

BIOL101 (Biology-1) 3 Credits

This course provides an opportunity to explore the nature of cells from prokaryote to eukaryotes. Biology is the study of different life forms and their interconnectedness with all other life forms. It provides opportunities to learn about the processes of all living things. Biologists contribute to medical and biotechnological advances. By studying Biology, students become more aware of ecological issues and develop more sustainable ways of using our natural resources e.g., soil, land, or water. The study of biology forms a firm foundation for all the other related courses including Food Science, Human Nutrition, Biomedical Science etc. that are relevant to the students of the College of Applied Sciences

BIOL181-Lab (Biology-Lab) 1 Credit

This course provides an opportunity to explore the nature of cells, from prokaryotes to eukaryotes. Biology-Lab offers a variety of laboratory exercises on current concepts in cell and molecular biology using research-grade scientific equipment. Different teaching techniques, materials and instruments will be employed to provoke student's interest to enrich their understanding about the basic concepts and principles in cell and molecular biology. Numerous laboratory methods will be utilized in demonstrations and student experiments. Students will exercise critical thinking for interpreting laboratory results

CHEM101 (Chemistry-1)

3 Credits

This course intended as the companion course for Chemistry 101 theory and is an introductory lab course focusing on basic principles and concepts in Chemistry. It provides the basis for further studies in physical and biological sciences, environmental sciences, various engineering disciplines, applied sciences such as: food sciences and nutrition, geology and metallurgy, pharmaceuticals, interdisciplinary areas like nano-science and technology. Topics include laboratory safety, chemical measurements, significant figures, laboratory techniques, naming and chemical formulae of compounds, chemical reactions - acid –base titrations, and cation& anion analysis, stoichiometry problems, calorimetric experiments for heat of reactions etc.

CHEM181 Lab (Chemistry- Lab) 1 Credit

This course intended as the companion course for Chemistry 101 theory and is an introductory lab course focusing on basic principles and concepts in Chemistry. It provides the basis for further studies in physical and biological sciences, environmental sciences, various engineering disciplines, applied sciences such as food sciences and nutrition, geology and metallurgy, pharmaceuticals, interdisciplinary areas like nano-science and technology etc. Topics include laboratory safety, chemical measurements, significant figures, laboratory techniques, naming and chemical formulae of compounds, chemical reactions - acid –base titrations and cation& anion analysis, stoichiometry problems, calorimetric experiments for heat of reactions etc.



Phys101 (Physics-1) 3 Credits

This course is an introductory physics module focusing on basic principles and concepts in Physics. It is designed for students who will continue their undergraduate degree programs in different colleges at A'Sharqiyah University.

Phys181Lab (Physics-1 Lab) 1 Credit

Physics is an experimental science. The theory that is presented in lectures has its origins and is validated by experimental measurement through experiments. Physics 181 laboratory is an introductory Physics module focusing on experiments of the basic principles and concepts in Physics 101. It is designed for students who will continue their undergraduate degree programs in Engineering and Applied Sciences.

ENGL101 (English-1) 3 Credits

This course is a part of 3 course programs that is designed to further practice and consolidate the GFP English Language Exit Standards and help prepare students. In addition, students will further enhance their ability to discuss/debate or argue their opinions on a topic. The methodology used will be communicative teaching with particular focus on student-centered learning, incorporating the 5 stars teaching principles, which embodies the notion of group work and communicative language teaching/learning. 25 students sit in five groups of five, rather than traditional lecture rows, allowing for collaborative learning during most classroom tasks and ensuring maximum contributions from all learner types.

VTMD102 (Biochemistry) 3 Credits

The course provides basic information about biochemistry and nutrients along with their function in metabolism and links this information to the role of nutrition in long-term health and prevention of disease. It will provide information about the biochemical mechanisms associated with digestion and absorption of macro, micronutrients. The course will also deal with chemistry, biochemistry of both fatand water-soluble vitamins, role of macro minerals and trace elements. Submission of a well written

review/report for assessment is compulsory.

VTMD182-Lab(Biochemistry Lab) 1 Credit

The course is a lab work to provide basic information about biochemistry and nutrients along with their function in metabolism and links this information to the role of nutrition in long-term health and prevention of disease.

