Statistical Physics (45/0; CF: 3.0) Y3S1

Maxwell's equations. Introduction to Third law of thermodynamics. Probability state of a system. Average value of Physical quantities. Micro and macro states. Ensembles. Principle of equipartition of energy. Gibbs's Distribution. Maxwell-Boltzmann Distribution. Quantum-Einstein statistics. Statistical meaning. Statistical meaning of entropy. Degeneracy in gases obeying quantum statistics. (PREREQUISITE: PHYS 112).

PHYS 314: Astrophysics (45/0; CF: 3.0) Y3S1

Structure, Origin and evolution of the universe. Galaxies, Stars and Planets. Enigmas of modern Astronomy; Quasars, Black holes and Pulsars. Theory and use of optical telescope and interpretation of basic observational data to determine the physical properties of planets and stars. (PREREQUISITE: PHYS 111, PHYS 121)

PHYS 315: Biophysics (45/0; CF: 3.0) Y3S1

Molecular Biophysics. Interaction of electromagnetic Radiation with biological molecules. Isotropic techniques. Classical physics of cellular processes. Biophysical approaches to Photosynthesis, Photobiology. Physical processes of osmosis. Electro-nerve Stimulation and Conduction. Memory mechanisms. Mass transport. Kinetic theory. Diffusion processes through membranes. Biophysical measurement techniques. Radioactive transfer of energy-boundary layers. (PREREQUISITE: PHYS 112, PHYS 212)

PHYS 316: Mathematical Physics I (45/0; CF: 3.0) Y3S1

Vector Calculus: Differentiation; Ordinary and Partial derivatives. Integration; Stoke's theorem and Divergence theorem. Orthogonal Curvilinear coordinate systems; Cylindrical and Spherical Polar coordinates. Linear differential Equations: Definition, power series solutions of 1st and 2nd order ODEs. Special functions; Gamma, Beta, Bessel, and Associated Legendre

functions. Orthonormal functions. Sturm-Liouville equation. Eigen function expansions. Complex Analysis: Complex variables, Complex calculus, differentiation, integration, analyticity, Cauchy's theorem.

PHYS 320: Physics Practical VI (0/60; CF: 2.0) Y3S2
 Franck Hertz experiment. Fine structure (one and two electron spectra). Electron spin resonance. Compton Effect. Interference (Newton's rings, Lloyd's mirrors, Young's Double slit) diffraction. Absorption spectrum of Iodine. Observation of the spectrum of atomic hydrogen. Operational Amplifier; Multistage amplifiers; Feedback amplifiers; RC coupled amplifiers; oscillators; communication systems (Modulation and Demodulation); Modulators; Geophysical surveys (Gravitational; Seismic, Resistivity; magnetic) **(PREREQUISITE: PHYS 310).**

PHYS 321: Atomic Physics (45/0; CF: 3.0) Y3S2
 Review of the Bohr's atomic model of the atom. Review of quantum mechanics of one- dimensional systems, extension to three dimensions; Schrödinger equation for the hydrogen atom, angular momentum and spherical harmonics, solution of the radial equation. Sommerfeld's relativistic model of the atom, Vector model of the atom: magnetic moments, orbital spin, space quantization, Vector coupling; LS and JJ coupling: electron spin, fine and hyperfine structure. Zeeman Effect: Normal, Anomalous, Lande's splitting factor, Spectral Notation. Stark effect. One-electron Spectra. Two electron spectra; the periodic table: Noble gases and alkali atoms, Optical spectra, X-ray spectra: Moseley relations, interpretation of X-ray spectra, **(PREREQUISITE: PHYS 122, PHYS 311)**

PHYS 322: Physical Optics (45/0; CF: 3.0)
 Theory of interference. Phase diagram method. Division of wavefront and amplitudes in interference. Fresnel and Fraunhofer diffraction. Zone plate. Diffraction at straight edge and at a number of parallel slits. Resolving power of optical instruments. Fresnel's explanation of optical activity. Polarimeters. Optical rotation by electric and magnetic fields. **(PREREQUISITES: PHYS 121, PHYS 211)**

PHYS 323: Classical Mechanics (45/0; CF: 3.0) Y3S2
 Rigid body Dynamics. Concept of generalized coordinates and degrees of freedom. Variation Principle. Hamilton's Equations. Lagrange functions and equations. Canonical Transformations. Hamilton Jacobi theory. Special relativity. **(PREREQUISITE: PHYS 111).**

PHYS 324: Communication Electronics I (45/0; CF: 3.0) Y3S2
 Signal modulation (amplitude, frequency and phase). Power relationship, Assignable frequency spectrum, Band selection. AM Transmitters-circuits, AM Radio receivers and transmitters, receiver circuits. IF amplifiers, Am Detectors, Automatic gain control, Audio Amplifiers, Loudspeakers' AM-FM stereo. FM Detectors, FM receivers. TV- Receivers, Deflection systems, and Video camera. Video picture signal, vestigial sideband transmission, Optical communication; Fibre optic, optical sources & detection. Optical modulation techniques. **(PREREQUISITES: PHYS 222, PHYS 312)**

PHYS 325: Geophysics (45/0; CF: 3.0) Y3S2
 The solar system. Earth as a planet and its rotation. Shape of the earth. Equation of time. The reference spheroid and geoid. Gravitation: International gravity formula. Isostasy: Seismology: seismicity of the earth; body and surface waves and their propagation in earth, seismology and the earth's structure, earthquakes (their measurement and precautions). Geomagnetism: earth's magnetic field and its variation. Thermal properties of the earth, heat flow studies. Geodynamics: Theories of continental drift, sea-floor spreading and plate tectonics, earth's surface features. **(PREREQUISITES: PHYS 111, PHYS 112, PHYS 211, PHYS 212)**

PHYS 326: Molecular Physics (45/0; CF: 3.0) Y3S2
 Molecular formation. Classification of molecules. Molecular structure and spectra. Electron affinities. Polarization. Magnetic and electric multiple moments. Currents and spins of molecules. The Hydrogen molecule. Rotational energy levels and spectra. Vibrational energy levels and spectra. Electronic spectra and molecules. Raman spectra and Molecular structure. **(PREREQUISITE: PHYS 311)**

PHYS 327: Industrial Attachment (0/120; CF: 4.0)
 Students are expected to undertake an industrial attachment in order to acquire appropriate practical skills in industries and other relevant institutions. The field attachment will be carried out for eight weeks immediately after the end of the third year of study. The course shall be graded through field assessment, field supervisor's report and the student's written report.

PHYS 401: Physics Project (0/120; CF: 4.0) Y4S1& S2

Students shall undertake a Physics project and submit a project report in second semester. The student shall identify a project from any of the areas covered in the syllabus and submit a brief proposal to the supervisor for approval. The work shall involve laboratory experiments using conventional or improvised techniques, literature review, experimental results, their interpretation, error analysis and conclusion. The project will be done over the two semesters. The report which should adopt the format of a thesis must be submitted at the end of the second semester in which the work is done. The project shall be graded through a proposal (approved by the academic supervisor), oral presentation of the project and a project report.

PHYS 410: Physics Practical VII (0/60; CF: 2.0) Y4S1

Characteristics of a GM tube. Verification of Inverse square Law. Absorption of Gamma and Beta- rays. Experiments using cloud chamber. Boolean algebra and logic gates. Sequential circuits (Flip-Flops, Registers, and counters). Nuclear physics experiments, radioactivity, micro controller programme and projects, communication systems (Modulation), renewable energy experiments, Geophysics experiments. **Y4S1 (PREREQUISITE: PHYS 320)**

PHYS 411: Digital Electronics (45/0; CF: 3.0) Y4S1
 Number systems and codes. Logic gates and circuits, truth tables. Timing diagrams. Boolean algebra, Boolean Functions and circuit design. Karnaugh maps, sum-of-products and product-of-sums logic design. Universality of NOR and NAND gates. Don't-care-conditions. Combinational circuit components and circuits. Multiplexers and demultiplexers. Decoders and encoders; Exclusive-OR- gates, Arithmetic circuits.

Sequential circuits: latches and Flip-Flops (RS, D, T, JK) and their Characteristics; Applications to counters and shift registers **(PREREQUISITE: PHYS 222, PHYS 321)**

PHYS 412: Nuclear Physics (45/0; CF: 3.0) Y4S1

Natural and artificial radioactivity. Nuclear detectors (alpha, Beta and Gamma). Nuclear models (shell and liquid-drop models). Mass and isotopic abundance of nuclei. Nuclear stability. Nuclear forces. Neutron Physics; neutron sources, slow down chain reacting pile and their interaction. Nuclear fission and power reactors. Nuclear fusion. Radiation monitoring and safety measures. Applications of nuclear physics. Isotopes and applications in medicine, agriculture and industry. **(PREREQUISITE, PHYS 311, PHYS 313)**

PHYS 413: Quantum Mechanics II (45/0; CF: 3.0) Y4S1

Time independent Perturbation theory (degenerate and nondegenerate). Variation theory. W.K.B Approximation. The Hellman-Feynman theorem. Time dependent perturbation theory. Transition and Fermi-Golden rule. Einstein transition probabilities. Spectrum of atomic hydrogen. Selection rules. Spin-orbit Coupling. Structure of helium atom. Pauli principle and Slater determinant. Zeeman Effect and Stark effect. Theory of scattering (classical and quantum). Born approximation. Method of partial waves. **(PREREQUISITE: PHYS 311).**

PHYS 414: Applied Geophysics (45/0; CF: 3.0) Y4S1

Gravitational, magnetic, seismic and electrical properties of the earth. Measurements, data reduction and geological interpretation for earth structure, minerals and groundwater. Oil and Geothermal. **(PREREQUISITE: PHYS 325)**

PHYS 415: Environmental and Renewable Energy Physics (45/0; CF: 3.0) Y4S1

The concept of energy. Global energy supply and consumption patterns. Energy conservation practices. World energy sources: fossil fuels, nuclear, solar, geothermal, wind, water. Ocean thermal gradient. Tides. Biomass and wood fuel. The global environment. Physics of atmospheric processes (eg. Solar terrestrial radiation). Transport processes in atmosphere. Water,

air, energy balance and hydrological cycle. Water vapour. Heat exchange. Heat conduction in soils, pollution problems. Applications of physics to medical, biological and environmental problems. **(PREREQUISITE: PHYS 112)**

PHYS 420: Physics Practical VIII (0/60; CF: 2.0) Y4S2

Wavelength of X-rays, Hall effect, Elastic properties of solids. Magnetic properties of solids. Microwave experiments. Measurement of wavelength of laser light and intensity of scattered laser light. **(PREREQUISITES: PHYS 410)**

PHYS 421: Solid State Physics (45/0; CF: 3.0) Y4S1

Review of atomic bonding, Crystallinity and forms of solids. Brillouin zones. Lattice dynamics: Elastic waves and phonons, Phonon statistics, Vibrational modes and spectrum. Specific heat Band structures. Electron-phonon interaction. Impurity states and nature of lattice defects. Characteristic properties of dielectrics, metals, semiconductors and magnetic solids. Cooperative phenomena. Superconductivity. Mode of electronic transport in solids. Ferro-, Para- and Diamagnetics. Applications to solid state devices. Electro-optics and lasers. **(PREREQUISITE: PHYS 221)**

PHYS 422: Electromagnetic Theory (45/0; CF: 3.0) Y4S2

Magnetic fields in matter: Magnetization, magnetic intensity, Magnets. Electromagnetic waves. Maxwell's equations. Plane waves in isotropic dielectrics and conducting media. Reflection and refraction of plane waves at dielectric and metallic boundaries. Polarization. Wave guides. EM radiation: scattering and dispersion. Electromagnetism. **(PREREQUISITES: PHYS 321, PHYS 222)**

PHYS 423: Mathematical Physics II (45/0; CF: 3.0) Y4S2

Partial differential equations: Definition, classification and applications in Physics: Wave equation, heat equation, Laplace's equation, Poisson's equation, Helmholtz equation. Method of separation of variables. Integral equations: Definition, Classification; Degenerate and difference Kernels, Volterra and Fredholm equations of 1st and 2nd kind. Convolution

integrals; Fourier and Laplace transforms. Conversion of differential to integral equations. Green's function and applications. Analytic functions. Conformal mapping and integrals, Cauchy's theorem and integral. Laurent series. Singularities and residues. Cauchy's residue theorem. Poles. Physical applications. Tensors. Orthonormal sets of functions and Eigen function expansions. Group theory. Variational methods. Normalization techniques. **(PREREQUISITE: PHYS 316)**

PHYS 424: Laser Physics (45/0; CF: 3.0) Y4S2

Interaction of radiation with matter: stimulation emission; Einstein's theory of Radiative processes; Kinetics of absorption: Population inversion and amplification. Elements of a LASER: Laser medium, pumping, resonators: open and closed resonators; Types and Properties of resonators. Laser excitation, oscillation and amplification. Laser Operation: Continuous wave and Pulsed operation Properties of laser radiation Laser Beams: Fundamental (Gaussian) laser beams; Properties, propagation and transformation of GBs; GBs in stable resonators (application of ABCD law); Higher order and novel laser beams. Types of Lasers: Solid State Lasers, Gas Lasers; Semiconductor Lasers; Liquid and Dye Lasers; etc. Laser classification, hazards and safety guidelines. Application of Lasers in various fields. **(PREREQUISITE: PHYS 322, PHYS 413).**

PHYS 425: High Energy Physics (45/0; CF: 3.0) Y4S2

Discovery of elementary particles (photon, meson, lepton, quark, and baryon). Particle classification and physical properties. Interaction particles and energy loss. The weakly interacting and strongly interacting particles. Elementary particle dynamics. Particle accelerators (Cyclotron, synchro-cyclotron, Betatron). **(PREREQUISITES: PHYS 412)**

PHYS 426: Plasma Physics (45/0; CF: 3.0) Y4S2

Introductory concepts. Plasma parameters. Governing equations. Kinetic theory. Gas dynamics. Continuity equations. Dynamics of particles, orbit theory. Individual and collective motion of charged particles in electric, magnetic fields and ionized gases. Hydromagnetic waves. Plasma stability. Properties of

equilibrium plasma. Measurement techniques. Elementary theory of charge conductivity. Astrophysical plasma. Laboratory devices including gaseous lasers. Thermonuclear fusion. **(PREREQUISITES: PHYS 112, PHYS 211, PHYS 212)**

PHYS 427: Paleomagnetism (45/0; CF: 3.0) Y4S2

General features of the geomagnetic field. Rock magnetism: Methods and techniques of measurement. Reversals of earth's magnetic field. Sea-floor spreading; plate tectonics. Apparent polar wandering. Origins of the earth magnetic field. The dynamo theory. Applications of paleomagnetism. Depth of penetration methods. Rock dating. The Chapmann production function. D layer, E layer, F layer: Ionosounding. Magnetic Properties of the earth's interior. **(PREREQUISITE: PHYS 414)**

PHYS 428: Microprocessors (45/0; CF: 3.0) Y4S2

Microprocessor interface. I/O organization, peripheral devices, I/O interface. Data transfer – DMA, Priority interrupt. I/O processor. Multiprocessor system organization. Data communication processor. Memory organization. Auxiliary memory. Memory hierarchy. Associative memory and other types of memories. Memory management Hardware. **(PREREQUISITES: PHYS 416)**

h) Biochemistry Units

Year 1 Semester 1 (Chemistry Plus Two Other Subjects)

Code	Title	L	P	CF
CHEM 110	Introduction to Inorganic Chemistry	30	30	3.0
CHEM 120	Introduction to Physical Chemistry	45	0	3.0
MATH 100	General Mathematics	45	0	3.0
COMP 101	Introduction to Computer Applications	45	15	3.5
Total		165	45	12.5

Year 1 Semester 2

Code	Title	L	P	C.F
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ZOOL 143	HIV/AIDs and Society	45	0	3.0
AGHE 140	Human Health	30	0	2.0
PHIL 108	Ethics Integrity and National Values	45	0	3.0
Total		165	30	14.0

Year 2 Semester 1 (BIOC, CHEM Plus BOTA or ZOOL)

Code	Title	L	P	CF
BIOC 200	Structural Biochemistry	45	0	3.0
BIOC 201	Bioenergetics & carbohydrate metabolism	45	0	3.0
BIOC 203	Introduction to Laboratory Techniques	30	30	3.0
CHEM 211	Quantum and Bonding Theories	30	30	3.0
CHEM 231	Stereochemistry and Reaction Mechanisms I	45	0	3.0
Total		135	0	15.0

Year 2 Semester 2

Code	Title	L	P	C.F
BIOC 202	Metabolism of lipids, proteins and nucleic acids	45	0	3.0
BIOC 209	Biochemistry of Vitamins & Minerals	30	30	3.0
CHEM 212	Comparative Study of S&P Block Elements	30	30	3.0
CHEM 221	Gases and Phase Equilibria	45	0	3.0
Total		150	60	12.0

Year 3 Semesters 1 (BIOC Plus CHEM or BOTA or ZOOL)

Code	Title	L	P	CF
BIOC 300	Enzymology	45	0	3.0
BIOC 301	Biochemistry of Nucleic Acids	30	30	3.0
BIOC 306	Biomembranes and Cellular Signaling	45	0	3.0
BIOC 310	Biochemistry of Parasites	45	0	3.0
BOTA 302	Biostatistics	45	0	3.0
Total		160	30	15.0

Y3S1 Electives (Student to take at least One)

BIOC 304	Basic Nutrition	30	30	3.0
BIOC 309	Biochemistry of Gene Expression	45	0	3.0

Year 3 Semester 2

Code	Title	L	P	C.F
BIOC 302	Biochemical Bacteriology and Mycology	30	30	3.0
BIOC 303	Advanced Laboratory Techniques	30	30	3.0
BMED 331	Forensic Science and Technology	30	30	3.0
BMED 332	Pharmacognosy & Drug Delivery Systems	30	30	3.0

BIOC 308 *	Industrial Attachment	0	120	4.0
Total		120	240	16.0

(*After Year 3 Semester 2)

Y3S2 Electives (Student to take at least One)

BIOC 305	Industrial Biochemistry	45	0	3.0
BIOC 307	Pharmaceutical Biochemistry	45	0	3.0

Year 4 Semester 1 (BIOC plus CHEM, BOTA or ZOOL)

Code	Title	L	P	CF
BIOC 401	Special Metabolism	45	0	3.0
BIOC 402	Biochemical Endocrinology	45	0	3.0
BIOC 408	Molecular Cell Biology	45	0	3.0
BIOC 409	DNA Technology	30	30	3.0
BMED 413	Immunology and Immunochemistry	30	30	3.0
Total		195	60	15.0

Y4S1 Electives (Student to take at least Two)

BIOC 405	Reproductive Biochemistry	45	0	3.0
BIOC 410	Industrial Biotechnology	45	0	3.0
BMED 414	Introduction to Bioinformatics	30	30	2.5
BIOC 452	Research Projects	0	120	2.0

Year 4 Semester 2

Code	Title	L	P	C.F
BIOC 403	Clinical Biochemistry	30	30	3.0
BIOC 404	Metabolic Regulation and integration	45	0	3.0
BIOC 416	Bio-entrepreneurship	15	60	3.0
BMED	Techniques in	30	30	3.0

434	Molecular Biology			
Total		120	120	12.0

Y4S2 Electives (Student to take at least Two)

BIOC 414	Advanced Industrial Biotechnology	45	0	3.0
BIOC 451	Current Trends in Biochemistry and Molecular Biology	30	0	2.0
BIOC 452	Research Projects	0	120	2.0
BIOC 453	Seminar Paper	0	120	4.0

Course Descriptions for Biochemistry option

BIOC 100: Introduction to Biochemistry and Biodiversity [3.0 L(45) P(0)]

Definition, scope and history of biochemistry; The molecular sense of life-Characteristic features and the major roles of Biology and Chemistry; various lifeless (inanimate) molecules and their unique roles in the living system; Foundations of biochemistry; Biomolecular hierarchy, Biomacromolecules composition, classification and their attributes to life, Water -Non-covalent interactions, Properties of water Acid/base properties, pH buffering capacity; The cell; Vertebrate and invertebrate biology; Plant biology; the variety among living organisms from all sources including terrestrial, marine and other aquatic ecosystems of which they are part; genetic diversity species diversity and ecosystem diversity, loss of biodiversity and proximate causes; a global crisis involving categories like vulnerable, endangered, rare and extinct species and probable solutions; systems of classification (binomial system, cladistics); food webs, pyramids of numbers & biomass; nutrient cycles; human influences on ecosystem e.g. pollution, greenhouse effect, acid rain, conservation, recycling

BIOC 203: Introduction to Laboratory Techniques [3.0 L(15) P(45)]

General laboratory instrumentation; Measurements of pH and the preparation of buffers; Chromatographic techniques- partition, ion-exchange, absorption, affinity, GLC, HPLC, paper and TLC; spectroscopy-UV-Vis, AAS, MS.

BIOC 205: Biochemistry of Lipids [3.0L (45) P (0)]

Introduction to lipids; General characteristics, saponifiable vs unsaponifiable lipids. Classification of lipids, Fatty acids:- structures, nomenclature and sources of fatty acids of physiological significance, Structures, nomenclature and source of triacylglycerol of physiological importance, Structures, sources and functions of glycerolphospholipids, Glycolipids: - structures, sources and functions, Glycolipids and the blood groups, Structures and functions of some steroids and sterols. The fat soluble vitamins, the eicosanoids: Classification, biosynthesis, nomenclature and their physiological functions.

BIOC 206: Introduction to Proteins and Nucleic acids [3.0 L(45) P(0)]

Structures and classification of amino acids that occur in proteins, non-protein amino acids of physiological importance. Acid based properties of amino acids that occur in proteins; general chemical reactions of amino acids: colour reactions and peptide bond formation; Classification of proteins. Some important properties of protein; representation of peptide structures; nucleic acids: structures of purines and pyrimidines; chemical reactions of nucleosides and nucleotides; biochemically important nucleotide derivatives and their mechanisms of action; phosphodiester bridge formation.

BIOC 208: Biochemistry of Carbohydrates [3.0: L(45) P(0)]

Carbohydrates: classification, structure, function & selected reactions of monosaccharides, disaccharides, polysaccharides, derivatives of monosaccharides (amino sugars & sugar alcohols), peptidoglycans & glycoproteins, glycosides and amino sugars: structures, sources and physiological significance polysaccharides: structure, sources and functions of starch, glycogen, insulin, dextrans, cellulose, chitin and glycoaminoglycans.

BIOC 209: Biochemistry of Vitamins & Minerals [3.0 L (45) P(0)]

Classification of vitamins; structures of vitamins: water soluble and fat soluble vitamins: general and specific characteristics of vitamins ; functions of vitamins as coenzymes in various biochemical reactions; enzyme co-factors, PAL-PAM shuttle and transaminations,

retinal chromophore, rhodopsin and transmembrane helices; sources and deficiency diseases involving vitamins; sources and metabolism of all gross and trace minerals; deficiency diseases associated with minerals.

BIOC 210: Carbohydrate Metabolism [3.0: L(45) P(0)]

Carbohydrate metabolism, Glycolysis, TCA cycle, ETC and glyoxylate cycle, cori cycle. Metabolism of other sugars and their genetic disorders. Glycogen metabolism and storage disorders; Gluconeogenesis; pentose phosphate pathway. Photosynthesis and photophosphorylation. C₃ and C₄ pathways of carbohydrate metabolism in plants.

BIOC 300: Enzymology [3.0: L(45) P(0)]

Enzymes and their classification; the active centre; dependence of enzyme reaction rates on enzyme and substrate concentration, pH and temperature; enzyme kinetics; the Michaelis equation, K_m and V_{max}. ; uni- and bisubstrate reaction; enzyme co-factors, inhibitors and activators; the physiological control of enzyme activity; zymogens and isoenzymes; case studies of mode of action of ribonuclease, carboxypeptidase, chymotrypsin, trypsin, pepsin and lysozyme; allosteric enzymes. (*Prerequisite: Bioc 206/Bioc 200*)

BIOC 301: Biochemistry of Nucleic Acids [3.0 L (45) P(0)]

Chromosome organization; structure of nucleic acids (nucleoside and nucleotide structure, secondary structure of nucleic acids, thermal properties of DNA, DNA replication; DNA recombination; the gene; bacterial conjugation, transformation and transduction; the genetic code and protein biosynthesis; (structure and properties) mutability of DNA and DNA repair mechanisms; gene manipulation; cancer genes. (*Prerequisite: BIOC 200/206*).

BIOC 302: Biochemical Bacteriology and Mycology [3.0 L(45) P(30)]

General structural features of bacteria and fungi; Microbial growth; Pathogenicity and virulence; Comparative metabolism of carbohydrates, lipids and proteins in microbes; Fermentation and microbial fermentation products; Peptidoglycan biosynthesis, lipopolysaccharide biosynthesis, nitrogen fixation and

assimilation. (*Prerequisite BIOC 201 AND BIOC 202*)

BIOC 303: Principles of Laboratory Techniques [3.0 L(30) P(30)]

Techniques for studying whole cell, tissue, and whole organisms; introduction to centrifugation; subcellular fractionation by differential centrifugation and density gradient centrifugation; types of centrifuges and their applications; enzyme assays:- (simple and coupled NAD⁺(P) linked assays), visible range spectrophotometry, assays of metabolites and tissue metabolite levels; the assay of metabolites and tissue metabolite levels; electrophoresis:- paper, starch, agarose and PAGE High resolution electrophoretic methods; iso-electric focusing. Characterization of proteins:- N-terminal analysis and elucidation of primary structure; introduction to manometry, fluorimetry and radio isotope techniques in biochemistry. (*Prerequisite: BIOC 203*)

BIOC 304 Basic Nutrition [3.0 L(45) P(0)]

Digestion (ruminant and non-ruminant), transport ; digestion of carbohydrates, proteins and lipids; Obesity, alcoholism, fatty liver atherogenesis, lipoproteinaemia; protein quality, digestion coefficient, biological value and nitrogen balance; malnutrition and its manifestations: kwashiorkor and marasmus; vitamins and their role in nutrition and deficiency diseases; trace elements in nutrition and their metabolism; calorimetry; basal metabolism; Partitioning of food energy ; specific dynamic action; human nutrition and recommended dietary allowance. (*Prerequisite (BIOC 201 AND BIOC 202)*)

BIOC 305: Industrial Biochemistry [3.0 L(45)P(0)]

Communication of Procedures in Industrial Biochemistry, set-up in an industrial microbiology establishment, Biochemical reactions of industrial importance; industrial fermented products- organic acids, amino acids, vitamins, alcoholic beverages, microbial enzymes, pharmaceuticals, monoclonal antibodies etc; fuel and biogas; waste treatment systems and biodegradation; microbial transformation; single cell protein (SCP) and oil (SCO); the study of natural toxins of chemical, fungal and bacterial origin; environmental contaminants, residues of pesticides, insecticides and detergents. Patents and Intellectual Property Rights in Industrial Microbiology and

Biotechnology.

BIOC 306: Biomembranes and Cellular Signaling [3.0 L(45) P(0)]

Membranes structures and assembly; plasma membranes and organelle membranes; role of the plasma membrane in intracellular signaling, signal transduction with receptors and second messengers, growth factors, hormones, receptors tyrosine kinases, G proteins, phosphoinositides and other components of signal transduction pathways.

BIOC 307: Pharmaceutical Biochemistry [3.0 L(45) P(0)]

Pharmacokinetics and pharmacodynamics; Classification of antimicrobial drugs based on their chemical structures; applications of antimicrobial; structure, biosynthesis, strain development and production method of antimicrobial; mode of action of various antimicrobial. Mechanisms of antimicrobial drug resistance. Drug delivery systems; viruses as tools in drug delivery, drug delivery to CNS, transdermal, iontophoretic delivery of therapeutic peptides/proteins; immunotoxins and cytotoxins for *in vivo* therapy, lipid emulsions and liposomes as drug delivery systems; gene therapy and delivery of oligonucleotides. (*Prerequisites BIOC 206/BIOC 200; BIOC 205; BIOC 208*)

BIOC 308: Industrial Attachment [4.0 L(0) P(120)]

A work-based experience programme providing a real-life organizational context for students to develop specific or generic skills, valuable to their professional development. Students can apply and enhance their skills in reality, contribute to the organization, and, at the same time, obtain invaluable guidance from their mentors. The cumulative total duration of the attachment should be no less than 2 months.

BIOC 309: Biochemistry of Gene Expression [3.0 L(45) P(0)]

Regulation of transcription in prokaryotes and eukaryotes; general transcription factors:- gene and tissue specific; examples of transcription regulation in eukaryotes i.e. hormonal regulation, HIV transcription, antibody diversity and embryonic development;

concepts and principles of genetic Analysis of disease mechanisms with cancer as the primary focus; oncogenes in tumours/ viruses, categories of oncogenes and their products; retroviruses and characteristics of virally transformed cells; tumour suppressor genes.

BIOC 310: Biochemistry of Parasites [3.0 L(30) P(30)]

Cellular and molecular structures of parasitic organisms-and their functional morphology; Organelles and subcellular compartments in parasites, Energy metabolism including a metabolism of carbohydrates proteins, lipids and nucleic acids. (*Trypanosoma*, *Plasmodium*); Mechanisms of drug resistance in protozoan parasites; Surface antigens of parasites and their role in invasion and survival in mammalian hosts, molecular and biochemical basis of antigenic variation and antigenic diversity in protozoan parasites, Surface membrane enzymes and transporters and their role in acquisition of nutrients by parasites; Invasion and survival of intracellular parasites; Survival and development of parasites in their arthropod vectors and parasite/vector interaction; Unusual features of gene organisation and regulation in kinetoplastid parasites, DNA-containing organelles (mitochondria, apicoplast, crypton). Kinetoplast DNA: structure and replication; developmental regulation of gene expression in African trypanosomes/antigenic variation; RNA editing; Unique biochemical pathways found in parasites and their potential for exploitation as chemotherapeutic targets; empirical and rational drug design.

BIOC 311: Phytochemistry [3.0 L(45) P(30)]

Primary and secondary metabolism in plants; Building blocks of phytochemicals ; The shikimate pathway; Coumarins, Flavonoids and stilbenes, Terpenoids quinines, Isoflavonoids, Plastoquinone, Vit E and phyloquinones, Themevalonate and deoxyxylulose phosphate pathways. Terpenoids (monoterpenes, sesquiterpenes, triterpenes, tetraterpenes). Steroids (cholesterol, steroidal saponins, cardiac glycosides). Alkaloids- tropane alkaloids, pyrrolizidine alkaloids, pyridine alkaloids, phenylethylamines and isoquinoline alkaloids, imidazole alkaloids, steroidal alkaloids, purine alkaloids. The acetate pathway: fatty acids and polyketides; Saturated Fatty Acids Unsaturated Fatty Acids Fixed Oils and Fats, Evening Primrose Oil

Acetylenic Fatty Acids Branched-Chain Fatty Acids Simple Phenols Structural Modifications: Anthraquinones.

BIOC 312: Biochemistry of Food Processing [3.0: L(30) P(30)]

Definition, scope and importance of food biochemistry, Cellular basis of foods (animal, plant, and microbial sources), The roles of carbohydrates in food structure, colour, flavour, and texture, The roles of lipids in food structure, colour, flavour, and texture, The roles of proteins in food structure, colour, flavour, and texture, Enzymatic and non-enzymatic browning reactions; influences on color , flavour, and texture; Water activity and water migration; the basis for food preservation, The roles of enzymes in food production, processing, and quality attributes, Fruits and vegetables; ripening and storage quality, Meats; biological and chemical considerations, Food additives; Vitamins, amino acids, minerals, Aroma Compounds in food and flavour enhancers-monosodium glutamate, nucleotide, Sugar substitutes – sorbitol, saccharin, cyclamate, Food Colours; Antinutritional factors and food contaminant Toxic trace elements, radio nuclides; Food microbiology, food hygiene, food borne illness. (*Prerequisite: BIOC 205, BIOC 206 and BIOC 208*)

BIOC 314: Nutritional Biochemistry [3.0 L(45)P(0)]

Digestion (ruminant and non-ruminant), transport; digestion of carbohydrates, proteins and lipids; basic diet, sources of energy, obesity, alcoholism, fatty liver atherogenesis, lipoproteinaemia; protein quality, digestion coefficient, biological value and nitrogen balance; malnutrition and its manifestations: kwashiorkor and marasmus; human nutrition recommended dietary allowance. (*Prerequisite: (BIOC 202/207/210).*)

BIOC 402: Biochemical Endocrinology [3.0 L (45) P(0)]

Hormones and their classification; hypothalamic regulation of endocrine secretion; the role of hormones in the interactions of multicellular organisms; mechanisms of hormone action on target receptors and the role of second messengers; the structure, biosynthesis, secretion, action and disorders of the

principal relevant hormones, insulin, glucagons, adrenalin, the pituitary hormone, thyroid hormone, parathyroid hormone, steroid hormone, gut hormone etc, diabetes state; prostaglandins as paracrine hormones and miscellaneous regulatory substances; hormones in insects. and other invertebrates; plant hormones and growth factors.

