KISII NATIONAL POLYTECHNIC

DEPARTMENT OF AGRICULTURE, LIVESTOCK & ENVIRONMENTAL SCIENCES

CURRICULUM FOR DIPLOMA IN ANIMAL HEALTH
(DIP DANH)

JULY 2020

1.0 THE CURRICULUM

1.1 Title: Diploma in Animal Health

1.2 Philosophy of the programme

The programme has been innovatively tailored to synergize achievement of the big four agenda pillar of food security whose main driver is agriculture. Agriculture touches on the other three pillars of the Big Four. This will catalyze poverty reduction through acquisition of education and skills in Animal health technology, dissemination of the knowledge to enhance improved animal health, welfare and production. Investment on this course will ensure that the inequality gap is bridged. For these reasons, implementation of this course is the surest way out of poverty for the 70% poor rural households which form the majority of the population.

The graduates from Diploma in Animal Health (DANH) will be trained to provide hands-on care to a variety of animals both large and small. The program will use an accredited curriculum by Kenya Veterinary Board (KVB) delivered by staff boasting over 10 years of accumulated veterinary experience.

1.3 Rationale

The Diploma in Animal Health programme is in response to the increasing demand of veterinarians to address animal health issues in Kenya and the horn of Africa. According to the Kenya National Bureau of Statistics (2018), Kenya is a net food importer with one out of three Kenyans suffering from food insecurity and over half of the country's poor spending 50 to 70 per cent of their total income on food. Even in rural areas, 57 per cent of food consumed is purchased. Almost 30 per cent of the children in the country face stunted growth. A healthy population will also have a positive ripple effect on the economy. Investment in agriculture will also ensure households are food sufficient and the savings could be used to educate children or invest in better housing. The surplus food can also be sold, thus providing a source of income.

Agriculture touches on the other three pillars of the Big Four since over 70 per cent of the rural poor depend on it for their livelihoods; proper investment in the sector will ensure that the inequality gap is bridged. For these reasons, the sector should top as it is the surest way out of poverty for poor rural households which form the majority of the population.

While livestock contributes less than 20% to agriculture GDP, it plays an important economic and socio-cultural role among many Kenyan communities, particularly the northern ASALs that have >60% of Kenya's beef cattle population. However, much of the cattle in the Kenyan Rural areas do not meet the 350 kg minimum market weight. Additionally, they tend to be very vulnerable to disease, drought and theft. Livestock includes beef and dairy cattle, sheep and goats, camels, poultry and pigs. Produce from livestock comes predominately from milk (i.e., dairy), but the fastest-growing sub-sector is meat, which has almost doubled in the period 2012-2014.

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 are posing new challenges in animal disease management requiring an

understanding in veterinary 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 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 animal health professionals equipped to meet challenges in the detection and control of endemic and emerging animal diseases. Kenya's economic growth is anchored on the four pillars of the Big four Agenda which are universal health care, food security, Manufacturing and Affordable housing. Kisii National Polytechnic is strategizing to make direct contributions to Agriculture which contributes 51 per cent of Kenya's Gross Domestic Product (GDP) specifically providing competitive quality training in animal health and artificial insemination and research for sustainable livestock through this veterinary programme. KNP is endowed with qualified academic staff and ample teaching facilities including a demonstration and commercial farm, diagnostic and research laboratories, as well as very strong networks and collaborations. This makes KNP very strategically positioned to deliver this course.

1.4 Goal of the Programme

To develop highly qualified, globally competitive and innovative human resource in Animal Health Certificate Course capable of promoting farm livestock productivity, raise incomes levels and improve access to formal & self-employment opportunities in the sector.

1.5 Programme Learning Outcomes

At the end of the programme, the students are expected:

i. To be able to educate farmers on quality animal husbandry practices, make proper informed diagnosis of the common diseases of animals and apply ethical and legal principles in the treatment of the animals both small and large.
ii. To be able to control animal diseases in order to enhance health of animals, human and environment
iii. To contribute to economic development and improvement of the animal industry and promote the ideals of animal welfare.
iv. To be able to carry out Quality control, operation and maintenance of laboratory equipment used in animal disease diagnosis

1.6 Mode of Delivery

This is a full-time with hands practical work and contact class hours.

1.7 Academic Regulations for the Programme

1.7.1 Admission Requirements

Admission requirement into the programme shall be based on KVB admission requirements All candidates must satisfy the following minimum requirements:

i. An aggregate score in KCSE of grade C or KCE/EACE Division II or equivalent
ii. Holders of Kenya Certificate of Secondary Education (KCSE) with an aggregate of C and a grade of at least C in Biology, English, Chemistry, Mathematics/ Physics.
iii. A minimum of a C- (Minus) in KCSE or division III at KCE, from institutions recognized by Kenya Veterinary Board with at least a Credit pass in Certificate in

Animal Health/ Agriculture/Medical Laboratory Technology from an institution approved by Kenya Veterinary Board

iv. Holders of an "A" level certificate with a minimum of one principal pass and at least a subsidiary pass in Biology and Chemistry.
v. Holders of a diploma in biomedical discipline recognized by the Kenya Veterinary Board.
vi. Any other qualification equivalent to the above from an institution recognized by Kenya Veterinary Board.

1.7.2 Regulation on Credit Transfer in a programme

No credit transfer for this programme

1.7.3 Course Requirements

ISO procedure for teaching will be followed in teaching of all courses in the programme.

1.7.4 Student Assessment Policy/ Criteria

The examinations will be done for each taught course as per KNP statutes

1.7.5 Grading System

The grading of examination for this programme shall be conducted in accordance with Kisii National Polytechnic Policy. However the pass mark shall be 40% for each course.