VTMD101 (Veterinary Anatomy-1) 3 Credits

This course is intended to give students the basic principles of anatomical terms and then the anatomical structures of the skeletal-muscularsystem (bones, joints, & muscles) of different animal species.



VTMD181Lab (Veterinary Anatomy-1 Lab) 1 Credit

This course will be the practical part of the theory course that deals with the anatomical structures of the skeletal-muscular system (bones, joints, & muscles) of different animal species.

ENGL102 (English-2) 3 Credits

This course will continue with what the students have learned in the previous foundation levels and more specifically English Communication Skills 1 Course. The four language skills of listening, speaking, reading and writing are integrated and developed for new uses such as writing essays, participating in classroom debates and working together to make a presentation about topics related to the students major.

VTMD211 (Veterinary Anatomy-2) 3 Credits

The course is the continuity with veterinary anatomy-1 to provide students' knowledge of the digestive system, the circulatory system, the urinary system, the nervous system, respiration and reproduction, muscular and skeletal systems, growth and developmentspecies differences are being discussed.

VTMD281Lab (Veterinary Anatomy-2 Lab) 1 Credit

This course is the practical unit of the theory course to provide students' practical knowledge of the digestive system, the circulatory system, the urinary system, the nervous system, respiration and reproduction, muscular and skeletal systems, growth and developmentspecies differences are being discussed.

VTMD212 (Veterinary Physiology-1) 3 Credits

This course is a general introduction to animal physiology, including the normal function of the cells, tissues and organs. The course will also cover the normal functions of the following systems: cardiovascular, digestive and respiratory systems.

VTMD192Lab (Veterinary Physiology-1 Lab) 1 Credit

This course is the practical course for the Physiology-1 theory course. Student will demonstrate experiments on the normal function of the cells, tissues and organs and also experiments on the normal functions of the following systems: cardiovascular, digestive and respiratory systems.

VTMD 212 (Veterinary Physiology-2) 3 Credits

This course is a continuity to physiology-1 course to cover the normal functions of the following systems: Urinary, nervous, special sense, endocrine reproductive, & vitamins.



VTMD 282Lab (Veterinary Physiology-2 Lab) 1 Credit

This course is the practical part of physiology-2 theory course to cover the normal functions of the following systems:. Urinary, nervous, special sense, endocrinere productive, & vitamins.

VTMD213 (Animal Husbandry) 3 Credits

The course the students will learn the different methods of handling and controlling different animal species. Also the student will be experience in day-to-day animal caring, identification, selective breeding, raising of livestock, production systems and subsistence of farming.

VTMD283Lab (Animal Husbandry Lab) 1 Credit

The course is the practical part of the theory course dealing with day-to-day animal caring, methods of animal identification, selective breeding, and the raising of livestock, production systems and subsistence of farming.

MNGT313 (Entrepreneurship) 3 Credits

This course is an introductory entrepreneurship course which focuses on the vital role played by entrepreneurs and entrepreneurship in the 21st century global economy. The process of successfully launching and growing an entrepreneurial venture by applying the entrepreneurial process is examined. The course integrates a number of different disciplines, ranging from sociology and psychology to economics, finance, marketing, and human resource management. It is a course that mixes theory with practice by applying principles, concepts and frameworks to real world situations

VTMD222 (Veterinary Histology & Embryology)3 Credits

In this course the students will learn the microscopic structures of cells, tissues and organs of different animal species. Also the students will learn the embryonic development of every organ in the body.

VTMD292Lab (Veterinary Histology & Embryology Lab) 1 Credit

This course is the practical part of the histology and embryology course that deals with the microscopic structures of cells, tissues and organs of different animal species. Also the embryonic development of every organ in the body will be discussed.

VTMD223 (Animal Genetics & Breeding) 2 Credits

This course will discuss the fundamentals of basic genetics (cell cycle, chromosome and gene structure, and modifications of classical genetic) and how they are applied in animal breeding to improve livestock animals. The course will also cover population, quantitative, and qualitative genetics. The two main tools of animal breeding (selection and mating) to obtain genetically-improved animals will be discussed.



VTMD311 (General Veterinary Pathology) 3 Credits

Pathology is a core discipline in veterinary medicine. Students will learn general principles about the processes involved in disease. The course will contribute to the students' achievement in understanding fundamental principles of disease and recognizing disease states across the range of species, focusing upon domestic animals.