BIOC 404: Metabolic Regulation and Integration [3.0 L(45)P(0)]

Introduction to metabolic regulation. Integration of metabolism and hormonal control of metabolism. Regulation of carbohydrate metabolism. Glycolysis. Gluconeogenesis. TCA cycle. Pentose phosphate pathway and glycogen metabolism (glycogenesis and glycogenolysis). Regulation of lipid metabolism. β -oxidation. Lipid synthesis. Regulation of nucleotide metabolism. The urea cycle. Regulation of protein synthesis at the genetic level.

BIOC 405: Reproductive Biochemistry [3.0 L(45) P(0)]

Basic concepts of reproduction and reproductive systems in mammals; sex hormones in mammals; ovulation and menstrual cycle and their hormonal control; chemistry of oral contraceptives; antifertility drugs and vaccines; other means of contraception; medical termination of pregnancy; role of prostaglandins; toxemia in pregnancy; infertility and its control; superovulation and other fertility promoting factors. *Prerequisite : BIOC 402*

BIOC 408: Molecular Cell Biology [3.0 L(45) P(0)]

Structure and functioning of the cell, plasma membrane, the extracellular matrix, the cytoskeleton, the nucleus, mitochondria and plasmids; the various microscopic techniques in cell biology; the concepts of molecular biology as they apply to genetics; control of cell cycle; the mechanisms of control of gene expression during development and cell differentiation in eukaryotes

BIOC 409: DNA Technology [3.0 L(45) P(0)]

Analysis methods of DNA structure, restriction endonucleases and other enzymes used in recombinant DNA technology, DNA hybridization, Southern and Northern analysis; and isolation of cloned genes

(vectors: plasmids, bacteriophage, cosmids, YACs, M13 sequencing vectors, expression vectors, safe host and vectors); the synthesis of ds cDNA; probes and probing; chemically synthesized oligonucleotides; the Polymerase Chain Reaction (PCR); Nucleotide sequencing (chain termination sequencing, short gun sequencing, paired end sequencing, new generation sequencing); genome wide analysis; introduction to bioinformatics; comparative genome analysis and model organisms; proteomics; mapping of the human genome; linkage mapping; Genetic engineering in plants: cell culture, (protoplast fusion, crown gall tumors, Ti plasmids); industrial applications of recombinant DNA technology (human insulin, synthetic insulin gene, proinsulincDNA, human growth hormones; Interferon, protein for vaccines). (*Prerequisite: BIOC 301*).

BIOC 410: Industrial Biotechnology [3.0 L(45) P(0)]

Batch and continuous fermentation systems- aeration, agitation, mass transfer, heat transfer in biological reactors, Scale up operations: laboratory result to pilot plant scale; Sterilization methods, Design and operation of a typical biological reactor, Equipment design and asepsis, Instrumentation for environmental control, Recovery of fermented products; Animal tissue culture and applications; Current trends in Industrial Biotechnology. (*Prerequisite :BIOC 305*)

BIOC 403: Advanced Laboratory Techniques [3.0 L (15) P(60)]

Immunological techniques: immunoassays including hormonal assays; analytical techniques for vitamins and trace elements determination; molecular biology techniques: isolation of nucleic acids, cloning, preparation of plasmids for use in molecular biology.; characterization of proteins- determination of molecular weight and sub- unit structure; clinical biochemistry- laboratory procedures such as measurement of urea, blood grouping and liver function test; microbiological techniques. Biomolecules estimations: Carbohydrate, lipids, qualitative and quantitative estimations of amino acids and proteins; Protein purification techniques. (*Prerequisites : BIOC 203 AND BIOC 303*).

BIOC 414: Advanced Industrial Biotechnology [3.0 L(45) P(0)]

Improvement of industrial microorganisms by mutations and recombination; Plant tissue culture techniques and their applications; preparation of gene products such as human insulin, somatotropin, growth hormone; molecular markers and their use in plant and animal breeding, determination of species and population diversity and forensic sciences; biotechnology of nitrogen fixation, nitrogenase, hydrogenase, *nif* genes and their regulation; serum fractionation and growth factors.

BIOC 417: Bioentrepreneurship [3 .5 L(30) P(45)]

Innovation concept; ingredients of successful ventures; creativity and ideation for entrepreneurship and innovation; marketing; segmentation, targeting and positioning; defining a business model; creative business modeling, product design, development and manufacturing in medicine, food and agriculture, environment, value added natural products; intellectual property rights, licensing strategy and patents protection; managing growth and financing; Development and presentation of business plan.

BIOC 452: Research Project [4.0 L(0) P(120)]

Supervised individual study of a selected topic in aquatic sciences involving literature search, proposal development, field and/ or laboratory work, and culminates in written report and seminar presentation. The project begins in semester 1 and ends in semester 2.

NOTE:

- Students in 3:3:1:1 system must take at least three electives (in addition to the core courses)per semester during the third and fourth year of study depending on their areas of specialization (Pure Maths, Applied Maths or Statistics).
- Students in 3:3:2:2 system must take at one elective (in addition to the core courses)per semester in the third and fourth years of study.
- Students in 3:3:3:3 system need only take the core courses. They may register for electives if they so wish.

Geography Units

YEAR 1 SEMESTER 1

Code	Course Title	L	P	CF
GEOG 111	Introduction to Physical Geography	45	0	3.0
GEOG 112	Quantitative Techniques in Geography	45	0	3.0
TOTAL		90	0	6.0

YEAR 1 SEMESTER 2

Code	Course Title	L	P	CF
GEOG 121	Introduction to Human Geography	45	0	3.0
GEOG 122	Map work and analysis of spatial Data	30	30	3.0
TOTAL		75	30	6.0

YEAR 2 SEMESTER 1

Code	Course Title	L	P	CF
GEOG 211	Introduction to Remote Sensing and GIS	30	30	3.0
GEOG 214	Statistical Mapping and Spatial Planning	30	30	3.0
TOTAL		60	60	6.0

YEAR 2 SEMESTER 2

Code	Course Title	L	P	CF
GEOG 221	Biogeography	45	0	3.0
GEOG 222	Development of Geographic Thought	45	0	3.0
GEOG 225	Applied Statistics in Geography	45	0	3.0
TOTAL		135	0	9.0

YEAR 3 SEMESTER 1

Code	Course Title	L	P	CF
GEOG 310	Marine Resources and Coastal Geography	45	0	3.0
GEOG 311	Geomorphology	45	0	3.0
GEOG 312	Computer-Assisted Cartography	30	30	3.0
GEOG 313	Geography of Settlement	45	0	3.0
GEOG 314	Geography of Agriculture	45	0	3.0
GEOG 315	Transport Geography	45	0	3.0
Elective (Choose one)				
GEOG 316	Political Geography	45	0	3.0

GEOG 317	Demography	45	0	3.0
GEOG 318	Soil Geography	45	0	3.0
TOTAL		300	30	21.0
GEOG 319	GIS and Remote Sensing in Natural Resource Management	30	30	3.0

NB: For Geography Major, all the courses apply. For Geography minor, only the bold apply

YEAR 3 SEMESTER 2

Code	Course Title	L	P	CF
ENSC 309	Environmental Impact Assessment and Audit	45	0	3.0
GEOG 321	Research Methods in Geography	45	0	3.0
GEOG 322	Climate Change and Development	45	0	3.0
GEOG 324	Geographic Information System	30	30	3.0
GEOG 325	Field Attachment in Geography	0	120	4.0
GEOG 327	Geography of Africa	45	0	3.0
Electives (Choose one)				
SOCI 314	Gender Issues and Development	45	0	3.0
GEOG 326	Cartography and Surveying	30	30	3.0
GEOG 323	Geography of Arid and Semi-arid Lands	45	0	3.0
TOTAL		255/240	150/180	22.0

NB: For Geography Major, all the courses apply. For Geography minor, only the bold apply

YEAR 4 SEMESTER 1

Course Code	Course Title	L	P	CF
NARE 212	Principles of Wildlife Management	30	30	3.0
GEOG 411	Environmental Management: Principles & Practices	45	0	3.0

GEOG 413	Geography of Energy	45	0	3.0
GEOG 414	Industrial Geography	45	0	3.0
GEOG 425	Dissertation	15	60	3.0
GEOG 416	Water Resource Management	45	0	3.0
Electives (Choose One)				
GEOG 412	Applied Geomorphology	30	30	3.0
GEOG 415	Disaster Management	45	0	3.0
GEOG 417	Remote Sensing and GIS Project	15	60	3.0
TOTAL		255/270/240	120/135/105	21.0

NB: For Geography Major, all the courses apply. For Geography minor, only the bold apply

YEAR 4 SEMESTER 2

Course Code	Course Title	L	P	CF
ENSC 407	Environmental Law and Policy	45	0	3.0
GEOG 421	Urban Planning	45	0	3.0
GEOG 423	Applied Agricultural Geography	45	0	3.0
GEOG 424	Regional Planning and Development	45	0	3.0
GEOG 426	Principles of Sustainable Development	45	0	3.0
GEOG 428	Geography of Tourism	45	0	3.0
Electives (Choose One)				
GEOG 422	Applied Hydrology	45	0	3.0
GEOG 429	Applied Climatology	30	30	3.0
GEOG 427	Medical Geography	45	0	3.0
GEOG 430	Participatory Approaches in Development	45	0	3.0
TOTAL		315/300	30	21.0
GEOG 431	Environmental Degradation and	45	0	3.0

	Management			

NB: For Geography Major, all the courses apply. For Geography minor, only the bold apply.

Course descriptions for geography courses are provided under BSc Geography

9.3 Matrix Aligning Courses/Units to Programme Learning Outcomes

a) Botany/ Zoology Units

Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
LO1: Articulate and innovatively apply relevant and accurate scientific principles to solve problems.	- General Botany - General Genetics - Plant Anatomy & Morphology - General Microbiology - Lower Invertebrates - Higher Invertebrates - Vertebrate Zoology	3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Plant Physiology - Ecology - Arthropod Biology	3.0 3.0 3.0	- Biostatistics - Plant Growth & Development - Biology of gymnosperms - Plant Ecology - Animal Physiology - Fundamentals of Entomology - History & Philosophy of Biology - Terrestrial Ecology	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Plant Evolution - Population Biology - Animal Behaviour	3.0 3.0 3.0
LO2: Create jobs or be employed in institutions, industries and other related organizations based on the acquired biological scientific competencies.			- Phycology - Taxonomy of Higher Plants - Mycology - Cell Biology - Histology	3.0 3.0 3.0 3.0 3.0	- Bryology & Pteridology - Ecophysiology - Advanced Microbiology - Animal Systematics & Evolution - Fresh Water Biology - Developmental Biology - Helminthology - Marine Biology - Ornithology & Mammalogy	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Plant Biochemistry - Plant Virology - Advanced Plant Physiology - Molecular and Microbial Genetics - Plant Bacteriology - Plant Nematology - Comparative Animal Physiology - Protozoology - Immunology - Ichthyology - Endocrinology - Cancer Biology & Society	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0
LO3: Understand the impact of biological sciences in society and value ethical conduct in scholarship and professional development.					- Plant Genetic Resource Management - Techniques of Mushroom Production - Research Methods - Ethnobiology - Industrial Attachment - Economic Botany - Principles of Crop Protection - Animal Physiology - Industrial Attachment	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	- Plant Pathology - Plant Biotechnology - Research Projects - Industrial Microbiology - Research Projects - Research Methods - Zoology Seminars - Applied Entomology - Botany Seminars	3.0 3.0 4.0 3.0 3.0 3.0 3.0 3.0 3.0

b) Learning outcomes for Chemistry Units

b) Learning Outcomes for Chemistry Course								
	YEAR 1		YEAR 2		YEAR 3		YEAR 4	
PROGRAMME LEARNING OUTCOMES (PLO)								
	COURSES	CF	COURSES	CF	COURSES	CF	COURSES	CF
LO 1 Equip students with strong analytical skills for data analysis and report writing. LO 2 Equip students with knowledge to aid in post-graduate studies.	Inorganic chemistry	3.0	Quantum and bonding theories	3.0	Coordination chemistry	3.0	Comparative study of d and f block elements	3.0
	Introduction to physical chemistry	3.0	Stereochemistry and reaction mechanisms I	3.0	Chemical Thermodynamics	3.0	Radiation and nuclear chemistry	3.0
	Introduction to organic chemistry	3.0	Comparative study of s and p block elements	3.0	Chemical kinetics	3.0	Electrochemistry	3.0
			Gases and phase equilibria	3.0	Carbonyls, their derivatives and amines	3.0	Stereochemistry and reaction mechanisms II	3.0
					Physical methods of structure determination	3.0	Organic spectroscopy	3.0
					Analytical chemistry I	3.0	Heterocyclic chemistry	3.0
							Analytical chemistry II	3.0
LO 3 Equip students with skills for job opportunities.					Bioinorganic chemistry	3.0	Quantum chemistry	3.0
					Chemical application of group theory	3.0	Statistical thermodynamics	3.0
					Chemistry of lipids	3.0	Heterocyclic chemistry	3.0
					Polyaromatics and protein chemistry	3.0	Introduction to organic synthesis	3.0
					Chemistry of carbohydrates	3.0	Industrial chemistry II	3.0
					Industrial chemistry 1	3.0	Research project	3.0
					Environmental chemistry 1	3.0	Environmental chemistry II	3.0
					Industrial attachment	3.0	Chemistry of natural products	3.0
							Polymer chemistry	3.0
							Instrumental techniques	3.0

d) Learning Outcomes for Mathematics Units

Learning Outcomes	Year 1	CF	Year 2	CF	Year 3	CF	Year 4	CF
LO1: Perform Mathematical operations with confidence and speed	Differential calculus vectors and mechanics	3.0 3.0	Vector analysis Multivariable calculus	3.0 3.0	Ordinary Differential Equations Complex Analysis Numerical Analysis Methods Of Applied Maths	3.0 3.0 3.0 3.0	Advanced Partial Differential Equations Partial Differential Equations Numerical Methods	3.0 3.0 3.0 3.0
LO2:comprehend, analyse, interpret and predict abstract mathematical ideas			Integral Calculus Linear Algebra General Mechanics	3.0 3.0 3.0	Group theory real analysis advanced real analysis advanced linear algebra	3.0 3.0 3.0 3.0	General topology testing of hypothesis functional analysis	3.0 3.0 3.0
LO3: Apply Mathematical knowledge to physical situations and draw conclusions	Introductory statistics	3.0	principles of probability & statistics bivariate probability & statistics Operations research	3.0 3.0 3.0	Dynamics fluid mechanics theory of estimation statistical quality control Statistical demography categorical data analysis design and analysis of experiments	3.0 3.0 3.0 3.0 3.0 3.0 3.0	Stochastic processes applied multivariate analysis biometric models Testing of hypothesis	3.0 3.0 3.0 3.0
LO4: Produce graduates capable of pursuing postgraduate studies in any mathematics related discipline							Ring theory advanced complex analysis advanced general topology measure theory advanced fluid mechanics advanced numerical analysis	3.0 3.0 3.0 3.0 3.0 3.0

e) Learning Outcomes for Physics Units

	YEAR 1		YEAR 2		YEAR 3		YEAR 4	
Programme Learning Outcomes (PLO)								
	COURSE	CF	COURSE	CF	COURSE	CF	COURSE	CF
LO1: Engage in analytical and critical thought and expression	Mechanics,	3.0	Waves & Oscillations,	3.0	Quantum Mechanics	3.0	Digital Electronics,	3.0
	Heat &		Electricity & Magnetism,	3.0	Basic Electronics	3.0	Nuclear Physics,	3.0
	Thermodynamics	3.0	Introduction to Material	3.0	Statistical Physics	3.0	Solid State Physics,	3.0
	Geometrical Optics,	3.0	Science,		Atomic Phys	3.0	Electromagnetic Theory.	3.0
	Introduction to Quantum Mechanics	3.0			Physical Optics	3.0		
					Classical Mechanics	3.0		
LO2: Apply the acquired experimental and technical skills for proficiency in a chosen career	Physics Practical 1,	2.0	Physics Practical 111,	2.0	Physics Practical V,	2.0	Physics Practical V11,	2.0
	Physics Practical 11.	2.0	Physics Practical 1V.	2.0	Physics Practical V1,	2.0	Physics Practical V111,	2.0
					Industrial Attachment.	4.0	Physics Projects.	4.0
LO3: Exploit opportunities and experiences as a creative and productive member of society	Mechanics,	3.0	Waves & Oscillations,	3.0	Astrophysics	3.0	Applied Geophysics,	3.0
	Geometrical Optics,	3.0	Electricity & Magnetism,	3.0	Biophysics	3.0	Environmental and Renewable Energy,	3.0
	Ethics, Integrity and	3.0	Introduction to Material	3.0	Communication Electronics	3.0	Mathematical Physics,	3.0
	National Values,	3.0	Science.		Geophysics	3.0	Laser Physics,	3.0
	Introduction to Academic				Molecular Physics	3.0	High Energy Physics,	3.0
	Communication Skills.	3.0			.		Plasma Physics,	3.0
							Paleomagnetism,	3.0
							Microprocessors	3.0
							Entrepreneurship and Business Management	3.0
LO4: Advance in the study of Physics and other related applied sciences	Mechanics,	3.0	Waves & Oscillations	3.0	Astrophysics	3.0	Digital Electronics,	3.0
	Heat &		Electricity & Magnetism	3.0	Biophysics	3.0	Nuclear Physics	3.0
	Thermodynamics	3.0	Introduction to Material	3.0	Mathematical Physics	3.0	Quantum Mechanics	3.0
	Geometrical Optics,	3.0	Science		Communication Electronics	3.0	Solid State Physics,	3.0
	Introduction to Quantum	3.0			Geophysics	3.0	Electromagnetic Theory	3.0
	Mechanics,				Molecular Physics	3.0		

e) Learning Outcome Matrix for BSc(S11) Biochemistry option

Expected Programme Learning Outcomes	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Learning Outcome	Courses	Courses	Courses	Courses
LO1. Have acquired necessary theoretical and practical skills in Biochemistry, Molecular Biology and Biomedical Science to enable them engage in gainful self-employment such as consultancy.	Introduction to Inorganic Chemistry, Organic Chemistry, Physical Chemistry Introduction to Botany and Zoology	Biochemistry Of Lipids Structural Biochemistry Bioenergetics and carbohydrate metabolism Metabolism of Lipids, Proteins and Nucleic acids	Biochemistry of Nucleic Acids Biochemical Bacteriology and Mycology Principles of Laboratory Techniques Basic Nutrition Biomembranes and Cellular Signaling Pharmaceutical Biochemistry	Biochemical Endocrinology Metabolic regulation and integration Reproductive Biochemistry Molecular Cell Biology DNA Technology Industrial Biotechnology Advanced Laboratory Techniques
LO2 Skilled manpower required by biomedical and Agro-based research and development Institutions, Institutions of higher learning and Industry; hence contributing to national economic growth.	Introduction to Biochemistry and Biodiversity	Bioenergetics and carbohydrate metabolism Metabolism of Lipids, Biochemistry Of Lipids Structural Biochemistry	BASIC NUTRITION Pharmaceutical Biochemistry Biochemistry of Food Processing Biomembranes and Cellular Signaling Pharmaceutical Biochemistry	Biochemical Endocrinology Advanced Industrial Biotechnology Metabolic regulation and integration Reproductive Biochemistry
LO3 Design and implement innovative biochemistry research studies and dissemination of these research findings	Introduction to Biochemistry and Biodiversity	Structural Biochemistry Bioenergetics and carbohydrate metabolism	Biochemistry Biochemistry of Food Processing Basic Nutrition Biomembranes and Cellular Signaling	Biochemical Endocrinology Metabolic regulation and integration Reproductive Biochemistry Molecular Cell Biology DNA Technology Industrial Biotechnology Advanced Laboratory Techniques
LO4 Attain minimum requirements for admission to pursue advanced studies in relevant areas of Medical sciences, Biomedicine, Biotechnology, Bioinformatics, and related Disciplines.	All level One Courses	All level Two Courses	All level Three Courses	All level Four Courses

f) Learning Outcome Matrix for BSc(S11) Geography majors

Programme Learning Outcomes	Year 1		Year 2		Year 3		Year 4	
	Courses	C.F	Courses	C.F	Courses	C.F	Courses	C.F
LO1. Demonstrate the place of Geography in contemporary society	Introduction to Physical Geography	3.0	Development of Geographic Thought	3.0				
	Introduction to Human Geography	3.0						
	Regions of the World	3.0						
LO2. Apply the skills and knowledge acquired in resource planning and management in a rural and urban context	Quantitative Techniques in Geography	3.0	Introduction to Remote Sensing and GIS	3.0	Computer-Assisted Cartography	3.0	Environmental Management: Principles & Practices	3.0
	Map work and analysis of spatial Data	3.0	Statistical Mapping and Spatial Planning	3.0	Environmental Impact Assessment and Audit	3.0	Water Resource Management	3.0
					Geographic Information System Cartography and Surveying	3.0	Applied Geomorphology	3.0
							Disaster Management	
							Remote Sensing and GIS Project	3.0
							Principles of Forest Resource Management	3.0
							Environmental Law and Policy	3.0
							Urban Planning	
							Applied Agricultural Geography	3.0
							Regional Planning and Development	3.0
							Applied Hydrology	
							Applied Climatology	3.0
							Participatory Approaches in Development	3.0
								3.0

LO3. Apply effective communication skills through report writing and power point presentation	Introduction to Academic Communications Introduction to Computer Applications	3.0 3.5			Field Attachment in Geography Research Methods in Geography	4.0 3.0	Dissertation	3.0
LO4. Critique the nexus between society and the physical environment and offer realistic pathways to sustainable development.	Introduction to Rural and Urban Development Cultural Geography Economic Geography Fundamentals of Meteorology and Climatology Introduction to Hydrobiology Environment and Development Introduction to Natural Resources	3.0 3.0 3.0 3.0 3.0 3.0 3.0	Geography of Kenya Atmospheric Systems and World Climates Biogeography Geography of Development Population Geography Introduction to Hydrology Introduction to Geology Natural Resources Ecology Principles of Forest Resource Management Ethics, Integrity and National Values HIV and AIDS and Society	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Marine Resources and Coastal Geography Geomorphology Geography of Settlement Geography of Agriculture Transport Geography Political Geography Demography Soil Geography Climate Change and Development Geography of Arid and Semi-arid Lands Geography of Africa Gender Issues and Development	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Geography of Energy Industrial Geography Principles of Sustainable Development Geography of Tourism Medical Geography	3.0 3.0 3.0 3.0 3.0

FACULTY OF VETERINARY MEDICINE & SURGERY



DIPLOMA IN ANIMAL HEALTH AND PRODUCTION

1. Philosophy of the programme

The programme innovatively influences human development through acquisition of education and skills in Animal health, dissemination of the knowledge to enhance animal health, welfare and production contributing to improved economy globally. The programme produces competitive hands - on graduates with capability to provide human resources to satisfy the needs of the country to solve animal health issues.

2. Rationale

Diploma in Animal Health and Production is a professional programme designed to train animal health professionals with adequate theoretical, practical, technological knowledge and skills in the treatment and control of animal diseases. Early part of the diploma programme will cover pre-clinical courses (Basic Anatomy, Basic Physiology, Introduction to Animal health, Basic Microbiology, and Basic Parasitology). The later part comprises clinical courses (Pharmacology and Toxicology, Reproduction and Obstetrics, Clinical Pathology, Herd Health Management, Animal diseases, Principles of Disease Control and Public Health & Epidemiology). The students' outlook on agricultural and livestock industries is broadened by the inclusion of support courses in other disciplines like Agronomy, Agricultural Engineering, Animal Production, Agricultural Economics and Extension Education. Students undertake field/industrial attachment at the end of their second year for a period of 8 weeks.

The University has continuously trained competent diploma graduates in Animal Husbandry and Health from East and Central African region. Therefore, this programme responds to the increasing demand of Animal Health providers to address animal health issues in the horn of Africa. Kenya's economy depends largely on agriculture. This puts a high demand on livestock production, which has resulted to major changes in animal production systems, tending towards intensification. These changes are posing new challenges in animal disease management requiring an

understanding in Animal Health Science. In the last three decades the effectiveness of animal health services delivery has seriously declined in developing countries, especially in Africa. This could be attributed to high cost of inputs and Animal Health services, emerging livestock diseases due to climate change and shortage of Animal Health providers to mitigate food security. The general trend in services delivery in Kenya is towards privatization of Animal Health practice. There is therefore a need to train more animal health professionals equipped to meet challenges in the detection and control of endemic and emerging animal diseases. Kenya's 2030 vision is anchored on three key pillars: economic, social and political governance. The university is strategizing to make direct contributions to the social pillar specifically the education sector vision which is to have globally competitive quality education, training and research for sustainable livestock through this veterinary programme. The University is endowed with highly qualified academic staff and ample teaching facilities including a demonstration and commercial farms, modern abattoir, diagnostic and research laboratories, as well as a community based ambulatory clinical service ideally suitable for veterinary training in the region.

3. Goal of the Programme

The programme aims at producing competent graduates with adequate practical and theoretical knowledge in animal health, production and welfare, contributing to the development of the livestock industry and the national gross domestic product.

4. Programme Learning Outcomes

At the end of the programme, the graduates are expected to be able to:

- i) **PLO 1:** Educate farmers on good animal husbandry practices, make correct diagnosis of the common diseases of animals and apply ethical and legal principles in the treatment of livestock
- ii) **PLO 2:** Enhance the health of livestock, human and the environment (One health) by controlling livestock diseases.
- iii) **PLO 3:** Contribute to economic development and improvement of the livestock industry and promote the ideals of animal welfare.

5. Mode of Delivery

This is a full-time face-face programme

6. Academic Regulations for the Programme

6.1 Admission Requirements

Admission requirement shall be as stipulated in the Egerton University Statutes 36 (2) of 2013.

In addition, the applicant must satisfy the following minimum requirements:

- i) Holders of Kenya Certificate of Secondary Education (KCSE) with a mean aggregate of C; and at least grade C in Biology/Biological science, C- in English, C- in Chemistry/Physical Science and C- in Mathematics or Agriculture.
- ii) A minimum of division II at KCE/EACE and at least a credit in Biology or Biological Science, Chemistry or Physical science and Mathematics or Agriculture from institutions recognized by the Senate /Kenya Veterinary Board.
- iii) A Credit pass in Certificate in Animal Health/ Agriculture/Range Management/ Wildlife Health/ Dairy Technology or equivalent with at least an aggregate of C- at KCSE or Division III at KCE from an institution recognized by the Senate /Kenya Veterinary Board.
- iv) Holders of "A" level certificate with a minimum of one principal pass in Biology and at least a subsidiary pass in Chemistry.
- v) Holders of a diploma in biomedical discipline recognized by the Senate / Kenya Veterinary Board.
- vi) Any other qualification equivalent to the above from an institution recognized by the Senate /Kenya Veterinary Board.

6.2 Credit Transfer in the programme

There shall be no credit transfer for this programme.

6.3 Course Requirements

ISO procedure for teaching (EU/AA/OP/06) will be followed in teaching of all courses in the programme.

6.4 Student Assessment Policy/ Criteria

The examinations will be assessed as per Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading shall be done in accordance with Egerton University Statute 36(6) of 2013. However the pass mark for all courses in the programme shall be 50%. The performance in each course shall be translated into grades as follows:

75-100%	A (Distinction)
65-74%	B (Credit)
50-64%	C (Pass)
49% and below	D (Fail)

6.6 Examination Regulations

All examinations shall be conducted in accordance with the examination regulations as stipulated in the Egerton University Statute 36(5) of 2013.

6.7 Moderation of Examinations

All examinations for the programme shall follow regulations as stipulated in the Egerton University Statute 36(5) of 2013 and be internally and externally moderated as per ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

To graduate, a student shall take and pass a minimum of 168.5 Credit Factors within the stipulated period.

6.9 Classification of the Diploma

This diploma programme is not classified.

7. Course Evaluation

All courses in this programme will be evaluated using a tool that captures all aspects including course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessment as per ISO procedure (EU/VC/OP/04).

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Programme shall be hosted in the Faculty of Veterinary Medicine and Surgery. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will be evaluated after every academic cycle as per ISO procedure (EU/VC/OP/05).

8.3 Course Coding

Courses in the programme shall be coded as follows:

- Four letters 'ANHE' indicating the name of the programme followed by four digits with first digit denoting the programme and three digits classifying the courses.
 - The first (0) indicates it is a Diploma programme.
 - The second digit denotes the year of study.
 - The third digit denotes the level of study.
 - The fourth digit denotes the serial number of the courses in the same level.
- The course coding for the second digit is as follows
 - 0 - Foundation subject areas
 - 1 - The Basic Subject Areas
 - 2 - Disease Courses
 - 3 - Principles of Disease Control
 - 4 - Herd Health and Management
 - 5 - Public Health
 - 6 - Student Projects & seminars
 - 7 - Field Attachment/Field visits

9. Courses offered for the programme

- **University Common Core Courses**
 - **ENSC 0101:** Introduction to Environmental Science
 - **PHIL 0108:** Ethics, Integrity and National Values
 - **STAT 0131:** Quantitative Techniques

9.1 Schedule of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
GBM 0103	Entrepreneurship	45	0	2.0
ANHE 0101	Anatomy	60	30	4.0
BOTA 0111	Genetics	30	30	3.0

CHEM 0111	Basic Inorganic and Physical Chemistry	30	30	3.0
PHIL 0108	Ethics, Integrity and National Values	45	0	3.0
ENSC 0101	Introduction to Environmental Science	30	30	3.0
STAT 0131	Quantitative Techniques	30	30	3.0
TOTAL		270	150	21.0

YEAR 1 SEMESTER 2

AGEC 0111	Fundamentals of Agricultural Economics	45	0	3.0
AGED 0112	Agricultural Communication Skills	30	0	2.0
ANHE 0111	Introduction to Animal Health	15	30	2.0
ANHE 0112	Veterinary Physiology	60	30	5.0
ANHE 0102	Embryology and Histology	30	15	2.5
ANHE 0141	Animal Welfare, Ethics and Law	30	15	2.5
CHEM 0131	Basic Organic Chemistry	30	45	3.5
DRLM 0111	Principles of Range Management	30	30	3.0
TOTAL		275	120	23.5

YEAR 2 SEMESTER 1

AGED 0231	Rural Sociology and Development	30	0	2.0
AGRO 0271	Pastures and Fodder Crop Management	30	30	3.0
ANHE 0212	Basic Microbiology	30	30	3.0
ANHE 0213	General Pathology	45	15	3.5
ANHE 0214	General Parasitology	45	30	4.0
ANHE	Animal Health	15	75	3.5

0271	Applied Skills			
ANSC 0210	Routine Livestock Practices	0	105	3.5
BIOC 0245	General Biochemistry	30	30	3.0
TOTAL		270	310	28.5

YEAR 2 SEMESTER 2

AGED 0232	Agricultural Extension	45	0	3.0
ANHE 0215	Basic Immunology & Vaccines	30	30	3.0
ANHE 0221	Animal Reproduction	45	30	4.0
ANHE 0220	General Pharmacology	30	15	2.5
ANHE 0231	Animal Nursing	30	30	3.0
ANSC 0230	Principals of Animal Nutrition	45	30	4.0
ANSC 0241	Animal Genetics and Breeding	45	0	3.0
ANSC 0250	Ruminant Husbandry	45	30	4.0
TOTAL		355	210	31.0.

YEAR 3 SEMESTER 1

AGEC 0343	Farm Accounting	45	0	3.0
AGEC 0345	Farm Management 1	45	0	3.0
ANHE 0320	General Toxicology	15	30	2.0
ANHE 0324	Clinical Pathology	30	30	3.0
ANHE 0325	Viral, Rickettsial and Parasitic Diseases	60	30	5.0
ANHE 0327	Bacterial and fungal Diseases	60	30	5.0
DLRM 0331	Bush Control and Grazing Management	30	30	3.0
ANHE 0363	Proposal Development	15	60	3.0
ANHE	Field Training	0	60	2.0

0373				
TOTAL		255	330	29.0

ANHE 0371	Field Attachment	0	270	4.0

YEAR 3 SEMESTER 2

AGEN 0371	Farm Structures	45	30	4.0
ANHE 0323	Metabolic and Nutritional Diseases/Disorders	45	0	3.0
ANHE 0336	Principles of Disease Control	30	0	2.0
ANHE 0341	Herd Health Management	0	90	3.0
ANHE 0351	Public Health & Epidemiology	30	30	3.0
ANHE 0352	Zoonosis and One Health Concept	30	0	2.0
ANHE 0364	Project Implementation & Reporting	0	60	2.0
ANSC 0360	Non-Ruminant Husbandry	45	30	4.0
AGBM 0330	Human Resource Management	45	0	3.0
TOTAL		240	240	26.0

c). Course Descriptions

ANHE 0101 Anatomy (60/30: CF 5.0) Y1S1

Systematic gross anatomy of farm animals, fish and bees. The relevant comparative aspects with other domestic species will be considered where appropriate and relevant. Cell biology (Cell and its history, cell theory, prokaryotic and eukaryotic cells, cell structure membrane structure and composition, movement of materials across the cell membranes cytoskeleton (microfilaments, microtubules, and intermediate filaments), junction complexes, cell movement, cell division. Gametogenesis, fertilization, cleavage, embryonic and foetal development will be emphasized for the purposes of understanding how the different organ systems are derived with emphasis on the domestic

bovine. Basic histology of tissues and organ systems with emphasis on recognition of normal tissues from histological sections. Field visits (sanctuary for animals with congenital deformities, external labs).). Blood composition, Morphology of mammalian and avian blood cells. Hematopoiesis erythropoiesis, granulopoiesis, Hemostasis extrinsic, intrinsic, and common pathways.

