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.

- 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.
- Applicants must satisfy the minimum cluster requirements of C+ in English, Mathematics/Physics, Biology and Chemistry in K.C.S.E. or equivalent examination
- 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
- 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
- Two principals and one Subsidiary pass at KACE level or equivalent, one of which must be in Biology and in any other science subject
- 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 - However 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 within the stipulated period.
Each semester will consist of 17 weeks, with 15 weeks teaching and 2 weeks examinations. The weighting of courses is in terms of credit factors. One credit factor is equivalent to 15 lecture hours or 30 practical (laboratory or tutorial or seminar) hours.
Full time students are required to take four Academic years with total of at least 217.0 Credit Factors (C.Fs).

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. Refer to ISO procedure EU/VC/OP/05

8.3 Course coding
The B.Sc. Animal Health Management and Production courses are coded as follows:
1. The code ANHE refers to Animal Health Programme
2. The first digit indicates the year of study.
3. The second digit indicates the field of the subject matter
4. The third digit indicates the serial numbers of courses in the field of the subject matter in the year.
5. 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 & Vet. Practice
5=Public Health, Animal Industry/Environmental Hygiene
6=Seminars, students projects
7=Field attachment/Field Visits/Animal handling

- **Courses/Units offered for the programme**

9.1 Schedule of Courses
(a) The common core courses for this programme
(i) COMS 111: Introduction to 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	C.F.
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 & Cell Biology	60	30	5.0
ANHE 111	Intro. to Animal Health Management	15	30	2.0
ANHE113	Veterinary Physiology II	30	30	3.0
CHEM 130	Introduction to Organic Chemistry	30	30	3.0
	TOTALS	**255**	**105**	**23.0**

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(60/30	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 during	**0**	**270**	**4.0**

	Session III)			

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 (45/30): CF 4.0) 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. Laboratorydiagnosis 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 livestockfish 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 ofReproduction&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 theHorse, 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 anthelminthic, 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 livestockcaused 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 toxaemia, 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.Environment 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	1x2hrs	---------	End of sem

			Management			
	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-RuminantProduction	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	5.0 3.5 5.0 3.0 5.0 4.0 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 • Statistics for Agriculture	3.0 5.0 4.0 4.0	• Parasitology • Reproduction & obstetrics • Pharmacology • Toxicology • Technical writing and Reporting • Principles of Agricultural Extension • Farm Structures • Farm Management Application	5.0 4.0 5.0 2.0 2.0 3.0 3.0 3.5 2.5 3.0 5.0 3.0 4.0 3.0	• Students'projects • Statistical Epidemiology • Field Visits • Seminars & Tutorials • Metabolic, Nutritional & Reproductive Diseases /Disorders • Principles of disease control • Heard health management • Herd health	3.0 3.0 2.0 2.0 5.0 3.0 2.0 2.0 3.5 2.0 2.0 5.0 2.5

					• Immunology • Veterinary epidemiology • Wild life and fish diseases • Viral, Rickettsial and Parasitic diseases • Clinical pathology • Field Attachment • Design & analysis of animal Experiments		management • Advances in Biotechnology • Public health & Environment • Zoonoses and one Health Concept	