VTMD381 (General Veterinary Pathology Lab) 1 Credit

This course will introduce the concepts of injury and departures from normal structure and function in the animal's body, as occurs in disease. The various pathological processes and their importance in the basis of animal disease will be studied. Correlation with clinical presentation will also be made.

BIOL201 (Microbiology-1) 3 Credits

Microbiology is the study of invisible, small microorganisms (characteristics, advantages and disadvantages) that form part of our world. These microorganisms include bacteria, viruses, fungi, algae and protozoa. Microbiology has been and will continue to be one of the pillars in the creation of opportunities for human progress and for the advancement of new knowledge to improve the quality of life. It has numerous applications in health and disease and in the development of new technologies in the various fields of microbiology like food and industrial microbiology, immunology, medical mycology, diagnostic microbiology, etc. This course is intended to prepare students for various careers and opportunities in the different fields of microbiology.

BIOL281 (Microbiology-1 Lab) 1 Credit

This course prepares students to pursue advanced and professional degrees successfully and enter the workforce with the tools to continue life-long advancement, and to contribute to our ever-expanding understanding of biological processes. Numerous laboratory methods will be utilized in demonstrations and student experiments. Students will exercise critical thinking for interpreting laboratory results.

VTMD312 (Veterinary Parasitology) 3 Credits

Different kinds of parasites and parasite relationships that is supported by case studies and suggestions for student projects. The book focuses strongly on parasite interactions with other pathogens and in particular parasite-HIV interactions, as well as looking at how host behavior contributes to the spread of infections. There is a consideration of the positive aspects of parasite infections, how humans have used parasites for their own advantage and also how parasite infections affect the

VTMD382 (Veterinary Parasitology Lab) 1 Credit

The course consists of lectures and laboratory classes covering the helminthes, arthropods, and protozoa occurring as important parasites of domestic and wildlife species. A taxonomic approach is taken, but emphasis is placed on practical aspects such as the parasites' developmental cycles, clinical features,



pathogenesis of disease, immunology, epidemiology, public health aspects, laboratory and clinical diagnosis, treatment, and control. Particular attention is paid to providing a host approach so that the parasites and their hosts are placed in context.

VTMD313 (Veterinary Pharmacology) 3 Credits

The course includes principles of pharmacology, the mechanisms of action, pharmacokinetic properties, and the effects (therapeutic and adverse) produced on the various systems of the body by representative drugs belonging to each pharmacological class of drugs are presented. Species variations in pharmacodynamic activity or pharmacokinetic behavior that contribute to differences in drug dosage requirements are described, and special attention is given to unusual sensitivity of particular animal species (or breeds) to the effects produced by certain drugs. Students are presented with the requisite information for rational selection and appropriate use of drugs for therapeutic purposes in domestic animal species and other species of veterinary interest. The material is presented with an applied veterinary clinical orientation.

VTMD321 (Systemic Veterinary Pathology) 3 Credits

The course includes general pathology and systemic pathology. The general principles and mechanisms of disease are discussed through the basic principles of cell and tissue reactions to injury, including degeneration, necrosis, pathological pigmentation, disturbances of circulation, disturbances of growth, neoplasia, inflammation, and immunopathology, etiology, pathogenesis, gross and microscopic lesions, and diagnosis of diseases of the organ systems in the body. Formal classroom lectures are complemented with laboratory classes and necropsy demonstrations aimed at interpretation of gross and microscopic lesions.

VTMD391Lab (Systemic Veterinary Pathology Lab) 1 Credit

The course includes etiology, pathogenesis, gross and microscopic lesions, and diagnosis of diseases of the organ systems in the body. Formal classroom lectures are complemented with laboratory classes and necropsy demonstrations aimed at interpretation of gross and microscopic lesions.

VTMD322 (Veterinary Microbiology) 3 Credits

The course will cover all aspects of bacteriology, mycology, and virology of veterinary importance. The course will cover different aspects of microbial classification, identification & characterization based upon their growth character, biochemical tests and colony morphology.

VTMD392Lab (Veterinary Microbiology Lab) 1 Credits

The course will be the practical aspect of VM322 course. The course provides introduction to the culture, biochemical reactions and identification of pathogenic bacteria, fungi and viruses isolated from different animal species.