ANHE 0111 Introduction to Animal Health(15/30: CF 2.0) Y1S1

Definitions of terms used in Animal health and veterinary sciences. Signs and importance of good health in farm animals, fish and bees. Aetiology, transmission and diagnosis of diseases in general and the role of animal health in agriculture and the national economy.

ANHE 0112 Veterinary Physiology (60/30: CF 5.0) Y1S2

Basic physiology of farm animals, fish and bees with emphasis on the functions of the organ systems, and the basic principles involved in the control of the physiological process in the body. Physiology of the new-born. Lactation. Egg-laying in the chicken, granulopoiesis, Hemostasis extrinsic, intrinsic, and common pathways. Blood grouping. Hematopoiesis, erythropoiesis

ANHE 0141: Animal Welfare, Ethics and Law (30/15: CF 2.5) Y1S2

Policy and law and animal welfare in veterinary practice, leadership and communication skills: Livestock development policy. Legislations in Animal Health and Production; Veterinary Ethics. Definition and assessment of animal welfare issues. The veterinarian and animal welfare, protection Legislation. Description of legal, professional and ethical values guiding the veterinary profession, understanding, evaluating and improving interpersonal relations with clients and colleagues.

ANHE 0271: Animal Health Applied Skills I(15/75: CF 3.5) Y1S2

Introduction to parts of the animal body. Rope work, knots and halter making. Handling and restraint of farm animals. Animal health tools and equipment.

Introduction to normal animal behaviour-eating habits, mating, nursing and movement behaviour of the domestic animals. Effects of environmental changes on behaviour –temperature, humidity and altitude. Response to intrusion by usual and unusual persons /animals /objects. Identification of farm animals - methods, choices and application. Physical examination, samples and sampling – blood, milk, faeces, urine and saliva. Post mortem, Preservation of specimen, blood and gland smears. Syringes, needles and their care. Weighing and weight estimation, drenching, aging and spraying. Vaccination including poultry, and handling of vaccines and their storage.

ANHE 0212: Basic Microbiology (30/30: CF 3.0) Y2S1

Introduction to micro-organisms. Bacteria, fungi, viruses, algae and mycoplasmas, rickettsia & chlamydia. Their growth and metabolism in relation to animal and human diseases. Practicals to emphasize basic laboratory technique in microscopy. Staining procedures, enumeration and identification of bacterial and fungi (media preparation and aseptic techniques).

ANHE 0213: General Pathology (45/15: CF 3.5) Y2S1

General pathological changes that is common to various tissues and organ systems in disease processes. Necropsy techniques and collection of samples for laboratory examinations and diagnosis.

ANHE 0214: General Parasitology (45/30: CF 4.0) Y2S2

Introduction to parasitism and host-parasite relationships. Classification and identification of important parasites of domestic animals, and emerging livestock fish, bees; protozoa, helminths and ectoparasites. Life cycles of parasites of economic importance and their importance in disease causation. Principles of control of animal parasites.

ANHE 0215: Basic Immunology and Vaccines (30/30: CF 3.0) Y2S2

Introduction to immunology; definitions and types of immunity. Specific and non- specific immunity. Lymphoid organs and cells of immune responses.

Antigens and antibodies; Primary and secondary immune responses. Humoral and cell-mediated immune responses. Basis of the specificity of immune responses. Tolerance and graft rejection. Autoimmunity. Immunodeficiency and hypersensitivity. Application of immunology in research, diagnosis, and disease control strategies. Vaccines, antisera and their use in disease prevention.

ANHE 0221: Animal Reproduction (45/30: CF 4.0) Y2S2

Introduction Reproduction definition. Review of reproductive endocrinology, anatomy, & physiology of female and male animal. Oestrous cycle. Fertilization. Gestation, parturition and care of neonate. Reproduction in Avian, Rabbits, Fish, Bees **Andrology:** Collection, and handling of semen in domestic animals (field trip to a bull station KAGRC). Assisted reproductive technologies. Common obstetrical problems and their management in farm animals. Reproductive disorders/diseases. Reproductive management in dairy and beef herds

ANHE 0220: General Pharmacology (30/15: CF 2.5) Y2S2

Introduction to pharmacology. Sources, mode of action, uses, dosages, and routes of administration of commonly used drugs. Drug absorption, distribution, metabolism and elimination. Antiseptics, anaesthetics, coagulants and anti coagulants. Ethical use of drugs and agro-chemicals. Pharmacokinetic including: Drug absorption, distribution, metabolism and elimination etc Pharmacodynamics including drug interacting sets, systemic Pharmacology including drugs acting on the nervous system, reproductive system etc Antiseptics, etc. Ethical use of drugs and agro-chemicals. Ethno-veterinary medicine. A visit to a pharmaceutical company and a botanical garden will be organised.

ANHE 0231: Animal Nursing(30/30: C.F.3.0) Y2S2 Animal Care:

Introduction to veterinary nursing, evaluation of the animal patient cleaning, dressings and bandages, practical care of wounds and grooming of the patient. Cleaning and disinfection of animal accommodation.

Emergency care and first aid Initial assessment emergency procedures fluid therapy, first Aid – The A–Z of specific conditions. **Theatre Practice:** Monitoring general anaesthesia sterilizing equipment for theatre, care of surgical instruments

ANHE 0319: General Toxicology (15/30: C.F.2.0) Y3S1

Introduction to toxicology: Definitions; an overview of cell biology; Concepts of basic toxicology; toxicants affecting the various organ systems in the body. Diagnosis and management of poisoning. Organic and inorganic poisoning including microbial (fungal) feed poisoning, metallic etc. A visit to a toxicology laboratory will be organised Y3S1.

ANHE 0324: Clinical Pathology (45/30: CF 4.0) Y3S1

Introduction to clinical pathology, clinical pathology samples collection and handling, function tests in diagnosis: renal function tests, examination of urine, hepatic functional tests: types, causes and diagnosis of jaundice. Laboratory evaluation of pancreatic, synovial and cerebro-spinal fluid and related disorders. Anticoagulants, erythrocyte and leukocyte haematocrit index. Blood staining techniques, anaemia and its classification, immune-haematology. A visit to be organized to a veterinary investigation/diagnostic laboratory.

ANHE 0325: Viral, Rickettsial and Parasitic Diseases (60/30: CF 5.0) Y3S1

Diseases of farm animals, and emerging livestock fish, bees caused by viruses, rickettsia and Parasites. Emphasis in parasitic infections on protozoan, helminths, and ectoparasitic infestations. The diseases will be discussed in terms of their aetiology, pathogenesis, transmission, clinical signs diagnosis, treatment and control.

ANHE 0327: Bacterial and Fungal Diseases (60/30: CF 5.0) Y3S1

Aetiology, occurrence, symptomatology, morbidity, diagnosis, treatment, prevention, control, and economic importance of: Anthrax, clostridial diseases - blackquarter, enterotoxaemia (pulpy kidney, lamp

dysentery), tetanus, contagious bovine pleuropneumonia, contagious caprine pleuropneumonia, foul in the foot (foot rot), foot abscess in sheep, haemorrhagic septicaemia, leptospirosis, paratuberculosis, suppurative pneumonia in sheep, swine erysipelas, actinomycosis, actinobacillosis, streptothricosis, and mycotic dermatitis. Neonatal diseases - predisposing factors, treatment and prevention of white scours, diarrhoea caused by faulty diet, coccidiosis, salmonellosis, calf pneumonia, joint and naval ill, calf diphtheria, calf septicaemia, piglet anaemia and colibacillosis. Fowl typhoid, pullorum, fowl cholera, salmonellosis and colibacillosis in poultry.

ANHE 0341 Herd Health Management (0/90: CF 3.0) Y3S1

General clinical examination of farm animals. Routine farm operations including dehorning, docking, Castration, and hoof trimming. Introduction to basic surgical techniques. Principles of herd health management including assessment of reproductive performance. Record keeping, disease surveillance and control.

ANHE 0363: Proposal development (15/30: CF 2.0) Y3S1

Students should be guided in the development process and content, of a scientific proposal. Students to develop a proposal and present an oral and written formats for evaluation either individually or in groups under supervision by a lecturer.

ANHE 0364: Project implementation and reporting (15/30: CF 2.0) Y3S2

Students shall be guided in the implementation of the proposed research project developed in semester 1 and present an oral and written formats for evaluation either individually or in groups under supervision by a lecturer.

ANHE 0372: Field Training(0/60: CF 2.0) Y3S1

Educational visits to institutions, laboratories and Animal Health enterprises to complement teaching. Students will be exposed to practical aspects of disease control, farm operations, meat inspection, milk hygiene, water hygiene, environmental pollution and biotechnology.

ANHE 0371: Field Attachment (0/270: CF 4.0) Y3S1

At the end of Y2S2, students are posted to the field under the supervision of field officers in order to expose them to livestock production practices, disease control, laboratory, extension, pharmaceutical and enterprise management. Teaching staff will visit the students to assess them in the course of the attachment period.

ANHE 0323: Metabolic Diseases and Nutritional Disorders (45/0: CF 3.0) Y3S2

Causes, clinical signs, diagnosis and treatment of: bloat, milk fever pregnancy toxemia, grain overload and ketosis, grass tetany, water intoxication. Mineral deficiencies, including – iron, copper, zinc, phosphorous, selenium, vitamin and cobalt and their excesses. Vitamins A, D, E, K, and B complex.

ANHE 0336: Principles of Disease Control (30/0: CF 2.0) Y3S2

Principles of disease prevention, control and eradication. Principles of planning and execution of disease control and eradication programmes. Disease Control Planning Strategies, Planning, appraisal and evaluation of disease control and eradication programmes. Aspects of the Law concerned with disease control acts, drugs and poisons act, Cattle cleansing acts; ethics and welfare

ANHE 0351: Public Health &Epidemiology (60/30: CF 5.0) Y3S2

Introduction to veterinary public health and hygiene. Basic epidemiology concepts; definitions and scope of epidemiology. Determinants of disease. Measures of disease occurrence. Disease transmission, maintenance of infection and disease patterns. Study designs, disease monitoring and surveillance; source of surveillance data; basic concepts in epidemiological investigations; clinical epidemiology. Principles of food, milk, meat, water and fish hygiene. Food borne infections and intoxication. Handling and transport of meat animals. Meat inspection, Treatment and disposal of slaughter-house wastes. Environmental hygiene.

ANHE 0352: Zoonoses and One Health Concept (45/0: CF 3.0) Y3S2

Classification of Zoonoses. Aetiology, transmission, clinical signs, diagnosis, treatment and control of: Cysticercosis, Hydatidosis, Brucellosis, Salmonellosis and Tuberculosis, Anthrax, Ringworm, Ornithosis /Psittacosis, Rabies, Rift Valley Fever, Cow pox, Leptospirosis, Bovine Spongiform encephalitis (Mad Cow Disease), Avian Influenza, Newcastle Disease, Bubonic Plague, Toxoplasmosis, Pastuerellosis, Q fever, Mange. Introduction to One Health Concept. Interaction of Human, Animal and Environmental Health.

9.2. SERVICE COURSES (DIPLOMA) OFFERED TO OTHER DEPARTMENTS

ANHE: 0201 Introduction to Gross Anatomy (30/15: CF 2.5) Y2S1

Basic gross anatomy of farm animals with emphasis on Bovine and Goat.

ANHE 0218 Animal Physiology (30/30: CF 3.0) Y2S2

Basic physiology of the organ systems in farm animals.

ANHE 0219: Reproduction in Farm Animals (30/30: CF 3.0) Y2S2

Review of Endocrinology and reproductive physiology of farm animals, including reproductive cycles in cattle, sheep and goats. Assisted reproductive technologies.

(Prerequisite: ANHE 0218)

ANHE 0326 Animal Diseases (45/30: CF 4.0) Y3S1

Signs of good health in farm animals. Causes, transmission, diagnosis and general disease control. Notifiable, zoonotic and other selected diseases of economic importance in East Africa, in terms of causative agents, transmission, clinical signs, diagnosis, treatment and control. (Prerequisites BOTA0231)

ASSESSMENT CRITERIA AND PROCEDURES FOR REGULAR EXAMINATIONS

(a) Examinations shall be graded on the basis of percentage marks consisting of thirty per cent (30%) as continuous assessment and seventy per cent (70%) as final examinations

The duration of the final examinations shall be as follows:

- A course having three CFs or less shall be examined by a paper of two hours only.
- A course having more than three CFs shall be examined by a paper of three hours only.

YEAR 1 SEMESTER 1

CODE	TITLE	Written Paper	Exam session
ANHE 0101	Anatomy	1 x 2 h	End of Sem
ANHE 0111	Introduction to Animal Health	1 x 2 h	End of Sem

BOTA 0111	Genetics	1 x 2 h	End of Sem
CHEM 0111	Inorganic Chemistry	1 x 3 h	End of Sem
PHIL 0108	Ethics, Integrity and National Values	1 x 2 h	End of Sem
ENSC 0101	Introduction to Environmental Science	1 x 2 h	End of Sem
STAT 0131	Quantitative Techniques	1 x 2 h	End of Sem
AGBM 0103	Entrepreneurship	1 x 2 h	End of Sem

YEAR 1 SEMESTER 2

CODE	TITLE	Written Paper	Exam session
AGEC 0111	Fundamentals of Agricultural Economics	1 x 2 h	End of Sem
ANHE 0102	Embryology and Histology	1 x 2 h	End of Sem
ANHE 0112	Veterinary Physiology	1 x 3 h	End of Sem
ANHE 0271	Animal Health Applied Skills	Continuous Assessment	
CHEM 0131	Basic Organic Chemistry	1 x 3 h	End of Sem
DRLM 0111	Principles of Range Management	1 x 2 h	End of Sem
ANHE 0141	Animal Welfare, Ethics and Law	1x 2h	End of Sem

YEAR 2 SEMESTER 1

CODE	TITLE	Written Paper	Exam session
AGED 0231	Rural Sociology & Development	1 x 2 h	End of Sem
AGRO 0271	Pastures and Fodder Crop Management	1 x 2 h	End of Sem
ANHE 0212	Basic Microbiology	1 x 2 h	End of Sem

ANHE 0213	General Pathology	1 x 3 h	End of Sem
ANSC 0210	Routine Livestock Practices	Continuous Assessment	End of Sem
BIOC 0244	Basic Veterinary Biochemistry	1 x 2 h	End of Sem

YEAR 2 SEMESTER 2

CODE	TITLE	Written Paper	Exam session
AGEC 0345	Farm Management I	1 x 2 h	End of Sem
AGED 0232	Agricultural Extension	1 x 2 h	End of Sem
ANHE 0214	General Parasitology	1 x h	End of Sem
ANHE 0220	General Pharmacology	1 x 2 h	End of Sem
ANHE 0215	Basic Immunology & Vaccines	1 x 2 h	End of Sem
ANHE 0220	Animal Reproduction	1 x 3 h	End of Sem
ANSC 0230	Principals of Animal Nutrition.	1 x 3 h	End of Sem
ANSC 0241	Animal Breeding	1 x 2 h	End of Sem
ANSC 0250	Ruminant Husbandry	1 x 3 h	End of Sem

YEAR 3 SEMESTER 1

CODE	TITLE	Written Paper	Exam session
AGEC 0343	Farm Accounting	1 x 2 h	End of Sem
ANHE 0320	General Toxicology	1 x 2 h	End of Sem
ANHE 0324	Clinical Pathology	1 x 2 h	End of Sem
ANHE 0325	Viral, Rickettsial and Parasitic Diseases	1 x 3 h	End of Sem
ANHE	Bacterial and	1 x 3 h	End of

0327	Fungal Diseases		Sem
ANHE 0341	Herd Health Management	1 x 2 h	End of Sem
ANHE 0342	Ambulatory Clinics I	1 x 2 h	End of Sem
ANHE 0362	Proposal development	Oral presentation & written proposal assessment	End of Sem
ANHE 0372	Field Visits	Continuous Assessment	End of Sem

ANSC 0360	Non-Ruminant Husbandry	1 x 3 h	End of Sem
ANHE 0371	Field Attachment	Student field assessment report	End of year

YEAR 3 SEMESTER 2

CODE	TITLE	Written Paper	Exam session
AGBM 0103	Entrepreneurship	1 x 2 h	End of Sem
AGED 0112	Agricultural Communication Skills	1 x 2 h	End of Sem
AGEN 0371	Farm Structures	1 x 2 h	End of Sem

ANHE 0323	Metabolic and Nutritional Diseases/Disorders	1 x 2 h	End of Sem
ANHE 0336	Principles of Disease Control	1 x 2 h	End of Sem
ANHE 0351	Public Health & Epidemiology	1 x 3 h	End of Sem
ANHE 0352	Zoonosis and one Health Concept	1 x 2 h	End of Sem
ANHE 0363	Project implementation and writing	Oral presentation & project Report	End of Sem
AGBM 0330	Human Resource Management	1 x 2 h	End of Sem

9.3 Matrix Aligning Courses/ Units to Programme Learning Outcomes

	Year 1	Year 2	Year 3			
Programme Learning Outcomes (PLO)						
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	CF
PLO 1.To educate farmers on good animal husbandry practices, make correct diagnosis of the common diseases of animals and apply ethical and legal principles in the treatment of animals.	- Animal Health Applied Skills - Gross anatomy - Introduction to Animal health - Inorganic chemistry - IT and society - Introductory mathematics - Animal physiology - Basic organic chemistry - Quantitative techniques	3.5 2.5 2.0 3.0 3.5 3.0 3.0 2.5 5.0	- General Parasitology - Pastures and fodder - Farm management - Agricultural extension - General Pharmacology	4.0 3.0 3.0 3.0 2.5	- General Toxicology - Viral, Rickettsial and Parasitic Diseases - Bacterial and fungal Diseases - Public Health & Epidemiology - Animal Health Applied II - Clinical Pathology - Field Training	2.0 3.0 4.0 5.0 5.0 3.0 2.0 3.0
PLO 2. To control animal diseases in order to enhance health of animals, human and environment	- Introduction to Biochemistry - Introduction to Environmental Science - Gross Anatomy - Animal Physiology - Introduction to Animal Health - Quantitative techniques - Genetics	5.0 3.0 2.5 5.0 2.0 3.0 3.0	- Basic Microbiology - General Pathology - Routine livestock practices - Introduction to Biochemistry - Animal Reproduction - Animal Nutrition & Feeding. - Animal breeding - Ruminant husbandry - Apiculture & aquaculture	3.0 3.5 3.5 5.0 4.0 4.0 2.5 4.0	- Zoonosis and one Health Concept - Public Health & Epidemiology - Clinical Pathology - Non-Ruminant Husbandry - Herd Health Management - Principles of disease control - Entrepreneurship	3.0 5.0 3.0 4.0 3.0 2.0 3.0 3.5

	Principles of range management			2.5	- Farm structures - Metabolic, Nutritional and metabolic Diseases/Disorder - Agricultural comm. Skills	3.5 2.0
PLO 3 To contribute to economic development and improvement of the animal industry and promote the ideals of animal welfare.	Fundamentals of Agric economics	3.0	- Animal Welfare, Ethics and Law - Rural Sociology And development - Animal Nursing	2.5 3.0	- Projects & Seminars - Human Resource Management - Bush control and grazing management	2.0 3.0 3.0

BACHELOR OF SCIENCE IN ANIMAL HEALTH MANAGEMENT AND PRODUCTION

1. Philosophy of the programme

The programme innovatively influences human development through acquisition of holistic animal health education and dissemination of knowledge and skills to enhance animal health, welfare and production to improve national and global economy

2. Rationale

Kenya's economy depends largely on agriculture. The rapid annual population growth of 3.1% requires a 4.0% growth in food production. The country's average Gross domestic product (GDP) from agriculture is 29%. The contribution from the livestock sector to the total G.D.P. however, is only 5%. This puts a high demand on livestock production, which has resulted to major changes in animal production systems, tending towards intensification. These changes are posing new challenges in animal disease management requiring a good knowledge in epidemiology and new approaches in disease control. In the last three decades the effectiveness of animal health delivery services has seriously declined in developing countries, especially in Africa. This is because governments cannot afford to meet the changing demands in disease control and the increasing costs of these programs. The general trend in Animal Health delivery services in Kenya is towards privatization. Most of these services are now being offered by Nongovernmental Organizations (NGO) or by the private sector. Hence the need to train managers who are equipped to meet these challenges.

3. Goal of the programme

Impart appropriate knowledge and skills for improved Animal health and production

4. Programme Learning Outcomes

At the end of the programme the graduate is expected to be able to:

PLO 1: Apply the acquired knowledge, skills and attitude in all areas of Animal health, production and welfare.

PLO 2: Integrate animal health and production techniques for economy and social well-being.

PLO 3: Recognize, diagnose and undertake basic treatment of animals.

5. Mode of delivery

This is a full time programme.

6. Academic Regulations for the Programme

6.1 Admission Requirements

Admission requirement into the programmes is by the Egerton University statutes 39(2) of 2013.

- i. All candidates admitted to the degree programme in Animal Health Management and Production must satisfy the Minimum University entry requirement of C+ as stipulated in the common university entrance regulations.
- ii. Applicants must satisfy the minimum cluster requirements of C+ in English, Mathematics/Physics, Biology and Chemistry in K.C.S.E. or equivalent examination
- iii. A minimum of C Plain in KCSE and at least a Credit Pass in Diploma in Animal Health/ Agriculture/Medical Laboratory Technology from an institution approved by Senate/ Kenya Veterinary Board
- iv. A minimum of a C- in KCSE with at least a Credit pass in both Certificate and Diploma in Animal Health/ Agriculture/Medical Laboratory Technology from an institution approved by senate/ Kenya Veterinary Board
- v. Two principals and one Subsidiary pass at KACE level or equivalent, one of which must be in Biology and in any other science subject
- vi. Holders of a degree in Biological Sciences from institution approved by the Kenya Veterinary Board.

6.2 Regulation on credit transfer

Credit transfer is offered up to 40% of the credit factors of the Bachelor of Science in Animal Health Management and Production programme at the same level as per Egerton university statutes 36 (3) of 2013. However Field attachment is not transferable

6.3 Course Requirements

The ISO procedure for teaching EU/AA/OP/06 rev 3 applies.

6.4 Student Assessment Policy /Criteria

Student assessment is guided by University examination rules and regulations as per Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examination for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013. The pass mark shall be 50%.

The performance in each course shall be translated into letter grades as follows:

75-100%	A (Distinction)
65-74%	B (Credit)
50-64%	C (Pass)
49% and below	D (Fail)

6.6 Examination Regulations

All examination for this programme shall be conducted in accordance with the examination regulation as stipulated in the Egerton University statutes 36(5) of 2013.

- i. No candidate shall be permitted to proceed to the next year of study until he /she has passed in all the prescribed courses taught in that year.
- ii. A candidate who fails an end-of-semester/year examination shall be required to do a supplementary examination(s)/resist(s) on the failed course(s).

6.7 Moderation of Examination

Moderation of examinations in this program me shall be according to ISO procedures (EU/AA/OP/07)

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses of a minimum total of 217.0 Credit Factors (C.Fs) within the stipulated period.

6.9. Classification of Degree

The Bachelor of Science in Animal Health Management degree programme is not classified

7. Course Evaluation

At the end of the teaching period, the University's Directorate of Quality Assurance (DQA) usually obtains students feedback, through a Teaching Effectiveness Evaluation (TEE) form that captures the evaluation of all aspects of the course including; course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessments. This is as per ISO procedure EU/VC/OP/04

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme is hosted in the Faculty of Veterinary Medicine. It is serviced by various respective departments within and outside the Faculty. The programme leader shall be appointed as per the University Standards and Guidelines (2014).

8.2 Programme evaluation

The programme will be evaluated after a four-year academic cycle as per ISO procedure EU/VC/OP/05

8.3 Course coding

The B.Sc. Animal Health Management and Production courses are coded as follows:

- The code ANHE refers to Animal Health Programme
- The first digit indicates the year of study.
- The second digit indicates the field of the subject matter
- The third digit indicates the serial numbers of courses in the field of the subject matter in the year.

- e) Course coding for Second digit (i.e. different subject matter areas) in Animal Health Management Programme is as follows: -

0=Foundation subject areas

1=Basic subject areas

2=Disease courses

3=Principles of disease control/Epidemiology/Preventive Medicine

4=Law & Veterinary Practice

5=Public Health, Animal Industry/Environmental Hygiene

6=Seminars, students projects

7=Field attachment/Field Visits/Animal handling

9. Courses/Units offered for the programme

9.1 Schedule of Courses

(a) The common core courses for this programme

(i) COMS 111: Communication Skills

(ii) ENSC 101: Environmental Education

(iii) PHIL 108: Ethics, Integrity and National Value

(b) Schedule of courses organized by academic year and semester

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
ANHE 101	Gross Anatomy	45	30	4.0
ANHE 112	Veterinary Physiology I	45	30	4.0
CHEM 111	General Inorganic & Physical Chemistry	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
ENSC 101	Environmental Education	30	30	3.0
STAT 133	Introductory Statistics	30	30	3.0
PHIL 108	Ethics, Integrity and National Value	45	0	3.0
	TOTALS	270	150	23.0

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	CF
AGBM 102	Principles of Entrepreneurship	45	0	3.0
AGBM 131	Principles of Management	45	0	3.0
AGEC 111	Introduction to Agricultural Economics	45	0	3.0
ANHE 102	Embryology & Histology	45	15	3.5
ANHE 111	Intro. to Animal Health Management	15	30	2.0
ANHE 113	Veterinary Physiology II	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
	TOTALS	255	105	21.5

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	CF
AGRO 271	Pastures and Fodder Crops	30	30	3.0
ANHE 213	General Pathology	60	30	5.0
ANHE 214	Microbiology I	45	30	4.0
ANHE 271	Animal Health Applied Skills	30	60	4.0
BIOC 244	Biochemistry	60	30	5.0
NARE 211	Principles of Wildlife Management	30	30	3.0
NARE 231	Ecology and Environmental Management	30	45	3.5
	TOTAL	315	225	28.5

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	CF
ANHE 215	Microbiology II	30	30	3.0
ANHE 216	Parasitology	60	30	5.0

ANHE 217	Immunology	45	15	3.5
ANHE 220	Animal Reproduction	60	30	5.0
ANSC 241	Quant. Genetics & Animal Breeding	45	30	4.0
DRLM 213	Principles of Dry Land Management	30	30	3.0
TOTAL		270	180	24.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	CF
AGED 331	Rural Sociology & Development	45	0	3.0
ANHE 320	Pharmacology	30	30	3.0
ANHE 328	Bacterial and Fungal diseases	60	30	5.0
ANHE 329	Viral, Rickettsial and Parasitic diseases	60	30	5.0
ANHE 337	Biostatistics and Research Methods	60	30	5.0
ANSC 313	Routine Livestock Practices	0	270	4.0
ANSC 333	Animal Nutrition and livestock Feeding	45	30	4.0
ANSC 365	Aquaculture	30	30	3.0
TOTAL		300	420	32.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	CF
AGEC 331	Agricultural Marketing & Trade	45	0	3.0
AGEC 343	Principles of Farm Management	45	0	3.0
AGED 334	Extension Education	45	0	3.0
AGEN 373	Farm Structures	45	0	3.0
ANHE 325	Toxicology	30	15	2.5
ANHE 327	Epidemiology	30	15	2.5

ANHE 321	Wildlife and Fish Diseases	30	30	3.0
ANHE 324	Clinical Pathology	30	30	3.0
TOTAL		270	135	23.0
ANHE 371	Field Attachment (8 Weeks in Session III)	0	270	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	CF
AGBM 406	Financial & Human Resource Management	45	0	3.0
ANHE 425	Metabolic and Nutritional Diseases /disorders	45	30	4.0
ANHE 432	Principles of Disease Control	45	0	3.0
ANHE 434	Herd Health Management	0	60	2.0
ANHE 452	Zoonoses and One Health Concept	30	30	3.0
ANHE 463	Proposal development	0	60	2.0
ANHE 465	Animal Welfare, Ethics and Law	30	15	2.5
ANSC 450	Livestock Production System-Ruminant	45	30	4.0
TOTAL		270	330	27.5

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	CF
ANHE 438	Animal Biotechnology	45	15	3.5
ANHE 439	Herd Health Management	0	60	2.0
ANHE 451	Public Health & Environment	60	30	5.0
ANHE 464	Project implementation and reporting	0	90	3.0
ANHE 472	Field Training	0	60	2.0
ANSC 460	Non Ruminant Production	45	30	4.0
TOTAL		150	285	20.5

(c) Course Descriptions

ANHE 101: Gross Anatomy (45/30:CF.4.0) Y1S1

Introduction to anatomy: Definitions, anatomical terminology, branches of anatomy, methods of studying anatomy, regions of the body, overview of anatomical and museum techniques. **Osteology:** Introduction, classification of bones, the skeleton and its parts, bones of the various parts of skeleton of domestic mammals, visceral bones. **Arthrology:** introduction and definitions, classification of joints, structure of synovial joint, joints of the various parts of the skeleton. **Myology:** introduction, overview of cutaneous muscles, overview of the muscle of head, neck, back and loins, thorax, abdomen, tail, pelvis and limbs. **Splanchnology:** structure of the various components of the various organ systems and associated organs including the digestive, respiratory, urinary, reproductive, nervous and cardiovascular systems and lymphoid organs. Sense organs: the eye, ear, integument and its appendages. Overview of avian Anatomy: Overview of avian skeleton, digestive, respiratory and urogenital organs. Field visit to relevant institutions e.g. National Museums for anatomical/museum techniques.

ANHE 112: Veterinary Physiology I (45/30: CF 4.0) Y1S1

Introduction; cell physiology, structural units, homeostasis and control systems, CNS: brain and spinal cord. Nervous system, nerve conduction, synaptic and neuromuscular transmission, Autonomic nervous system; Parasympathetic and Sympathetic divisions, Sensory physiology, Sense organs-eye, ear. Muscular system, classification of muscles, types of muscles, structure and functions. Respiratory system, gas transport and exchange. Cardiovascular system, heart and blood vessels, types of circulation, blood, formed and cellular elements, haematopoiesis. Lymphatic system, Lymph

ANHE 102: Embryology, Histology and Cell Biology (60/30: CF 5.0) Y1S2

Introduction and definitions, gametogenesis, fertilization, overview of early embryonic development including cleavage, blastulation and gastrulation. Fetal membranes, Overview of teratology. Overview of tissue harvesting

and processing for microscopic examination, cytology, basic body tissues. Overview of development and histology of the various organs/organ systems and associated structures/organs including digestive, respiratory, urinary, reproductive, nervous cardiovascular and haemopoietic/lymphoid systems; special sense organs, integument and its appendages. Cell Biology: Cell and its history, cell theory, prokaryotic and eukaryotic cells, cell structure membrane structure and composition, movement of materials across the cell membranes cytoskeleton (microfilaments, microtubules, and intermediate filaments), junctional complexes, cell movement, cell cycle and kinetics of cell division in development, abnormal cell divisions. Field visits (sanctuary for animals with congenital deformities, external labs).

ANHE 111: Introduction to Animal Health Management (15/30:CF2.0) Y1S2

Definitions of terms used in Animal Health Management and Veterinary sciences. Signs and importance of good health in farm animals. Causes and control of diseases in general and the role of Animal Health in Agriculture and the national economy.

ANHE 113: Veterinary Physiology II (30/30): CF 3.0) Y1S2

Endocrine system, Hormones, classification and functions. Reproductive system, male, Female reproduction, fertilization, implantation, parturition, lactation, physiology of new born, egg formation and production. Renal physiology, electrolyte and fluid balance, acid base balance. Digestive system, comparative physiology of digestion in farm animals: monogastric and ruminant, avian and fish digestion, Environmental physiology, temperature regulation, adaptation, energy metabolism and growth.

