JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY

FACULTY OF AGRICULTURE

DEPARTMENT OF LANDREOSOURCES PLANNING AND MANAGEMENT

COURSE STRUCTURE AND DESCRIPTION

FOR

THE DEGREE OF BACHELOR OF SCIENCE IN
ANIMAL HEALTH, PRODUCTION AND PROCESSING (AAP)
COURSE STRUCTURE

The courses for the undergraduate programme are listed below. All courses are one unit, unless otherwise stated. The practical sessions are incorporated in the specific units.

FIRST YEAR

<table>
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<th>CODE</th>
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COURSE DESCRIPTIONS

FIRST YEAR

HRD 2101 COMMUNICATION SKILLS [45 hours]
Course Description
Definition of concepts: elements, process, qualities and barriers, Culture barriers concerning HIV and AIDS communication; communication, models of communication. Oral Communication: Public speaking, persuasion, interviews, meeting and tutorial discussion. Listening skills: efficient listening, barriers to efficient listening, empathic listening and counselling for people in distress. Reading: skimming, scanning and study reading. Writing: principles of good writing, minutes writing, letter writing. Visual communication: chalkboard, transparencies, stencils, slides, television and films, Source information: interviews, questionnaires, library observation and experiments and Computer communications.

AHS 2101 AGRICULTURE AND AGROMETEOROLOGY [45 hours]
Course Description

HRD 2102: DEVELOPMENT STUDIES AND SOCIAL ETHICS [45 hours]
Course Description

HRD 2103: GENERAL ECONOMICS [45 hours]
Course Description
Money and banking; functions money markets and monetary policy. Public finance: government expenditure, government revenue and fiscal policy. International trade; role, balance of payment, exchange rate, regional and international institutions.

**SMA 2160 MATHEMATICS I [45 hours]**

**Course description**

Quadratic functions and equations. Remainder theorem and its application to solution of factorisable polynomial equations. Surds, logarithms and indices. Estimation of roots of a polynomial equation by graphical and numerical techniques. Series: finite, infinite, arithmetic, geometric and binomial (positive integral index only) including applications to compound interest, approximations, growth and decay. Matrices: definition, operations, associated determinant, inverse and application to solution of linear simultaneous equations in two or three unknowns by inverse or row reduction. Trigonometry: trigonometric functions including their graphs and inverses in degree and radian measure. Sine and cosine formulae. Addition, multiple angle and factor formulae. R cos (x-a) form. Area formulae.

**SPH 2160 PHYSICS I [45 Hours]**

**Course Description**


**SMA 2161 MATHEMATICS II [45 hours]**

**Course description**


**SPH 2161 PHYSICS II [45 hours]**

**Course Description**

Optics: reflection at plane surfaces, reflection through prism, dispersion spectra, reflection through lenses, optical instruments, velocity of light and photometry. Wave theory of light,
interference, diffraction and polarization. Oscillations of waves, sound waves and velocity of sound. Vibrations in pipes, string and rods.


**SCH 2106 PHYSICAL CHEMISTRY [45 Hours]**

Course description

**SCH 2107 INORGANIC CHEMISTRY [45 Hours]**

Course Description

**SCH 2108 ORGANIC CHEMISTRY [45 Hours]**

Course Description

**SBT 2120 GENERAL MICROBIOLOGY [45 Hours]**

Course Description
SBH 2111 BIOCHEMISTRY I [45 Hours]
Course Description

SZL 2102 ANIMAL PHYSIOLOGY [45 Hours]
Course Description
Introduction to physiology of farm animals, body systems, integument, musculoskeletal, urogenital, respiratory, digestive, nervous, endocrine, cardiovascular and lymphatic system. Behaviour of farm animals in different physiological states. Physiology of lactating females, egg laying, thermoregulation, metabolism, excretion and secretion.

