BACHELOR OF SCIENCE IN ANIMAL HEALTH AND PRODUCTION

Course Description

UCU 100: Communication Skills
Reading skills: intensive and critical reading, interpretation of non-verbal information, content tables, indices. Listening skills: in lectures, predicting structure of a lecture, following tutorial discussions. Library skills; Collecting and abstracting information: note-taking, classification and storage of information. Speaking skills: in tutorials, presenting a paper, Writing skills: and editing various types of writing, indicating references, Study techniques:., storing and retrieving information.

UCU 103: Introduction to Critical and Creative Thinking

UCU 104: Development Studies

KCU 100: History and Development of Agriculture in East Africa
Climate and soils of East Africa; history and development of agriculture in Kenya: agricultural production systems, agriculture and the Kenyan economy; factors limiting crop and animal production in Kenya; agriculture and enterprise development: nature of entrepreneurship development in agriculture, characteristics of entrepreneurs; agricultural organization and research.

KST 112: Agricultural Botany
Study of microscope (its parts, functions and precautions); plant cell; preparation of temporary slides to show cell structure, cell division, starch grains, plastids; plant tissues; anatomical studies of plant parts with temporary staining and mounting; preparation of solutions of different concentration for physiological studies, plasmolysis, osmosis, diffusion & permeability; study of microorganisms and their economic.
importance; algae, fungi, bacteria and viruses (one typical example of each); preparation of microbiological slides; preservatives (FAA, IAA) their uses and precautions.

**SZL 100: General Zoology**
Origins of the universe, earth and life forms. Principles and significance of classification of prostistan and Animal Kingdoms. An evolutionary and taxonomic review of the main phyla of these two kingdoms. Brief overview of membranes, cells, resistance to diseases, homeostasis, thermoregulation, respiration, reproduction, nervous system, skeletal system, excretion and osmoregulation, circulatory system, micro and macro-evolution.

**SZH 106: Fundamentals of Animal Ecology**
Fundamentals of animal ecology; adaptation, fitness and evolution, migration, dispersal, distribution. Population dynamics, abundance, competition, predation, parasitism, mutualism. Community ecology: the nature of community, influx of energy and matter, the influence of competition, predation and disturbance on community structure; Ecosystem levels: island and community structure, diversity and stability. Wildlife ecology

**SZH 101: Comparative Anatomy**
Study of the macroscopic anatomy of vertebrates based on detailed dissection of the dog, sheep or goats. Structural anatomy of organs and tissues: Musculo-skeletal, nervous, circulatory, respiratory, reproductive. Comparison with other domestic species will be emphasized.

**SZH 104: Embryology**

**SZH 100: Cell Biology and Systemic Histology**
**SZH 103: Animal Physiology**
Physiological mechanisms of vertebrates: Structure, functions and organization of physiological systems: Digestion, respiration, circulation, osmoregulation, excretion, reproduction and nervous system. Homeostasis and constancy: regulatory and coordinating systems. Senses: smell, hearing and vision.

**SZH 105: Introduction to Genetics**

**SBC 229: Basic Biochemistry**

**SZH 206: Basic Microbiology**
History of microbiology: Pastures’ postulates, General characteristics and classification of bacteria, viruses, protozoa, rickettsia, fungi, algae. Isolation and identification of bacteria, fungi and viruses from natural systems; Bacterial phylogeny, structure and function of bacterial cells, ecology and physiological diversity of bacteria and bacteriophages, bacteria and viruses as agents of disease, human applications of bacteriology, microbial genetics and genomics.

**KAP 301: Bacterial and Fungal Diseases**
Aetiology, occurrence, symptomatology, morbidity, diagnosis, treatment, prevention, control, and economic importance of; Anthrax, clostridial diseases – blackquater, entrotoxaemia (pulpy kidney, lamp dysentery), tetanus, contagious bovine pleuropneumonia, contagious caprine pleuropneumonia, foul in the foot (foot rot), foot abscess in sheep, swine erysipelas, actinomycosis, actinobacillosis, streptothricosis, and mycotic dermatitis. Fowl typhoid, pullorum, fowl cholera, salmonellosis and colibacillosis in poultry.

**KAP 201: Quantitative Genetics and Animal Breeding**
Qualitative and quantitative traits; Traits of economic importance; Random mating; Repeatability; Heritability; Genetic correlation; Selection, Improvement of multiple traits; Selection indices; Genetic response to selection; Crossbreeding; Inbreeding; Computation of breeding values; mating systems; Application of breeding methods to improve traits of economic importance; Breeding programmes; Advances and application of biotechnology; policy, Marker assisted selection and introgression; Legal and institutional considerations.

**KRM 306: Pastures and Fodder Production and Conservation**
Forages, botany and identification of pasture grasses, legume and fodder crops; ecology and distribution of natural grassland in Kenya; agronomy, production, conservation and utilization of pastures and fodder crops; crop improvement of pastures and fodders.

**KAP 311: Viral and Rickettsial Diseases**
Geographical distribution, aetiology, symptomatology, morbidity, mortality, diagnosis, treatment, and control of diseases of economic importance caused by viruses, Rickettsia, including Foot and Mouth Disease, Malignant Catarrhal Fever, Rabies, Blue Tongue, Nairobi Sheep Disease, Pox infections; Lumpy Skin Disease, Rift valley fever, pestes des ruminates, Swine Fever, Avian Influenza, New castle disease, Gumboro Disease, Fowl Pox, Mareks disease, Anaplasmosis, Heartwater. Bovine petechial fever, Chlamydiosis, Ehrlichiosis

**KAP 305: Parasitic Diseases**
Parasitic diseases of major economic and public health importance in domestic animals in Kenya. Major disease caused by protozoa – Trypanosomosis, East Coast Fever, Babesiosis, Trichomoniasis; helminthes – nematodes, Cestodes and Trematodes; arthropods – Ticks, tsetse flies, fleas, lice and other biting and nuisance flies. Emphasis is laid on their aetiology, species affected, transmission, pathogenesis, clinical manifestations, diagnosis, and control.