ANHE 114: Principles of Genetics (30/30: C.F. 3.0) Y1S2

Chromosomes, mitosis, meiosis; Mendelian principles and interaction of genes. Linkage, crossing over and mapping, DNA structure and replications. Sex determination and sex linkage. Multiple alleles, cytoplasmic inheritance, variations in chromosome

structure and number. Mutations, recombination. Genetic engineering; polygenic inheritance. Hardy Weinberg equilibrium.

ANHE 213: General Pathology (60/30: CF 5.0) Y2S1

Cellular, organic and systemic reaction to injury or inflammation (acute or chronic) related to: Infections, Circulatory disturbances, intoxication, parasitism, immunological disorders, metabolic disturbances, growth disturbances and Neoplasia. A visit to laboratories will be organized

ANHE 214: Microbiology I (45/30: CF 4.0) Y2S1

Encompasses bacteriology, virology and mycology. Rickettsia and Chlamydia and mycoplasma. Disinfection and sterilization History, Definitions, classification, Structure and morphology, metabolism and growth culture and staining techniques. A visit to laboratories will be organized)

ANHE 271: Animal Health Applied Skills I (30/60: CF 4.0) Y2S1

Parts of the animal body. Handling and restraint of farm animals. Animal health tools and equipment. Vaccine storage, handling and vaccination Animal behaviour. Identification of farm animals. Physical examination and sampling Post mortem, Preservation of specimens. Farm practice and procedures.

ANHE 215: Microbiology II (30/30: CF 3.0) Y2S2

The course encompasses the following pathogenic microorganisms: Bacteria and Mycoplasma; Viruses; *Anaplasma*, *Ehrlichia* and *Chlamydia*; and fungi. Laboratory diagnosis and identification techniques including serological methods, Pathogenicity, Antimicrobial susceptibility testing, Concepts of immunity. Visits to relevant laboratories will be organized

ANHE216: Parasitology (60/30: CF 5.0) Y2S2

Introduction to parasitism and host-parasite relationships. Classification and identification of parasites of domestic animals, and emerging livestock fish bees, protozoa, helminths, and ecto-parasites. Life cycles of parasites of

economic importance and their significance in disease causation. . Principles of control of animal parasites.

ANHE 217: Immunology (45/15: CF.3.5) Y2S2

History of immunology, definitions Concepts of immunity and types of immunity. Antigens, antibodies and their interactions; primary and secondary immune response. Humoral and cell-mediated immunity. Tolerance, and graft rejection; hypersensitivity and immunodeficiency and immune related conditions. Application of immunology in research, diagnosis, and disease control. Vaccinology and vaccine A visit to laboratories will be organized

ANHE 220: Animal Reproduction (60/30 CF 5.0) Y2S2

Introduction – Reproduction definition, Review of Functional Anatomy of Reproduction & embryology of female and male animal. **Gynaecology:** Physiology of Reproduction; Reproductive cycles. Gamete transport and fertilization, Gestation and development of the conceptus. Foetal membranes, **Obstetrics:** Physiology of pregnancy, parturition and care of neonate in horse, cattle, sheep, goats, pigs, dogs, cats. Reproduction in Avian, and emerging livestock. **Andrology:** Serving ability and breeding soundness. Collection, and handling of semen in domestic animals (field trip to a bull station KAGRC). Assisted reproductive technologies. Common obstetrical problems and their management in farm animals. Reproductive disorders/diseases in female and male animal.

ANSC 313: Routine Livestock Practices (0/120: CF 4.0) Y3S1

The students participate in carrying out routine managements practices associated with both ruminant and non-ruminant production. Areas covered include hand and machine milking, milk recording, calf feeding and cleaning of calf houses, feeding of chicken and record keeping, pig feeding and hygiene maintenance, rabbit housing and feeding.

ANHE 320: Pharmacology (30/30: C.F. 3.0) Y3S1

Introduction to pharmacology with emphasis on sources, mode of action, uses, dosages, and routes of

administration of commonly used drugs. Pharmacokinetics: Drug absorption, distribution, metabolism and elimination. Pharmacodynamics. Systemic pharmacology. Therapeutics including antimicrobial, anti-protozoa anthelmintic, acaricides, insecticides, disinfectants and antiseptics. Ethical use of drugs and agro-chemicals. Ethnoveterinary- Herbal medicine of Veterinary importance. A visit to a pharmaceutical company and botanical garden will be organised

ANHE 325: Toxicology (30/15: C.F. 2.5) Y3S2

Introductory toxicology; definitions; concepts and basic toxicology of toxicants affecting various organ systems in the body; toxicokinetics, toxicodynamics, diagnosis and management of poisoning. Specific toxicoses including metallic poisoning, mycotoxins, fungicides, rodenticide, herbicide, acaricide, nitrates, etc. A visit to toxicology laboratory will be organized

ANHE 328: Bacterial and Fungal Diseases (60/30: CF.5.0) Y3S1

Diseases of farm animals caused by bacteria, and fungi. Important properties of the causal agents will be discussed. Emphasis will be on those diseases of importance in the tropics and especially in the East Africa region. The diseases will be discussed in terms of their aetiology, animal species affected, transmission, pathogenesis, clinical signs, diagnosis, treatment and control.

ANHE 329: Viral, Rickettsia and Parasitic Diseases (60/30: CF.5.0) Y3S1

Diseases of farm animals and emerging livestock caused by Viruses, rickettsiae, and Parasites. Important properties of the causal agents will be discussed. Emphasis will be on those diseases of importance in the tropics and especially in the East Africa region. Parasitic infections with emphasis on important vector borne protozoan diseases, helminthosis, and ectoparasitic infections. The diseases will be discussed in terms of their Pathogenesis, Transmission, and Clinical signs, Diagnosis, Treatment and Control.

ANHE 327: Epidemiology (30/15: CF.2.5) Y3S2

Basic epidemiology concepts; definitions and scope of epidemiology. Determinants of disease. Measures of disease occurrence. Disease transmission, maintenance of infection and disease patterns. Study designs, disease monitoring and surveillance; source of surveillance data; basic concepts in epidemiological investigations; clinical epidemiology.

ANHE 321: Wildlife and Fish Diseases (30/30: CF.3.0) Y3S2

Special diseases affecting camels and wildlife such as flamingos, ostriches, snakes, crocodiles, and fish in the tropics will be covered in terms of their causative agents, transmission, clinical signs, diagnosis, treatment and control. A visit to wildlife and fish conservation areas will be organized.

ANHE 337: Biostatistics and Research Methods (60/30: CF.5.0) Y4S2

Introduction and definition of basic concepts. Data presentation. Estimation of parameters and sample size determination, sample selection methods, simple random and cluster estimation of proportions. Testing of hypothesis for large and small sample sizes, difference in two means, difference in two proportions and difference in prevalence between several groups, linear correlation and regression. Applied time series analysis, economics of disease control. Computer application in analysis

ANHE 324: Clinical Pathology (30/30: CF.3.0) Y3S2

Introduction to clinical pathology, clinical pathology samples collection and handling, theory of function tests, renal function tests, examination of urine, hepatic functional tests: types, causes and diagnosis of jaundice. Laboratory evaluation of pancreatic, synovial and cerebral-spinal fluid and related disorders. Hemostasis: extrinsic, intrinsic, and common pathways, anticoagulants, erythrocyte and leukocyte haematocrit index. Blood staining techniques, anaemia and its classification, immune haematology, blood grouping, haematological indices. A visit to be organized to a veterinary investigation/diagnostic laboratory.

ANHE 371: Field Attachment (0/270: CF 4.0) Y3S2

Offered at the end of Y3S2. The student is posted to the field under the supervision of field officer in order to expose him/her to actual livestock production situations likely to be encountered upon graduation. University staff will visit the student to assess him/her towards the end of the attachment period.

ANHE 425: Metabolic and Nutritional Diseases/disorders. (45/30: CF.4.0) Y4S1

Causes, clinical signs, diagnosis and treatment of: bloat, milk fever, pregnancy toxemia, grain overload and ketosis; Grass tetany, water intoxication, mineral deficiencies, including – iron, copper, zinc, phosphorous, selenium, vitamin and cobalt and their excesses. Vitamins A, D, E, K, and B complex.

ANHE 432: Principles of Disease Control (45/0: CF.3.0) Y4S1

Principles of disease prevention, control and eradication. Principles of planning and execution of disease control and eradication programmes. Disease Control Planning Strategies, Planning, appraisal and evaluation of disease control and eradication programs. Aspects of the Law concerned with disease control acts, drugs and poisons act, Cattle cleansing acts, ethics and welfare. A visit to farms outside University will be organized.

ANHE 452: Zoonoses and One Health Concept (30/30: CF 3.0) Y4S1

Classification of aetiology, transmission, clinical signs, diagnosis, treatment and control of zoonotic diseases. One health concept.

ANHE 463: Animal Welfare, Ethics and Law (30/15: CF.2.5) Y4S1

Policy and law and animal welfare in veterinary practice, leadership and communication skills: Livestock development policy. Legislations in Animal Health and Production; Veterinary Ethics. Definition and assessment of animal welfare issues. The para veterinarian and animal welfare, protection Legislation. Description of legal, professional and ethical values guiding the veterinary profession, understanding, evaluating and

improving interpersonal relations with clients and colleagues. A visit to conservation sites will be organized

ANHE 438: Animal Biotechnology (45/15: CF.3.5) Y4S2

Use of genetic engineering in vaccine development and production such as thermostable. Vaccine, CCPP composite vaccine, Hybridoma technique, recombinant DNA use in disease diagnosis, Development of recombinant vaccines Nucleic Acid vaccines. Organized visits to areas of biotechnological interest will be covered during the course

ANHE 463: Proposal development (15/30: CF 2.0) Y4S1

Students should be guided in the development process and content, of a scientific proposal. Students should then develop a proposal and present an oral and written formats for evaluation either individually or in groups under supervision by a lecturer.

ANHE 464: Project implementation and reporting (15/30: CF 2.0)Y4S2

Students shall be guided to implement the proposed research project developed in semester 1and present an oral and written formats for evaluation either individually or in groups under supervision by a lecturer.

ANHE 439: Herd Health Management (0/60: CF.2.0) Y4S1

Clinical examination of farm animals, history taking, examination of the environment, sampling taking and diagnosis of diseases in the field and laboratory. Attachment of clinical cases inside and outside the University farms. Basic principles of veterinary surgery e.g. asepsis, instrumentation and suturing, tissue damage and healing, types of anaesthesia, shock and fluid therapy management.

ANHE 451: Public Health and Environment (60/30: CF 5.0) Y4S2

Introduction to veterinary public health and hygiene. Principles of food, milk, meat, water and fish hygiene.

Food borne infections and intoxication emerging diseases. Treatment and disposal of slaughter house wastes. Inspection, handling and transport of meat. Environmental hygiene. A visit to various slaughtering houses/slabs will be organised for all livestock species

ANHE 472: Field Training (0/60: CF 2.0) Y4S2

Students will visit areas of academic interests, whereby practical aspects of meat inspection, milk hygiene, water hygiene, environmental pollution and biotechnology will be emphasized. (Y4S2)

SERVICE COURSES (DEGREE) OFFERED TO OTHER DEPARTMENTS

ANHE 201: Introduction to Gross Anatomy (30/30: CF 3.0) Y2S1

Introduction to anatomy (definitions and terminologies), branches of anatomy, body regions, the skeleton, basic osteology, arthrology, myology, integument and anatomy of organ systems of farm animals with emphasis on the bovine and goat.

ANHE 218: Animal Physiology (30/30: C.F 3.0) Y2S2

Basic physiology of the organ systems in farm animals. Physiology of the foetus and neonate, lactation and egg-laying. Environmental physiology.

ANHE 311: Reproduction in Farm Animals (30/30: CF 3.0) Y3S1

Endocrinology and reproductive physiology of farm animals, including reproductive patterns in cattle, sheep and goats. Artificial insemination, Embryo transfer technology.

ANHE 426: Animal Diseases (45/30: CF 4.0) Y4S2

Signs of good health in farm animals. Causes, transmission, diagnosis and general disease control. Notifiable, zoonotic and other selected diseases of economic importance in East Africa, in terms of causative agents, transmission, clinical signs, diagnosis, treatment and control.

ANHE 427: Animal Health, Food-borne and Zoonotic Diseases (30/30: CF 3.0) Y4S1

Signs of good health in farm animals. Causes, transmission, diagnosis and general disease control. Food borne diseases. Zoonoses. The diseases will be described in terms of aetiology, epidemiology, clinical signs, and control. Food additives and residues.

Examination schedule

Year	Exam	Code	Examination Title	Written paper	Practical paper	Examination Session
1	ANHE	101	Gross Anatomy	1x3hrs	1x3hrs	End of sem
	CHEM	111	General Inorganic & Physical Chemistry	1x2hrs	1x2hrs	End of Sem
	ANHE	114	Principles of Genetics	1x2hrs	1x2hrs	End of Sem
	COMS	111	Communication Skills	1x2hrs	-----	End of sem
	ENSC	101	Environmental Science	1x2hrs	-----	End of sem
	STAT	133	Introductory Statistics	1x2hrs		End of sem
	PHIL	108	Ethics, Integrity and National Value	1x2hrs	-----	End of sem
	AGBM	102	Principles of Entrepreneurship	1x2hrs	-----	End of sem
	AGBM	131	Principles of Management	1x2hrs	-----	End of sem
	AGEC	111	Introduction to Agricultural Economics	1x2hrs	-----	End of sem
	ANHE	102	Embryology & Histology and Cell Biology	1x3hrs	1x3hrs	End of sem
	ANHE	111	Introd. to Animal Health Management	1x2hrs	1x2hrs	End of sem
	ANHE	112	Veterinary Physiology I	1x2hrs	1x2hrs	End of sem
	ANHE	113	Veterinary Physiology II	1x2hrs	1x2hrs	End of sem
	CHEM	130	Introduction to Organic Chemistry	1x2hrs	1x2hrs	End of sem
	PHIL:	108	Ethics, Integrity and National Value	1x2hrs	1x2hrs	End of sem
2	AGRO	271	Pastures and Fodder Crops	1x3hrs	1x3hrs	End of sem
	BIOC	244	Basic Veterinary Biochemistry	1x3hrs	1x3hrs	End of sem
	ANHE	217	Immunology	1x2hrs	1x2hrs	End of sem
	ANHE	213	General Pathology	1x3hrs	1x3hrs	End of Sem
	ANHE	214	Microbiology I	1x3hrs	1x3hrs	End of sem
	ANHE	215	Microbiology II	1x3hrs	1x3hrs	End of sem
	ANHE	216	Parasitology	1x3hrs	1x3hrs	End of sem
	ANHE	220	Animal reproduction	1x3hrs	1x3hrs	End of Sem
	ANHE	271	Animal Health Applied Skills	1x3hrs	1x3hrs	End of sem
	NARE	231	Ecology and Environmental Management	1x2hrs	-----	End of sem
	DLRM	213	Principles of Dry Land Management	1x2hrs	-----	End of sem
	NARE	211	Principles of Wildlife Management	1x2hrs	-----	End of sem
	ANSC	241	Quantitative Genetics & Animal Breeding	1x3hrs	1x3hrs	End of sem

	ANHE	218	Veterinary Physiology III	1x2hrs	1x2hrs	End of sem
	ANHE	201	Introduction to Gross Anatomy	1x2hrs	1x2hrs	End of sem
3	AGEC	331	Agricultural Marketing and Trade	1x2hrs	-----	End of sem
	ANSC	365	Aquaculture	1x2hrs	-----	End of sem
	AGEC	343	Principles of Farm Management	1x2hrs	-----	End of sem
	AGEN	373	Farm Structures	1x2hrs	1x2hrs	End of sem
	AGED	331	Rural Sociology & Development	1x2hrs	-----	End of sem
	AGED	334	Extension Education	1x2hrs	-----	End of sem
	ANHE	311	Reproduction in Farm Animals	1x2hrs	1x2hrs	End of sem
	ANHE	320	Pharmacology	1x2hrs	1x2hrs	End of sem
	ANHE	325	Toxicology	1x2hrs	1x2hrs	End of sem
	ANHE	327	Epidemiology	1x2hrs	1x2hrs	End of sem
	ANHE	328	Bacterial and fungal diseases	1x3hrs	1x3hrs	End of sem
	ANHE	322	Wildlife and Fish Diseases	1x2hrs	1x2hrs	End of sem
	ANHE	329	Viral, Rickettsial and Parasitic diseases	1x3hrs	1x3hrs	End of sem
	ANHE	324	Clinical Pathology	1x2hrs	1x3hrs	End of sem
	ANHE	337	Biostatistics and Research Methods	1x3hrs	1x3hrs	End of sem
	ANHE	371	FIELD ATTACHMENT (8 weeks during session III)	Field Assessment and Students' reports		End of sem
	ANSC	333	Animal Nutrition & Livestock feeding	1x3hrs	1x3hrs	End of sem
	ANSC	313	Routine Livestock Practices	Continuous. Assessment		End of sem
4	AGBM	406	Financial and Human Resource Management	1x2hrs	-----	End of sem
	ANHE	425	Metabolic & Nutritional Diseases	1x3hrs	1x3hrs	End of sem
	ANHE	432	Principles of Disease Control	1x2hrs	-----	End of Sem
	ANHE	463	Proposal Development	1x 2 hrs	1x 2 hrs	End of Sem
	ANHE	465	Animal Welfare, Ethics and Law	1x2hrs	1x2hrs	End of sem
	ANSC	450	Ruminant Production	1x3hrs	1x3hrs	End of sem
	ANHE	438	Animal Biotechnology	1x3hrs	1x3hrs	End of sem
	ANHE	426	Animal Diseases	1x3hrs	1x3 hrs	End of sem
	ANHE	427	Animal Health, Foodborne & Zoonotic Diseases	1x2hrs		End of sem

	ANHE	439	Herd Health Management	Continuous Assessment		End of Sem
	ANHE	451	Public Health & Environment	1x3hrs	1x3hrs	End of sem
	ANHE	464	Project Implementation and Reporting	1 x 2 hrs	1x 2 hrs	End of sem
	ANHE	452	Zoonoses and one Health Concept	1x2hrs	1x3hrs	End of sem
	ANHE	472	Field Training	Attendance and Reports		End of sem
	ANSC	460	Non-Ruminant Production	1x3hrs	1x3hrs	End of sem

9.3 Matrix aligning courses/units to Programme Learning Outcomes

		Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)									
	Courses	C.F	Courses	C.F	Courses	C.F	Courses	C.F	
PLO1.Acquired knowledge in all areas of animal health, production and welfare.	• Gross Anatomy • Intr.to computer application • Embryology&Histology • Veterinary Physiology I • Veterinary Physiology II • Environmental Education • Communication skills • Introductory StatisticsPrinciples of entrepreneurship • General inorganic&physical chemistry • Intr. To organic chemistry • Intr.to agricultural economics • Intr.to crop production • General botany • General genetics • Pastures and Fodder Crops Production	4.0 3.5 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.5 3.0 3.5 3.0 3.0 3.0 5.0	• VeterinaryBasic Biochemistry • Animal nutrition and livestock feeding • Quant. Genetics &animal breeding • Principles of Range Management • Principles of Wildlife Management • Ecology and Environmental Management	5.0 3.0 3.0 2.5 4.0 3.0			• Ruminant production • Non-Ruminant production • Animal welfare, Ethics and Law	4.0 4.0 2.5	
PLO2.Understood the role of Animal Health in the society's economy and well being.	• Intr.to animal health management	2.0	• Animal health applied skills • Principles of Management • Production Economics	4.0 3.0 3.0	• Routine Livestock Practices • Bacterial and fungal diseases • Agricultural Marketing and trade	4.0 5.0 3.0	• Herd Health management • Ambulatory clinics 1 • Ambulatory clinics 11	2.0 2.0 2.0	
PLO3.Acquired competencies to recognize, diagnose and undertake basic treatment of animals.			• Rural Sociology & Development • General pathology • Microbiology I • MicrobiologyII	3.0 5.0	• Parasitology • Reproduction & obstetrics • Pharmacology • Toxicology	5.0 4.0 5.0 2.0 2.0	• Students'projects • Statistical Epidemiology • Field Visits • Seminars &	3.0 3.0 2.0 2.0	

			Statistics for Agriculture	4.0	- Technical writing and Reporting - Principles of Agricultural Extension - Farm Structures - Farm Management - Application - Immunology - Veterinary epidemiology - Wild life and fish diseases - Viral, Rickettsial and Parasitic diseases - Clinical pathology - Field Attachment - Design & analysis of animal Experiments	3.0 3.0 3.5 2.5 3.0 5.0 3.0 4.0 3.0	Tutorials - Metabolic, Nutritional & Reproductive Diseases /Disorders - Principles of disease control - Heard health management - Herd health management - Advances in Biotechnology - Public health & Environment - Zoonoses and one Health Concept	5.0 3.0 2.0 2.0 3.5 2.0 2.0 5.0 2.5

BACHELOR OF VETERINARY MEDICINE AND SURGERY (BVMS)

1. Philosophy of the programme

The programme innovatively influences human development through acquisition of education and skills in veterinary medicine and surgery, dissemination of the knowledge to enhance animal health, welfare and production, contributing to improved global economy.

2. Rationale

Bachelor of Veterinary Medicine and Surgery (BVMS) is a professional degree programme designed to train veterinarians with adequate theoretical, practical, technological knowledge and skills in the treatment and control of animal diseases. Early part of the BVM programme covers pre-clinical courses (Anatomy, Physiology, Biochemistry and Molecular Biology, Microbiology, Parasitology, Immunology and Animal Production sciences). The later part comprises clinical courses (Medicine, Theriogenology, Therapeutics, Surgery and Public Health). Since its inception in 1939, Egerton University has continuously trained competent diploma graduates in Animal Husbandry and Health and more recently graduates with a Bachelor of Science in Animal Health Management, from East and Central African region. The BVMS programme is a response to the increasing demand of veterinarians to address animal health issues in the horn of Africa.

Kenya's economy largely depends on agriculture. The rapid annual population growth of 3.4% (2009 population census), requires a 4.0% growth in food production. The country's average Gross Domestic Product from Agriculture is 42% while the contribution from the livestock sector to the total Gross Domestic Product is only 10% (Republic of Kenya, 2002). This puts a high demand on livestock production, which has resulted to major changes in animal production systems, tending towards intensification. These changes pose new challenges in animal disease management requiring a deeper understanding in veterinary medicine. During the last three decades the effectiveness of animal health services delivery has seriously declined in developing

countries, especially in Africa. This could be attributed to high cost of inputs and veterinary services, emerging livestock diseases due to climate change and shortage of veterinarians to mitigate food security. The general trend in services delivery in Kenya is towards privatization of veterinary practice. There is therefore a need to train more veterinarians equipped to meet challenges in the detection and control of endemic and emerging animal diseases. Kenya's 2030 vision is anchored on three key pillars: economic, social and political governance. The strategy of the University is to make direct contributions to the social pillar, specifically the education sector vision, which is to have globally competitive quality education, training and research for sustainable livestock through this Veterinary Medicine and Surgery programme. Egerton University has qualified academic staff and ample teaching facilities, including a demonstration and commercial farm, modern abattoir, diagnostic and research laboratories, as well as a community based ambulatory clinical service ideally suitable for Veterinary Medicine and Surgery training in the region.

3. Goal of the Programme

The broad aim of the BVMS programme is to produce qualified and practically competent Veterinarians who will contribute to the development of the animal industry in order to provide more animal products to the general population and significantly contribute to the national gross domestic product.

4. Programme Learning Outcomes

At the end of the programme the graduate is expected to be able to:

PLO 1: Apply the knowledge, skills and attitude in all areas of animal health, production and welfare to serve society

PLO 2: Evaluate, diagnose, treat and prevent animal diseases and diseases of public health importance.

PLO 3: Understood the role of animal health to contribute to economic development and improvement of the industry through production and breeding of animals.

5. Mode of Delivery

This is a full time face-to-face programme

6. Academic Regulations for the Programme

6.1 Admission Requirements

Candidates admitted to the programme must satisfy the minimum entry requirements as stipulated in the common university entrance regulations in the Egerton University statutes 36 (2) of 2013.

The candidates must satisfy the following requirements:

- i. Have at least C+ grade in the following subjects drawn from the K.C.S.E (Kenya Certificate of Secondary Examination) or its equivalent: Biology or Biological science, Chemistry, Mathematics/Physics or Physical Sciences or Agriculture and English.
- ii. Be holders of A-level or its equivalent with two principals and one subsidiary pass, one of which must be in biology and subsidiary in chemistry.
- iii. Be holders of Diploma with a minimum of C in KCSE and have passed with a minimum of credit in Animal Health, Animal Husbandry, Agriculture/Medical Laboratory Technology, Wildlife Management, Range Management and related disciplines from recognized institutions subject to Senate approval.
- iv. Be holders of a degree in Biological Science from institutions recognized by Kenya Veterinary Board
- v. Any other qualification equivalent to any of the above, subject to approval by the Kenya Veterinary Board.

6.2 Regulation on Credit Transfer

Credit transfer shall be as stipulated in the Egerton University Statutes 36 of 2013.

6.3 Course Requirements

The Egerton University Statutes 36 of 2013 shall apply. In addition, ISO procedure for teaching (EU/AA/OP/06) shall be followed in teaching of all courses in the programme

6.4 Student Assessment Policy/ Criteria

All examinations for the BVMS programme shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examination for this programme shall be conducted in accordance with Egerton University statute 36(6) of 2013.

The marks obtained in each course shall be translated into letter grades as follows:

75-100%	A (Distinction)
65-74%	B (Credit)
50-64%	C (Pass)
49% and below	F (Fail)

6.6 Examination Regulations

All examinations in the programme shall be conducted in accordance with examination regulations as stipulated in Egerton University Statute 36(5) of 2013. In addition, there shall be university examinations held at the end of year/ semester and conducted in all of the following modes depending on the year of study and examination schedule.

- Written examination
- Practical/ Clinical examination and
- Oral examination

The end of year/semester examinations shall include a Final Examination (Theory, practicals and orals) comprising 60% and a continuous assessment test of 40%.

6.7 Moderation of Examinations

All examinations for this programme are externally moderated as per ISO procedure EU/AA/OP/07.

6.7 Graduation Requirement

All courses in the programme are compulsory and completion of all prescribed courses is mandatory before graduation. The minimum total credit factors for the programme is 258.5 CFs. To graduate, a student shall be required to take and pass ALL scheduled courses within the stipulated period.

6.9 Classification of the Degree

The Bachelor of Veterinary Medicine and Surgery degree is not classified.

7. Course Evaluation

All courses in this programme shall be evaluated using a tool that captures all aspects including course content,

instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessment. ISO procedure EU/VC/OP/04 shall apply.

8. Management and Administration of the Programme

8.1 Host Department and Programme Academic Leader

The Bachelor of Veterinary Medicine and Surgery Programme is hosted in the Faculty of Veterinary Medicine and Surgery and serviced by several departments in the Faculty, namely: Veterinary Anatomy and Physiology; Pathology, Microbiology and parasitology; Public Health, Pharmacology and Toxicology and Clinical Studies. The programme leader shall be appointed as per University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will be evaluated after a five-year academic cycle as per the ISO procedure EU/VC/OP/05.

8.3 Course Coding

The Bachelor of Veterinary Medicine and Surgery courses are coded as follows:

- All courses shall be abbreviated VMED (Veterinary Medicine) followed by a three digits.
- The first digit refers to the year of study
- The second digit indicates the field of the subject matter as follows:
 - 0 Foundation courses subject areas e.g. Anatomy
 - 1 Basic subject areas e.g. Physiology, Biochemistry,
 - 2 Pathology, Immunology, Microbiology, Parasitology
 - 3 Pharmacology, Toxicology
 - 4 Medicine, Theriogenology
 - 5 Diseases, Epidemiology, Biostatistics
 - 6 Public Health, Preventive Veterinary Medicine, Animal Industry, Field Attachment
 - 7 Surgery oriented disciplines
- Other Clinical Sciences e.g. Veterinary Jurisprudence, Herd health, clinical rotations, case presentation.

- The third digit indicates the serial number of courses in the field of the subject matter in the year.

9. Courses/ Units offered for the programme

9.1 Schedule of Courses

a. Common Core Courses

CODE	TITLE	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
PHIL 108	Ethics, Integrity and National Value	45	0	3.0
ENSC 101	Environmental Education	30	30	3.0

b. Schedule of Courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
BIOC 145	Biomolecules	45	30	4.0
PHIL 108	Ethics, Integrity and National Value	45	0	3.0
VMED 103	Gross Anatomy I	75	45	6.5
VMED 107	Cell Biology and Histology	75	45	6.5
VMED 112	Veterinary Physiology I	45	30	4.0
VMED 113	Veterinary Physiology II	45	30	4.0
	TOTALS	330	180	28.0

YEAR 1 SEMESTER 2

BIOC 146	Metabolism of Biomolecules	60	30	5.0
BIOC 147	Molecular Biology	30	30	3.0
COMS 111	Communication Skills	45	0	3.0
VMED 104	Gross Anatomy II	60	45	5.5
VMED	Gross Anatomy III	45	30	4.0

105				
VMED 106	Embryology	45	30	4.0
VMED 114	Veterinary Physiology III	60	30	5.0
	TOTALS	345	195	29.5

YEAR 1 SEMESTER 2

VMED 161	Farm Practice	0	270	4.0

YEAR 2 SEMESTER 1

ENSC 101	Environmental Education	30	30	3.0
NARE 211	Principles of Wildlife Management	45	0	3.0
VMED 224	Bacteriology and Mycology	60	30	5.0
VMED 225	Entomology	45	30	4.0
VMED 262	Laboratory Animal Medicine	30	30	3.0
	TOTALS	270	150	23.0

YEAR 2 SEMESTER 2

ANSC 241	Quantitative Genetics & Animal Breeding	45	30	4.0
VMED 227	Virology	30	15	2.5
VMED 228	Immunology	30	30	3.0
VMED 229	Protozoology	45	30	4.0
VMED 230	Helminthology	45	30	4.0
VMED 231	General Pathology	60	30	5.0
	TOTALS	270	165	23.5

VMED 263	Laboratory Attachment	0	270	4.0

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F.
AGED 332	Principals of Agricultural Education	30	0	2.0
VMED 322	Systemic Pathology I	45	30	4.0
VMED 332	Veterinary Pharmacology	45	45	4.5
VMED 341	Theriogenology 1	30	15	2.5
ANSC 333	Nutrition and livestock feeding	45	30	4.0
VMED 342	Medicine 1	60	30	5.0
ANSC 365	Aquaculture	30	30	3.0
VMED 352	Biostatistics and Research Methodology	30	30	3.0
VMED 371	Surgery I	30	30	3.0
ANSC 443	Animal Breeding Plans	15	30	2.0
	TOTALS	255	180	25.0

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	C.F.
VMED 323	Systemic Pathology II	30	30	3.0
VMED 333	Veterinary Pharmacy and Pharmaceutics	30	15	2.5
VMED 334	Veterinary Toxicology	45	15	3.5
VMED 343	Theriogenology 1I	30	15	2.5
VMED 344	Medicine II	60	30	5.0
VMED 353	Epidemiology and Preventive Medicine	30	30	3.0
VMED 361	Public Health 1	30	30	3.0
VMED 372	Surgery II	30	30	3.0
	TOTALS	285	195	25.5

VMED 364	Field Attachment	0	270	4.0

YEAR 4 SEMESTER 1

CODE	TITLE	L	P	C.F.
ANSC 451	Livestock Production System-Ruminant	60	30	5.0
VMED 421	Clinical Pathology	30	30	3.0
VMED 422	Special Pathology I	45	30	4.0
VMED 443	Medicine III	45	30	4.0
VMED 444	Theriogenology III	30	30	3.0
VMED 452	Veterinary Economics and Business Management	60	30	5.0
VMED 461	Public Health II	30	45	3.5
VMED 472	Surgery III	30	30	3.0
VMED 473	Surgery IV	45	30	4.0
	Totals	320	255	29.5

YEAR 4 SEMESTER 2

CODE	TITLE	L	P	C.F.
ANSC 461	Livestock Production System-Non Ruminant	60	30	5.0
VMED 423	Special Pathology II	30	30	3.0
VMED 445	Medicine IV	45	30	4.0
VMED 446	Theriogenology IV	30	30	3.0
VMED 461	Public Health II	30	30	3.0
VMED 462	Public Health III	0	120	4.0
VMED 474	Surgery V	45	30	4.0

VMED 481	Animal Welfare, Ethics & Law	30	15	2.5
	TOTALS	255	325	27.5

VMED 464	Clinical Attachment	0	270	4.0

YEAR 5 SEMESTER 1

VMED 522	Diagnostic Pathology	0	90	3.0
VMED 545	Therigenology Clinics	0	90	3.0
VMED 546	Medicine Clinics	0	90	3.0
VMED 573	Surgery Clinics	0	90	3.0
VMED 581	Clinical Case Presentations	0	60	2.0
VMED 582	Clinical Lab. Methods	0	90	3.0
VMED 586	Research Projects	0	90	3.0
Totals		0	600	20.0

YEAR 5 SEMESTER 2

Course Code	Title	L	P	C.F
VMED 522	Diagnostic Pathology	0	90	3.0
VMED 545	Therigenology Clinics	0	90	3.0
VMED 546	Medicine Clinics	0	90	3.0
VMED 573	Surgery Clinics	0	90	3.0
VMED 581	Clinical Case Presentations	0	60	2.0
VMED 582	Clinical Lab. Methods	0	90	3.0
VMED 586	Research Projects	0	90	3.0
Totals		0	600	20.0

c). Course Descriptions

VMED 103: Gross Anatomy I (75/45:C.F. 6.5) Y1S1

Basic concepts and techniques in gross anatomy

Locomotor apparatus of domestic animals:

Osteology: classification of bones, Comparative osteology of the ox, camelidae, crocodiles, snakes, sheep, goat, horse, pig, cat and dog, birds and fish. Pelvic diameters of domestic mammals.