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

1.7.6 Examination Regulations

- All examinations for the Diploma in Animal Health programme will be conducted in accordance with examination regulations as stipulated in ISO of KNP on Rules and Regulations for the Diploma Programme.
  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)/resit(s) on the failed course(s) as stipulated in the KNP Academic policy.
- 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. A course having 90 hours or less shall be examined by a paper of two hours only.
b. A course having more than 90 hours shall be examined by a paper of 3 hours only.
Note: 90 hours (Both practical and theory)

YEAR 1 EXAMINATIONS

a. YEAR 1 SEMISTER 1

Code	Title	Written Paper	Examination Session
DENS 101	Basic Bio-Statistics & Computer Applications	2 hours	End of Sem
DANH 111	Gross Anatomy	3 hours	End of Sem
DANH112	Introduction to Animal Health	2 hours	End of Sem
DAGR 113	Introduction to Soil Science	2 hours	End of Sem
DANH 114	General Physiology	3 hours	End of Sem
DENS 115	Basic Biochemistry	3 hours	End of Sem
DANH 116	Animal Growth and Development	2 hours	End of Sem

b. YEAR 1 SEMESTER 2

Code	Title	Written Paper	Examination Session
DANH **121**	Basic Microbiology	2 hours	End of Sem
DAGR 122	Farm Structures and Mechanisation	2 hours	End of Sem
DANH 123	Animal Genetics & Breeding	2 hours	End of Sem
DANH 124	Parasitology	2 hours	End of Sem
DANH 125	Animal Nutrition & Feeding	2 hours	End of Sem
DAGR 126	Pastures and Fodder Production & Conservation	2 hours	End of Sem
DAGR 127	Rural Sociology & Development	2 hours	End of Sem
DANH 128	Botany and Zoology	2 hours	End of Sem

YEAR 2 EXAMINATIONS

a. YEAR 2 SEMESTER 1

Code	Title	Written Paper	Examination Session
DANH 211	Microbial Diseases	3 hours	End of Sem
DANH 212	Parasitic Diseases	2 hours	End of Sem

DANH 213	Livestock Production Systems - Ruminants	2 hours	End of Sem
DANH 214	General Pathology	2 hours	End of Sem
DANH 215	Basic Immunology & Vaccines	2 hours	End of Sem
DANH 216	Pharmacology and Toxicology	3 hours	End of Sem
DES 217	HIV/ AIDS	2 hours	End of Sem
DANH 218	Internal Attachment		

b. YEAR 2 SEMESTER 2

Code	Title	Written Paper	Examination Session
DAGR 221	Agricultural Extension and Communication	2 hours	End of Sem
DAGR 222	Apiculture & Aquaculture	2 hours	End of Sem
DAGR 223	Companion and Draught Animal Production	2 hours	End of Sem
DANH 224	Clinical Pathology	2 hours	End of Sem
DANH 225	Breeding Technologies	3 hours	End of Sem
DANH 226	Livestock Production Systems: Non-Ruminant	2 hours	End of Sem
DAGR 227	Principles of Range Management	2 hours	End of Sem
DENS 228	Ecology and Environmental science	2 hours	End of Sem
DAGR 229	Value Addition of Animal Products and Marketing	2 hours	End of Sem

YEAR 3 EXAMINATIONS

a. YEAR 3 SEMESTER 1

Code	Title	Written Paper	Examination Session
DAGR 300	Entrepreneurship	2 hours	End of Sem
DAGR 311	Farm Management & Accounting	2 hours	End of Sem
DAGR 312	Fundamentals of Agricultural Economics	3 hours	End of Sem
DANH 313	Animal Welfare, Ethics and Law	2 hours	End of Sem
DANH 314	Herd Health Management	3 hours	End of Sem

DANH 315	Metabolic and Nutritional Diseases/Disorders	2 hours	End of Sem
DANH 316	Zoonosis and one Health Concept	2 hours	End of Sem
DANH 317	Projects and Seminars I	Oral Presentations & Proposal writing	End of Sem
DANH 318	Animal Health Applied Skills	Continuous Assessment	End of Sem
DANH 319	Field Attachment	Student Field Assessment Report	End of Year

b. YEAR 3 SEMESTER 2

Code	Title	Written Paper	Examination Session
DANH 321	Public Health	2 hours	End of Sem
DANH 322	Routine Livestock Practices	Continuous Assessment	End of Sem
DANH 323	Projects and Seminars II	Oral Presentations & Project Report	End of Sem
DANH 324	Reproductive diseases and Disorders	2 hours	End of Sem
DANH 325	Basic Epidemiology	Continuous Assessment	End of Sem
DAGR 326	Agricultural Value Chain Analysis	2 hours	End of Sem
DAGR 327	Climate Smart Agriculture	Continuous Assessment	End of Sem
DANH 328	Animal Health Field Visits		

2.0 Moderation of Examinations

All examinations for this programme shall be internally and externally moderated as per ISO procedure

2.1 Graduation Requirements

- This is a three-year programme
- The maximum duration of the programme is 6 semesters.
- Each student should take a minimum of 2685 hours.

- To graduate, a student shall be required to take and pass ALL scheduled courses within the stipulated period.

2.2 Classification of the Diploma

Diploma in Animal Health programme shall be classified as follows

- Distinction
- Credit
- Pass
- Fail

2.3 Course Evaluation

All courses in this programme will be evaluated through Quality Assurance Department using a tool that captures all aspects including course content, instructional process, infrastructure and equipment for delivery, instructional and reference materials and assessment. The ISO procedure should be followed

2.4 Management and Administration of the Programme

2.4.1 Host Department and Programme Leader

The Diploma in Animal Health Programme is hosted in the Department of Agriculture and Environmental Science. The programme will fall under Animal Science section coordinator who shall be a Veterinary Surgeon appointed as per KNP guidelines.

2.4.2 Programme Evaluation

The programme will be evaluated after a three-year academic cycle as defined in the KNP ISO procedure on program evaluation.

2.4.3 Course Coding

The Diploma in Animal Health and Breeding Technology courses are coded as follows:

- Course codes have four letters e.g. DANH indicating the name of the programme followed by three digits classifying the course and 3 digits 123
- The first digit denotes the year of study
- The second digit denotes the level of study
- The third digit denotes the serial number of the courses

2.5 Courses/ Units offered for the programme

Common core courses

- DAGR 300 Entrepreneurship
- DENS 101 Basic Bio-Statistics & Computer Applications

SCHEDULE OF COURSES

YEAR 1 SEMESTER 1

CODE	TITLE	L	P	TH
DENS 101	Basic Bio-Statistics & Computer Applications	30	15	45
DANH 111	Gross Anatomy	60	30	90
DANH 112	Introduction to Animal Health	15	30	45
DAGR 113	Introduction to Soil Science	20	10	30
DANH 114	General Physiology	60	30	90
DENS 115	Basic Biochemistry	60	30	90
DANH 116	Animal Growth and Development	30	15	45
	TOTAL	**275**	**160**	**435**

YEAR 1 SEMESTER 2

CODE	TITLE	L	P	TH
DANH 121	Basic Microbiology	45	15	60
DAGR 122	Farm Structures and Mechanisation	45	15	60
DANH 123	Animal Genetics & Breeding	30	15	45
DANH 124	Parasitology	45	30	75
DANH 125	Animal Nutrition & Feeding	60	15	75
DAGR 126	Pastures and Fodder Production & Conservation	45	30	75
DAGR 127	Rural Sociology & Development	45	0	45
DANH 128	Botany and Zoology	30	15	45
	TOTAL	**345**	**135**	**480**