AAP 2101 INTRODUCTION TO ANIMAL HEALTH, PRODUCTION AND PROCESSING [45 Hours]
Course Description

AAP 2102 VETERINARY ANATOMY 1 [45 Hours]
Course Description

SZL 2111 HIV/AIDS [45 hours]
Course Description
General introduction: Public health and hygiene, human reproductive system, sex and sexuality. History of sexually transmitted diseases (STDs); History of Human Immunodeficiency virus/ Acquired Immune deficiency Syndrome (HIV/AIDS), Comparative information on trends, global and local distribution, Justification of importance of course. Biology of HIV/AIDS; Overview of immune system, natural immunity to HIV/AIDS. The AIDS virus and its life cycle, disease progression, transmission and diagnosis. Discordant couples. Treatment and Management;
SECOND YEAR

ICS 2110 INFORMATION TECHNOLOGY I [45 hours]
Course Description

STA 2160 STATISTICS [45 hours]
Course Description

AAP 2201 ANIMAL PARASITOLOGY [45 Hours]
Course Description

AAP 2202 GENERAL PATHOLOGY [45 Hours]
Course Description

AAP 2203 VETERINARY ANATOMY II [45 Hours]
Course Description
Introduction to gross and microscopic anatomy of farm animals and fish. Introduction to histological techniques, cytology and basic body tissues, stains. Introduction to developmental anatomy; gametes, fertilization, placental membranes, embryo development teratology. Systematic gross anatomy, histology and embryology of the following body systems, musculoskeletal, respiratory, digestive, nervous, endocrine, cardiovascular, integumentary and lymphatic system.

AHS 2202 GENETICS AND CYTOGENETICS [45 hours]
Course Description

AAP 2204 PRINCIPLES OF ANIMAL NUTRITION AND FEEDING [45 Hours]
Course Description

AFP 2430: PRINCIPLES OF FOOD PROCESSING AND PRESERVATION [45 Hours]
Course Description
Development of the food processing industry and its role in utilization of world food supply. Fabrication of foods, packaging, distribution, food quality, trends in consumption and standards. Factors causing food spoilage. Chemical methods of Food Preservation, Pickling and Fermentation. Thermal processing, Freezing, concentration, dehydration. Irradiation, High Pressure preservation

ICS 2215 INFORMATION TECHNOLOGY II [45 Hours]
Course Description
Data communication and networking: data communication, data switching, data communication equipment, stand alone computers and multi-user systems, computer-computer links, centralized data processing, distributed processing and networks. Electronic office: office automation,

AAP 2206 ANIMAL HEALTH I [45 Hours]
Course Description
General examinations; History taking, general and physical examination of systems; nervous, cardiovascular, respiratory, digestive, lymphatic, musculo-skeletal, endocrine, exocrine, reproduction and urinary. Sample taking and preservation for confirmatory diagnosis. Principles of disease control and management. Major infectious diseases of livestock and poultry; viral, rickettsial, bacterial, mycoplasmal, protozoal, parasitic and fungal diseases; aetiology, pathogenesis, clinical presentation, diagnosis, treatment, prevention, control and eradication. Production diseases of animals; feeding related disorders including bloat, lactic acidosis, hardware disease, displaced abomasums and impaction. Mineral and vitamin imbalance and poisoning.

AAP 2207 CLINICAL PATHOLOGY [45 Hours]
Course Description
Basic principles of haematology and clinical chemistry. Collection of samples, cell counts, morphological and cellular changes during disease. Clinical chemistry; determination of plasma proteins, serum enzymes and mineral levels, electrolyte and fluid balances, urinalysis. Liver and kidney function tests.

AAP 2208 VETERINARY EPIDEMIOLOGY [45 Hours]
Course Description
Introduction to veterinary epidemiology; basic concepts; patterns of disease occurrence. Notifiable and zoonotic diseases and their importance in human health, transmission and spread of disease. Measurement of disease prevalence in animal populations. Disease determinants, screening tests and disease surveillance; outbreak investigations. Quarantines and their legal provisions.