Arthrology: Definitions, Components of synovial joints, classification of joints, joints of vertebral column and trunk, joints of fore/hind limbs.

Myology: Comparative myology of the ox, sheep, goat, horse, pig and the dog.

Field visits to areas of interest such as the museums and others for preservation of specimens

VMED 107: Cell Biology and Histology (75/45: C.F. 6.5) Y1S1

Cell Biology: Eukaryotic cell structure and ultra-structure: cellular compartments, plasma membrane and cell surfaces, organelles, cytoskeleton (microfilaments, microtubules, and intermediate filaments), junctional complexes, cell movement. Cell cycle and kinetics of cell division in development, abnormal cell divisions.

Histology: concepts and definitions. Microscopes and microscopy. Preparation of histological samples, Tissue fixation and processing, microanatomy and staining. Basic body tissues (Epithelial and glandular tissue, connective and supporting tissues, muscle tissue, nerve tissue). Histology of the digestive, cardiovascular, respiratory, Reproductive, urinary, endocrine, and nervous systems. Histology of the skin, special sense organs, lymphoid organs & haemopoietic system histochemistry and cytological techniques.

VMED 104: Gross Anatomy II (60/45: C.F. 5.5) Y1S2

Veterinary Splanchnology: Digestive, respiratory, circulatory, lymphatic, endocrine and urogenital systems of domestic animals including cattle, sheep, goat, horse, pig cat, dog, poultry and fish. Central and peripheral nervous systems. Special sense organs and common integument of the domestic mammals camel, cattle, sheep, goat, horse, donkey, pig, dog, cat

Field visits to areas of interest such as the museums and others for preservation of specimens

VMED 105: Gross Anatomy III (60/30: C.F.4.5) Y1S2

Veterinary Neuroanatomy and Integument: anatomy of the central and peripheral nervous system of domestic animals including mammals, birds and fish. Anatomy of fish, bee, crocodile, snake. Avian skeleton and arthrology. Types of joints. Structure of the synovial joint. Comparative arthrology of domestic animals. Joints of the various regions of the body.

Myology: digestive, respiratory, circulatory, lymphatic, endocrine and urogenital systems of birds and fish. Central and peripheral nervous systems. Special sense organs

Field visits to areas of interest such as the museums and others for preservation of specimens

VMED 106: Embryology (45/30: C.F. 4.0) Y1S2

Embryology: Introduction to embryology. Methods of studying embryology. Phylogeny and ontogeny. Gametogenesis, fertilization, early embryonic development (cleavage, blastulation, gastrulation) in domestic mammals and birds. Developmental dynamics including stem cells. Implantation, foetal membranes and placentation. Introduction to teratology. Organogenesis of the Nervous, digestive musculoskeletal, lymphatic, cardiovascular, respiratory, endocrine, urinary and reproductive systems and organs of special senses. Teratology and congenital malformations.

VMED 112: Veterinary Physiology I (45/30: C.F. 4.0) Y1S1

Introduction. Homeostasis as a central theme in Physiology. Control systems. Cell physiology and biophysics; membrane structure, properties and function; physical and chemical forces governing movement of materials across body compartments; biophysics of membranes

Neurophysiology. Nervous tissue, nervous transmission, neuromuscular and synaptic transmission, **Sensory physiology,** Sensory tracts and Sensory cortex, Descending fibres and motor cortex, reflexes. Sensory organs: Ear and control of movement, the Eye. Special senses in insects (bee). Central Nervous System and Autonomic Nervous System, Pain Physiology in Animals.

Muscle physiology; Muscle types (Skeletal, cardiac, smooth), classification, structure, muscle proteins, sarco-tubular system, muscle fibre types, excitation-contraction coupling, contraction-relaxation cycle, muscle disorders

VMED 113: Veterinary Physiology II (45/30: C.F. 4.0) Y1S1

Bodyfluids. Compartments, composition and measurements, regulation of Volume and Osmolarity. **Blood,** characteristics, formation and constituents, blood clotting and grouping. Erythrocytes, Erythropoiesis, Iron metabolism. **Cardiac function,** Heart, electrical activity, autonomic control, sterling's law, Circulation through special regions (coronary, skin, cerebral, spleen).Control of peripheral circulation, haemorrhage, lymphatic circulation,

Respiratory physiology. Mechanisms of breathing, Compliance, alveolar surfactant, pulmonary resistance, Pulmonary ventilation, ventilation-perfusion ratios, distribution of ventilation, control of respiration. Physics of gases, gas diffusion and blood transport. **Endocrinology.**Hypothalamus, Hypophysis, adrenal gland, thyroid, parathyroid gland and calcium metabolism, pancrease

VMED 114: Veterinary Physiology III (60/30: C.F. 5.0) Y1S2

Renal Physiology. Kidney functions, Glomerular filtration, Tubular function and reabsorption, water electrolyte regulation, mechanisms and regulation of tubular handling of solutes, methods for assessment of kidney function. Methods of assessing renal function, blood and urine analysis, micturition. Acid-base balance

Environmental Physiology: Thermal physiology, Thermoregulation, Fever and other hyperthermia, hypothermia, thermal stress, high altitude, adaptation. Comparative thermoregulation. Physiology of exercise. **Energy metabolism,** trace mineral metabolism, tropical mineral deficiencies.

Gastro-Intestinal: Digestion: Simple-stomached animals, prehension, mastication. Enzymatic and microbial digestion, absorption of nutrients, water and electrolytes. Neuro-endocrine control of digestion. Ruminant stomach: motility, microbial and carbohydrate fermentation, volatile fatty acids and rumen pH

regulation, protein digestion and ureolytic activity of microbes, fat digestion, absorption. Disorders of rumen fermentation. Comparative digestive physiology, in simple stomached, non ruminant herbivores, ruminant herbivores, poultry and fish.

Reproductive physiology: Male reproductive Physiology. Testis, spermatogenesis, steroidogenesis, testicular thermoregulation, regulation of testicular function, ductal and accessory glands. **Female reproductive Physiology.** Ovary, Oogenesis, ovarian cycles, fertilization, implantation, pregnancy, parturition, lactation. Physiology of the foetus and the neonate.

Avian Physiology. CNS, Special senses, GIT, Renal function, Respiratory, Metabolism, cardiovascular, acid-base regulation, reproduction

Field visits to relevant institutions for biotechnology, sample analysis and molecular biology techniques.

VMED 161: Farm Practice (0/270: C.F. 4.0)

Guided attachment for introduction to practical livestock production in a farm set up as follows: - Normal Farm operations, Different species and breeds of farm animals, Animal handling. Farm animal management practices. Pasture and fodder production and conservation. Farm records. Field visits to dog pounds, donkey sanctuaries, camel and wildlife farms.

VMED 224: Bacteriology and Mycology (60/30: C.F. 5.0) Y2S1

Bacteriology: Characteristics of pathogenic bacteria, rickettsia, chlamydia, cell structure and function, classification, culturing, reproduction and genetics. Techniques on isolation and identification of bacteria, rickettsia and Chlamydia including different staining methods.

Mycology: Study of fungi with emphasis on their classification structure, culturing, reproduction and genetics. Techniques on isolation, staining and identification. Pathogenic fungi and mycotoxins of veterinary importance and their diagnosis.

VMED 227: Virology (45/15: C.F. 3.5) Y2S2

Introduction to pathogenic viruses; virus structure and sub-cellular organelles. Classification and nomenclature. Interaction of viruses with cells, and target

macromolecules. Virus replication process; attachment; viropexis, transport, uncoating, transcription and synthesis of viral genome, assembly, packaging and release. Subviral agents, i.e. viroid and prion. Propagation of viruses and serological tests for virus identification and isolation, cell culture, experimental animal inoculation, embryonated egg inoculation, and nucleic acid detection. Important viral diseases.

VMED 228: Immunology (30/30: C.F. 3.0) Y2S2

Overview and Historical perspective of immunology. Definitions and types of immunity. Antigens, antibodies and their interactions; primary and secondary immune responses. Humoral and cell-mediated immunity, auto-immunity. Tolerance and graft rejection; major histocompatibility complex, complement system, immune evasion. Hypersensitivity and immunodeficiency. Vaccines and vaccination principles. Application of immunology in research, diagnosis and disease control.).

VMED 225: Entomology (45/30: C.F. 4.0) Y2S1

Arthropod parasite infections of veterinary importance in food and work animals (including camelids, ostriches, bees and wild animals). Emphasis is on classification and taxonomy, life history, transmission, morphological features, identification, pathogenesis and pathology, clinical signs, diagnosis, treatment and control.

VMED 262: Laboratory Animal Medicine(30/30: C.F.3.0) Y2S1

Role of experimental animals in biomedical research. Types of laboratory animal production systems: Housing and environmental requirements. Reproduction and sexing. Nutrition and feeding, facility inspections, animal use protocol review, preventive medicine, monitoring disease status, and diagnosis and treatment of spontaneous diseases in laboratory animals. Ethical and registration issues.

VMED 229: Protozoology (45/30: C.F. 4.0) Y2S2

Study of the protozoan parasites of various food and work animals (including camelids, ostriches, bees and wild animals). Emphasis is on classification and taxonomy, life history, transmission, morphological

features, identification, pathogenesis and pathology, clinical signs, diagnosis, treatment and control.

VMED 231: General Pathology(60/30: C.F.5.0) Y₂S₂

Introduction to pathology, historical perspectives, classifications. The cell; its processes and functions, degenerations, necrosis, circulatory disturbances, practical diagnostic procedures in gross and microscopic lesions, autolysis. Inflammation and types of repair, healing and injury. Infections, pathogenicity and virulence of microorganisms, abnormal disorders, neoplastic growths and tumours.

VMED 230: Helminthology (45/30: C.F.4.0) Y₂S₂

Helminth parasite infections of veterinary importance in domestic animals (including camelids, ostriches, bees, wild animals and emerging livestock. Morphological features and identification of helminths, epidemiology, life cycle, pathogenesis and pathology, diagnosis, treatment and control of helminths infections. Immunity in parasitic infections. Zoonotic parasitoses.

VMED 263: Laboratory Attachment at the End of Year Y2 (0/270: C.F.4.0) Y₂S₂

Laboratory attachment under supervision of registered veterinary officer for eight weeks in veterinary Investigation/Diagnostic laboratory.

VMED 322: Systemic Pathology I(45/30: C.F.4.0) Y₃S₁

Description of lesions of haematopoietic, cutaneous, cardiovascular, respiratory, urinary and digestive systems resulting from infections, parasitic infestations, malnutrition, neoplasia, trauma and toxic substances in animals

VMED 323 Systemic Pathology II(30/30: C.F.3.0) Y₃S₂

Description of lesions of the reproductive, endocrine, musculoskeletal, nervous and sensory systems, resulting from infections, parasitic infestations, malnutrition, neoplasia, trauma and toxic substances in animals.

VMED 332: Pharmacology (45/45: C.F: 4.5) Y₃S₁

Introduction to pharmacology, drug dosage and administration. Mechanisms of drug action. Drug development, safety and effectiveness. Absorption, distribution, biotransformation and excretion of drugs (pharmacokinetics). Tissue hormones, histamine and antihistamines. Non-steroid anti-inflammatory drugs. Adrenergic drugs, cholinergic drugs and cholinergic blockers. Muscle relaxants. Drugs acting on cardiovascular, CNS stimulants, sedatives, hypnotics and anticonvulsants. Analgesics, diuretics drugs acting on skin and mucous membranes. Drugs acting on respiratory and urinary systems. Anticoagulants, coagulants and haematinics. Pharmacology of metabolic diseases. Drugs acting on gastrointestinal tract including purgatives and laxatives. Hormones of adrenal and anterior pituitary gland, hormones affecting reproduction including oestrogenic and abortifacients, anabolic steroids. Therapeutics Antimicrobial agents; antiseptics and disinfectants, coccidiostats, sulphonamides, chloramphenicol, tetracyclines, aminoglycosides, macrolides, penicillins, cephalosporins, quinolone and fluoroquinolone, polypeptides. Trypanocidal and babesicidal drugs. Drugs for treatment and prophylaxis of theileriosis, ehrlichiosis. Anthelmintics. Acaricides and insecticides. Antiviral, anticancer and antifungal drugs. Drug resistance mechanisms. Ethno-veterinary and phytomedicine. Field trips to be organized to pharmaceutical enterprises and a botanical garden

VMED 333: Veterinary Pharmacy and Pharmaceutics (30/15: C.F: 2.5) Y₃S₂

Prescription writing and legal aspects of drug handling. Principles of drug dependency drug compounding and prescription, common drug abbreviation apothecary, therapeutic strategies: choice of drugs, monitoring of therapeutic responses, organisation of pharmacy inventory in a veterinary hospitals, formulation of veterinary drugs. Field trips to be organized to pharmaceutical enterprises and a veterinary hospital.

VMED 334: Veterinary Toxicology(45/15: 3.5) Y₃S₂

Introduction to toxicology. Branches of toxicology. Absorption, distribution, biotransformation and excretion of toxicants. Calculations in toxicology. Management

and treatment of toxicoses. Specific toxicoses from pesticides, acaricides, insecticides, herbicides, fungicides, mycotoxins, fungi, algae, rodenticides, antimicrobials, heavy metals and metalloids. Toxicity of trace elements. Urea and ammonium salts. Nitrates and Chlorates. Water deprivation/sodium chloride poisoning. Radiation toxicology; Poisonous plants and venomous animals. Environmental toxicology and pollution. Ecosystem health..A visit to be organized to a toxicology laboratory and a quality assurance laboratory or a toxicology research laboratory

VMED 341: Theriogenology I (30/15 C.F.2.5) Y₃S₁

Gynaecology: Introduction to theriogenology. Review of the anatomy and physiology of the female genitalia and reproductive endocrinology. Oogenesis. Functions and clinical examinations of female reproductive organs of large animals. Puberty. Reproductive cycle and patterns in domestic animals. Oestrus synchronization. Ovulation. Disturbances of ovulation. Gamete transport and fertilization. Gestation and development of the conceptus. Foetal membranes in domestic animals. Anomalies of foetal development including genetic acquired causes. Physiology of pregnancy, Pregnancy diagnosis, parturition and lactation. Reproduction in emerging livestock.

VMED 343: Theriogenology II (30/15 C.F.2.5) Y₃S₂

Andrology: Review of anatomy and embryology of male genitalia. Functions of testes and accessory sexual organs. Spermatogenesis. Functions and clinical examinations of male reproductive organs of large animals. Mating and sexual behaviour. Collection, analysis, dilution, preservation, storage, transportation of semen and insemination techniques. Reproductive disorders affecting insemination. Field trip to KAGRC-NAIROBI. Serving behaviour. Serving ability and semen disorders.

Reproductive disorders/diseases: Abnormalities of the oestrus cycle in cattle, horses, buffaloes, sheep, goats, rabbits, camels, donkeys, pigs and poultry. Abnormalities of fertilization and gestation period. Prolapse. Retention of afterbirth in domestic animals. Fertility: Infertility: Aetiology, clinical signs, diagnosis and management of infertility in male and female

VMED 342: Medicine I(60/30: C.F. 5.0) Y₃S₁

General clinical medicine: Responses of different body systems of domestic animals and emerging livestock to diseases and conditions. Practical approaches to physical examination of body systems, collection and processing of clinical samples from different body systems.

VMED 344: Medicine II (60/30) Y3S2

Food Animal medicine: Definition, distribution, aetiology, pathogenesis, clinical signs, diagnosis, treatment, control and management of diseases and conditions (including zoonotic diseases) affecting cattle, buffaloes, sheep, goats, rabbits, camels, donkeys, pigs and poultry.

Companion Animal Medicine: Definition, distribution, aetiology, pathogenesis, clinical signs, diagnosis, differential diagnosis, treatment, control and management of diseases and conditions (including zoonotic diseases) affecting, horses, dogs, cats, and other pets.

VMED 352: Biostatistics and Research Methodology(30/30: C.F.3.0)Y₃S₁

Introduction to basic medical statistics. Concepts of statistical population and samples. Introduction to research methodology; study design. Descriptive statistics. Probability concepts. Theory of estimation. Introduction to computer use.

Statistical analysis: analysis of variance. Regression and correlational analysis, interpretation of results and validity of conclusions. Test of hypotheses. Project report writing; research proposal writing, principles of presentation, communication; oral, posters, abstract and manuscript preparation.

VMED 353: Epidemiology and Preventive Medicine(30/30: C.F. 3.0) Y₃S₂

Definition and scope of epidemiology. Causes, determinants, measures of occurrence, transmission and maintenance of disease. Disease patterns, study designs. Monitoring and surveillance of disease, Sources of surveillance data, screening tests. Epidemiological investigations, clinical epidemiology. Principles of prevention, control and eradication of diseases. Principles of planning and executing disease control and

eradication programmes. Disease control strategies. Herd and flock health management programme

VMED 371: Surgery I(30/30:C.F.3.0) Y3S1

Introduction to principles and techniques of general surgery. Surgical facilities, equipment, instrumentation, sutures, biomaterials and implants. Principles and techniques of surgical asepsis, theatre, suturing and related surgical operations. Surgical drains and drainage techniques. Definition, aetiology, classification, principles and techniques of wounding, wound healing and management. Complications in wound healing. Reconstructive surgery. Cryosurgery and electro surgery. Circulatory shock. Principles of body fluid compartments and distribution, fluid therapy and veterinary blood transfusion. Practical in general veterinary surgery.

VMED 372: Surgery II (30/30: C.F.3.0) Y₃S₂

Introduction to the principles and techniques of veterinary anaesthesiology. Review and practical aspects on preoperative patient preparation, and evaluation. Administration of drugs for premedication and induction of general anaesthesia. Instrumentation for veterinary anaesthetic machines and accessories. Pre-peri-and post-anaesthetic patient monitoring and management. Identification, prevention and management of pre-peri-and-post-anaesthesia complications. Principles and techniques of local and general anaesthesia in selected domestic animals. Analgesia. Indications, principles and techniques for euthanasia in veterinary practice. Practical in local and general anaesthesia in large animals and small animals.

VMED 361: Public Health 1 (30/30: C.F.3.0) Y₃S₂

Introduction to public health and hygiene. Food microbiology and principles of food preservation. Causes and signs of food spoilage. Spoilage of various foods. Principles of milk, meat, eggs, honey and water hygiene. Food safety and standards. Consumer protection and food safety.

VMED 364: Field Attachment at the End of Year Y₃(0/270: C.F.4.0) end of Y₃S₂

Field attachment under supervision of registered veterinary officer for eight weeks in private veterinary

practices, government parastatal, farms and slaughter houses to expose students to practical animal disease situations and conditions.

VMED 421: Clinical Pathology (30/30: C.F. 3.0) Y₄S₁

Introduction to clinical pathology, theory of function tests, renal function tests, examination of urine. Anaemia and its classification. Hepatic functional tests: types, causes and diagnosis of jaundice. Thyroid function. GIT function tests. Laboratory evaluation of pancreatic, synovial and cerebro-spinal fluid disorders. Tissue serum enzymes and their levels during clinical abnormalities. Blood biochemistry; cholesterol, low and high density lipoproteins. Components of blood, anticoagulants, erythrocyte and leukocyte haematocrit index. Blood staining techniques, haemoparasitic identification and evaluation, RBC inclusion bodies, haemopoiesis, haemostasis, coagulation, and fibrinolysis, immune hematology, blood grouping, haematological indices. A visit to be organized to a veterinary investigation/diagnostic laboratory

VMED 422: Special Pathology I(45/30: C.F.4.0) Y₄S₁

Pathogenesis, gross and microscopic pathology of Bacterial infections, mycoplasma, chlamydial and rickettsia infections. Pathology of viral infections and mycotic infections in domestic animals, emerging livestock and companion animals.

VMED 443: Medicine III(60/30: C.F. 5.0) Y4S1

Avian diseases: Aetiology, pathogenesis, clinical signs, diagnosis, treatment and control (including nutritional disorders) of diseases affecting poultry and pet birds.

Wildlife diseases: Diseases affecting fish and wildlife (including, snakes, crocodiles, flamingos and ostriches) in terms of their aetiology, transmission, clinical signs, diagnosis, treatment and control. Diagnosis, treatment and control approaches for zoo and marine animal diseases. Disease interactions between wildlife and domestic animals. Field trips to relevant farms/zoos/marine parks will be organized

VMED 445: Medicine IV(15/60: C.F. 3.0) Y4S2

Integrated herd and clinical medicine: Differential diagnosis of major clinical syndromes in animals, clinical

therapeutics principles of population medicine, herd health programmes in farm animals. Field trips to relevant farms/zoos/marine parks will be organized

VMED 444: Theriogenology III (30/30: C.F. 3.0) Y₄S₁

Reproductive management large animals: Pre-calving and nutrition management, Calf and Heifer Management, Examination for breeding soundness, Artificial insemination and assisted reproductive technologies in domestic animals. Economics of reproductive herd health in domestic livestock. Breeding management of horses and donkeys. Record keeping, disease surveillance and control. Herd fertility management: Evaluation of fertility, economic aspects,

Small animal reproduction: Fertilization and maintenance of pregnancy in companion animals. Pseudo-pregnancy, parturition. Different methods of pregnancy detection. Infertility investigation. Vaginal smears interpretation. Management of neonatal period. Contraception. Andrology and Artificial insemination. Fertility assessment of the male and female dogs and cats).

VMED 446: Theriogenology IV (30/30: C.F. 3.0) Y₄S₂

Obstetrics: Review anatomy of pelvis and pelvic ligaments. Diseases and accidents during gestation. Approach to an obstetrical case. Pregnancy diagnosis in all species. Types of dystocia .Management of dystocia in all domestic animals. Post-operative complications; Care of the new-born.Abnormal conditions of the placenta, uterus and vagina; Metrichchecking. Udder Health: Review of anatomy and development of the udder. Lactation and diseases of udder and teats. Mastitis; definition, types, clinical signs, treatment and control in domestic animals. Dairy farm analysis, Strategies of boosting milk production in tropics.

VMED 452: Veterinary Economics and Business Management(60/30: C.F 5.0) Y4S1

Definition and objectives of Science of Business Management. Elements of good management (financial, marketing and human resources) Functions of management. Cooperatives and corporations in livestock business. Role of livestock sector in the economy in Kenya; Economic Principles of production and their

application in Dairy, Beef, Piggery and Poultry. Principles and procedures of combination of enterprises. Profitability analysis of livestock precuts. Constraints in the development of livestock, dairy Beef, Piggery and poultry enterprises.

VMED 461: Public Health II (S1: 30/45: C.F.3.5, S2:30/30:C.F. 3.0) Y₄S_{1&2}

Food-borne diseases: Food infections: Aetiology, clinical signs and control of food borne diseases caused by bacteria, viruses and parasites. Waterborne diseases and sanitation.

Food intoxications: Intoxications caused by bacteria, fungi, plants, protozoa, spoiled animal products and allergens.

Zoonoses: Classification of aetiology, transmission, clinical signs, diagnosis, treatment and control of Zoonoses and One health concept.

Handling and transport of slaughter animals. Meat inspection of (cattle, donkey, camel, sheep, goat, pig poultry, fish and game meat). Animal by-products, Edible and inedible Animal by-products, Waste management. Industry & slaughter house wastes and effluent disposal. Residues in animal products and food additives,

VMED 462: Public Health III(0/120: C.F.4.0) Y4S2

Meat inspection procedures in abattoir including ante-mortem, slaughter procedure, meat inspection, meat hygiene and handling of (cattle, camels, sheep, goats, pigs, fish, poultry, and game meat). Meat control Act. & Meat hygiene documents

VMED 423: Special Pathology II(30/30: C.F.3.0) Y₄S₂
Pathogenesis, gross and microscopic pathology of helminthic and protozoal infections. Pathological changes in nutritional and metabolic diseases; pathology of toxicosis and pathology of Avian and fish diseases

VMED 472: Surgery III(30/30: C.F.3.0) Y4S1

Diagnostic imaging:

Principles and techniques of veterinary radiology and ultrasonography. Production of X-Rays, including digital radiography and x-ray machines. Radiographic techniques, image processing, storage, interpretation and diagnosis. Special diagnostic techniques and procedures.

Contrast radiography. Principles of radiobiology and radiation therapy. Principles, techniques and instrumentation of radiation safety and protection. Computed tomography, magnetic resonance imaging and nuclear medicine.

VMED 473: Surgery IV(45/30:C.F:4.0)Y₄S₁

Large animal and special surgery

Soft tissue surgery: Surgical conditions of the head and neck. Surgical approaches to the abdomen in large animals (cattle, sheep, goats, pigs, horses and donkeys). Surgical conditions and procedures of the male and female uro-genital system and organs, rectum and anus. Hernia, tumours, castration, urinary conditions. Dehorning procedures. Surgical approaches to the thoracic and abdominal cavities. Principles and techniques for surgical conditions and procedures of the chest, abdomen and rectum.

Special surgery: comparative veterinary dentistry. Comparative veterinary ophthalmology; with emphasis on surgical principles and techniques for managing conditions of the eye. Surgical conditions of the ear, mouth and nose. Comparative veterinary neurology and management of selected neurosurgical conditions.

Veterinary orthopaedics: Definition, aetiology, classification, diagnosis and management of lameness and orthopaedic conditions in cattle, sheep, goats and pigs. Equine lameness and orthopaedics, with emphasis on horses and donkeys.

VMED 474: Surgery V (45/30: C.F.4.0) Y₄S₂

Small animal surgery

Soft Tissue Surgery: Principles and techniques in surgery of the abdominal cavity. Surgery of the digestive system the oral cavity and oropharynx; oesophagus; stomach; small intestines; large intestines; perineum, rectum and anus. Surgery of the liver and extra-hepatic biliary system. Surgery of the reproductive and genital system of the male and female. Surgery of the kidneys, ureters, bladder and urethra urinary **Canine and feline orthopaedics.** Definition, Aetiology, classification of bone fractures and orthopaedic conditions. Instrumentation, principles and techniques of bone healing, fracture repair and management. Complications of fracture repair including mal-union, non-union,

delayed union and osteomyelitis. Fractures of the mandible, maxilla, scapula, humerus, radius and ulna, carpal, metacarpal and phalangeal bones. Orthopaedic conditions of the thoracic limb with emphasis on elbow dysplasia. Orthopaedic conditions of the pelvic limb including hip dysplasia. Fractures of the pelvis, femur, tibia, tarsus, metatarsals and phalanges.

VMED 481: Animal Welfare, Ethics and Law(30/15: C.F.3.0) Y₄S₂

Policy and law and animal welfare in veterinary practice, leadership and communication skills: Livestock development policy. Legislations in Animal Health and Production; Veterinary Ethics. Definition and assessment of animal welfare issues. The veterinarian and animal welfare, protection Legislation. Description of legal, professional and ethical values guiding the veterinary profession, understanding, evaluating and improving interpersonal relations with clients and colleagues. **(Prerequisites: VMED 331).**

VMED 464: Clinical Attachment(0/ 270: C.F.4.0) at end of Y₄S₂

Clinical veterinary attachment in well-established veterinary practice facility under supervision of veterinary officers to expose students to practical surgical/obstetrical procedures

VMED 522: Diagnostic Pathology (0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Post-mortem procedures for large and small animals. Pathological and differential diagnosis of animal disease conditions. Forensic pathology, Post mortem case reporting.

VMED 545: Theriogenology Clinics(0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Obstetrical techniques, pregnancy diagnosis, fertility clinic in the hospital and field situations. **(Prerequisites: VMED 442)**

VMED 546: Medicine Clinics (0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Medicine clinics: large and small animal hospital clinics, and differential diagnosis of major medical conditions. **(Prerequisites: VMED 441)**

VMED 573: Surgery Clinics (0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Operative surgery and surgical clinics: large and small animal hospital clinics, and differential diagnosis of major surgical conditions

VMED 581: Clinical Case Presentations(0/120: C.F. 4.0) Y₅S₁& Y₅S₂

Clinical rotations and differential diagnosis of diseases affecting large and small animals during ambulatory and herd health services. **(Prerequisites: VMED 442)**

VMED 582: Clinical Laboratory Methods(0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Clinical laboratory methods and diagnosis of animal diseases. Students undertake routine diagnostic procedures in the laboratory including haematology, biochemistry and cytology, protozoology, bacteriology, serology and helminthology. **(Prerequisites: VMED 421)**

VMED 586: Research Projects(0/180: C.F. 6.0) Y₅S₁& Y₅S₂

Introduction to principles of scientific communication. Research proposal design and research methodology. Students carry out research projects on topics related to veterinary medicine either individually or in groups and present seminars under supervision by a lecturer.

9.2 The examinations schedule

Code	Title	Written Paper	Practical Paper	Oral Exams	Examination Session
YEAR 1 EXAMINATIONS					
PHIL 108	Ethics, Integrity and National Value	1x2hrs	-----	-----	End of Sem
COMS 111	Communication Skills	1x2hrs	-----	-----	End of Sem
VMED 105	Gross Anatomy III	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 103	Gross Anatomy I	1x3hrs	1x3hrs	1x0.25	End of Sem
BIOC 145	Biomolecules	1x3hrs	1x3hrs	1x0.25	End of Sem
BIOC 146	Metabolism of Biomolecules	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 112	Veterinary Physiology I	1x3hrs	1x3hrs		
VMED 104	Gross Anatomy II	1x3hrs	1x3hrs	1x0.25	
VMED 106	Embryology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 107	Cell Biology and Histology	1x3hrs	1x3hrs	1x0.25	End of Sem
BIOC 147	Molecular Biology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 114	Veterinary Physiology III	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 113	Veterinary Physiology II	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 161	Farm Practice	Continuous Assessment and report	1x3hrs		End of Sem
YEAR 2 EXAMINATIONS					
ENSC 101	Environmental Science	1x2hrs	-----	-----	End of Sem
NARE 211	Principles of Wild life Management	1x2hrs			
ANSC 241	Quantitative Genetics & Animal Breeding	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 224	Bacteriology and Mycology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 227	Virology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 228	Immunology	1x2hrs	1x2hrs	1x0.25	End of Sem
VMED 225	Entomology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 229	Protozoology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 262	Laboratory Animal Medicine	1x2hrs	1x2hrs	1x0.25	End of Sem
VMED 231	General Pathology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 230	Helminthology	1x3hrs	1x3hrs	1x0.25	End of Sem
VMED 263	Laboratory Attachment				
YEAR 3 EXAMINATIONS					
AGED 332	Principals of Agricultural Education	1x2hrs	-----	-----	End of Sem.
ANSC 443	Animal Breeding Plans	1x2hrs	-----	-----	End of Sem.
VMED 322	Systemic Pathology I	1x3hrs	1x3hrs	1x0.25	End of Sem.
ANSC 333	Animal Nutrition and livestock Feeding	1x3hrs	1x3hrs	1x0.25	End of Sem
ANSC 365	Aquaculture	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED332	Veterinary Pharmacology	1x3hrs	1x3hrs	1x0.25	End of Sem.
VMED 341	Theriogenology 1	1x2hrs	1x2hrs	1x0.25	End of Sem

VMED 342	Medicine 1	1x3hrs	1x3hrs	1x0.25	End of Sem.
VMED 352	Biostatistics and Research Methodology	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 371	Surgery I	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 323	Systemic Pathology II	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 333	Veterinary Pharmacy and Pharmaceutics	1x2hrs			
VMED 334	Veterinary Toxicology	1x3hrs	1x3hrs	1x0.25	End of Sem.
VMED 343	Theriogenology II	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 344	Medicine II	1x3hrs	1x3hrs	1x0.25	End of Sem.
VMED 361	Public Health 1	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 353	Epidemiology and preventive medicine	1x2hrs	1x2hrs	1x0.25	End of Sem.
VMED 372	Surgery II	1x2hrs	1x2hrs	1x0.25	End of Sem.