YEAR 2 SEMESTER 1

CODE	TITLE	L	P	TH
DANH 211	Microbial Diseases	60	30	90
DANH 212	Parasitic Diseases	45	30	75
DANH 213	Livestock Production Systems - Ruminants	45	15	60
DANH 214	General Pathology	45	15	60
DANH 215	Basic Immunology & Vaccines	30	30	60
DANH 216	Pharmacology and Toxicology	60	30	90

DESC 217	HIV/ AIDS	15	0	15
DANH 218	Internal Attachment	0	75	75
	TOTAL	**300**	**225**	**525**

YEAR 2 SEMESTER 2

CODE	TITLE	L	P	TH
DAGR 221	Agricultural Extension and Communication	45	0	45
DAGR 222	Apiculture & Aquaculture	30	15	45
DAGR 223	Companion and Draught Animal Production	30	15	45
DAHB 224	Clinical Pathology	30	30	60
DANH 225	Breeding Technologies	60	30	90
DANH 226	Livestock Production Systems: Non-Ruminant	45	15	60
DAGR 227	Principles of Range Management	30	30	60
DENS 228	Ecology and Environmental science	30	15	45
DAGR 229	Value Addition of Animal Products and Marketing	30	15	45
	TOTAL	**330**	**165**	**495**

YEAR 3 SEMESTER 1

CODE	TITLE	L	P	C.F
DAGR 300	Entrepreneurship	30	0	30
DAGR 311	Farm Management & Accounting	60	15	75
DAGR 312	Fundamentals of Agricultural Economics	45	0	45
DANH 313	Animal Welfare, Ethics and Law	30	15	45
DANH 314	Herd Health Management	0	45	45
DANH 315	Metabolic and Nutritional Diseases/Disorders	45	15	60
DANH 316	Zoonosis and one Health Concept	45	0	45
DANH 317	Projects and Seminars I	15	60	75
DANH 318	Animal Health Applied Skills	15	75	90
	TOTAL	**285**	**225**	**510**
DANH 319	Field Attachment	0	225	**225**

YEAR 3 SEMESTER 2

CODE	TITLE	L	P	TH
DANH 321	Public Health	45	15	60
DANH 322	Routine Livestock Practices	0	105	105
DANH 323	Projects and Seminars II	15	60	75
DANH 324	Reproductive diseases and Disorders	30	15	45
DANH 325	Basic Epidemiology	30	15	45
DAGR 326	Agricultural Value Chain Analysis	45	15	60
DAGR 327	Climate Smart Agriculture	30	15	45
DANH 328	Animal Health Field Visits	0	60	60
	Total	**195**	**300**	**495**
Grand Totals		**1730**	**1435**	**3,165**

COURSE DESCRIPTIONS

DANH 111: Gross Anatomy (60/30:TH90) 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.

DANH 112: Introduction to Animal Health (15/30:TH45) 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.

DANH 114: General Physiology (60/30:TH 90) Y1S1

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.

DANH 318: Animal Health Applied Skills (15/75: TH90) Y3S1

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.

DANH 121: Basic Microbiology (45/15: TH60) Y1S2

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).

DANH 214: General Pathology (45/15: TH60) 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.

DANH 313: Animal Welfare, Ethics and Law (30/15: TH45) Y3S1

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.

DANH 124: Parasitology (45/30: TH75) Y1S2

Introduction to parasitism and host-parasite relationships. Classification and identification of important parasites of domestic animals, fish and bees; protozoa, helminths and ecto-parasites. Life cycles of parasites of economic importance and their importance in disease causation. Principles of control of animal parasites.

DANH 215: Basic Immunology & Vaccines (30/30: TH60) Y2S1

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.

DAGR 222: Apiculture and Aquaculture (30/15: TH45) Y2S2

The role of bees in agriculture. Importance of beekeeping in Kenya. Biology of the honeybee. Breeding, diseases and pests. The management of a bee colony with respect to flowering vegetation, foraging behaviour and feeding. Swarm control. Types of hives. Harvesting, handling, processing, grading and marketing of honey and wax. The honey and wax industry. The fish industry. Fresh water fishes in lakes and rivers with, emphasis on selected species, their environment, feeding, reproduction and techniques for harvesting and handling. Role and potential of fish farming. Techniques of culture, fisheries, breeding, construction and management of fishponds, harvesting, and handling of fish. Fish diseases, parasites and their control. Seawater fishes with emphasis on selected species, their

environment, feeding habits, reproduction, harvesting and handling. Fish processing, grading and marketing.

DANH 225: Breeding Technologies (60/30: TH90) Y2S2

Introduction – Reproduction & Obstetrics, Review of reproductive endocrinology, anatomy, embryology & physiology of female animal. Reproductive cycles in domestic animals. Gamete transport and fertilization. Gestation and development of the conceptus. Foetal membranes in domestic animals. Physiology of pregnancy, parturition and care of neonate. Andrology: Review of anatomy and physiology of the male animal. Collection, analysis, preservation and use of semen in domestic animals (field trip to a bull station KAGRC). Assisted reproductive techniques. Common obstetrical problems and their management in farm animals. Reproductive disorders/diseases.

DANH 216: Pharmacology and Toxicology (60/30: TH90) Y2S1

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. 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.

DANH 212: Parasitic Diseases (45/30:TH75) Y2S1

Diseases of farm animals, fish and bees caused by viruses, rickettsia and Parasites. Emphasis in parasitic infections on protozoan, helminthes, and ecto-parasitic infestations. The diseases will be discussed in terms of their aetiology, pathogenesis, transmission, clinical signs diagnosis, treatment and control.

DANH 211: Microbial Diseases (60/30: TH90) Y2S1

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.

DANH 224: Clinical Pathology (30/30: TH60) Y2S2

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, immunohaematology.

DANH 314: Herd Health Management (0/45: TH45) 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.

DANH 317/323: Projects and Seminars I & II (30/120: TH150) Y3S1 & Y3S2

Students will be introduced to research methodology and guided to develop project proposals, carryout the research including report writing and make presentations of their findings during seminars under staff supervision.

DAGR 327: CLIMATE SMART AGRICULTURE (30/15:TH45) Y3S2

Integrated approach in managing landscape to address interlinked challenges of food security and climate change. Components include: Agro-forestry; Soil and water conservation; Enhanced resilience and reduced emissions; Supplementary irrigation and drainage; Introduction to organic farming – Vermicomposting, - Black soldier fly breeding technology; Plant breeding & Agro-ecological zonation; Natural resource use & Management; Classical basis of smart farming (Hydroponics; Mushroom production)

DANH 328: Animal Health Field Visits (0/60: TH60) Y3S2

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.