**KAP 307: Beef and Camel Production**

**KAP 306: Dairy Production**

KAP 308: Sheep and Goat Production
Goat production systems and the role of goats in agriculture. Breeds, application of principles in breeding and selection, physiology, nutrition and disease control in management of goats for meat and milk production. Goat products processing and marketing.

KAP 310: Pig Production
Pig industry and production systems: Breeds. Application of the principles in breeding and selection, reproductive physiology, nutrition, housing and health in the management of a pig enterprise. Evaluation and processing of pig carcass. Marketing of pigs and pig products.

KAP 304: Routine Livestock Practices

SZH 302: Pharmacology

ASC 300: Rural Sociology
Principles of sociology; influence of social systems in food production and agricultural development; analysis of human relationships as influenced by life among the rural communities and societies; rural populations; rural social institutions and stratification; process of change in agricultural technology and community decision-making; social factors influencing agribusiness in rural areas.

ENS 349: Rangeland Resources
Taxonomy and autecology of common range plants. Terminology in range management, the range environment, plant resources and products. Productivity and nutrition, multiple and proper use
concepts. Grazing management and range science principles in range management. Livestock production systems in the Kenyan rangelands, Grazing in relation to plant ecology. Types of ranching organizations groups, co-operative, company partnership, individual and grazing blocks. Livestock and wildlife - their impact on rangelands.

**KCU 300: Field Attachment**
The 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 student to assess them in the course of the attachment period.

**KST 408: Agricultural Extension and Rural Development**
Meaning of rural development and rural poverty, gender and poverty, development theories and strategies in rural development; Nature and scope of agricultural development; Role of Agriculture in socio economic development; Theories of agricultural development; Approaches and strategies to rural development, e.g millennium development goals, decentralization, community development, integrated rural development, gender approaches to development etc. rural project planning, identification, design, monitoring and evaluation.

**SZH 408: Biometrics and Research**
Methods of acquiring knowledge: Non-scientific and scientific methods; steps in scientific research. Preparing a research proposal: Problem sources and formulation, problem statement, research objectives, formulation of the research hypothesis, identification of variables, literature review and background information. Research and sampling designs. Types of research; Exploratory, experimental, descriptive, correlational, explanatory, evaluation and participatory research. Data collection methods: experimental and survey research. Participatory Rural Appraisal (PRA) techniques and methods. Data processing, analysis and hypothesis testing. Computer applications in research: SPSS and other software. Report writing and presentation.

**BBA 310: Entrepreneurship and Small Business Development**
Concepts and definitions, entrepreneurial motivation, leadership and networking, risk taking and small business management, decision making, instituting and managing change, enterprise management strategies, policies and goals.

**KBT 208: Farm Management**

KAP 409: Animal Welfare, Ethics and Laws
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

KAP 404: Apiculture, Aquaculture and Emerging Livestock
The fish industry. Culture fisheries; breeding and produciton Fish diseases, parasites and their control. feeding habits, reproduction, harvesting and handling. Fish processing, grading and marketing. The role of bees in agriculture in Kenya. Biology of the honeybee. Breeding, diseases and pests. The management of a bee colony with respect to flowering vegetation, foraging behavior and feeding. Swarm control. Types of hives. Harvesting, handling, processing, grading and marketing of honey and wax. The honey and wax industry.

KAP 408: Zoonosis and One Health Concept
Classification of zoonoses. Epidemiology, clinical signs in man and animals, control and precautions with regard to: Cysticercosis, Hydatidosis, Brucellosis, Salmonellosis and Tuberculosis, Anthrax, Ringworm, Ornithosis/Psittacosis, Rabies, Rift Valley Fever, Cow pox, Leptospriosis, Bovine spongiform encephalopathy (Mad Cow Disease), cryptospodiosis/cyclospora Avian Influenza, Newcastle Disease, Bubonic Plague, Toxoplasmosis, Pastuerellosis, Q fever, Mange. Introduction to One Health Concept. Interaction of Human, Animal and Environmental Health.

SZH 412: Ambulatory
Applied principles of herd health management, including assessment of reproductive performance. Record keeping, diseases surveillance and control. Visit to farms and attend to clinical cases inside and outside university Farms. Herd health programmes and farm procedures
**KAP411: Metabolic, Nutritional and Reproductive Diseases**


**SZH407: Public Health and Epidemiology**


**KAP401: Poultry Production**


**KCU 400: Research Project**

Students carry out research project either individually or in groups under supervision by a professor and/or lecturer. Students give individual oral presentation and written reports on completed or proposed research projects or subjects related to animal production.

**KAP 410: Herd Health**

Introduction to Herd Health, objectives, Herd Health programming. Examination of the environment, sample taking and diagnosis of diseases in the field and laboratory. Basic surgical procedures and types of anesthesia. First Aid and Emergency Intervention. Basic reproductive management. Planned animal health and production in livestock. Principles of Disease Control.
SZH 404: Clinical Medicine

Common diseases affecting small and large animals, their diagnosis and treatment: Bovidae, shoats, horses, donkeys, camels; Companion animals; dogs and cats. Skin diseases, common bacterial diseases of large animals: Anthrax, Clostridium diseases, mastitis. Protozoal disease: Theileriasis, Babesiosis. Diseases affecting different organ systems. Drug dosage and treatment regimes, indication and contraindication.