VMED 364	Field Attachment	Field assessment and report			End of Sem	
YEAR 4 EXAMINATIONS						
ANSC 451	Livestock production system Ruminant Production	1x3hrs		1x 3hrs	-----	End of Sem
ANSC 461	Livestock production system-Non-Ruminant	1x3hrs		1x 3hrs	-----	End of Sem
VMED 452	Veterinary Economics and Business Management	1x3hrs		1x3hrs	1x0.25	End of Sem.
VMED 464	Clinical Attachment	Field assessment and report				End of Sem
VMED 421	Clinical Pathology	1x 2hrs		1x2hrs	1x0.25	End of Sem
VMED 422	Special Pathology I	1x3hrs		1x3hrs	1x0.25	End of Sem
VMED 423	Special Pathology II	1x3hrs		1x3hrs	1x0.25	End of Sem
VMED 443	Medicine III	1x3hrs		1x3hrs	1x0.25	End of Sem
VMED 445	Medicine IV	1x3hrs		1x3hrs	1x0.25	End of Sem
VMED 444	Theriogenology III	1x2hrs		1x 2hrs	1x0.25	End of Sem
VMED 446	Theriogenology IV	1x2hrs		1x 2hrs	1x0.25	End of Sem
VMED 452	Veterinary Economics and Business Management	1x3hrs		1x3hrs	-----	End of Sem
VMED 461	Public Health II	1x2hrs		1x2hrs	1x0.25	End of Sem
VMED 463	Public Health III	1x2hrs		1x2hrs	1x0.25	End of Sem
VMED 464	Clinical Attachment	Field assessment report				End of year
VMED 472	Surgery III	1x2hrs	1x2hrs	1x0.25		End of Sem
VMED 473	Surgery IV	1x3hrs	1x3hrs	1x0.25		End of Sem
VMED 474	Surgery V	1x3hrs	1x3hrs	1x0.25		End of Sem
VMED 481	Animal Welfare, Ethics and Law	1x2hrs	1x2hrs	1x0.25		End of Sem
YEAR 5 FINAL YEAR BVM &S EXAMINATIONS						
VMED 522	Diagnostic Pathology	1x3hrs	1x3hrs	1x0.25		End of year
VMED 545	Theriogenology Clinics	1x3hrs	1x3hrs	1x0.25		End of year
VMED 546	Medicine Clinics	2x3hrs	1x3hrs	1x0.25		End of year
VMED 573	Surgery Clinics	1x3hrs	1x3hrs	1x0.25		End of year
VMED 581	Clinical Case Presentations		1x3hrs	1x0.25		End of year
VMED 582	Clinical Lab Methods	1x2hrs	1x3hrs	1x0.25		End of year
VMED 586	Research Projects	Assessment of proposal, presentations and written report				End of year

9.3 Matrix Aligning Courses to Programme Learning Outcomes

	Year 1		Year 2		Year 3		Year 4		Year 5	
Programme Learning Outcomes (PLO)	Courses	CF	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1. Acquired Knowledge and skills in all areas of animal health, production and welfare to serve society	• Comparative Gross Anatomy	15.0	• Animal Nutrition and Feed Resources	5.0	• Systemic Pathology	6.0	• Clinical Pathology	3.0	Post Mortem Practicals	6.0
	• Embryology and Histology	9.0	• Microbiology and Immunology	12.5	• Pharmacology • Toxicology	10.0	• Medicine	8.0	Theriogenology Practicals	6.0
	• Biomolecules Metabolism of biomolecules Biochemistry and Molecular Biology	12.0	• Entomology and Protozoology	8.0	• Theriogenology	5.5	• Theriogenology	6.0	Medicine Practicals	6.0
	• Veterinary Physiology	12.0	• Animal Genetics, Breeding and Conservation	5.0	• Medicine	10.0	• Public Health	6.0	• Surgery Practicals	6.0
	• Communication Skills	3.0			• Public Health	3.0	• Surgery	8.0	• Clinical Case Presentations	4.0
	• Introduction to Computer Applications	3.0			• Epidemiology and preventive medicine	3.0	• Non Ruminant Production	5.0	• Clinical Lab. Methods	4.0
	• Farm Practice	4.0	• General Pathology	5.0	• Surgery	5.0	• Meat Inspection Practical	4.0		
			• Helminthology	5.0	• Field, Laboratory, Clinical Attachments	4.0	• Animal Welfare, Ethics & Law	3.0		
			Field, Laboratory, Clinical Attachments	4.0			Field, Laboratory, Clinical Attachments	4.0		
							Extension Education	3.0		
							Animal Welfare, Ethics & Law	3.0		
• PLO 2. Acquired competencies in recognition, diagnosis, treatment, and prevention of animal diseases and diseases of public health importance.	• Farm Practice	4.0	• Bacteriology and Mycology, Virology and Immunology	12.	• Systemic Pathology	6.0	• Clinical Pathology	3.0	Post Mortem Practicals	6.0
			• Entomology and Protozoology	5	• Pharmacology • Toxicology	10.0	• Medicine	8.0	• Theriogenology Practicals	6.0

			• General Pathology	8.0	• Theriogenology	5.5	• Theriogenology	6.0	Medicine Practicals	6.0
			• Helminthology	5.0	• Medicine	10.0	• Public Health	6.0	Surgery Practicals	6.0
			• Field, Laboratory, Clinical Attachments	4.0	• Public Health • veterinary pharmacy and pharmaceuticals	3.0	• Surgery	8.0	• Clinical Case Presentations	4.0
					• Epidemiology and preventive medicine	3.0	• Meat Inspection Practical	4.0	• Clinical Lab. Methods	4.0
					• Surgery	5.0	• Field, Laboratory, Clinical Attachments	4.0		
					• Field, Laboratory, clinical Attachments	4.0				
PLO3 Understood the role of animal health to contribute to economic development and improvement of the industry through production and breeding of animals.	• Farm Practice	4.0	• Animal Nutrition and Feed Resources	5.0	• Field, Laboratory, Clinical Attachments	4.0	• Livestock production; Non- Ruminant	5.0		
			• Animal Genetics, Breeding and Conservation	8.0			• Field, Laboratory, Clinical Attachments	4.0		
			• Field, Laboratory, Clinical Attachments	4.0						

INSTITUTE OF WOMEN, GENDER AND DEVELOPMENT STUDIES



DIPLOMA IN GENDER AND DEVELOPMENT STUDIES

1. Philosophy of the programme

The Diploma in Gender and Development Studies is designed to address multidisciplinary issues of gender, women and development from the African perspective. The programme targets decision-makers involved in the formulation of gender sensitive policies and those who wish to apply gender knowledge and skills essential to all careers and in the critical realisation of Sustainable Development Goals (SDGs) and Education for All (EFA) goals.

2. Rationale

The multi-disciplinary nature of the diploma course in Gender and Development Studies will provide students with skills and knowledge required in government, NGOs, community based organizations and other relevant bodies involved in gender equity programmes. This course will enhance the government's objective of mainstreaming gender in development since students will be equipped with the necessary skills and knowledge required in the society. The course will also provide knowledge and skills for further capacity building in the area of gender, women and development studies. Knowledge on gender and development is relevant in promoting gender equality in society. Gender has also become one of the key elements for economic sustainability and social justice.

3. Goal of the Programme

The fundamental aim of the programme is to contribute to capacity and intellectual development in the study of gender and development from an interdisciplinary perspective through research. The Programme is designed to produce highly trained and competent graduates with requisite professional knowledge and skills required in socio-economic development, both locally and internationally. The programme also prepares students to pursue advanced training in the Gender and Development field. It aims to equip the student with appropriate applied knowledge, skills and attitudes related to gender, women and development. Finally, the programme aims at equipping individuals

with practical skills for gender mainstreaming in development.

4. Programme Learning Outcomes

The graduates of the programme should be able to:

- (i) Identify and analysis gender issues in relation to development in the society.
- (ii) Sensitise the community on gender issues through advocacy, counselling and practice.
- (iii) Improve organizational capacities with regard to planning and implementation of gender strategies for development.
- (iv) Incorporate gender perspectives in planning and implementation of development projects.
- (v) Apply the acquired skills and knowledge for gender mainstreaming in their fields of specialization.
- (vi) Conduct research in gender and development related areas.

5. Mode of delivery

The mode of delivery shall be full time and part-time.

6. Academic Regulations for the programme

6.1 Admission Requirements

The applicants must have passed the Kenya Certificate of Secondary Education (K.C.S.E) with a minimum grade of C (plain) or its equivalent. Candidates may be admitted to the Diploma programme if they hold a certificate (3 months min.) in Gender, Women and Development Studies. In addition, applicants may be required to appear for an interview by the Institute (either oral or written) to determine their eligibility. All University rules and regulations governing admission into the degree programmes shall apply according to Egerton University Statute 36 of 2013.

6.2 Course requirements

The course requirement includes student class attendance, lecturer continuous assessment tests and any other course requirements that students will be advised to adhere to.

6.3 Student Assessment Policy-Course structure and Duration

Student assessment is guided by the University examination rules and regulations and University ISO Procedures.

6.4 Grading system

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statutes 36 of 2013.

6.5 Examination Regulations

All examinations shall be conducted in accordance with the examination rules and regulations as stipulated in the Egerton University Statute 36 of 2013.

6.6 Moderation of examinations

Moderation of examinations will be in accordance with the examination rules and regulations as per Egerton University Statute 36 of 2013 and in accordance to ISO Procedure (EU/AA/OP/07).

6.7 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses which comprise a grand total of 109.5 CFs within the stipulated period.

6.8 Diploma Classification

The Diploma certificate classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

The course will be evaluated to capture all aspects of the course in relation to content, lecturer instructional process for delivery, facilities, references and assessments.

8. Management and Administration of the programme

8.1 Host department and Programme Academic Leader

The Host department is the Institute of Women, Gender and Development studies. The programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessment according to ISO Procedures EU/VC/OP/05.

8.3 Course Coding

Coding system will be done in accordance with the coding rules and regulations governing diploma and degree courses at Egerton University. The programme code will be **GEDS**, for Gender, Women and Development Studies.

First (1st) digit denotes diploma (zero)

Second (2nd) digit denotes year of study.

Third (3rd) digit denotes field of study.

Fourth (4th) digit denotes sequence of course.

9. Courses/Units offered for the programme

All courses offered includes those in the schedule below and common core courses are also included

9.1 Schedule of Courses

(b) Schedule of courses per year /semester

YEAR 1 SEMESTER 1 (SESSION 1)

CODE	TITLE	L	P	CF
COMP 0190	Information Technology and Society	45	15	3.5
GEDS 0111	Gender and Communication	45	0	3.0
GEDS 0112	Introduction to Gender	45	0	3.0
GEDS 0113	Theories of Gender	45	0	3.0
GEDS 0114	Introduction to Gender and Reproductive Health	45	0	3.0
GEDS 0121	Health1 Introduction to Women Studies	45	0	3.0
TOTAL		270	15	18.5

YEAR 1 SEMESTER 2 (SESSION 2)

GEDS 0115	Gender and Social Psychology	45	0	3.0
GEDS 0116	Conceptualization of Masculinity in the African Perspective	45	0	3.0
GEDS 0117	Reproductive Health and Society	45	0	3.0
GEDS 0122	Women in Governance	45	0	3.0
GEDS 0131	Introduction to Gender and Development	45	0	3.0
GEDS 0132	Theoretical Perspectives in Gender and Development	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1 (SESSION 3)

GEDS 0211	Introduction to Gender and Sexuality	45	0	3.0
GEDS 0201	Introduction to statistics	45	0	3.0
GEDS 0212	Gender Analysis	30	30	3.0
GEDS 0213	Gender and Agriculture	30	30	3.0
GEDS 0231	Gender Research Methods	45	0	3.0
GEDS 0214	Gender and Violence	45	0	3.0
TOTAL		240	60	18.0

YEAR 2 SEMESTER 2 (SESSION 4)

GEDS 0215	Gender, Sexuality and Related Contemporary Issues	45	0	3.0
GEDS 0216	Gender and Family	45	0	3.0
GEDS 0232	Poverty, Policies and Gender Implications	45	0	3.0
GEDS 0217	Gender and Health	45	0	3.0
GEDS 0218	Gender and Education	45	0	3.0
GEDS 0219	Gender and Crime	45	0	3.0
TOTAL		270	0	18.0
GEDS 0241	Field Attachment	0	120	4.0

YEAR 3 SEMESTER 1 (SESSION 5)

GEDS 0311	Gender Law and Human Rights	30	30	3.0
GEDS 0312	Gender and Ageing	45	0	3.0
GEDS 0321	Women in Religion	45	0	3.0
GEDS 0322	Gender Information and Media	45	0	3.0
GEDS 0331	Gender and Globalization	45	0	3.0
GEDS 0332	Gender Science and Technology	45	0	3.0
TOTAL		180	60	18.0

YEAR 3 SEMESTER2 (SESSION 6)

GEDS 0313	Gender and Environment	30	30	3.0
GEDS 0333	Globalization and Gender Dynamics	45	0	3.0
GEDS 0314	Gender Economy and Workplace	45	0	3.0
GEDS 0323	Gender in Conflict and Peace Studies	45	0	3.0
GEDS 0341	Seminar in Gender Studies	30	30	3.0
TOTAL		195	60	15.0
GRAND TOTAL		1500	285	109.5

(c) Course Description

GEDS 0111: Gender and Communication (45/0/0; CF 3.0) Y1S1

Concepts of communication; meaning, process, types and models of communication. Gender and language; use of language in the construction of gender identities. Cross-cultural gender issues in communication; stereotyping in gender and language; socio-linguistic theories of male and female; verbal and non-verbal communication; gender language and power; case studies in gender and language use, new perspectives on language, gender and communication.

GEDS 0112: Introduction to Gender (45/0/0; CF 3.0) Y1S1

Basic terms and concepts in gender, social construction of gender, distinction between sex and gender,

stereotypes, power relations in society, socialising agents: family, school, media, church.

GEDS 0113: Theories of Gender (45/0/0: CF 3.0) Y1S1

Overview of feminist and gender theories based on radical, liberal and Marxist feminist views. Understanding of the biological and cultural determinisms in explaining gender differences, implications on gender roles assigned to men and women in various societies.

GEDS 0114: Gender and Reproductive Health 1 (45/0/0: CF3.0) Y1S1

Definition of terminologies. Beijing 1995 Platform of action on women's health, women's health rights in the convention of Elimination of all forms of discrimination against women; manifestations of gender inequalities in health, factors influencing women's health, measures to combat gender inequalities. Importance of reproductive health; concepts of reproductive health; integration of gender dimension in reproductive health issues. Women's voices when crafting maternal health policies.

GEDS 0115: Gender and Social Psychology (45/0/0: CF 3.0) Y1S2

Psychology of gender a theoretical analysis. Intersection of sexual orientation and social class with gender. Lifespan development, physical, mental and social roles and social systems. Sexual socialization and orientation in society; attitude formation, change and group behaviour. Psychological models of the female and male personality –psychoanalytic, social learning, cognitive development and gender schema perspectives. Gender roles, gender bias in psychological research.

GEDS 0116: Conceptualization of Masculinity in the African Perspective (45/0/0: CF 3.0) Y1S2

Origin of hegemonic masculinity. Historical, cross-cultural, and contemporary contexts. Intergenerational differences in the contemporary expressions of masculinities in Africa. Indicators of changing forms of masculinities; language, dressing, musical genre and general discourse. Modes of mobilisation of masculinity, Transnational influences in shaping

masculinity in Africa. Implications of contemporary masculinities for the struggle for gender equality and identity in Africa

GEDS 0117: Gender and Reproductive Health II (45/0/0:3.0) Y1S2

Gender dimensions in family planning and maternal and child health programmes. Gender relations and reproductive rights. Reproductive health rights in Kenya; Womens issues or gender relations; reproductive health rights on family planning, female genital mutilation, early marriage. Issues of women empowerment on: safe motherhood, Adolescent/youth sexual knowledge, infections and conditions, human sexuality, male participation in reproductive health. Women, gender and rights perspectives in health policies and programmes. Impact of gender and reproductive health on development. *(PREREQUISITE GEDS 0114)*

GEDS 0121: Introduction to Women Studies (45/0/0: CF 3.0) Y1S1

Fundamental concepts and engendering; power, discrimination, exploitation, violence, subordination, injustice, revolution, emancipation. Status of women in society, life experiences of women using empirical research. Concepts and theories reflecting feminists concerns and principles. Multidisciplinary approach on reproductive health, poverty, impact on women. Theoretical explanations for acquisition, development and maintenance of female gender roles, implications of gender oppression, assignment in daily lives of women and men, experiences of women in diverse contexts. Combined qualitative and quantitative methods such as life stories, group discussions, case studies, questionnaires and surveys. Social changes: recognition analysis of women's oppression; ending women's subordination in patriarchal societies.

GEDS 0122: Women in Governance (45/0/0: CF 3.0) Y1S2

Overview of women's representation in decision making level, factors limiting women participation in democracy and electoral processes, implications of gender imbalances in governance and political

development, and mechanisms of addressing the existing imbalances.

GEDS 0131: Introduction to Gender and Development (45/0/0: CF 3.0) Y1S2

Definition of terms. Introduction to theories of modern development, social change and development(Global population trends). Gender and industrialization; gender and labor laws in Kenya; Gender dimensions in rural/urban change; role of nationalism, religion, ethnicity and civil society in national development.

GEDS 0132: Theoretical Perspectives in Gender and Development (45/0/0: CF 3.0) Y1S2

Feminist theories, gender analytical frameworks such as WID, WAD and GAD. Different perspectives on development programmes, development counties. Challenges and opportunities offered through changes in the global and local women's movements to generate new theories and knowledge. Contemporary issues on gender and gender mainstreaming.

GEDS 0201: Introduction to Statistics (45/0/0: CF 3.0) Y2S1

Introduction to descriptive and inferential statistics. Application of statistical methods for use in gender. Probability, univariate statistics, bivariate statistics; organization and classification of data, graphic representation, measures of central tendency and variability, percentiles, normal curves, standard scores, correlation and regression; hypothesis testing. Introduction to statistical inference and the use of computers for statistical calculations.

GEDS 0211: Gender and Sexuality 1 (45/0/0: CF 3.0) Y2S1

Definition of terminologies; sexuality, sexual health, violence against women. UN declaration 1993; WHO 1996; youth reproductive health and HIV prevention. Causes of violence against women (VAW); ratification of the convention of CEDAW; dimensions of violence against women. Case studies on sexual relations, violence against women, trends of gender violence in Kenya, power relations and impact on sexual health,

preventive measures and legislation at international and national levels. Infections and inequalities in sexuality.

GEDS 0212: Gender Analysis (45/0/0: CF 3.0) Y2S1

Tools and methods used for gender analysis. Analysis of gender roles; analysis of access to and control of resources, gender needs met and not met. Analysis of gender inequality; levels of causes of gender inequality; and the gender equality and empowerment framework. Division of labour; access to; formal credit facilities, training and productive resources. Gender inequality; ways and means of achieving balanced relationships between men and women in society. Evaluating potential impacts of programmes and policies on men and women as an integral part of developing government programmes and policies.

GEDS 0213: Gender and Agriculture (45/0/0: CF 3.0) Y2S1

Agriculture and development. Gender roles in crop and livestock production. The concept of agro-ecosystem. Tropical farming systems; organic farming. Gender issues and implication in subsistence and commercial agriculture, labour, marketing and extension services. Sustainable agriculture: food/nutritional security and gender equity; gender planning for social change.

GEDS 0214: Gender and Violence (45/0/0: CF 3.0) Y2S1

Gender based violence as manifested in the society today. Institutions that sustain gender violence; types and effects of oppression, Various forms of gender based violence; rape, battering, sexual abuse, sexual harassment, sexual slavery. Male dominance as established and maintained through patriarchy. Gender based violence as expressed in the popular culture such as music, literature, films, advertising and pornography.

GEDS 0215: Gender and Sexuality II (45/0/0: CF 3.0) Y2S2

Growth and development issues of sexuality; promotion of youth sexual and reproductive health; sexuality and psychosexual growth, sexual dysfunctions and management; policies and legislation on sexual harassment, sexual violence-rape, breaking the silence,

masculinity versus femininity approach in rape. Advocacy and awareness-raising. Female sexuality-social and theoretical perspectives. Relationship between sexual harassment, gender and bullying. Biological expression of sexuality, and intimacy in aging. **(PREREQUISITE GEDS 0115)**

GEDS 0216: Gender and Family (45/0/0: CF 3.0) Y2S2

Definition of basic concepts. Types of families, family structures; patriarchal, matriarchal, same sex pairing or single headed. Socialisation within the family. division of labour within the family and its influence on power, decision making, access to and control over resources. Social and economic change and its implication on the family

GEDS 0217: Gender and Health (45/0/0 CF 3.0) Y2S2

Introduction to gender and health. Health policy and interventions, women health and concerns. HIV/AIDS issues; care and their gendered implications; coping strategies, gender and differentials in HIV/AIDS infection. Integrating women empowerment and reproductive health, gender and population; health and traditional medicine.

GEDS 0218: Gender and Education (45/0/0: CF 3.0) Y2S2

Definitions of Education. Types of Education in society. Socio-Economic factors that influence the provision of Education. Meaning of Gender difference. Socio-economic factors likely to cause gender difference in provision of Education. Enrolments in schools/colleges by gender. The issues on girl child education globally and in Kenyan context. Emerging issues on gender, Equity in society and Education. The way forward in Gender and Education.

GEDS 0219: Gender and Crime (45/0/0: CF 3.0) Y2S2

Analysis of types of crime, theories of crime, causes of crime, crime committed by gender and their implications. Methods of crime control and treatment of offenders by gender. Alternative methods of

imprisonment for offenders such as children and mothers.

GEDS 0231: Gender Research Methods (45/0/0: CF 3.0) Y2S1

Introduction to basic research skills and gender based research; conceptual/methodological issues, grounded theory, women's Law approach, semi-autonomous social fields. Needs assessment in research; qualitative vs. quantitative research; selected data collection techniques: data organization, analysis and interpretation. Gender discourse analysis; writing research reports; conceptual and ethical issues; advantages of conducting applied gender research.

GEDS 0232: Poverty Policies and Gender Implications (45/0/0: CF 3.0) Y2S2

Definition of concepts; poverty, gender and development. Poverty implications on gender, analysis of national land and property rights; employment and Social policy responses to poverty. Micro enterprises in rural and urban areas, gender and national budgeting. Analysis of policies; CDF, SAPS, PRS land and property rights.

GEDS 0241: Field Attachment (45/0/0: CF 3.0) Y3S1

Three months attachment in organizations related to students project; hospitals, schools, industries, NGOs. The students will use knowledge gained in year 1 and 2 to identify issues and structures that perpetuate gender inequalities and using research methods learned; life stories, group discussions, case studies questionnaires, surveys, carry out research and write report which will be graded as well as supervisors report.

GEDS 0311: Gender, Law and Human Rights (45/0/0: CF 3.0 Y3S1)

Introduction to gender, human rights and the law. Issues of women in the legal process and other key institutions in the society. Human rights abuses or injustices; violence against women, discrimination and constitutional provisions in relation to the protection of women vis-a- vis culture and traditions. Social justice

system in response to women's unique needs, administration of justice delivery system; the police, the courts and other key service provider institutions. Basic introduction to the international human rights framework and the specific human rights court within the UN and African system.

GEDS 0312: Gender and Ageing (45/0/0: CF 3.0) Y3S1

The ageing process and gender. Ageing factors in gender; biological, psychological and social. scientific factors of ageing, application of advantage age factors in women. Social aspects of ageing related to family roles, cultural and social support. Use of health and social services. Social cognition; stereotypes, attitudes, discrimination regarding ageing. Death and bereavement, public policy and health care. Physical and social environment; diseases, nutrition, medical care, exercise, financial status, stress, ethnicity/race and gender.

GEDS 0321: Women in Religion (45/0/0: CF 3.0) Y3S1

Definitions of concepts. Various religious viewpoints; basic belief of religions and women; place and status of women in religious systems. Women and Islam; women and Christianity; women and Hinduism; women and Buddhism; women and Judaism; Women and African traditional religions. Effects of Science and secularism on religion and women.

GEDS 0322: Gender, Information and Media (45/0/0: CF 3.0) Y3S1

Concepts of media and information; various types of media and forms of information. Description of modes and channels of information flow. Images of women in media and information: print and electronic- race, ethnicity, sexuality and gender. Media representations and misrepresentations of women in Kenya. Key issues of Gender-media relation; representation of women media discourse and industry, analysis of news media's coverage of women in politics, marketing of girl power; careers for women in the media, employment and decision-making. Sexual discrimination and violence in

the media; representations, interaction and discourse. Gender and information technology; opportunities, exclusion and marginalization, gender and cyberspace; historical trends of women and information technology.

GEDS 0331: Globalization and Gender Dynamics 1 (45/0/0: CF 3.0) Y3S1

Definition globalization. Globalization and work, gendered identities. Analysis of global policies: participation and exclusion. Development aid partners. Relationship between gender and globalization. Transformation of women's work. Gender and development policies, women entrepreneurs, women in the labour market, women marginalization in global development, women and migration, embodying change.

GEDS 0332: Gender, Science and Technology (45/0/0: CF 3.0) Y3S1

Definitions of Gender, Science and Technology. Science and Technology in society. Global and local policies on Science and Technology. Gender disparities in scientific and technological fields. Justification of gender equity in schooling, scientific and technological field and employment. Socio-economic factors that are likely to cause gender difference in society, education and scientific field. Emerging issues and way forward in Gender, Science and Technology.

EDS 0313: Gender and Environment (30/30/0: CF 3.0) Y3S2

The concept of environment: physical and biotic aspects. Challenges to environmental management and human manipulations: role of gender. Identification and prioritization of gender issues in natural resources; EMCA, EIA, integration of gender dimensions in sustainable environment management.

GEDS 0314: Gender, Economy and Workplace (45/0/0: CF 3.0) Y3S2

Various economic systems existing in society and influence on the division of labour. Trends in labour force and labour markets structures in Kenya and other African countries. Gender issues and implication of hours of work, income structures, employment and

unemployment in understanding gender; gender economy and workplace. Intersections and conflicts at work, medical leave and discrimination

GEDS 0323: Gender in Conflict and Peace Studies (45/0/0: CF 3.0) Y3S2

Definition of basic concepts. Types, nature, sources and methods of conflict prevention, management and resolution. Role of women in conflict and peace building at family, community, national and international levels. Traditional and modern methods of conflict resolution used by women. Sustainable peace building.

GEDS 0332: Globalization and Gender Dynamics II (45/0/0: CF 3.0) Y3S2

Feminist analysis of diverse experiences of femininity and masculinity in South, North, West and Eastern Blocks. Global factory, cross-cultural consumption, human rights, global communications, economic restructuring, nationalism, environmental challenges. Globalization and reformulation of identities, locations and political possibilities created. **(PREREQUISITE GEDS 0233)**

GEDS 0341: Seminar in Gender and Development Studies (30/30/0: CF 3.0) Y3S2

Presentations and discussions on various gender issues. Content of presentation and discussion based on projects, assigned topics related to gender, women and development; introduction to development, development theories, poverty and livelihood, gender matters in development and case studies.

9.2 Matrix aligning courses/units to Programme learning outcomes

	Year 1		Year 2		Year 3	
Programme learning outcomes (PLOs)	Courses	CF	Courses	CF	Courses	CF
PLO 1: Skills to understand how to identify the importance of gender equity in development	-Gender and Communication	3.0	-Gender and Sexuality	3.0	-Gender Analysis	3.0
	-Gender and Reproductive Health,	3.0	-Gender and Violence	3.0	-Gender, Law and Human Rights	3.0
	-Gender and Social Psychology	3.0	-Gender and Education,	3.0	-Gender and Entrepreneurship	3.0
	-Women in Governance	3.0			-Gender, Information and Media	3.0
PLO 2: Analytical knowledge for organizational capacity building gender and development	-Introduction to Gender and Development	3.0	-Poverty Policies and Gender Implications	3.0	-Women in Conflict and Peace Studies	3.0
	-Theoretical Perspectives in Gender and Development	3.0			-Gender, Economy and Workplace	3.0
	-Introduction to Women Studies	3.0				
PLO 3: Develop of skills to incorporate gender perspectives into planning and implementation in projects	-Conceptualization of Masculinity in the African Perspective	3.0	Introduction to Gender Research Methods	3.0	-Gender Analysis	3.0
	-Introduction to gender and development Gender and Family	3.0	-Gender, Agriculture and Food Security	3.0	-Gender and Environment	3.0
PLO4: Incorporate gender mainstreaming in projects			-Introduction to Gender Research Methods	3.0	-Seminar in Gender, Women and Development Studies	3.0
			-Globalization and Gender Dynamics	3.0		
PLO 5: Apply of acquired skills and abilities			-Gender, Guidance and Counselling Skills	3.0	-Gender Research and Report Writing	3.0
			-Gender Research and Report Writing	3.0	-Gender Analysis	3.0

BACHELOR OF ARTS IN GENDER AND DEVELOPMENT STUDIES

1. Philosophy of the programme

The degree in Gender and Development Studies is designed to address multidisciplinary issues of gender, women and development from the African perspective. The programme targets decision-makers involved in the formulation of gender sensitive policies and those who wish to apply gender knowledge and skills essential to all careers and in the critical realisation of Millennium Development Goals (MDGs) and Education For All (EFA) goals.

2. Rationale

The multi-disciplinary nature of the degree course in Gender, Women and Development Studies will provide students with skills and knowledge required in government, NGOs, community based organizations and other relevant bodies involved in gender equity. This course will enhance the government's objective of mainstreaming gender since students will be equipped with the necessary skills and knowledge required in the society. The course will also provide knowledge and skills for further capacity building in the area of gender, women and development studies. Knowledge on gender and development is relevant in promoting gender equality in society. Gender has also become the key element for economic sustainability and social justice.

3. Goal of the Programme

The fundamental aim of the programme is to contribute to capacity and intellectual development of the study of gender and development from an interdisciplinary perspective through research. The Programme is designed to produce highly trained and competent graduates with requisite professional knowledge and skills required in the socio-economic sector of development, both locally and internationally. The programme also prepares graduates to pursue advanced training in the Gender and Development field. It aims to equip the student with appropriate applied knowledge, skills and attitudes related to gender,

women and development. Finally, the programme aims at equipping individuals with practical skills for gender mainstreaming in development.

4. Programme Learning Outcomes

The graduates of the programme shall be able to:

- i. Understand the importance of gender equity in development
- ii. Analyse knowledge on organizational capacity building in relation to gender and development
- iii. Incorporate gender in regard to planning, implementation and strategies in development projects
- iv. Apply practical skills for gender mainstreaming in development
- v. Application of acquired abilities in community outreach

5. Mode of delivery

The mode of delivery shall be full time and part-time (Face to face, Day, Evening and Weekends)

6. Academic Regulations for the programme

6.1 Admission Requirements

The applicants must have passed the Kenya Certificate of Secondary Education (K.C.S.E) with a minimum grade of C+ (plus) or its equivalent. Candidates may be admitted to the Bachelor of Arts programme if they hold a diploma in Gender, Women and Development Studies of "Credit" level or higher recognized by university senate. In addition, applicants who have a diploma with a Credit level or higher in other related programmes that are relevant to gender from recognized institutions may be admitted to the degree programme. All University rules and regulations governing admission into the degree programmes shall apply according to Egerton University statute of 2013 36 (2)

6.2 Regulations on credit transfer

Credit transfer shall be according to Egerton University Statute 36 (6) of 2013.

6.3 Course requirements

The course requirement includes student class attendance, lecturer continuous assessment tests and any other course requirements that students will be advised to adhere to. This will adhere to ISO procedure EUAAOP/06/5

6.4 Student Assessment

Student assessment shall be guided by the University examination rules and regulations in accordance to Egerton statute 36 (6) of 2013.

6.5 Grading system

The grading of examinations shall be conducted in accordance with Egerton University Statute 36 (5) of 2013

6.6 Examination Regulations

Examinations shall be conducted in accordance with the examination rules and regulations governing degree courses as per Egerton University statute of 2013 36 (5).

6.7 Moderation of examinations

The examination rules and regulations shall be as stipulated in the Egerton University Statute 36 and ISO Procedures (EU/AA/OP/07)

6.8 Graduation Requirements

To graduate, a student shall be required to take and pass all scheduled courses of 147.5 CFs within the stipulated period.

6.9 Degree Classification

The degree classification shall be in accordance with Egerton University Statute 36 of 2013.

7. Course Evaluation

The course will be evaluated to capture all aspects of the course in relation to content, lecturer instructional process for delivery, facilities, references and assessments. This is in reference to ISO Procedure.