DANH 319: Field Attachment 1 & 2 (0/300: TH300) Y2S1 &Y3S1

At the end of Y2S1 & Y3S1, 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.

DANH 315: Metabolic and Nutritional Diseases/Disorders (45/15: TH 60) Y3S1

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.

DANH 321: Public Health (45/15: TH 60) Y3S2

Introduction to veterinary public health and hygiene. Principles of food, milk, meat, water and fish hygiene. Food borne infections and intoxication. Treatment and disposal of slaughter-house wastes. Meat inspection, handling and transport. Environmental hygiene.

DANH 325: Basic Epidemiology (30/15: TH 45) 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.

DANH 316: Zoonoses and one Health Concept (45/0: TH 45) Y3S1

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.

DANH 213: Livestock Production Systems - Ruminants (45/15: TH 60) Y2S1

Introduction to production of ruminants; dairy and beef cattle, sheep, goats and camels. Introduction to dairy production; production systems; dairy structures and housing. Calf, heifer, cow and breeding bulls' management. Introduction to beef production; production systems. Beef structures and housing.

Management of beef calves, weaners, yearlings and cows. Grazing systems. Techniques of increasing reproductive potential of beef cattle. Introduction to sheep and goat production; sheep and goat structures, breeding and feeding systems. Management of breeding stock, lambs, weaners and yearlings. Dairy goat management. Introduction to camel production, production systems and management of various categories. Adaptive features. Camel structures. Feeding behavior. Handling and health management, management of emerging livestock. Record keeping in ruminants' production. Handling, processing and marketing. Value chains of ruminant products. Climate change adaptation strategies.

DANH 226: Livestock Production Systems – Non-Ruminants (45/15: TH 60) Y2S2

Introduction to production of non-ruminants; poultry, pigs, rabbits and farmed wild animals. Poultry production: Poultry breeds and breeding, poultry management systems. Housing, equipment and hygiene, incubation and brooding, management of layers, broilers, dual purpose and indigenous chicken, economics of poultry production. Hatchery operations. Poultry products and marketing. Pig production: breeds and breeding, housing and management of the sow, piglet, grower-finishing pigs, boar. Economics of pig production. Pig products and marketing. Rabbits' production: rabbit breeds, breeding and selection, reproductive behavior. Housing, feeding, management of bucks, does, lactating doe and litter, weaners. Records and economics of rabbit production. Rabbit products and marketing. Farmed wild animals; requirements and production

DAGR 229: Value-Addition of Animal Products & Marketing (30/15: TH 45) Y2S2

Importance of value addition. Principles of value addition of animal products including meat, milk, honey, leather, eggs Value addition and marketing of livestock products: grading, packaging and packaging materials. Processing equipment and machines. Introduction to meat, dairy and leather technology. Honey processing. Fish processing.

DAGR 300: Entrepreneurship (30/0: TH 30) Y3S1

Entrepreneurship and self-employment: definitions; theories of entrepreneurship; role of entrepreneurship in development, government strategies/incentives on small scale enterprises in Kenya; entrepreneurship motivation: characteristics of a successful entrepreneur; self-assessment of entrepreneurial potential; acquisition of entrepreneurial skills; entrepreneurial awareness: business information; procedure in starting a business; forms of business; business environment; entrepreneurial competencies: decision making process; coping with competition; risk minimization; time management; entrepreneurial opportunities: definitions; qualities of a business opportunity;

generation of business ideas; sources of business ideas; selection of a suitable market; business finance: sources of finance; factors to be considered by borrowers. Business Plan: definition and importance; components; writing a business plan; enterprise management: definition; functions; setting business objectives; public relations; customer care; ethics and integrity; pricing. Business policy and strategy development. Basic accounting and economics.

DAGR 122: Farm Structures & Mechanization (45/15: TH 60) Y1S2

Course content should provide the trainee with a general understanding of animal farm structures for restraining, housing and routine management of animals and equipment. Introduction: definition of farm mechanization and farm structures, importance of farm mechanization and constraints of farm mechanization. Sources of farm power: types, advantages and disadvantages. Farm Machinery; servicing and maintenance of farm tractor; the storage requirement for farm machinery/equipment and function of various parts of knapsack sprayer. Farm Structures: Farm plans, layout and design, Construction materials. Farm Water Supply: sources and harvesting methods, distribution (canals, pumping and piping) and storage system. Soil and water Conservation. Practicals: identification of farm machinery/equipment; crush design; soil and water conservation methods; parts of the knapsack sprayer; tools and equipment used in wire fencing. Focus should be on siting and construction of basic farm structures, and general maintenance of machinery.

DAGR 126: Pastures, Fodder Production and Conservation (45/30: TH 75) Y1S2

Introduction: Pastures and leys – definition, classification, common pasture plants, desirable qualities, and ecological distribution. Pasture Establishment; use of pastures in soil conservation, soil fertility and disease / pest control. Improvement of Natural Pastures. Pasture Management & Utilization. Fodder establishment and managements: Fodder; Agroforestry. Concept of Seasonal Fluctuation in Pasture Production. Conservation of Pasture and Fodder. Silage and Silage Making; feeding silage. Hay and hay making; Handling and storage of hay; Hay quality; Feeding hay.

DAGR 127: Rural Sociology and Development (45/0: TH 45) Y1S2

Concepts in rural sociology; rural communities and social systems; culture; social groups, organizations and institutions; social processes; and social change in rural societies; diffusion/adaptation processes; gender as a social relation and the social construction of gender; culture and agricultural extension; implication for agricultural extension. Conflict resolution; HIV and AIDS. Alcohol, drug and substance Abuse, disaster management and preparedness. Devolution as a system of governance

DANH 125: Animal Nutrition & Feeding (60/15: TH 75) Y1S2

Introduction: definition of terms, importance of nutrition, composition and functions of feeds: components of feeds, proximate feed analysis scheme, general functions of water, carbohydrates, proteins and fats in animals. Essential and non-essential amino acids. Essential fatty acids. Macro and micro elements. Water and fat soluble vitamins. Storage of minerals and vitamins in the body. Classification of common feeds: roughages, supplements, concentrates. Digestion: forms of digestion, anatomical differences in the digestive system of ruminants and non-ruminants. Absorption, utilization and storage in both ruminants and non-ruminants. Availability of minerals. Digestibility. Feed intake. Feed additives. Animal feed requirements: maintenance and production. Feeding standards. Feed evaluation. Energy partition. Crops residues, crop and animal by- products. Principles of ration formulation: ingredients, methods, mixing. Total Mixed Rations. Forms of feed presentation.