AAP 2209 ANIMAL BREEDING [45 Hours]
Course Description
Introduction to breeding. Measurement of production traits; phenotype and genotypes, heritability, gene improvement: selection; traditional practices, selection criteria, accuracy of selection, intensity of selection, genetic variability and generation interval, selection of multiple traits. Crossbreeding, sustenance of good characteristics, heterosis, additive inheritance, interaction of new genotype, environment, progeny testing. Breeding policy, government

**AFS 2210 FUNDAMENTALS OF FOOD CHEMISTRY [45 Hours]**

**Course Description**

**AFS 2210 MICROBIOLOGY OF FOOD AND NON-FOOD LIVESTOCK PRODUCTS [45 Hours]**

**Course Description**

**AAP 2211 INTERNAL ATTACHMENT [8 weeks]**

**Course Descriptions**
Practical work every day (8 weeks) in the university farm, food science workshops and ambulatory clinics around the university environs
THIRD YEAR

AAP 2301 INTRODUCTION TO RANGE MANAGEMENT [45 Hours]
Course Description
Definition of range and management; distribution, characteristics, and functions of rangeland ecosystems; soil and vegetation; biotic-abiotic interactions; grazing ecology; grazing management; wildlife-livestock interactions; conflicts in land and use, rangeland monitoring; rangeland rehabilitation; managing rangeland complexity. Evaluation of resources in specified range areas.

HRD 2117 INDUSTRIAL BOOK-KEEPING [45 hours]
Course Description

AAP 2302 IMMUNOLOGY [45 Hours]
Course Description

AAP 2303 PHARMACOLOGY AND PHARMACOGNOSY [45 Hours]
Course Description
AAP 2304 ANIMAL HEALTH II [45 Hours]
Course Description
Animal restraint techniques, animal identification, rope works, knots and halter making. Equipment for management of surgical conditions at the farm. Simple surgical procedures in farm animals such as castration, dehorning, tail docking, foot trimming. Emergencies in farm animals including bloat choke and first aid techniques.

AAP 2305 ANIMAL PRODUCTION I [45 Hours]
Course Description
Ruminant production; Cattle, sheep and goats, dromedary. Factors affecting the production of good quality products from the ruminant animals; such as climacteric management, nutrition and genetic factors. Non ruminant production and management. Herd health: management, programming and planning.

ABE 2321 AGRICULTURAL STRUCTURES AND EQUIPMENT [45 Hours]
Course Description

AAP 2306 ANIMAL PRODUCTION II [45 Hours]
Course Description
Importance of non conventional livestock; reptiles, mammals, amphibians, birds, insects. Production, rearing, advantages and disadvantages of non-conventional livestock in the production systems. Economic and aesthetic analysis of non-conventional livestock. Ethics and legal implications.

AAP 2308 THERIOGENOLOGY [45 Hours]
Course Description
AAP 2309 VETERINARY PUBLIC HEALTH [45 Hours]
Course Description

AAP 2310 AQUATIC BIOLOGY AND AQUACULTURE [45 Hours]
Course Description

AFS 2315 ANALYSIS OF FOOD AND FEED [45 Hours]
Course Description

ECE 2220 SANITATION AND WASTE CONTROL [45 Hours]
Course Description

AAP 2311 RESEARCH METHODOLOGY [45 hours]
Course Description
Definition. Types of Research; experimental, survey and simulations. Problem identification. Research proposal: Research process; literature review. Methodology; Data collection, generation and analysis, observations, interviews, questionnaires and conclusions. Technical report writing: The student is expected to write and present a proposal at the departmental seminar where it will be discussed and appropriate recommendation made and
approved as final year project. The approved proposal will be submitted by the student to the department for assessment.

AAP 2312 FIELD ATTACHMENT [8 Weeks]
Course Description
Students to be attached to livestock farms, industries and institutions where they will gain relevant experience in health, production, processing and marketing of animal products and expected to submit a report.

AAP 2313 LIVESTOCK DUTIES [45 hours]
Course Description
Handling and straining of Cattle, sheep goats and other livestock, diagnosis and treatment of livestock diseases on the farm, milking, feeding, cleaning, de-horning and other routine livestock procedures (duties) on the farm
FOURTH YEAR

AFS 2310 DAIRY TECHNOLOGY I [45 Hours]
Course Description

AFS 2305 MEAT TECHNOLOGY [45 Hours]
Course Description

AFS 2408 PROCESSING OF AQUATIC AND POULTRY PRODUCTS [45 Hours]
Course Description
Introduction to aquatic and poultry food resources: fishes, other aquatic animals, sea weeds, types of poultry, eggs, other poultry products. Types of processed products of aquatic origins and their processing technologies. Types of processed products and processing technologies of aquatic and poultry resources. Quality of processed aquatic and poultry products. Packaging and storage of processed aquatic and poultry products. Quality assurance techniques of the products.