VTMD323 (Veterinary Immunology) 3 Credits

The course provides theoretical and practical knowledge in immunology. The course is a 4 week all day course, it provides a review of the immune system, and it functions as well as routine immunological assays. The course is being taught in a classroom setting as well as in the lab where students will learn to perform the assays and analyze and troubleshoot their data. The basic aspects of humoral and cell-mediated immunity, the role of immunological reactions in infectious disease pathogenesis, hypersensitivity, and autoimmune disease. Students will study the principles of immunity to bacteria, viruses and parasites and the fundamentals of vaccination. Students will also be familiarized with diagnostic techniques for assessing the immune system and for diagnosis of immune mediated disease.

VTMD324 (General Veterinary Medicine & Surgery) 2 Credits

This course aims to teach students the skills of clinical examination of different animal species. It also aims to understand the general systemic status of animals, such as, pain, stress, toxaemia, fever, septicaemia, sudden death, body fluid and electrolytes disturbances, acid-base balance, allergies, appetite disturbances, and poor performance.

VTMD333 (Veterinary Forensic Pathology) 3 Credits

This course introduces the students to animal forensic and teaches the fundamentals of forensic autopsy. It also provides practical advice for performing animal crime investigations. This course is an important reference guide for clinical veterinarians interested in performing animal necropsies for forensic casework. It presents a broad range of animal species, with particular focus on the post mortem examination and the observed pathology.

VTMD334 (Veterinary Toxicology) 3 Credits

This course provides the students on the latest approaches for diagnosis in chemical and plant poisoning cases in animals. The course is updated to include the newest developments which include new toxins, methods and regions that is needed for veterinary students. The course covers significant aspects of veterinary toxicology, the basic principles and key concepts with clinical applications.

VTMD383-Lab (General Veterinary Medicine & Surgery)

1 Credit

This course is the practical part of the VM324 course teaches students the practical skills of clinical examination of different animal species.

VTMD325 (Animal Nutrition) 2 Credits

The course includes topics on nutrients, the digestive processes, and the application of nutritional sciences to the health and well-being of various species of animals.



PhytochemistryVTMD411 (Veterinary Internal Medicine-1) 3 Credits

The course will cover all non-infectious diseases and conditions that affect various body systems in different animal species: etiology, clinical signs, diagnosis, treatment and control.

VTMD482Lab (Veterinary Surgery-1 Lab) 1 Credit

The general surgery section provides soft tissue surgery of digestive, urogenital, cardiovascular and integumentary system as well as oncologic surgery. The orthopedics/neurosurgery section provides fracture management, surgery of joint and spine. The anesthesiology section provides local and general anesthesia for patients including internal medicine, surgery, diagnostic imaging, etc of SNUVMTH. The primary area of research includes epidural anesthesia, wound healing, clinical application of stem cells on non-union of bone fracture and spinal cord injury, and cancer research of animals.

VTMD413 (Veterinary Infectious& Zoonotic Diseases) 3 Credits

The course provides introduction to bacteriology, virology, parasitology, mycology, and immunology to prepare students for more in-depth study during the systems. Clinical applications of the basic sciences are emphasized.

VTMD414 (Veterinary obstetrics & Theriogenology) 3 Credits

The course introduces topics on breeding soundness in male and female animals, and normal pregnancy and production. Integration of reproductive physiology, endocrinology, pathology and pharmacology as they apply to the diagnosis, treatment and prevention of reproductive disorders of domestic animals. Normal estrous cycles, breeding, pregnancy and parturition in domestic animal species will be covered.

VTMD415 (Veterinary Clinical Pathology) 2 Credits

The course includes topics on hematologic, biochemical and cytologic tests in health and disease of animals. Selection of appropriate diagnostic tests for various diseases, with their specificity, sensitivity, and interpretation, diseases of the respiratory, genitourinary, nervous and endocrine systems of domestic animals.

VTMD485Lab (Veterinary Clinical Pathology Lab)

1 Credits

The course introduces students to the diseases of the respiratory, genitourinary, nervous and endocrine systems of domestic animals.

