

Veterinary Medicine Course Contents

VM 101 Animal Husbandry and Welfare (3H: 2T, 3P)

Different methods of handling and controlling domestic animals such as cows, sheep, goats, horses and camels in addition to small animals (dogs and cats) are discussed. The course also covers the identification of different anatomical body regions. Besides, the students will be introduced to methods of writing short essays and reports related to issues and problems in animal husbandry. In addition, this course will cover a wide range of areas in animal welfare, bioethics, business and professional ethics, and ethics and technology with in emphases on animal rearing that meets religious and human standards. The students will be evaluated partially on their writing performance.

Co-request course(s): BIO 103

VM 102 Animal Breeding and Molecular Genetics (2H: 2T, 0P)

This course will discuss the fundamentals of molecular 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.

Pre-request course(s): VM 101 and BIO 103

VM 112 Veterinary Anatomy 1 (3 H: 1T, 6P)

Study of structural, functional, and topographical anatomy of carnivores, horses, and ruminants and clinical application of gross anatomy. The practical part of the course covers embalming of animals including bone preparation for study, osteology, arthrology, myology and cardio-vascular systems of different domestic animals. Additionally, the innervation of thoracic, pelvic limbs of the horse, the peritoneum with its reflection and all parts of the digestive system are discussed.

Pre-request course(s): BIO103

VM 114 General Histology (2H: 1T, 3P)

An introductory course in animal histology and microscopic anatomy of organs. For the most part, it will deal with cells and tissues from mammals. This course is intended to give enough experience to be able to identify normal tissues from different organs prepared by standard methods for light microscopy.

Pre-request course(s): BIO103

Co-request course(s): VM 112

VM 122 Animal Physiology 1 (3 H: 3 T, 0 P)

This is a general physiology course in which the major organ systems such as the nervous system, cardiovascular system, blood components and digestive system are discussed.

Pre-request course(s): BIO 103

Co-request course(s): VM 112, VM 114

VM 213 Veterinary Anatomy 2 (3H: 1T, 6P)

This course covers the pleura and its reflection, respiratory, urinary, male and female genital in addition to the anatomy of nervous system, lymphatic, eye and hoof. Also a brief description of poultry anatomy is described.

Pre-request course(s): VM 112

VM 215 Systemic Histology and Embryology (3H: 2T, 3P)

This is a continuation of general Histology course, covers the normal histology for body systems (digestive, respiratory, urinary, male and female reproductive systems). In addition, electron microscopy photographs, desmosomes and cell to cell pictures will be presented. The course will also cover the students the normal embryological sequence of events and embryogenesis and to familiarize them with the basis for understanding animal development. This course covers embryonic development for different animal organs starting from fertilization to implantation inside the uterus

Pre-request course(s): VM 114

VM 223 Animal Physiology 2 (2H: 2T, 0P)

This is a continuation of general physiology course in which the major organ systems are described. In this course the renal system, Respiratory system, endocrinology and reproductive system are discussed.

Pre-request course(s): VM 122

VM 225 Veterinary Immunology (3H: 3T, 0P)

This course includes an overview of the fundamental concepts of immunology. The interaction between the host and microbial pathogens, mechanisms that underline hypersensitivity reactions, autoimmune disease and immune deficiency are included.

Pre -request course(s): CHEM 262, VM102 , VM 122

VM 226 Serology and Virology Laboratory (1H: 0T, 3P)

Throughout this laboratory practical session, the students will be introduced to a number of techniques commonly used in Immunology and Virology.

Pre-request course(s): VM 225

Co-request course(s): VM 236

VM 231 Introduction to Veterinary Bacteriology (2H: 2T, 0P)

This course deals with the structure, physiology, growth, nutrition classification of microbes, their mode of infection, virulence, and hosts with emphasis on veterinary health aspects.

Pre-request course(s): BIO 103

VM 232 Veterinary Bacteriology and Mycology (3H: 3T, 0P)

The course deals with the study of different groups of aerobic and anaerobic bacteria, spirochetes, mycoplasmas, chlamydia, fungi, yeast and mold, with the emphasis on their methods of classification, virulence and distribution in different animals' species.