AAP 2402 RESEARCH PROJECT I [90 hours]
Course Description
The student will write a report on the progress made in the research project being undertaken. The student will also present the progress report orally to a panel of examiners in a departmental seminar, where it will be discussed and appropriate recommendations made.

AAP 2403 ENVIRONMENTAL SCIENCE FOR ANIMAL PRODUCTION [45 hours]
Course Description
Environmental health; Air, water and soil pollution. Assessment of environmental pollution, biodegradable and non-biodegradable items used in livestock and crop production. Impact of livestock production and processing on the environment. Livestock and crop waste disposal systems. Technologies that modify the chemical and physical characteristics of waste materials: Reduction of environmental damage, enhancement of natural resources, turning of waste products into better use. Sustainable livestock production and processing systems.
AAP 2404 CLINICAL PHARMACOLOGY AND PHARMACOBIOTECHNOLOGY [45 Hours]
Course Description

AAP 2405 SOCIOLOGY, RURAL DEVELOPMENT AND EXTENSION STUDIES [45 hours]
Course Description
Introduction to rural sociology; characteristics and social structures of rural society. Rural/urban societies. Sociology of development: Sociology as a science, methods of investigation in sociology, Importance of sociology. Historical development of sociology, basic concepts in sociology., culture, values, norms, conflict, sanctions, agents of socialisation, population dynamics, social change and its management. Meaning and objectives of rural development; socio-economic development, modernisation, and economic growth; Theories of rural development role of development agencies, problems of rural and urban development. Development in the Kenyan perspective.
Technology: transfer, diffusion and adoption of innovations, decision support tools.
Extension: goals, principles and methods of extension, teaching methods, communication, management of extension systems, leadership in extension, extension organisation/structure.
Cross cutting issues in extension and development, gender issues, environmental issues, sustainable development, millennium development goals, food safety and health concerns.
Project development, implementation and evaluation

AAP 2406 RESEARCH PROJECT II [90 hours]
Course Description
The student will write a report on the progress made in the research project being undertaken and submit it to the project coordinator for grading. The student will also give an oral presentation to
a panel of examiners in a departmental seminar, for grading and making appropriate recommendations.

AAP 2407 LIVESTOCK POLICY AND JURISPRUDENCE [45 hours]
Course Description
Introduction to policy analysis: Concept of market failure and public goods, concept of welfare (private and social), monopolies and economic welfare, cost-benefit analysis, role of government in economic management under different economic systems; goals of macroeconomic policies: Problems of developing countries and relevant macroeconomic policies, economic development, low income countries; Role of private sector; control and liberalisation. Concept of law in economic management; the place of agricultural and veterinary laws in liberalized environment, the distribution between; regulation, control and facilitation. The role of laws related to animal food products. Legislative Acts: meat, dairy, weight and measures, public health.

AAP 2408 LIVESTOCK BY-PRODUCTS PROCESSING AND USES [45 Hours]
Course description
Utilization and economic importance of livestock by products, processing of products from non-conventional livestock, crocodiles, snakes, seafood, crabs and fish, hides and skins, blood and bone meal, other livestock by products, hooves and. Preparation and grading. Acquisition, preservation, utilization, grading and processing; tanning, salting. Deterioration factors; management and control. Marketing; local and export requirements. Policy and legislation.

AFS 2403 DAIRY TECHNOLOGY-II [45 Hours]
Course Description

AFS 2409 FOOD QUALITY ASSURANCE AND SENSORY EVALUATION [45 Hours]
Course description
HRD 2109 AGRICULTURAL MARKETING [45 hours]
Course Description

HRD 2401: ENTREPRENEURSHIP SKILLS [45 Hours]
Course Description