VTMD421 (Avian Management) 2 Credits

The course includes topics on farm animal and poultry breeds, development of animal and poultry industry; animal and poultry housing and management; milk production; meat and egg production; factors affecting production systems, principles of poultry husbandry and production; poultry housing and



equipment; hatchery practice and management; broiler management; layer and breeder management; records and analyses; poultry health management.

VTMD422 (Veterinary Artificial insemination & Embryo transfer) 2 Credits

The course introduces the applications of molecular genetics in selection ; marker assisted selection; cloning, quantitative trait loci; gene transfer; transgenic animals; in vitro fertilization; sex control; embryo splitting.

VTMD423 (Veterinary Diagnostic Imaging) 2 Credits

The course provides students introduction to radiographic, fluoroscopic, mobile and tomographic equipment requirements and design. The content also provides a basic knowledge of quality control and to provide entry-level radiography students with principles related to computed tomography (CT) imaging. Routine and emergency patient care procedures are described, as well as infection control procedures using standard precautions. The role of the radiographer in patient education is identified.

VTMD424 (Veterinary Surgery-2) 3 Credits

The course provides introduction to surgery in various animal species are given. The lecture topics include patient and surgeon preparation, tissue handling instrumentation, suturing and surgical principles and approaches to various organ systems and anatomical regions. The course also includes preoperative planning, anesthesia and surgical techniques, operative room decision making and post-operative care in this laboratory course. Students begin by practicing technical skills on inanimate models. They progress to performing a series of supervised operations designed to parallel the most commonly performed surgeries in private practice. A once weekly rounds period allows discussion of issues arising from the previous anesthesia and surgery, and planning for the upcoming laboratory. Though some didactic material is presented, the course is mainly experiential. The evaluation outcome of the course is outstanding, pass or fail.

VTMD425 (Veterinary Clinic-1) 3 Credits

This course is designed to provide the students with clinical experience toall kinds of animalsto include veterinary internal medicine, surgery, Theriogenology, poultry diseases, fish disease and diseases of wildlife animals. Students will work with sick animals attend daily to veterinary clinics so that getting experience of treatment.

VTMD444 (Veterinary Internship) 3 Credits

Veterinary Internship is undertaken after finishing 4th year in the Veterinary Medicine Program. The course provides mentored, experiential clinical training for veterinarians seeking to advance their clinical competence. The course is designed to develop the technical competence of the intern and provide training opportunities on a broad range of elective and entry-level procedures. The intern is provided a



comprehensive orientation to all aspects of the hospital or practice. Participation in daily rounds and case reviews with the clinician instructor is an essential component of the internship training.

VTMD511 (Avian Diseases) 3 Credits

This course will give students experience with most common diseases affecting birds mainly chickens. Specific details about each disease will be explained including etiology, epidemiology, clinical signs, pathological changes, diagnosis, differential diagnosis, treatment, prevention and control.

VTMD512 (Veterinary Anesthesiology) 2 Credits

The course provides students to the introduction of patient evaluation and preparation, local anesthetic drugs, anesthetic equipment, patient monitoring, pain management, breathing systems and ventilation, shock therapy, respiratory and cardiac emergencies, and euthanasia.

VTMD513 (Veterinary Epidemiology& Biostatistics) 3 Credits

The course includes topics on rapid movement of people and animals, disease can spread more quickly than before and is harder to control than ever.

VTMD514 (Milk & Meat Hygiene) 2 Credits

The course provides an introduction to the safety and suitability of milk and milk products to protect consumers' health. From the time milk leaves the udder of the animal, unless adequate safeguards are maintained, it may receive bacteria and other micro-organisms from the surroundings, for example the milker and other equipment used in milk processing, storage and transportation. Hence the necessity for the study of milk hygiene.

1 Credit

VTMD584Lab (Milk & Meat Hygiene Lab)

The course provides an introduction to the safety and suitability of milk and milk products to protect consumers' health. From the time milk leaves the udder of the animal, unless adequate safeguards are maintained, it may receive bacteria and other micro-organisms from the surroundings, for example the milker and other equipment used in milk processing, storage and transportation. Hence the necessity for the study of milk hygiene.