DENS 101: Biostatistics & Computer Applications (30/15: TH 45) Y1S1

Introduction to basic biostatistics. Concepts of statistical populations and samples. Descriptive statistics. Probability concepts. Theory of estimation. Analysis of variance. Test of hypotheses. Regression and correlation analysis. Application of biostatistics: Introduction to computer systems, basic parts of a computer, software and hardware, computer networks, programme control, applications of computers in organizations. Software concepts, hardware control level, operating systems and file management. Use of computer applications: - word processing, spreadsheet, databases and the internet: the World Wide Web, browsing, statistical application programs. Introduction to Research methodology

DENS 115: Basic Biochemistry (60/30: TH 90) Y1S1

Course content should provide the trainee with a general understanding of biochemistry. Definition and importance of Biochemistry. Organic chemistry: Definition; Functional groups of organic compounds; Introduction to functional groups of organic compounds: Hydrocarbons- amines, alcohols and carboxylic acids. Classification and roles in metabolism of: Carbohydrates, Lipids, Proteins, Enzymes, Vitamins, and Minerals. Introduction to Molecular Biology. Definition; Components; Structure of DNA; DNA replication; Types and functions of RNA. Course content should be augmented with laboratory practicals.

DANH 123: Animal Genetics and Breeding (30/15: TH 45) Y1S2

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.

DAGR 227: Principles of Range Management (30/30: TH 60) Y2S2

Definition of rangeland and rangeland management; range resources of the world with emphasis on East Africa. Distribution, characteristics and functions of rangeland ecosystems; soils and vegetation; biotic- abiotic interactions; ecological zones. Grazing management; wildlife-livestock interactions; pastoralism and agro-pastoralism; conflicts in land-use; rangeland monitoring; rangeland rehabilitation; managing rangeland complexity. Inventory of resources in specified range areas. Range indicators. Multiple range use and proper use.

DENS 228: Ecology and Environmental Science (30/15: TH 45) Y2S2

Introduction: definitions of ecology, definition of terms used in ecology; Community Associations between organisms; Adaptation Energy and nutrient flow: Producers Consumers and Decomposers, Food-chains and Food-webs, Ecological pyramids Ecosystem: components of ecosystem ,The ecosystem concept; Flow of energy through the ecosystem, Cycling of materials in an ecosystem; Production Plant ecology- Growth forms Classification of plant communities The concept of eco-climatic zones; characteristics of mountain, tropical rain forest and savanna grassland plant communities The concept of eco-climatic zones; characteristics of mountain, tropical rain forest and savanna grassland plant communities Development of plant communities; seral, sub-climax and climax communities and their production Vegetation retrogression Application of principles of ecosystem in the environment-destructive and beneficial activities of both man and animals Application of principles of ecosystem in the environment-destructive and beneficial activities of both man and animals.

DANH 322: Routine Livestock Practices (0/105: TH 105) Y3S2

Supervised work in the various livestock sections where students milk, feed livestock (cattle, sheep, goats, pigs, poultry, beekeeping and rabbits), organize breeding and care for sick animals, livestock feed rationing, rearing of young stock, Keeping of farm records Management practices: culling, sexing. Livestock handling and restraining, judging, weighing. Farm structures and maintenance. Pasture production, management and conservation.

DAGR 311: Farm Management & Farm Accounting (60/15: TH 75) Y3S1

The course concepts and planning techniques necessary for a manager to control and monitor the firm business; including management data, their use, collection, recording and analysis problem/difficulties in keeping firm records. Designing and presenting firm accounting systems including accounting methods and components of firm accounting systems. Firm business; activities of the firm business analysis. The balance sheet; the income statement; analysis of the net firm income techniques; enterprise budgeting; partial budgeting; complete budgeting and cash flow budgeting, program planning and linear programming. Principles of Accounting; Principles of double-entry accounting. Fundamental concepts of accounting Livestock Inventory Management. Financial Statements; Sales, Accounts Receivable, Accounts Payable, Bank, etc. Preparation of Income Statement, Cash Flow and Statement of Financial Position Interpretation of Farm Financial Statements; Key steps in financial ratio analysis; Key financial ratios and classification; Calculation of key ratios for assessing financial performance and position of a business; Limitations of ratio analysis; E-Profit monitoring: Financial performance of each enterprise-dairy, cattle, sheep etc. Identify the principle unit of production; E-Profit Monitoring Management System.

DAGR 221: Agricultural Extension & Communication (45/0: TH 45) Y2S2

Course content in communication will allow the trainee to become proficient in public speaking and critical thinking as well as to use appropriate platforms to prepare reports, develop extension messages, and make public presentations. Communication: Definitions, elements and stages of communication; barriers to effective communication; communication methods; mass communication; channels of effective communication; listening skills; technical writing; progress reports, periodic reports; lobbying and advocacy. Extension: Principles of agricultural extension; ICT and agricultural extension; teaching objectives in extension education; extension teaching methods; Teaching Aids; public speaking; audience situations, their possible causes and management; meetings/discussions; demonstrations; Agricultural Information Services. Practical sessions on clinical record & report writing, client communication and public speaking

DAGR 113: Introduction to Soil Science (20/10: TH 30) Y1S1

Soil origin, definition of soil, soil formation- broad categories of soil formation rocks; weathering, factors that influence soil formation,; process of horizon development; soil profile, soil sampling; physical properties of soil; texture, structure, consistency, porosity, air, water, colour. Soil organisms, soil organic matter, organic matter cycle; humus, chemical properties of soil; soil pH and liming.

Mineralogical properties of soil, essential mineral elements, soil fertility- organic and inorganic manures, organic farming.

DANH 225 /Breeding Technologies (60/30 TH 90) Y2S2

Overview of the physiology of reproduction; hormones, estrous cycle. An introduction to various technologies used in breeding of animal; definition of in vitro fertilization, ova pick up and embryo development, the process of embryo transfer, potential value of embryo transfer, donor selection, superovulation of the donor, expected embryo transfer results. Application of synthetic hormone regime in estrus synchronization, benefits of estrus synchronization. Definition of cloning, importance of cloning

DAGR 312/ Fundamental of Agricultural Economics (45/0 TH 45) Y3S1

Micro and macroeconomics. Nature of economic theory and basic concepts. Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country. Population system of exchange and its problems, evolution, meaning and functions of money and classification.

DANH 116: Animal Growth and Development (30/15 TH 45) Y1S1

Course content should provide the trainee with a broad understanding on Animal Growth and Development. Introduction to growth and development; prenatal phase of growth and development: stages of growth, growth curve, post-natal phase of growth and development, the post-natal growth curves, factors that influence growth and development during the post-natal period of growth, manipulation of growth and development in animals. Compensatory growth: definition, comparison with normal growth, economic value of compensatory growth, factors that influence compensatory growth. Maturity: definition, reproductive maturity, physical maturity. Body composition: body tissues, effects of age on fat, bone and muscle development, effects of age on meat quality.