8. Management and Administration of the programme

8.1 Host department and Programme Academic Leader

The host department is the Institute of Women, Gender and Development studies. The programme academic leader shall be appointed in accordance with University Standards and Guidelines (2014).

8.2 Programme Evaluation

All courses will be evaluated using a course evaluation tool that captures the evaluation of all aspects of the course including: course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessment according to ISO Procedures EU/VC/OP/05.

8.3 Course Coding

Coding system will be done in accordance with the course coding policy at Egerton University.

The programme code shall have the prefix **GEDS**, standing for Gender, and Development Studies.

First (1st) digit denotes year of study.

Second (2nd) digit denotes field of study.

Third (3rd) digit denotes sequence of course.

9.0. Courses offered for the programme

All courses offered are included in the schedule below:

9.1 Schedule of Courses

(a) List of University Core Common Courses

COMS 111 - Communication skills

COMP101 - Introduction to Computer Applications

ZOOL 143 - HIV/AIDS and Society

PHIL 108 - Ethics, Integrity and National Values

(b) Schedule of courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	CF
GEDS 112	Gender, Culture and Creativity	45	0	3.0
GEDS 113	Gender and Sexuality	45	0	3.0
ZOOL 143	HIV/AIDS and Society	45	0	3.0

COMS 111	Communication Skills	45	0	3.0
GEDS 111	Introduction to Gender	45	0	3.0
GEDS 121	Introduction to Feminist & Gender Theories	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

COMP 111	Introduction to Computer Applications	45	0	3.0
GEDS 114	Reproductive Health 1	45	0	3.0
GEDS 115	Masculinity in the African Perspective	45	0	3.0
GEDS 121	Introduction to Women Studies	45	0	3.0
GEDS 122	African Women in History and Contemporary Society	45	0	3.0
ENSC 100	Introduction to Environmental Education	45	0	3.0
TOTAL		255	30	18.0

YEAR 2 SEMESTER 1

GEDS 231	Gender and policies of poverty	45	0	3.0
GEDS 211	Gender and Education	45	0	3.0
GEDS 212	Gender, Work and Family	45	0	3.0
GEDS 213	Gender, Language and Communication	45	0	3.0
GEDS 221	Social Policies in Gender	45	0	3.0
GEDS 232	Introduction to Research Methods	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

SOCI 203	Social structures of East African Societies	45	0	3.0
GEDS 214	Gender, Science and Technology	45	0	3.0
GEDS 215	Basic Counselling Skills in Gender	45	0	3.0
GEDS 216	Gender and Childhood Development	45	0	3.0
GEDS 222	Globalization and Gender Dynamics	45	0	3.0
GEDS	Gender, Agriculture and	30	30	3.0

233	Food Security			
TOTAL		255	30	18.0

YEAR 3 SEMESTER 1

PHIL 300	African Philosophy	45	0	3.0
GEDS 311	Human Rights and Ethics	45	0	3.0
GEDS 312	Gender Based Violence	45	0	3.0
GEDS 321	Women and Governance	45	0	3.0
GEDS 332	Statistical Methods in Gender	45	0	3.0
SOCI 304	Social Psychology	45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 2

GEDS 314	Gender and Law (Field trip)	30	30	3.0
GEDS 315	Gender and Criminology	45	0	3.0
GEDS 323	Women, Information and Media	45	0	3.0
GEDS 322	Gender Aspects in Entrepreneurship	45	15	3.5
GEDS 316	Gender, Research and Report Writing	30	30	3.0
GEDS 313	Gender Analysis	45	0	3.0
TOTAL		240	75	18.5

YEAR 3 SEMESTER 2 (LONG HOLIDAY PERIOD)

GEDS 342	Field/Industrial Attachment	0	120	4.0

YEAR 4 SEMESTER 1

GEDS 431	Gender, Environment and Development	30	30	3.0
GEDS 432	Gender, Economy and Workplace	45	0	3.0
GEDS 421	Funding Proposal Writing	45	0	3.0
GEDS 422	Women in Religion	45	0	3.0
GEDS 433	Gender, Conflict and Post Conflict Resolution	45	0	3.0
GEDS	Aging process and Gender	45	0	3.0

423				
TOTAL		255	30	18.0

YEAR 4 SEMESTER 2

GEDS 412	Gender Mainstreaming in Project Management	45	0	3.0
GEDS 413	Socio-Cultural Dimensions in Reproductive Health	45	0	3.0
SOCI 410	Social Change and Development	45	0	3.0
GEDS 434	Responsive Monitoring and evaluation	45	0	3.0
GEDS 435	Gender and Organizational Policies	45	0	3.0
GEDS 441	Seminars in Gender and Development Studies	0	60	2.0
TOTAL		225	60	17.0
GRAND TOTAL		2070	345	147.5

(c) Course Descriptions

GEDS 111: Introduction to Gender (45/0/0: CF 3.0) Y1S1

Social constructions of gender, distinction between sex and gender, existence and bases for sex and gender differences; biological, psychological and cultural issues, de-construction of gender stereotypes; construction of power relations through, media, sexual relation

GEDS 112: Gender Culture and Creativity (45/0/0: CF 3.0) Y1S1

Definition of terms, comparisons and similarities between male and female gender attributes; stereotype perceptions of women in different cultures in Kenya and other countries; creativity process and gender; advantages of gender equity and equality for human development; women and aesthetics

GEDS 113: Gender and Sexuality (45/0/0: CF 3.0) Y1S1

Definition of terms in sexuality; Biological basis of sex identity; conceptualizing masculinity and femininity, love, sex and power realities in relation to HIV /AIDS prevention, power and resistance, links between sexual

normalcy/deviance, Theories of sexuality; sexuality and sexual identity, sex trade, sexual spaces, lesbian, gay, bisexual, transsexual, transgender. Sexuality and human rights; Local and International context

GEDS 114: Gender and Reproductive Health (45/0/0: CF 3.0) Y1S2

Reproductive health and health care; health care disparities; Integration of gender dimensions on health, family planning issues, abortion; health rights and female genital mutilation, male circumcision, adolescent health, menopause, andropause, reproductive health rights and early and late marriage. Gender dimensions of surrogacy arrangements, birth control, work environments for women and men; childcare, sexual harassment. Discourse on new reproductive technologies into sociological perspective.

GEDS 115: Masculinity in the African Perspective (45/0/0: CF 3.0) Y1S2

Overview of masculinity; Types of masculinity; Conceptual, empirical, theoretical, and methodological issues in the study of masculinities. Inter-generational differences in the contemporary expressions of masculinities in Africa. Indicators of changing forms of masculinities; language, dressing, musical genre, media and general discourse. Modes of mobilisation of masculinity, Transnational influences in shaping masculinity in Africa. Implications of contemporary masculinities for the struggle for gender equality and civic identity and culture in Africa; masculinity and sexed bodies.

GEDS 121: Introduction to feminist and gender theories (45/0/0: CF 3.0)Y1S2

Overview of feminist and gender theories; Freudian paradigms, Marxist queer and Feminism theory, Liberal Feminism, Marxist Feminism, Radical Feminism. Black feminism, Third world feminism. Status, roles, images and experiences of women and girls. Cultural norms and social institutions that define women status. Influence of gender on contemporary social organization and behavior of women and the family unit.

GEDS 122: African Women in History and Contemporary Society(45/0/0: CF 3.0) Y1S2

.Women in African historiography. Sources for the study of women's history. Women in pre-colonial era. Women in medieval Europe. Women during industrial revolution. Women in the age of imperialism; Imperialism and colonizing process; women and anti-colonial and nationalist movement, domesticity and imperialism. Women in independent Africa: self-improvement groups and organizations, programmes and strategies for women's development and structural adjustment programmes. Women in the contemporary world; The women's' movement in Africa.

GEDS 131: Introduction to Gender and Development (45/0/0: CF 3.0) Y1 S1

Understanding concepts in gender and development; Role of gender in development. Gender inequalities in the developing world; Development approaches in gender: WID, WAD and GAD; Factors affecting women and men in development processes; Women's experiences as agents and beneficiaries of development, poverty, work and households.

GEDS 211: Gender and Education (45/0/0: CF 3.0) Y2 S1

Conceptualization of gender and education in society; curriculum issues; Retention and wastage with respect to gender disparity in schools, colleges and universities. Barriers to gender equity in education sector and employment in developed and developing countries. Comparison of government policies and practices on gender and education in developing and developed countries. Emerging gender issues in the education system and in employment sector. Gender equity gains and losses; in education, training and employment in Kenya.

GEDS 212: Gender, Work and Family (45/0/0: CF 3.0) Y2S1

Conceptual issues in the study of work and family. Types of families; Intersections and conflicts between work and family; family medical leave, pregnancy discrimination act. Family wage economy during industrialization; impact of historical context on work-

family experiences. Causes and consequences of gender differences in the household division of labour. Paid and unpaid work. International perspectives on gender economic inequality; work family policies in Kenya.

GEDS 213: Gender, Language and Communication (45/0/0: CF 3.0) Y2S1

Theoretical perspectives on gender and language; role of gender in the expression and creation of gender identities; gender differences in discourse; styles, language structure and use. Nature and function of gender differences in communication on a cross-cultural basis. Acquisition of gendered ways of speaking and sexism in language. Stereotypes in gender and language; Male/female communication and miscommunication. Language, power and dominance in relation to gender. Issues of gender and politeness. Case studies in gender and language use; new perspectives on language and gender.

GEDS 221: Gender and Social Policies (45/0/0: CF 3.0) Y2S1

Overview of social policy processes (Identification, planning implementation and evaluation). Impact of social welfare programmes and policies upon women's lives; assumptions and values in formulation of policies. Alternative approaches to dealing with women's concerns. Women's socio-economic circumstances (the feminization of poverty), and agendas for reform, alternative social services for women. Role of public and private sector.

GEDS 231: Poverty, Policies and Gender (45/0/0: CF 3.0) Y2S1

Concepts poverty, gender and development. Stereotypes of concepts of poverty and gender at individual, community, national and global levels. Poverty levels based on culture, educational level, exposure, experience age and gender. . Reduction of poverty through national policies; CDF, SAPS, PRS. Analysis of national and global policies; land and property rights, employment, fiscal and monetary.

GEDS 232: Introduction to Gender Research Methods (45/0/0: CF 3.0) Y2 S1

Definition of the basic concepts in gender research; Introduction to needs assessment process (identification, design and planning), and the ethics guidelines in research; the role of pilot study, research methods (qualitative and quantitative), and data collection techniques (FGDs, Interviews, Questionnaires, surveys-). Understanding the role of research sites, sampling approaches and target population in research. Data analysis process and presentation of findings.

GEDS 214: Gender, Science and Technology(45/0/0: CF 3.0) Y2S2

Conceptualization of gender, science and technology in society. Scientific and technological literacy policy and objectives. Rationale for gender equity in science and technology in school curriculum. Gender issues in the field of science and technology; Gender trends in enrolment, retention and wastage with respect to science and technology in school colleges, universities and employment sector. Emerging gender issues in the field of science and technology. Government policies and practices on gender, science and technology; Gender equity gains and losses in the fields of science and technology.

GEDS 215: Gender, Guidance and basic Counselling (45/0/0: CF 3.0)Y2S2

Definition of concept; Importance of counselling; Theories of Counselling; Principles of counselling; Counselling process; Basic skills of counselling; Types of counselling, preventive, curative, Drug & Substance Abuse, Marriages, Trauma, Death ,Counsellor and counselee self-concept; Challenges of implementation counselling; Counselling and support systems; Policy guidelines on the implementation of guidance and counselling;

GEDS 216: Gender and Childhood Development (45/0/0: CF 3.0)Y2S2

Definition of terms in gender and childhood development concepts. Gender and development theories i.e. Social learning theory, Social cognitive theory, and Gender schema. Childhood development

stages and socialization process; Agents of socialization, culture and society expectations of boys and girls. Types of families in society today i.e. single parent, polygamous, parent families, same sex families/homosexual, and child headed families, institutionalized families and dysfunctional families; parenting styles, structures of subordination and domination, and the impacts of teenage/adult conflicts/politics in the society.

GEDS 222: Globalization and Gender Dynamics (45/0/0: CF 3.0) Y2S2

Concept of globalization. Various dimensions of globalization (economic, political and cultural). Relationship between gender and globalization. Transformation of women's work, sexual division of labour, women activism in the global stage. Inequalities in the global economy. Environment and health impacts, gender and migration. Feminization of poverty, Emerging trends in gender and globalization such as technology and media

GEDS 233: Gender, Agriculture and Food Security (30/30/0: CF 3.0) Y2S2

General food situation in Africa and Kenya, a global, regional and local analysis; Gender division of labour in agriculture, women's access to and control over resources; land, credit, information and extension services. Agricultural value chain development; Government policies on food security. Implications of food security at the family, community and national levels. Agriculture and environmental sustainability; emerging issues in gender and agriculture. Field trip.

GEDS 311: Human Rights and Ethics (45/0/0: CF 3.0) Y3S1

Overview of International human rights instruments; national constitutions and legislation in advancing women's rights. Historical perspectives and philosophical basis of human rights; Three generations of human rights; Exploration of the international instruments: CEDAW, DEVAW, Sustainable Development Goals; ILO –100, Banjul Charter and protocol on the rights of women of Africa. Key instruments and Declarations; Nairobi forward-looking

strategies, Beijing Platform for Action. Ratification and compliance of Human Rights instruments case of Kenya and other State Parties.

GEDS 312: Gender Based Violence (45/0/0: CF 3.0)Y3S1

Overview of gender based violence; Theories of Gender based violence. Forms of gender-based violence; Sexual, Physical, Emotional, Economic; Types of violence; Violence at the workplace, state violence, sexual harassment, defilement, rape and marital rape, FGM, forced marriages, domestic violence, inheritance, widow disinheritance, bigamy. Socio-economic and health cost of gender based violence on the society and government services.

GEDS 321: Women and Governance (45/0/0: CF 3.0) Y3S1

Definition of concepts, gender, governance. History of women's access and participation in governance and politics in Africa; factors influencing political structures in Africa; tactics and leadership styles in contemporary African societies and distribution of power. Current trends in women's political mobilization in Africa; Role of civil society in gender and governance; Gender gap, gender differences in electoral strategies, impact of gender or political behavior, status of women in public office. Gender, governance and affirmative action; gender quotas and the electoral systems; Case studies of politically active women in the continent.

GEDS 332: Statistical Methods in Gender (45/0/0: CF 3.0) Y3S1

Introduction to sex disaggregated data in statistics. Ability to use, present and interpret numerical data disaggregated by sex in order to communicate aspects of social life in an effective and informative way. Levels of measurements and univariate descriptive techniques, measures of association. Logic of multivariate analysis, sampling error, significant testing data management, analytical features within Statistical Packages for Social Sciences and using computer packages effectively to analyses data.

GEDS 313: Gender Analysis (45/0/0: CF 3.0) Y3S2

Overview of gender analysis; Introduction to Gender Analysis Concepts and steps; frameworks and tools; Women and men participation in development and decision-making. Relationship between men and women in their conditions; life needs, levels of participation, access to and control of resources. Gender analysis of the unequal distribution of advantages and disadvantages for men and women in society. Gender as a social factor in policy, social and economic relations. Causes of gender inequality; ways and means of achieving balanced relationships between men and women in society. Evaluating potential impacts of programmes and policies on men and women as an integral part of developing government programmes and policies. Relevance of gender analysis in development.

GEDS 314: Gender and Law (30/30/0: CF 3.0) Y3S2

Gender differentiation in law, legal system, legal education and legal profession. The law making process; Law as an agent of social ordering and its use to effect social change. Use of law in cases of sexual harassment, domestic violence; denial of basic rights: restriction on employment, inheritance, ownership of land. Laws that perpetuate discrimination. Role of the legislature; making laws that outlaw discrimination; providing sanctions for violations. Exploration of law reform and social justice strategies: advocacy and lobbying. Case studies in justice administration. Field trip to the administration of justice delivery system in Kenya; courts, police and prosecutors. Write up of practical lessons learnt from the field trip.

GEDS 315: Gender and Criminology (45/0/0: CF 3.0) Y3S2

Analysis of types of crime, theories of crime, causes of various types of crime committed by gender. Impact of social change on the crime situation in Kenya, methods of crime control and prevention, treatment of offenders by gender, efficiency of crime control and prevention mechanisms, societal reaction to crime committed by various gender, alternative methods of imprisonment. Emerging issues in gender and crime: Case studies and report writing.

GEDS 316: Gender Research and Report Writing (30/30/0: CF 3.0) Y3S2

Overview of gender research terms; theories in Gender Research (e.g Grounded theory, gender perspective theory and feminist theory), gender research areas, advantages/ disadvantages of qualitative and quantitative research methods. Proposal formulation; stages of proposal writing (introduction, problem statement--), data analysis techniques and process of generating themes. Developing skills in thesis/report writing process, formatting, layout, headings (numbering/language/paragraphs/sentences), and referencing styles (APA/ Harvard).

GEDS 322: Entrepreneurship in Contemporary Society (45/15/0: CF 3.5) Y3S2

The concept of entrepreneurship, role of entrepreneurship in socio-economic development, gender and entrepreneurship, role of women groups in entrepreneurship, mobility and entrepreneurship; access and management of technology; access to training, information and advice, women and credit facilities and other resources. Challenges faced by women entrepreneurs and strategies of overcoming these challenges. Budgeting and business plans; Current trends and case studies. Field trip (women entrepreneurs).

GEDS 323: Women, Information and Media (45/0/0: CF 3.0) Y3S2

Definitions of Media and information: Variations of media and forms of information. Description of modes and channels of communication. Analysis of images of women in the media. Media representations and misrepresentations of women in Kenya. Exploration of key issues of Gender-Media relation: representation of women in media, discourse and industry; analysis of news media coverage of women in politics; marketing of 'girl power'; strategizing for equality in newsrooms, Employment and Decision-Making. Sexual discrimination and Violence in the Media; Representation, Interaction and Discourse. Gender and information technology: Exclusion and Marginality; Gender and Cyberspace; History of women and

information technology. Role of media in empowering women.

GEDS 332: Statistical Methods in Gender (45/0/0: CF 3.0) Y3S1

Introduction to sex disaggregated data in statistics. Ability to use, present and interpret numerical data disaggregated by sex in order to communicate aspects of social life in an effective and informative way. Levels of measurements and univariate descriptive techniques, measures of association. Logic of multivariate analysis, sampling error, significant testing data management, analytical features within Statistical Packages for Social Sciences and using computer packages effectively to analyse data.

GEDS 342: Field Attachment- (HOLIDAY PERIOD) (0/120/0: CF 4.0) Y3S2

Three months attachment in organizations related to students project and or research interest; hospitals, schools, industries, NGOs. Attachment report of between 5000 and 8000 words to be written by students in areas of gender, women and development. Students will be supervised in the field.

GEDS 412: Gender Mainstreaming in Project Management (45/0/0: 45/0/0: CF 3.0) Y4S1

Concepts for gender mainstreaming in Programme management; cyclical model and gender mainstreaming, selection of project engendered priority and themes; Understanding project cycle management from a gender perspective: enhancing quality of gender equality in project management, Main checklists for gender mainstreaming in projects; Assessing the significance of gender perspectives in various phases.

GEDS 421: Funding Proposal Writing (45/0/0: 45/0/0: CF 3.0) Y4 S1

Definition of terms, Introduction to writing funding proposal; Introduction, problem statement, the role of literature review; objectives in funding proposal, research methodology. Summarized proposed activities, anticipated outcomes and their linkages to the timeframe. Budgeting, proposal defense skills, use of power point, formatting skills and referencing styles.

GEDS 422: Women and Religion (45/0/0: CF 3.0) Y4S1

Definitions; concepts of various religious viewpoints; basic belief of religions and women; place and status of women in religious systems; women and Islam; women and Christianity; women and Hinduism; women and Buddhism; women and Judaism; Women and African traditional religions; effects of Science and secularism on religion and women. Cults, occults, gender and religion.

GEDS 423: Ageing Process and Gender (45/0/0: CF 3.0)Y4S1

The ageing process and gender; ageing factors in gender, scientific factors of ageing, application of advantage age factors in women. Social cognition; stereotypes, attitudes, discrimination regarding ageing. Cultural differences and male/female experiences of ageing in Africa. Menopause, andropause, mid-life crisis, sexuality, cancer, mental health and diseases of the laterage. Retirement and social security. Death and bereavement

GEDS 431: Gender, Environment and Development (30/30/0: CF 3.0) Y4S1

Overview of environmental development and management; Identification and prioritisation of Gender issues in natural resources, environment and development. Challenges of environment and development: poverty, governance, culture. Gender inequalities; access to and control of natural resources for development. Gender roles and relation. Concepts in Ecofeminism. Sustainable environment management concepts; EMCA, EIA; Agroforestry. Gender conflicts in environment and development. Integration of gender specific needs in the mainstream of environment and development. Two field trips to selected areas of interest. *PREREQUISITE ENSC 100*

GEDS 432: Gender, Economy and Workplace (45/0/0: CF 3.0) Y4S1

Various economic systems existing in society and how they influence the division of labour. Trends in labour force and labour markets structures in Kenya and other African countries. Role of education and training in gender economy and workplace; Flexible worker;

occupational specialization and gender; Socialization and gender economy and workplace Gender issues and implication of hours of work, income structures, employment and unemployment in understanding gender, economy and workplace.

GEDS 433: Gender, Conflict and Post Conflict Reconstruction (45/0/0: CF 3.0) Y4S1

Definition of concepts. Theories of conflict. Analysis of 'the role of men and women in armed conflicts. Political socialization, peace building processes at the family, community, national and international levels. Conflict trends and analysis of the impacts of armed conflicts on men, women, girls and boys. Peace strategies to combat armed conflict. UN security Council. How gender dimensions should be integrated in peace building, post-conflict capacity building and economic reconstruction. Contemporary issues in peace and conflict resolution.

GEDS 434: Gender Responsive Monitoring and Evaluation (45/0/0: CF 3.0) Y4S1

Introduction to monitoring and evaluation ; definition and concepts; Reasons to monitor gender specifically; Principles and guidelines for gender-sensitive M&E; indicators for use in monitoring, Linking gender outcomes with the overall objective; global gender indices; standards and guidelines; A review of practical experiences; measuring women's empowerment and social transformation in the post-2015 agenda; evaluation approaches and methods; gender indicators; global gender indices; questions to consider in designing a gender-sensitive M&E component.

GEDS 435: Gender and Organizational Policies (45/0/0: CF 3.0) Y4 S2

Overview of gender and organizational policies; Organizational structures that perpetuate inequality and their eradication mechanism; introduction to gender audit and analysis tools for diagnosis of organizations, differential treatment in the work place; differential pay, promotion disparities; affirmative action, retrenchment, staff training and staff welfare. Gender mainstreaming, gender planning and change management in organizations.

**GEDS 441: Seminar in Gender and Women Studies
(0/60/0: CF 2.0) Y4S2**

Presentations and discussions on various gender issues. Content of presentation and discussion based on projects, assigned topics related to gender, women and development; introduction to development, development theories, poverty and livelihood, gender matters in development, case studies.

GEDS 413: Socio-Cultural Dimension in Reproductive Health (45/0/0: CF 3.0) Y4S2

Gender socialization and parenting; the manhood puzzle; motherhood and fatherhood; gender, health and social problems; women, weight, and food. Gender and substance abuse, alcohol, drugs, smoking; women and AIDS. Feminist perspective on reproduction. Sexism, racism, classism and how they contribute to women's health problems; optimal health and well-being of both men and women. Incidence, diagnosis, treatment of particular diseases (e.g.; breast cancer, cardiovascular disease, eating disorders) shaped by gender, race and class, sexual identity. Lifespan development, physical and mental health, social roles and social systems. Contemporary views and practices in reproductive health.

9.3 Matrix aligning courses/units to Programme learning outcomes

Matrix linking courses/links to Programme Learning Outcomes								
	Year 1		Year 2		Year 3		Year 4	
Programme Learning Outcomes (PLO)								
	Courses	CF	Courses	CF	Courses	CF	Courses	CF
PLO 1:Skills understand how to identify the importance of gender equity in development	-Gender and Reproductive Health	3.0	-Gender and Education	3.0	-Gender Analysis	3.0	-Gender Mainstreaming in Project Management	3.0
	-African Women in History and Contemporary Society	3.0	-Poverty, Policies and Gender	3.0	-Gender and Law	3.0	-Gender, Economy and Workplace	3.0
	-Introduction to Gender Development	3.0	-Gender and Social Welfare Policies	3.0	-Women and Governance	3.0	-Gender, Conflict and Post Conflict Reconstruction	3.0
			-		-Gender Based Violence-	3.0		
					Entrepreneurship in Contemporary society	3.0		
PLO 2: Analytical knowledge for organizational capacity building gender and development	-Gender Culture and Creativity	3.0	-Gender and Childhood Development	3.0	-Field Attachment	3.0	-Gender Mainstreaming in Project Management	3.0
	-Gender and Sexuality	3.0	-Poverty, Policies and Gender	3.0	-Human Rights and Ethics	3.0	-Socio-Cultural Dimension in -Reproductive Health	3.0
	-Gender and Sexuality	3.0	-Gender, Language and Communication	3.0	-Gender and Law	3.0	-Gender, Economy and Workplace	3.0
			-Guidance and Counselling basic Skills	3.0	-Gender Analysis	3.0	- Responsive Monitoring and Evaluation	3.0
			-Gender, Science and Technology	3.0	-Women and Governance	3.0	-Gender and Organizational Policies	3.0
					-Field Attachment	4.0	-Seminar in Gender and Women Studies	3.0
					-Gender Analysis	3.0		3.0
					-Gender and Criminology	3.0		3.0
					-Gender Research and Report Writing	3.0		
	PLO3: Development of skills to incorporate gender to planning and implementation in projects	-Introduction to gender and development	3.0	-Introduction to Gender Research Methods	3.0	Gender Analysis	3.0	-Gender Responsive Socio-Cultural Dimension in
-Masculinity in the African Perspective		3.0	-Gender, Agriculture and Food Security	3.0		3.0	-Reproductive Health	
-Introduction to feminist and gender theories		3.0					Gender Mainstreaming in Project Management	3.0
-Gender, Work and Family		3.0					-Gender, Environment and Development	3.0
		3.0						
PLO4: Incorporate gender mainstreaming in projects	-Policies in gender mainstreaming	3.0	-Introduction to Gender Research Methods	3.0	-Gender Analysis	3.0	-Gender and Organizational Policies	3.0
	-Responsive gender	3.0	-Globalization and		-Statistical Methods in Gender	3.0	-Gender Mainstreaming in Project Management	3.0

	monitoring and evaluation		Gender Dynamics	3.0			-Gender Responsive Gender and Organizational Policies	3.0
PLO 5: Applying acquired skills and abilities	-Computer Applications	3.0	-Guidance and basic Counselling Skills	3.0	-Gender Research and Report Writing	3.0	-Organizational Policies	3.0
	-HIV/AIDS and Society	3.0	-Gender Research and Report Writing	3.0	-Gender Analysis	3.0	-Seminar in Gender and Women Studies	3.0
							-Gender Mainstreaming in Project Management Monitoring and Evaluation	3.0

COLLEGE OF OPEN AND DISTANCE LEARNING

DIPLOMA IN MILITARY SCIENCE

1. Philosophy of the programme

War is fought and won not only with Military Hardware, but also with intelligence and dexterity.

2. Rationale

The Diploma of Military Science programme is tailor-made for serving officers of Kenya Defence Forces. The Programme seeks to broaden their general understanding on issues that affect their day to day work and the country at large.

3. Goal of the programme

To provide a carefully selected mix of military and academic courses to produce an efficient and reliable officer

4. Programme learning outcomes

PLO 1 Equip the graduates with knowledge, skills and attitude that enable them to be flexible and easily adaptable to varying working environments.

PLO 2 Enhance the capacity to acquire and use information/data for purposes of making accurate and informed decisions in their routine professional duties.

PLO 3 Analyse the various operational situations for effective management of security sustenance.

5. Mode of delivery

The mode of delivery of the courses will be by distance learning with three face to face; sessions of about a week each; Induction, Mid-Semester Review with continuous assessment and End of semester review with continuous Assessment and Examinations. Full time

face to face mode could also be used should the need arise.

6. Academic Regulations for the programme

6.1 Admission requirements

- i. All candidates to be admitted to the Diploma in Military Science must satisfy the minimum common entrance requirements as stipulated in Egerton University Statutes 36 of 2013.
- ii. Military Officers holding qualifications equivalent to the above from institutions recognised by Egerton University Senate may also be considered for admission.

6.2 Regulations on credit transfer in the programme

Credit transfer shall be as stipulated in the Egerton University Statutes 36 of 2013.

6.3 Course Requirements

This will be as per Egerton University Statute 36 of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment/Criteria

Students will be assessed as stipulated in Egerton University statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36(6) of 2013.

6.6 Examination regulations

Examination regulations will follow Egerton University statute 36 (5) of 2013.

6.7 Moderation of Examinations

Examination moderation shall follow Egerton University statute 36 (5) of 2013 and ISO procedure EU/AA/OP/07.

6.8 Graduation Requirements

Conferment of a Diploma shall be to candidate who have passed all courses offered and satisfied relevant statutes of Egerton University.

6.9 Classification of Diploma

Classification of Diploma will be done as stipulated in Egerton University Statute 36(17a) of 2013.

7.0 Course Evaluation

Course evaluation will be done in accordance with ISO teaching effectiveness evaluation procedure EU/VC/OP/04

8.0 Management and Administration of the Programme

The programme will be hosted in the College of Open and Distance Learning. The programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.1 Programme Evaluation

The programme will undergo an internal programme evaluation (self-assessment) at the end of each academic cycle in accordance with statute EU/VC/OP/05 of Egerton University

8.2 Course Coding

The course coding is made up of four capital letters "MILS" which is an acronym for Military Science, followed by four digits:

The first digit is zero indicating that it is a Diploma course.

The second digit indicates the year or level the course is offered where the 2nd digit is 1, the course is Military. The other digits indicate serialization.

9.0 Course/Units offered should include

9.1 Schedule of Courses

a. Common core Courses

COMS 0101: Communication Skills

PHIL 0104: Philosophy and Society

PHIL 0106: Law and Society

b. Schedule of courses

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	C.F
PHIL 0104	Philosophy and Society	45	0	3.0
MILS 0111	Military History I	45	0	3.0
MILS 0113	National and International Affairs	45	0	3.0
MILS 0123	Mathematics	45	0	3.0
MILS 0127	Financial Management	45	0	3.0
COMS 0101	Communication Skills	45	0	3.0
MILS 0125	Computers	45	30	4.0
TOTAL		315	30	22.0

YEAR 1 SEMESTER 2

MILS 0112	Military Strategy I	45	0	3.0
MILS 0114	Command	45	0	3.0
MILS 0120	Introduction to Research Methods	45	0	3.0
MILS 0122	Geography I	45	15	3.5
MILS 0126	Principles of Micro Economics	45	0	3.0
MILS 0116	Management	45	0	3.0

PHIL 0106	Law and Society	45	0	3.0
TOTAL		315	15	21.5

YEAR 2 SEMESTER 1

MILS 0211	Military History II	45	0	3.0
MILS 0213	Military Strategy II	45	0	3.0
MILS 0225	Introduction to Environmental Management	45	0	3.0
MILS 0229	Elements of Climate Geography	45	0	3.0
MILS 0221	Research Methods	30	30	3.0
MILS 0223	General Psychology	45	0	3.0
MILS 0227	Principles of Macro Economics	45	0	3.0
TOTAL		300	30	21.5

YEAR 2 SEMESTER 2

MILS 0210	Leadership	45	0	3.0
MILS 0216	Theory and Practice of Military Thought	45	0	3.0
MILS 0226	Disaster Preparedness and Management	45	15	3.5
MILS 0228	Applied Psychology	45	0	3.0
MILS 0212	Research Project and Seminar	0	120	4.0
MILS 0220	Organizational Behaviour	45	0	3.0
MILS 0222	Conflict Resolution and Management	45	0	3.0
MILS 0224	Financial Management	45	0	3.0
TOTAL		315	135	25.5

c. Course Descriptions

MILS 0111: Military History I

Introduction to History, and Military History. War and Principles of War. Evolution of Weapon Systems.

Warfare from 1500 to 1830. Changes in warfare between 1830 – 1945. War in ancient times. First World War, causes and course. Aftermaths of World War I. The League of Nations.

MILS 0112: Military Strategy I

Introduction to Military Strategy, Evolution of Strategic Thought, Classical thinkers, Modern Strategic Thinkers, Modern Strategic Concepts, National Strategic Concepts, Development of Grand (National) Strategy, Military Strategy and Doctrine. (The Strategy Making Process), The Principles of War, The Nature of Strategy, Causes of War.