VTMD515 (Veterinary Clinic-2) 6 Credits

The course provides students to the principles of diagnosis, treatment, prevention, and control of diseases/conditions of cattle, goats, sheep, and swine. Students will be introduced to clinical problem solving using case material from the Veterinary Teaching Hospital. They will develop their verbal and written communication skills through case simulations and analyses. The course will be presented using lectures, laboratory classes and independent study. The graduating competencies can be found on the OVC website



MSAF421 (Fish Diseases) 3 Credits

The course provides an overview of communicable and non-communicable diseases that affect fish and shellfish. Major pathogens of free-ranging as well as captive animals discussed. Students learn to recognize, prevent, and control economically and ecologically important disease syndromes

VTMD522 (Veterinary Internal Medicine-2) 3 Credits

The course provides students to recognize, diagnose, and treat common internal disorders and conditions. Clear, step-by-step guidelines thoroughly describe commonly performed procedures. Hundreds of summary tables make it easy to look up clinical signs, potential causes, drug information, and treatment modalities. This edition is updated with the latest research findings for accurate diagnosis and management of domestic animal pathologies.

VTMD524 (Case-Report Seminar) 1 Credits

The course will cover as seminar to present interesting clinical cases under supervision of faculty members and share the discussion with specialist and students. The student must present the case beginning with the clinical history, causes, clinical signs, diagnosis, differential diagnosis and the protocol of treatment and the prevention measurements.

VTMD525 (Animal Welfare & Ethics) 2 Credits

This is an interdisciplinary course to the welfare of animals and medical ethics to familiarize the students with updated medical laws, regulations in relation to veterinary ethics. The course will also provide an introduction to laboratory animal welfare for those who intend to work in research involving animals.

VTMD526 (Veterinary Clinic-3) 6 Credits

This course is the continuity to other clinical courses the students took over to give the students more experience in treatment, prevention and control of animal diseases through clinical practice in veterinary hospitals.

FSHNF313 (Food Microbiology) 3 Credits

Food is necessary for human survival and it's shelf-life plays an enormous role in the global economy and sustenance. Although, microbes play an essential role in food preservation since time immemorial and more recently in food biotechnology, however, their unwanted propagation and presence in food poses an acute &chronic risk to human health with both imperative aspect needs to be considered as food degradation reactions continues in presence of microorganisms. Food has been designed to give students an understanding of the role of microorganisms in food processing and preservation; the relationship of microorganisms to food safety, food spoilage, food-borne illness, i.e., food infections or food intoxication, extrinsic & intrinsic factors related to food and its quality, along with food fermentation; food biotechnology; hygienic production of food.



MSAF302 (Fisheries Management) 3 Credits

This course provides général overview of the field of fisheries science. It covers general topics such as management, harvesting, rules and regulations, as well as conservation. Also the course aims to provide students with the basics of how fisheries and fishes are managed, techniques and management regulations.

FSHN F416 (Meat & Poultry Technology) 3 Credits

This course will teach the students techniques used to process, storage, distribute and utilize meat of animal and bird origin.

FSHN F211 (Food Sanitation) 3 Credits

Food-borne illness account for several hundred thousands of hospitalizations and several thousand deaths, globally. Foodborne illnesses result due either through food infection or food intoxication. Cases of food-borne illnesses are underestimated due the lack of surveillance and reporting to the health-care facilities. However, in order to reduce such incidence, it is essential to understand the characteristics of different physical, chemical and biological hazards and their common sources. This course has been designed to introduce the aspects of food contamination, food hygiene and handling, food sanitation and safety issues and practices, involved in the food preparation process. Prevention of all types of Food contamination and food safety management system, i.e., Hazard Analysis Critical Control Points (HACCP) is emphasized. Food Safety Management helps safeguard quality and safety throughout the whole food supply chain including raw and semi-manufactured foodstuffs and final products in all principal food segments. Establishing a food safety management system and getting it certified is an important step in ensuring control over your supply chain. HACCP can be used in restaurants, school food service and other sites to keep food as safe as possible. Other related

FSHN F415 (Dairy Technology) 3 Credits

This course discusses the chemistry, physics, and microbiology of milk. In addition to providing knowledge of milk properties, this section forms the basis for understanding what happens during processing, handling, and storage. Part II, Processes, illustrates the main unit operations used to manufacture milk products and highlights the influence certain product and process variables have on resulting products.