DANH 128: Botany and Zoology (30/15 TH 45) Y1S2

Course content should provide the trainee with the basic principles in Botany and Zoology. Botany and Zoology: Definitions and importance. Cytology: Definition; Animal and plants cells - Parts of the cell and their functions; Prokaryotic and Eukaryotic cells; Cell division - mitosis and meiosis; Levels of organisms' organisation - Cells; Tissues; Organs and Organ systems. Plant morphology: Root System; Types of roots; Parts of roots; Root modifications. Stem: Stem parts; Stem Modifications. Structure of typical leaf. Flowers: Parts of a typical flower; Types of inflorescence. Fruits and seeds:

Formation; Classification; Seed dispersal. Taxonomy: Introduction; definition; classification; Hierarchal groupings in animals and plants; Binomial nomenclature in animals and plants; Characteristics of phyla of agricultural and veterinary importance. Germination and early growth. Focus is on fundamentals of plant and animal.

DENS 217: HIV and AIDS (15/0 TH 15) Y2S1

Course content should provide the trainee with knowledge on HIV AIDS and STIs. Introduction: Definition of HIV and AIDS, Background information on HIV and AIDS, Epidemiology of HIV and AIDs; global prevalence; national prevalence; Modes of transmission of HIV. Predisposing factors of HIV infection. Phases of HIV infection. Human sexuality: reasons why men and women engage in sex; definition of irresponsible sex; consequences of irresponsible sex; sexual myths, beliefs and attitudes. List of the common STIs; Relationship between HIV and AIDS and other STIs; importance of treatment of STIs in the control of HIV and AIDS; Strategies for Prevention, Control and Management of HIV /AIDS and other STIs. Emphasis should be on need for behavioural change.

DAGR 326: Agricultural Value Chain Analysis & Management (45/15 TH 60) Y3S2

Introduction; Concept of a value chain, difference between a value chain and a supply chain, Importance of a value chain approach to agricultural development, Importance of pro-poor value chains, Chain upgrading and promotion, Chain upgrading strategies, Empowerment strategies for small holder farmers. Value chain mapping and analysis; Value chain development VCD process, Criteria and sub-criteria for evaluation of the identified value chains, Components of a value chain map. Analyzing the macro-environment/chain context/ regulatory/ policy analysis; Concept of chain context and its importance to value chain actors, pestle tool in analyzing key elements of the chain context, importance of influencing the chain context.

APPENDICES

a. Appendix I: Facilities

i. Classrooms

S/No	Name of Classroom	Average Size (M^2)	Resources in the Room	Condition	Current Use	Remarks
1	DANH 1	45	• White board • Chairs • 2 fluorescent lights	Good & New	24 students	Conducive for use
2	DANH 2	45	• White board • Chairs • 2 fluorescent lights	Good & New	24 students	Conducive for use
3	DANH 3	45	• White board • Chairs • 2 fluorescent lights	Good & New	24 students	Conducive for use
4	CANH 1	45	• White board • Chairs • 2 fluorescent lights	Good & New	24 students	Conducive for use
5	CANH 2	45	• White board • Chairs • 2 fluorescent lights	Good & New	24 students	Conducive for use
6	CANH 3	45	• White board/black board • Chairs • 1 fluorescent lights	Good but old	15 students	Conducive for use
7	J9	30	• White board/black board • Chairs	Good but old	15 students	Conducive for use

			• 1 fluorescent lights			
8	J10	30	• White board/black board • Chairs • 1 fluorescent lights	Good but old	15 students	Conducive for use
9	J10	30	• White board/black board • Chairs • 1 fluorescent lights	Good but old	15 students	Conducive for use

ii. Laboratories & Workshops

S/No	Laboratory	No	Capacity
1.	Anatomy & Physiology; **Lab 1**	1	25
2.	Biochemistry; **Lab 2**	1	25
3.	Microbiology; **Lab 3**	1	25
4.	Pharmacology & Toxicology; **Lab 4**	1	25
5.	Parasitology; **Lab 5**	1	25
6.	ICT; **Lab 6 & 7**	2	25 each
8.	Engineering Workshop	1	40

b. Appendix II: Teaching Demonstration Farm (Animals & Equipment)

Species	Number	Herd Structure (list)	Farm Equipment (list)
Cattle	To be bought, procurement on-going	1 dairy unit	Procurement ongoing
Sheep	To be bought, procurement on-going	1 unit	Procurement ongoing

Goats	To be bought, procurement on-going	1 unit	Procurement ongoing
Pigs	To be bought, procurement on-going	1 piggery	Procurement ongoing
Poultry	To be bought, procurement on-going	2 poultry houses	Procurement ongoing
Rabbits	**12.** more to be bought, procurement on-going	2 rabbitry with 12 Rabbits	Procurement ongoing
Bees	5 bee-hives	Apiary	Bee-hives installed

Note: Kisii National polytechnic has a memorandum of agreement with neighbouring KALRO and ATC with adequate Livestock resourses for training pending procurement of our farm livestock.

c. Appendix III: Offices

S/No	Type	Number	Capacity	Usage
1	Administrative Offices at Agriculture Department	4	4 Staff	Good condition
2	Administrative Offices at Engineering Workshop	2	4 Staff	Good condition
3	Trainers' Offices at the KNP New building	1	16 Staff	Good condition
4	Technical Staff Offices at the Laboratories	2	6 Staff	Good condition

d. Appendix IV: Equipment & Teaching Materials

Item	Type	Number	Capacity
Desktop Computers	HP COMP	3	
Laptops/Noteb ooks	Acer, Lenovo Del Hp	5	
Animal Health Applied Skills equipment	Burdizzo castrators Drenching Gun Hoof Trimmer Embryotone wire Ear tag applicator Debudding iron CMT Test Plates	Procurement Ongoing	

	Elastrator with Elastrator rubber ring Shears Postmortem Knives Postmortem metal trays Cool box 10l capacity Assorted surgical Equipment Liquid Nitrogen Cylinders Insemination Gun (pistolette) MC Master slides		
Animals	Dairy Cows Goats Sheep Chicken Rabbits Fish Bees	Procurement Ongoing	
Teaching Charts	Bovine General Body Parts Avian General body parts Goat general body parts Sheep general body parts Pig general body parts Integument system (Skin Layers Physiology Charts Parasitology charts Different types of parasites Specific organs	1 1 1 1 1 1 1 1 1	
Skeletons	Bovine Caprine Avian Rabbits Organs (liver Heart, etc.)	1 1 2 2 1	
Farm Tools/implements	Wheel Burrows Jembes Pangas Rakes Hand trowels Bee Keeping Tools	2 5 5 2 5 Procurement Ongoing	
Laboratory Equipment	Microscopes Autoclave Centrifuge Analytical Scale Incubator Refrigerator	3 3 2 3 1	