MILS 0113: National and International Affairs I

Concepts and definitions, Theories and development of nation, nation-states, Evolution and Emergence of Nation states in Africa. Contextualizing International Organisations. Definitions, terminologies, role(s) of International organizations, League of Nations, United Nations Organizations, Organizations of Africa Unity, Africa Union, Non-Alignment Movement, Regional Organizations. Ideological blocs and the Arms Race, USA as a Super Power, Indian Ocean and Littoral States, An overview of modern world conflicts.

MILS 0114: Command

Training and training management. Supply and maintenance support. Important command matters. Extra-curricular activities. Unit facilities maintenance. Personnel welfare programmes. Safety and security.

MILS 0120: Introduction to Research Methods

Nature and function of research. Sources of data. Secondary and primary. Methods of data collection; sample survey methods; direct observation, interviews, participant observation, questionnaires, library research. Data interpretation and presentation; graphs, tables, charts and diagrams.

MILS 0122: Geography I

Introduction to different types of maps and photographs: topographical maps, population maps, aerial photographs and satellite images. Scale and its significance. Using scale to measure distances of roads, rivers, areas (both regular and irregular), in the field. Map making process and use of different types of maps for landform hydrological and vegetation analysis. Interpretation of natural and man-made features from maps and aerial photographs. Field work techniques for data gathering. Field exercises focusing on interpretation of human activities, natural features and their relationships. Analysis of data.

MILS 0225: Introduction to Environmental Management

The definition of the environment; environmental science and technology; environments components and resources; major ecosystems and biomes; goods and services provided by the ecosystems; biochemical cycles and significance to the ecosystems; Human intervention and resultant effects and mitigation measures. The concept of sustainability and sustainable development. Environment and Technology.

MILS 0123: Mathematics

Elementary properties of real numbers. Laws of indices. Expansion and factorization of algebraic and quadratic expressions. Solutions and quadratic formula. Absolute value function and inequalities. Relations and functions; dependent and independent variables. Domain and range. Composite and inverse functions. Polynomial functions, factor and remainder theorems. Factorization for up to degree 3. Exponential and logarithmic functions. Permutations and combinations. Binomial coefficients and binomial theorem. Arithmetic and geometric progressions. Induction formula. "The notation, dummy variable and partial sums. Elements of geometry; equation of straight line and circles." Differentiation of simple functions and gradient to a curve. Turning points and curve sketching. Integration

of simple functions area under a curve; volumes of revolutions.

MILS 0125: Introduction to Computers

General introduction to computers. Basic architecture of micro- computer systems, systems and application software such as MS windows and Ms Office. Overview of embedded systems. Skill development in basic word Processing, spreadsheets, database management and micro-computer operations.

MILS 0126: Principles of Micro Economics

Definition, Scope and Methods of economics; Nature and scope of microeconomic; Economic systems and organizations; Theory of demand and supply, Elasticity theory, Resource allocation/distribution; Consumer theory; Production theory Costs of production; Factor pricing; Markets and the theory of market structures.

MILS 0211: Military History II

The French Revolutionary and Napoleonic Wars. The American Civil wars. Italian and German unification. Prelude, battles and campaigns of World War I. The Paris Peace Conference and the League of Nations. World War II: theatres, battles, weaponry, generalship - the Axis powers and the Grand coalition. The U.N.O. in the history of war. The Atomic and Nuclear ages.

MILS 0213: Military Strategy II

Nuclear War Strategy, Reflections on Strategy in the Present and the future, Limited War Strategy: Korea, Revolutionary Warfare, The Strategy of Terrorism, Regional Security: A Theory, Revolution in Military Affairs, Military Interventions and the UN.

MILS 0210: Leadership

Introduction to leadership - Definitions of leadership/Military leadership theories; Principles of leadership, leadership traits. Motivation. Military professionalism. The leader and counselling the military, press and public relation. Leadership styles.

MILS 0216: Theory and Practice of Military Thought

Background to Military Thought. Schools of thought about War. Military thinkers, Machiavelli, Gustavus Adolphus, Vaun Ban and their legacies. War and Tactics, the Macedonian army, the Greek Warfare before Philip, Philip's new model army. Theory and Practice of Military Thought. Generalship; Alexander, Fredrick, Napoleon, Mc Arthur.

MILS 0116: Management

Introduction to the Scope of Military Management, Functions of Management, Role of Communication in Management, Manpower Planning, Career Planning, Personnel Recruitment Training and Development, Job Evaluation, Performance appraisal, Creative thinking, Time Management, Delegation and Decentralisation, Human relations and Motivation, Stress Management.

MILS 0221: Research Methods

Nature and functions of research. Elements of research design: Statement of the problem, objectives, hypothesis, literature review, sampling frame and sample size, sources of data and data collection methods. Field research techniques; observation, experimental, interview, use of questionnaires. Quantitative and qualitative techniques of data analysis. Data interpretation and report writing.

MILS 0223: General Psychology

Historical perspective of psychology. Theories of psychology. Attitudes and personality. Factors that influence human personality. Perception and intelligence. Human development: learning, motivation and emotions. Group dynamics.

MILS 0226: Disaster Preparedness and Management

Basic principles of ecology. Ecosystems balance. Factors influencing ecosystems balance. Sources and agents of environmental pollution. Introduction to the

concept of disaster. Different types of disaster; earthquakes, floods, famine, lighting, volcanic eruptions, tsunamis, landslides, hurricanes, fires, oil spills terrorism, war gas leaks, civil engineering works, occupational hazards, nuclear fall-outs, industrial accidents and their management.

MILS 0227: Principles of Macro-Economics

Definition and Scope of macroeconomics; micro and macro-economic links; National Income accounts, National Income determination; the consumption, investment and saving functions; the simple Keynesian macroeconomic models; monetary and fiscal policy; Inflation; Unemployment and balance of payments.

MILS 0228: Applied Psychology

Basic and applied psychology. Psychodynamic theory. Behaviourism. Humanistic theory. Human motivation. Theories of personality. Personality traits and testing. Intelligence testing. Psychopathology. Behaviour modification. Psychological counselling and tests. Mental health. Psycho-social development. Counselling approaches and techniques.

MILS 0222: Conflict Resolution and Management

Definition, types and levels of conflict. Causes of conflicts in society. Social conflict as a theory of social change. Social harmony versus class conflict. Social inequality and conflict. Social conflict and violence. Social function of conflict and violence. Psychological, socio-economic, cultural and political implications of conflicts. Methods and theories of conflict prevention and management. The role of national and international organizations institutions in conflict management.

MILS 0229: Elements of Climate, Geomorphology and Hydrology

The elements of weather and climate. History of weather forecasting and growth of meteorological and climatologically services. Weather observations and forecasting, composition of atmosphere. Energy and

moisture of the atmosphere. Heat exchange in the atmosphere. Evaporation, condensation and precipitation. Pressure, winds and atmospheric motion. Local weather. Microclimatology. Climate and climate classification. Climatic change. The elements of hydrological cycle. The water flow systems. Agents of Erosion and sedimentation: water, wind, waves, glaciations. The geomorphic process. Mass movement and landscapes resulting from geomorphic processes and mass movement.

MILS 0212: Research Project

Select a research topic in liaison with lecturer in-charge. Write a research proposal. Collect and analyze data. Interpret the empirical results. Present a report.

MILS 0127: Financial Management

The purpose of accounting. Accounting equation and balance sheet. Accounts of sole traders, partnerships, limited companies, depreciation, bad debts, provision for bad debts, accruals, prepayments, statements. Types of record books, accounting conventions.

MILS 0220: Organizational Behaviour

The nature of organizations; the development and theories of organizations; the individual in organization; groups in the organizations; conflict in organization; the structure of formal organizations; bureaucracy; leadership, communication and motivation in organizations; organizational changes; organizations in developing regions.

MILS 0224: Financial Management

Application of agricultural finance to farm and other agricultural business firms. Elementary mathematics of finance and the objectives of financial management. Financial statements, cash flow analysis, financial leverage and other elements in the application of the capital investment. Investment appraisal, costs of capital for making management decisions. Dividend policy.

9.2 Matrix aligning courses/units to programme learning outcomes

Programme Learning Outcomes	Year 1	CFs	Year 2	CFs
PLO 1 Equip the graduates with knowledge, skills and attitude that enable them to be flexible and easily adaptable to varying working environments.	Introduction to Research methods Geography I Philosophy and Society Law and Society	3.0 3.5 3.0 3.0	Introduction to Environmental management Elements of climate geography Research Method Research project and seminar	3.0 3.0 3.0 4.0
PLO 2 Enhance the capacity to acquire and use information/data for purposes of making accurate and informed decisions in their routine professional duties.	Financial management Introduction to computers Mathematics Communication Skills Computers	3.0 3.0 3.0 3.0 3.0	Principles of micro Economics Principles of Macro Economics Financial management	3.0 3.0 3.0
PLO 3 Analyse the various operational situations for effective management of security sustenance.	Military history 1, National and International Affairs Command Military strategy 1 Management	3.0 3.0 3.0 3.0 3.0	Military history II Military strategy II Theory and practice of Military thought Conflict resolution and management Leadership Applied psychology Disaster preparedness and management Organizational behaviour	3.0 3.0 3.0 3.0 3.0 3.0 3.5 3.0

BACHELOR OF MILITARY SCIENCE

1. Philosophy of the programme

Military training is not only about Military Hardware, but also about intelligence and dexterity.

2. Rationale

The Bachelor of Military Science degree programme is tailor-made for serving officers of Kenya Defence Forces. The Programme seeks to broaden their general understanding on issues that affect their day to day work and the country at large.

3. Goal of the programme

To provide a carefully selected mix of military and academic courses to produce an efficient and reliable officer

4. Programme learning outcomes

PLO 1 Perform professional military duties and other related tasks more effectively and efficiently.

PLO 2 Plan, design and implement innovative strategies and delivery of efficient services using available resources.

PLO 3 Evaluate and analyze different situations and make rational decisions.

PLO 4 Carry out operational tasks and research for the improvement of military service

5. Mode of delivery

The programme will be blended with three face to face sessions per semester each lasting a week: Induction, Mid Review and End of Semester Review.

6. Academic Regulations for the Programme

6.1 Admission requirements for the Programme

All candidates must satisfy the minimum common entry requirements as stipulated in Egerton University Statute 36(2) of 2013. Military Officers holding qualifications equivalent to the above from institutions recognised by Egerton University Senate may also be considered for admission.

Admission may be offered to Military Officers who hold Diploma in Military Science of Egerton University or its equivalent.

6.2 Regulations on credit transfer in the programme

Candidates may be allowed credit transfer as per Egerton University statutes of 2013 articles 36 (3).

6.3 Course Requirement

This will be as per Egerton University Statute 36 of 2013 and ISO procedure for teaching (EU/AA/OP/06 rev 3).

6.4 Student Assessment Criteria

Students will be assessed as per Egerton University Statute 36(6) of 2013.

6.5 Grading System

The grading of examinations for this programme shall be conducted in accordance with Egerton University Statute 36 (6) of 2013.

6.6 Examination regulations

Examination regulations shall follow Egerton university statute 36 (5) of 2013

6.7 Moderation of Examinations

Examination moderation shall be done as per ISO procedure EU/AA/OP/07

6.8 Graduation Requirements

To qualify for a Bachelor of Military Science Degree, candidates must have taken and passed all the prescribed courses of study (144 CFs) within prescribed time

6.9 Classification of degrees

Classification of degrees will be done as stipulated in Egerton University Statute 36 (17a) of 2013

7. Course Evaluation

All courses will be evaluate using ISO Teaching Effectiveness Evaluation Procedure EU/VC/OP/04

8. Management and Administration of the Programme

8.1 Host department and Programme Academic Leader

The programme will be hosted in the College of Open and Distance Learning. The Programme academic leader shall be appointed according to the University Standards and Guidelines (2014).

8.2 Programme Evaluation

The programme will undergo an internal programme evaluation at the end of each academic cycle in accordance with ISO procedure EU/VC/OP/05

8.3 Course Coding

Course coding is made up of four capital letters "MILS" which is an acronym for Military Science, followed by three digits:

The first digit indicates year of study.

The 2nd digit is one (1) denotes Military course.

The 3rd digit indicates serialization.

9.0 Course/ units offered for the program

9.1 Schedule of Courses

a. Common core Courses

COMS 111: Communication Skills

PHIL 104: Philosophy and Society

PHIL 106: Law and Society**b. Schedule of courses****YEAR 1 SEMESTER 1**

CODE	TITLE	L	P	C.F
COMS 111	Communication Skills	45	0	3.0
PHIL 104	Philosophy & Society	45	0	3.0
MILS 112	Military Strategy I	45	0	3.0
MILS 113	Military History I	45	0	3.0
MILS 125	General Psychology	45	0	3.0
ECON III	Micro Economics	45	0	3.0
TOTAL		270	0	18.0

YEAR 1 SEMESTER 2

PHIL 106	Law and Society	45	0	3.0
MILS 111	National and International Affairs I	45	0	3.0
MILS 114	Leadership I	45	0	3.0
MILS 116	Military Strategy II	45	0	3.0
MILS 118	Management I	45	0	3.0
MILS 128	Applied Psychology	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 1

ECON 121	Macro Economics	45	0	3.0
MILS 211	Military History II	45	0	3.0
MILS 213	Command I	45	0	3.0
MILS 224	Project Development and Management	45	0	3.0
MILS 228	National Disaster Management	45	0	3.0
GEOG 316	Political Geography	45	0	3.0
TOTAL		270	0	18.0

YEAR 2 SEMESTER 2

MILS 212	National and International Affairs II	45	0	3.0

MILS 214	Theory and Practice of Military Thought I	45	0	3.0
AGBM 221	Financial Accounting	45	0	3.0
MILS 223	Research Methods	45	0	3.0
GEOG 224	Population Geography	45	0	3.0
MILS 226	Conflict Resolution and Management	45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 1

GEOG 211	Remote Sensing	45	0	3.0
MILS 313	Theory and Practice of Military Thought II	45	0	3.0
MILS 315	Command II	45	0	3.0
MILS 321	Economic Development	45	0	3.0
MILS 325	Entrepreneurship Fundamentals Of Physical and Human Geography	45	0	3.0
MILS 327		45	0	3.0
TOTAL		270	0	18.0

YEAR 3 SEMESTER 2

MILS 312	Leadership II	45	0	3.0
MILS 316	Auditing I	45	0	3.0
SOCI 314	Gender and Development	45	0	3.0
MILS 314	Management II	45	0	3.0
GEOG 324	Geographic Information Systems Business Law	45	0	3.0
MILS 324		45	0	3.0
TOTAL		270	0	18.0

YEAR 4 SEMESTER I - CORE

SOCI 303	Criminology	45	0	3.0
MILS 411	Armed Conflict and International	45	0	3.0

	Humanitarian Law			
MILS 413	Theory, Practice and Policy of Military Strategy	45	0	3.0
MILS 421	Public Relations	45	0	3.0
MILS 424	Research Project	15	60	3.0
MILS 427	Human Resources Management	45	0	3.0
TOTAL		285	60	18.0

Year 4 Semester 2

AGHE 140	Human Health	45	0	3.0
AGBM 210	Behavioural Science	45	0	3.0
MILS 411	Auditing II	45	0	3.0
MILS 412	Seminar in Peace Studies	45	0	3.0
AGBM 415	Financial Management	45	0	3.0
MILS 426	Ethics and Governance	45	0	3.0
TOTAL		270	0	18.0

(c) Course Descriptions

MILS 111: National And International Affairs I

Concepts and definitions; theories and development of nation, nation-state; evolution and emergence of Nation States in Africa. Contextualising International Organizations. Definitions, terminologies, role(s) of International Organizations, League of Nations, United Nations Organizations, Organizations of Africa Unity, Africa Union, Non-Alignment Movement, Regional Organizations. Ideological blocs and the Arms Race, USA as a Super Power, Indian Ocean and Littoral States, An overview of modern world conflicts (Y1S2).

MILS 112: Military Strategy I (45/0:C.F.3.0)

Introduction to Military Strategy, Evolution of Strategic Thought, Classical thinkers, Modern Strategic thinkers, modern strategic concepts, National Strategic Concepts, Development of Grand (national) Strategy, Military Strategy and Doctrine. (The strategy making process) The Principles of War, The Nature of Strategy, Causes of War (Y1S1)

MILS 113: Military History I (45/0: C.F. 3.0)

The French Revolutionary and Napoleonic Wars. The American Civil wars. Italian and German unification. Prelude, battles and campaigns of World War I. The Paris Peace Conference and the League of Nations. World war II: theatres, battles, weaponry, generalship - the Axis powers and the Grand coalition. The U.N.O. in the history of war. The atomic and Nuclear ages. (Y1 S1)

MILS 114: Leadership I (45/0: 3.0)

Introduction to leadership and approaches to leadership. Functions, responsibilities and styles of leadership. Leadership in the traditional African setting. Military leadership and public relations. Comparative studies of

traditional leadership in Africa, Asia and Europe. (Y1S2)

MILS 116: Military Strategy II (45/0 CF. 3.0)

Sun Tzu and the fundamentals of strategy: policy and strategy, Sun Tzu's art of war. ; Clausewitz and the foundations of modern strategy: war and policy, Clausewitz art of war. Clausewitz and Sun Tzu: a comparison. Strategy and policy in a revolutionary era: French nationalism, Napoleons campaigns. Policy and strategy of limited war. Bismarck and the wars of German unification; causes of war, Bismarck's war strategies. The first World War: policy; causes of the war, strategy and the dynamics of total war, theory of policy-strategy relationship-land, air and maritime operations. The dynamics of war termination strategy (Y1 S2)

MILS 125: General Psychology (45/0: CF 3.0)

Historical perspective of psychology. Theories of psychology. Attitudes and personality. Factors that influence human personality. Perception and intelligence. Human development: learning, motivation and emotions. Group dynamics. (Y1 S1)

MILS 128: Applied Psychology (45/0: C.F. 3.0)

Basic and applied psychology. Psychodynamic theory. Behaviorism. Humanistic theory. Human motivation. Theories of personality. personality traits and testing. Intelligence testing. Psychopathology. Behavior modification. Psychological counseling and tests. Mental health. Psycho-social development. Counseling approaches and techniques. (Y1 S2)

MILS 118: Management I (45/0: CF 3.0)

Introduction to the Scope of Military Management, Functions of Management, Role of Communication in Management, Manpower Planning, Career Planning, Personnel Recruitment Training and Development, Job Evaluation, Performance appraisal, Creative thinking,

Time Management, Delegation and Decentralization, Human relations and Motivation, Stress Management. (Y1 S2)

MILS 212: National & International Affairs II (45/0:CF3)

Kenya's national mobilization policy. Policy formulation and decision making in the government machinery. Managing social change in Kenya. National elements of power. Global economic order and its impact on Kenya. Emergence of newly industrialized Nations and Kenya's aspirations. East-West influences in Africa. Arab influence in Africa. Africa's security, security problems. The World Bank, the IMF and Africa's debt problem. Importance of Latin American and the Caribbean in the unpopular World Order. The collapse of the USSR. China and in world affairs. (Y2 S2)

MILS 214: Theory & Practice Of Military Thought I (45/0: CF 3.0)

Background to Military Thought. Schools of thought about War. Military thinkers, Machiavelli, Gustavus Adolphus, Vaun Ban and their legacies. War and Tactict, the Macedonian army, the Greek Warfare before Philip, Philip's new model army. Theory and Practice of Military Thought. Generalship; its essentials diseases, novelty and remedies. Alexander, Fredrick, Napoleon, Mc Arthur (Y2S2)

MILS 211: Military History II (45/0: C.F 3.0)

Middle East Conflict, The Persian Gulf war, the Falkland War, Strategy and generalship of Falkland war, Vietman war, Ogaden war, Angola war, Rwanda massacre, coup de tats, Military rule in Africa, civil wars in Africa (Y2S1)

MILS 213: Command I (45/0: CF 3.0)

Training and training management. Supply and maintenance support. Important command matters.

Extra-curricular activities Unit facilities maintenance. Personnel welfare programmes. Safety and security. Y2S1)

MILS 223: Research Methods (30/30: CF 3.5)

Nature and functions of research. Elements of research design: Statement of the problem, Objectives; Hypothesis; Literature review; Sampling frame and Sample size, Sources of data and data collection methods. Field research techniques; observation, experimental, interview, use of questionnaires. Quantitative and qualitative techniques of data analysis. Data interpretation and report writing. Y2S2)

MILS 224: Project Development and Management (45/0: CF 3.0)

Projects and programmes; projects cycle, identification and preparation; Methods of project formulation; target groups in project preparation; construction of data bases, techniques of preparation, costs and benefits, methods of appraisal, basic techniques of accounting and financial control for production and social projects; choice of technology; programme planning and appraisal; implementation and management; time and cost control; organizational design; monitoring and evaluation methods, ensuring sustainability and further development.(Y2 S2)

MILS 226: Conflict Resolution & Management (45/0: CF3.0)

Definition, types and levels of conflict. Causes of conflict in society. Social conflict as a theory of social change. Social harmony versus class conflict. Social inequality and conflict. Social conflict and violence. Social function of conflict and violence. Psychological, socio-economic, cultural and political implications of conflicts. Methods and theories of conflict prevention and management. The role of national and international organizations institutions in conflict management. (Y2 S2)

MILS 227: Political Geography (45/0: CF3.0)

Introduction to the geopolitical, geostrategic debate. The nature and modern theories of state, nation and nation state and their subdivision at the local level. The theoretical aspects of geostrategic and geopolitics through space and time. Political regions and structure. Political process and time. Political regions and structure. Political process perception and decision-making. The contemporary international relations with particular emphasis on international law and trade, economic integration of land-locked states, regional and international organizations. The last frontiers of the world such as Atlantic and outer and higher seas. Geopolitical aspects of religion and language, transportation, population and food ecology, energy and land use. The future of political geography multinational and transnational corporations, population and food ecology, energy and land use. The future of political geography of small states, air and space, international migration, multinational and transnational corporations, the new international economic order and non-governmental organizational. The role of political geography in the future. (Y2 S1)

MILS 228: National Disaster Management and Environment (45/0: C.F 3.0)

Human response to disasters; measuring the disaster effects; effects; coping with disasters; national disaster management policies; case studies; military role in disaster management; role of non-governmental organizations; disaster preparedness, planning and coping strategies. International involvement in disaster management (Y2S1)

MILS 312: Leadership II (45/0: CF.3.0)

An overview of functions, responsibilities and challenges of leadership. Basis of leadership influence and characteristics of effective leaders. Contingency theories of leadership. Functional leadership. Nature and characteristics of leadership training techniques.

Case studies of military leaders; Alexander the Great, Napoleon Bonaparte, Montgomery, Eisenhower (Y3 S2)

MILS 313: Theory and Practice of Military Thought II (45/0 CF 3.0)

Alliance, politics and global war: Second World War; causes of war, strategies of belligerents. The Cold War and the Korean Conflict: Policy and strategy in a cold war situation, causes of Korean War, Role of the two superpowers. Limited war in a revolutionary setting; Vietnam; causes of the war; nationalism, conduct of the war; retrospect and prospects; the end of the cold war. The Gulf war; intra-state and extra-state wars; A comprehensive look at their distribution over time 1816 - 1997. People against States; Ethnopolitical conflict and the changing Worlds system. The stability of Unipolar Bipolar and Multipolar World. The perils of proliferation. Organization theory; Deterrence theory, and the Spread of Nuclear Weapons. (Y3 S1)

MILS 315: Command II (45/0 CF. 3.0)

Health, fitness of the soldier. Logistic resources and command decisions. Inspection and its role in command. Training. Military justice and administration. Command structure. Command decisions and decision making process. Socio-economic analysis of the Armed Forces. Case study on Ghana's "operation cold chop" (Y3 S1)

MILS 321: Economic Development

Economic development and economic growth. Historic perspective of economic development. Alternative theories and strategies of development. Economic development in developing countries. Comparative analysis of economic development in developing countries. Development planning and market process. Economic planning and resource allocation. Challenges of planning. Importance of Agriculture in economic development. Land tenure reforms. Settlement and irrigation schemes. Technological

change in agriculture. Role of informal sector in economic development. Population and economic development. Theories of demography. Population and labor market. Policy economics. Methods of policy evaluation. Politics and economic policy (Y3 S1)

MILS 323: Remote Sensing (30/30: CF3.0)

Satellite instrumentation in remote sensing. Images; types and uses. Advanced techniques in aerial photography. Needs of environmental monitoring. The physical bases satellite based remote sensing. Active and passive remote sensing. Reflectance characteristics of natural phenomenon. Sensor platforms and sensor packages. Data collection; processing and interpretation. Application of remote sensing and Geographic Information Systems (Y3 S1)

MILS 324: Business Law (45/0: 3.0)

Introduction to the legal environment of business, criminal law and business, Law of Tort and business, The law of Contract; origin, sources, nature, classification, essential elements, mistake, misrepresentation, illegal contracts, Remedies for Breach of contract; agency creation, relationship and purpose; Agent and authority; Principal rights; liabilities and duties; termination of Agency; Ostensible authority, undisclosed Principal, Sales contracts; Nature, essential elements, Doctrine and Caveat Emptor, Conditions and Warranties, Partnership - formation, rights and duties of partners, termination of Partnership. (Y3 S2)

MILS 325: Entrepreneurship (45/0: CF.3.0)

Essentials of investment; investment risk, time value of money, entrepreneurial behavior, understanding enterprise environment, market identification and choosing areas of investment. Forms of organization; financing of new business, costing, sources of finance. Financing of on-going business, drawing up short-term and long-term business plans. Policy and strategy

formulation; personalizing the plans, evaluating and selecting business opportunities, choice of management structure. Financial records; monitoring and evaluation of performance, interpreting financial statement in small businesses. Computer applications in small business management (Y3 S1)

MILS 327: Fundamentals of Physical and Human Geography (45/0: 3.0)

Study of landforms and land forming processes. Plate tectonics. Major features of the earth's surface. The hydrological cycle, earth's resources and development. Water and climate; distinction between weather elements and theory measurements. Major characteristics of the biosphere; concept of biosphere and the domain of biogeography, structure of biosphere, characteristics of the atmosphere, the hydrosphere. Concept of the ecosystem: major ecosystems of the earth, and their classification. Human impact on the biosphere. Conservation of ecology and eco-development. Man's role in changing the face of the earth. The human environment from simple to complex societies. The bases of spatial interaction, the concept of distance (absolute and relative), migration and decision-making. Human settlements and global human activities. (1 S2)

MILS 314: Management II (45/0: 3.0)

Organization theory and behaviour. Personnel Management. Marketing Management. Purchasing and supply. Strategic Management. Financial Management. Small business management (Y4 S1)

MILS 411: Armed Conflict And International Humanitarian Law (30/30: CF 3.0)

Introduction to international humanitarian law. The four Geneva Conventions and Additional protocols. Theoretical approaches to; and historical development of armed conflict and the law of war. Rules and principles applicable in armed conflict. Protection of

the wounded, the sick and the shipwrecked and combatants status. Protection of prisoners of war, protection of civilian population in the hands of the enemy. Role of the medical personnel and humanitarian actors. The socio-economic, social psychological implications of armed conflicts and their management. Armed conflicts of non- international character. Human rights and International humanitarian law. Refugees and armed conflicts. African traditional forms of law and justice with regard to armed conflicts and victims of the same. Practical aspects of conflict preparedness. (4 S1)

MILS 412: Seminar in Peace Studies

The Seminar in Peace Studies seeks to provide an opportunity for the student to conduct a survey of literature and experiences on pertinent issues relating to peace initiatives within the country, region and beyond. The following is an indication of the issues students will be expected to research on: Global problems in the 21st Century; Post – Conflict peace building, International relations in the context of development, peace processes in creating a just and stable World; the role of national and regional organizations in peace processes and regional stability; the role of the Kenyan Military in maintaining peace within the country, region and the World in general. Resulting from independent research studies, each student will prepare and present two (2) papers on selected issues. (Y4 S2)

MILS 413: Theory, Practice and Policy of Military Strategy II (45/0 CF. 3.0)

Sun Tzu and the fundamentals of strategy; policy and strategy, Sun Tzu's art of war. Clausewitz and the foundations of modern strategy; war and policy, Clausewitz art of war. Clausewitz and Sun Tzu; a comparison. Strategy and policy in a revolutionary era; French nationalism, Napoleon campaigns. Policy and strategy of limited war. Bismarck and the wars of German unification; causes of war, Bismarck's war strategies. The First World War; policy, causes of war,

strategies and the dynamics of total war, theory of policy-strategy relationship-land, air and maritime operations. The dynamics of war termination strategy (Y4 S1)

MILS 421: Public Relations (45/0: C.F 3.0)

Introduction to Public Relations. History of Public Relations. Identification of various publics. Public and customer relations. Communication as a tool of public relations. Organizational role of public relations in business survival. Public relations techniques. Organizational change and public relations. Corporate image building. Public relations in the Military Science. Public relations in public organizations. Group dynamic and its management. (Y4 S1)

MILS 423: Criminology (45/0: C.F 3.0)

The nature of crime. Criminal law, theories and causes of crime, professional or organized crime, crime prevention, the traditional and modern methods of treatment of offenders, types of punishment, the rationale of justification for efficacy of types of punishment or non-efficacy of types of punishment, social reaction to crime, alternatives to imprisonment and crime control in societies. (Y4 S1)

MILS 424: Research Project/Seminar (45/0: CF. 3.0)

Select a research topic in liaison with lecturer in-charge. Write a research proposal. Collect and analyze data. Interpret the empirical results. Present a report. (Y4S2)

MILS 426: Ethics & Governance (45/0: C.F 3.0)

Definition of Governance, theories of governance, types of government, the role of political parties and other stakeholders in governance, Definition of ethics and morals. Classification, nature and scope of ethics, definition of corruption, causes, effects of corruption, preventive measures against corruption, ethical and moral issues in corruption, the role of ethics in eradicating corruption. (Y4 S2)

MILS 427: Human Resource Management (45/0: 3.0)

Personnel, Administration and Industrial Relations (PAIR) and management of people; management goals, policy and theory; behavioral science; human resource planning and staffing, sources and recruitment; selection policy, program and practices. Personnel appraisal; productivity and human resource development; training and development concepts; methods and programs; employee morale and communication; wage and salary administration; employee benefits and services labour versus public relations; contract negotiation and administration; stress management; Audit and Research (Y4S1)

9.3 Matrix aligning courses/units to programme learning outcomes

Programme Learning Outcomes (PLO)	Year 1	C.F	Year 2	C.F	Year 3	C.F	Year 4	C.F
PLO 1 Perform professional military duties and other related tasks more effectively and efficiently.	Military Strategy 1	3.0	Theory and Practice of Military Thought I	3.0	Theory & Practice of Military Thought II	3.0	Theory, Practice and Policy of Military Strategy	3.0
	Military Strategy II	3.0	Conflict Resolution & Management	3.0	Leadership II	3.0	Criminology.	3.0
	Military History I	3.0	Military History II	3.0	Command II	3.0	Seminar in Peace Studies	3.0
	Leadership I	3.0	Command I.	3.0	Management II	3.0	Human Resource Management	
	Management I	3.0	National Disaster Management.	3.0				
	Total CFs	15.0		15.0		12.0		12.0
PLO 2 Plan, design and implement innovative strategies and delivery of efficient services using available resources.	Principles of Microeconomics	3.0	Financial Accounting.	3.0	Business Law.	3.0	Financial Management	3.0
			Principles of Macroeconomics	3.0	Economic Development.	3.0	Auditing II	3.0
			Project Development & Management.	3.0	Entrepreneurship.	3.0		
			Research Methods	3.0	Auditing I	3.0		
	Total CFs	3.0		12.0		12.0		6.0
PLO 3 Evaluate and analyze different situations and make rational decisions.	Philosophy & Society.	3.0	Research Methods	3.0	Remote Sensing.	3.0	Ethics & Governance	3.0
	Law & Society.	3.0	Project Dev. & Management	3.0	Geographic Information Systems.	3.0	Behavioral Science	3.0
	General Psychology.	3.0			Fund. of Phy. & H. Geog.	3.0	Armed conflict & IHL	3.0
	Applied Psychology.	3.0					Human Health	3.0
	Total CFs	12.0		6.0		9.0		12.0
PLO 4 Carry out operational tasks and research for the improvement of military service	Introd. to Academic Communication Skills	3.0	National & International Affairs II.	3.0	Gender & Development	3.0	Research Project	3.0
	National & International Affairs I	3.0	Political Geography	3.0	Leadership II	3.0	Public Relations	3.0
	Leadership I	3.0	Population Geog.	3.0	Entrepreneurship	3.0	Theory, Practice & Policy of Military Strategy	3.0
	Management I	3.0	Research Methods.	3.0				
			Command I	3.0				
	Total CFs	12.0		15.0		9.0		9.0