	Chest Freezer Electric Oven Colony Counter Bio-Safety Cabinets	1 3 1 1	
Projectors		2	
Computer Software	SPSS, Moodle SAS	3	
TV		1	50

e. Appendix V: References & Recommended Teaching Materials

i. Books

1. Anatomy & Physiology

Title	Author	Year of publ.	Copies
Animal Physiology	Ian Kay	1998	1
Clinical Anatomy & Physiology for Veterinary Technicians	Thomas Colville & Joanna M. Bassert	2008	1
Textbook of Veterinary Anatomy 4th Edition; 3rd Ed.	Keith M., Wolfgang O. and C.J.G. Wensing	2009	5
The Merck Veterinary Manual 10th Edition	Cynthia, M. KahnScott Line (Associate Editor)	2010	2

2. Histology

Title	Author	Year publ.	Copies
Textbook of Veterinary Histology	JO ANN Eurell and Brian L.Frappier	2006	3
Text book of Histology 4th edition	Leslie P. Gartner		4
Wheaters Basic Histopathology; 4th Edition	Alan Steven's, James S. Lowe, Barbara Young		5
Fundamental Histology; 4th Edition	B. Young, J.W. Health		5
Junqueiras Basic Histology; 14th Edition	Anthony L. Mescher		5

3. Embryology

Title	Author	Year publ.	copies
Veterinary Embryology	T.A. McGready, M.T., Ryan, et al	2006	3

4. Physiology

Title	Author	Year of publ.	No. of copies
Cunningham's Textbook of Veterinary Physiology	Bradley G. Klein PhD	2019	5
Essentials of Animal Physiology	S.C. Rastogi	2007	3
Animal Physiology Adaptations and Environment 5th Edition	Knut Schmidt, Nielsen		5
Anatomy & Physiology in Health & Illness 9th Edition	Anne Waugh, Allison Curant		5
Animal Physiology	Mohan P. Arora		3

5. Biochemistry

Title	Author	Year of publ.	No. of copies
Principles of Biochemistry	David Lehninger Nelson	2012	5
Principles of Biochemistry 5th Edition	Michael M. Cox, David L. Nelson		3
Principles of Biochemistry 4th Edition	David L. Nelson, Michael M. Cox		3

6. Pathology

Title	Author	Year of publ.	No. of copies
Handbook on Animal Diseases in the Tropics, 4th Edition	Ahmad Afshar		4
Fundamentals of Veterinary Clinical Pathology	Micheal A. Scott and Steven L. Stockham	2002	5
Veterinary Medicine: Textbook of the diseases of cattle, sheep, pigs, goats and horses 9th edition	Radostitis, Otto, M.T.,	2000	5
Veterinary Microbiology and Microbial Diseases	B.K. Markey, Peter J. Quinn	2011	5
Muir's Textbook of Pathology 14th Edition	David A. Levinson, Robin Reid, Alastair Burt		5

7. Haematology

Title	Author	Year of publ.	N0. Of copies
Practical Haematology; 9th Edition	S.M. Lewis, B.J Bain, I. Bates		5

Modern Haematology; 2nd Edition	Reinhold Munker, M. D Erhard Hiller, M.D Jonathan Glass M.D Ronald Paquette M.D		5

8. Parasitology

Title	Author	Year publ.	copies
Foundations of Parasitology, 8th Ed. McGraw-Science	Nicholas F.W.,	2003	5
Parasites: A guide to Laboratory Procedures and Identification	Ash, L.A and T.C. Orihel		5
Foundations of Parasitology; 9th Edition	Larry S. Roberts, John Janory, J. I Steve Nadler		5
Introduction to Animal Parasitology 3rd Edition	J.D Smyth		5

9. Microbiology

Title	Author	Year publ.	copies
Veterinary Microbiology and Microbial Diseases	B.K. Mackf cvey, Peter J. Quinn		5
Concise Review of Veterinary Microbiology; 2nd Ed.	P.J. Quinn B.K. Markey F.C. Leonard E.S. Fitzpatrick S. Fanning	2016	2
Practical Food Microbiology; 3rd Ed.	D. Roberts & M. Greenwood	2003	1
Microbiology 3rd Edition	Dr. Arora, B. Arora		5
Higher Biology a Laboratory Manual	J. J. Torrance		1
Prescott's Microbiology 8th Edition	Joanne M. Willey, Linda M., Christopher J. Wolvertion		3
Medical Microbiology & Immunology 14th Edition	Warren Levinson		5
Microbiology an Introduction 12th Edition	Gerald J. Tortora, Berdell R. Funke, Christine L. Case		5
Practical Microbiology	Bharti Arora, D.R. Arora		5

10. Pharmacology & Toxicology

Title	Author	Year of publ.	No. of copies
Clinical pharmacology and therapeutics for veterinary technicians	Robert L. Bill	2006	2
Textbook OF Veterinary Pharmacology and Toxicology	Ruckebusch, Toutain and Koritz	1983	5
Rang & Dales Pharmacology 6th Edition	H.P. Rang, M.M. Dale, J.M Ritter, R.T Flower		5

11. Surgery

Title	Author	Year of publ.	No. of copies
Veterinary Surgical Techniques	Amresh Kumar	2001	3
Essentials of Veterinary Surgery 8th Edition	A. Venugopalan		5

12. Public Health

Title	Author	Year publ.	copies
Farm Animal Welfare	Benard E. Rollin	2003	5
Livestock Housing; Modern Management to Ensure Optimal Health and Welfare of Farm Animals	Andres Aland & Thomas Banhazi	2013	1

13. Animal Breeding & Genetics

Title	Author	Year publ.	copies
Introduction to veterinary Genetics	Malden MA, Blackwell	2009	3
Concepts of Genetics 6th Edition	William S. Klug, Michael R. Cummings		3
Genetics	Monroe W. Strickberger		1
Understanding Animal Breeding 2nd Edition	Richard M. Burdon		5
Animal Husbandry	Ashok Kumar		3
Modern Livestock & Poultry production 9th Edition	Frank B. Flanders, James R. Gillespie		5

14. Animal Nutrition

Title	Author	Year publ.	copies
Range Management: principles and Practices 6th Edition	Jerry L. Holechek et al.	2010	3

Basic Principles of Livestock Management	Hysen Bytyqi	2011	3
Aquaculture: Farming aquatic animals and Plants 3rd Edition	John S. Lucas, Paul C. Southgate and Craig S. Tucker	2000	3
Principles of Cattle Production 2nd Edition	Clive J.C Philips		5

15. Epidemiology & Biostatistics

Title & Publisher	Author	Year of publ.	No. of copies
Immunology 7th Edition	David Male, Jonathan Brostoff, Ivan Roith		5

ii. **Library Resources**

The institution has a modern library facility equipped with books and online resources to enhance animal Health study from within. Some of the books include;

iii. **Internet Access Points**

All offices are connected to internet and supplied with desktop computers. Learners can access free Wi-Fi at specific designated areas.

The library is equipped with computers connected to free internet for learners and trainers to access academic materials online.

The institution has unlimited internet access with a strong server installed in the Server room near the library.

Kisii National polytechnic Website has a link to access **E- Library Resources** for **Animal Health** students. The website domain is http://www.kisiipoly.ac.ke.

Kisii National Polytechnic subscribes to a number of databases through which students can access full articles journals for free.

The **E-Library** can be accessed through E-books; http://kisiipoly.ac.ke/eResources/eBook.php, Journals: http://kisiipoly.ac.ke/eResources/journals.php and Resourses; http://kisiipoly.ac.ke/eResources/eResource.php

There is also link on the Kisiipoly website for **E-learning** using **Moodle Platform.** The Trainers use **Blended Learning** approach and therefore **Moodle Platform** necessary.

6 Appendix VI: Teaching Staff

S/no	Name	Academic qualification	Registration Body
1.	Dr. Janet Cheptoo Siele	Vet Surgeon	Animal Science Coordinator Trainer-Animal Health
2.	Dr. Allan Muiruri	Vet Surgeon	Animal Health Trainer
3.	Dr. Sharlet Openda	Vet Surgeon	Animal Health Trainer
4.	Dr. Japhet Nyamweya	Vet Surgeon	Animal Health Trainer
5.	Dr. Amos Nyamweya	Vet Surgeon	Animal Health Trainer
6.	Dr. Samuel Ongondi	Vet Surgeon	Animal Health Trainer
7.	Evans Morara	MSc AGED on going BSc AGED Diploma in AGED	Dean, School of Agriculture, Livestock & Environmental Sciences
8.	Eunice Araka	BSc AGED	Deputy Dean, Department School of Agriculture, Livestock & Environmental Sciences
9.	Okinda Wetaba Fredrick	BSc Agricultural Engineering 2017	Agricultural Engineering Section Coordinator Trainer
10.	Fredrick Mosoti Mayaka	MSc Analytical Chemistry on-going Bachelor of Science (Biochemistry & Chemistry)	Agro-processing Section Co-Coordinator Trainer
11.	Obondo Kevin Otieno	MSc Soil Science on - going BSc Soil Environments & Land Use Management 2017	Crop, Soil & Horticulture Section Coordinator Trainer
12.	Leonard Kirui	BSc Microbiology & Biotechnology 2012 Diploma in Medical Laboratory Sciences	Microbiology Technician
13.	Nyang'wono Kinanga Naom	MSc Environmental Science on-going Bachelor of Environmental Studies 2014	Environmental Sciences Section Coordinator Trainer
14.	Dorcas Maina	MSc on going BSc AGED Diploma in Horticulture	Trainer Agro-processing
15.	Benjamin Kisiangani	MSc Agricultural Economics on going	Farm Manager Trainer

		BSC Agricultural Economics	
16.	Morondi Osiemo David	MSc Public health on going BSC Environmental Health 2015 Diploma in Applied Biology 2010	Trainer
17.	Godner Bwari Peter	MSc Public Health 2018 BSC Environmental Health 2014	Trainer
18.	Omagwa Emmah Kemuma	MSc Agric Extension on-going PGDE Science (Biology/Agriculture 2016) BSc AGED 2011	Trainer
19.	Absolom Onwong'a Mokua	Bachelor of Agribusiness Management 2012	Trainer
20.	Noor Dahia Hanshi	BSc Animal Science 2017	Trainer
21.	Ondemo Fredrick Mang'era	MSc Fisheries on-going BSc AGED 2015 Diploma in Agriculture 2008	Trainer
22.	Nyagwansa Obunga Hezbon	Bachelor of Education and Counseling 2013 Diploma in Education and Counseling 2011	Trainer
23.	Atuti Stella Kemunto	PhD Plant pathology on-going MSc Plant Pathology 2016 BSc AGED 2014	Trainer
24.	Nchobera K Tabitha	BSc AGED 2017 Diploma in Applied Biology Diploma Technical Education	Trainer
25.	Linet Bosire	Bachelor of Environmental Studies 2003	Trainer

7 Appendix VII: Technical/Support Staff and Qualifications

S/no	Name	Academic qualification	Registration Body
1.	Denis Muhavi	BSc Animal Health Management on going diploma in Animal Health 2008 Animal Health Technician & AI	KVB

2.	Maxwell	Applied Biology Technologist Bed Science (AGED)	-
3.	Alfred Ontachi	Technologist	KMLTTB
4.	Moses Onditi	Technologist	Pharmacy & Poisons Board
5.	Nancy Matoke	Analytical Chemistry Technologist	-
6.	Lilian Chebet	Applied Biology Technologist	
7.	Janet Mokaya	ICT Officer	
8.	Job Onsongo	D/ICT Officer	
9.	Nancy Matoke	ICT Technician	
10.	Ronald Osano	ICT Technician	
11.	Neville Gwaro	ICT Technician	
12.	Dennis Ombongi	ICT Technician	
13.	Jacquiline Omosa	ICT Technician	
14.	Enoch Ochieng'	ICT Technician	

Appendix VII: Accommodation, Recreational Facilities, Water Resources & Electricity

a. **Recreational Facilities – Sports playground** for ball games such as **football** and **volleyball** is available. There are two main **recreational parks** ideal for relaxing and study. There is also **a forest park** for nature walk and bird viewing. There a huge student centre at the centre of the institution parked with the **hall**, **canteen**, **dining hall**, **kitchen**, **food store**, **shops & common room** for watching **TV**.
b. **Hostels** for student accommodation for both **female** and **male students** for those from far. Capacity is 200 students.
c. **Water source** - piped Kisii County Government water. The institution has **a borehole** supplementing water supply and ensuring presence of water 24/7. There is also **water taps** through the compound and in the hostels, kitchen, washrooms, and around lecture rooms.
d. There is a huge recreational hall for **Drama** and **Theater activities**, **Seminars** and **Conferences** on Library ground floor. [Note: the hall is also used for carrying out **exams**].