Pre-request course(s): VM 231

VM 233 Veterinary Entomology (2H: 2T, 0P)

This course covers external parasites especially ticks, in addition to classification of parasites, epidemiology, and methods of tick control.

Pre-request course(s): BIO103

VM 234 Veterinary Parasitology (2H: 2T, 0P)

This course includes general aspects of parasitic infection in different animals in addition to classification, description of external features of parasites, internal parasites, molecular infection and epidemiology of parasitic infections.

Pre-request course(s): VM 233

VM 235 Veterinary Bacteriology and Mycology Laboratory (1H: 0T, 3P)

This course covers principles of microbiology process in terms of the use of the microscope and different ways to bacterial staining, and determine its types and methods of preparation media and methods of sterilization and the use of disinfectants, and biochemical tests and examination of sensitivity to antibiotics, to be applied in the study of gram positive and negative bacteria as well as anaerobic bacterial cultures.

Co-request course(s): VM 232

VM 236 Veterinary Virology (3H: 3T, 0P)

This course covers general virology, systemic virology. The general virology includes virus evaluation, host range, and virus classification. The systemic virology includes important viral diseases of cattle, sheep, goats, equine, poultry, feline and canine.

Pre-request course(s): VM 225

VM 238 Veterinary Entomology and Parasitology Laboratory (1H: 0T, 2P)

This course allows students to practice sample collection, preparation and evaluation of samples for parasitological examination. Laboratory sessions will include techniques for identifying intestinal, blood and external parasites.

Co-request course(s): VM 234

VM 252 General Veterinary Pathology (4H: 3T, 3P)

This course will introduce basic concepts of pathology to veterinary medical students in terms of tissue, organ, body & especially cellular response to various stimuli. This course will focus on cellular adaptation to injury, circulatory disturbances, necrosis, and inflammation, wound healing, and Neoplasia. The practical section will illustrate basic mechanisms of disease. Each single laboratory will consist of a series of images and/ or glass slides demonstrating gross and histopathological findings. A short description and morphologic diagnosis will be provided for each image or glass slide.

Pre-request course(s): VM213, VM215 and VM 223, VM 225

VM 300 Clinical Application and Integration of Basic Veterinary Sciences I (1H: 0T, 2P)

This course provides problem solving and integration of clinical cases and basic sciences in the veterinary medicine. Students learn through interaction with their peers in small group settings. Integration and reinforcement of basic veterinary knowledge in microbiology, immunology, anatomy and physiology in relation with technical and clinical skills related to the listed basic courses. Teaching will be through critical thinking exercises, professional skills application activities.

Pre-request course(s): VM 226, VM .235, VM 238, VM 223, VM 252.

VM 321 Animal Nutrition (2H: 2T, 0P)

This course will discuss the fundamentals of animal nutrition including: feedstuffs and their use in livestock feeding, nutrients and how they are digested, absorbed, and metabolized by ruminants and monogastric. Additionally, nutrient requirements, diet formulation, and feeding management of livestock animals will be covered. Nutritional disorders (deficiency and toxicity) will be also studied.

Pre-request course(s): CHEM 262, VM 223

VM 330 Applied Veterinary Sciences and Diagnostic Laboratories (4H: 0T, 12P)

The student will be trained in Veterinary Laboratory topics related to bacteriology, parasitology, Immunology and Virology applied diagnostic techniques. Students will be assigned to execute experimental projects related to veterinary laboratory diagnostics and will learn the general approaches of planning and executing scientific investigations. In addition, the students are expected to gain practical experience and skills on bioavailability and pharmacokinetics study as well as utilizing different methods to measure drug concentration. The students will also obtain direct experience in observations of physiological phenomena. The student will conduct studies under the instructor's supervision and learn reporting procedure related to pharmacological and physiological topics.

Pre-request course(s): VM 226, VM .235, VM 238, VM 223, VM 252.

VM 341 General Veterinary Pharmacology (3H: 3T, 0P)

This course covers general principles of drug administration, pharmacokinetics, pharmacodynamics and related mathematical concepts and calculations. Therapeutic clinical indication, actions, important adverse effects, and interaction will be described for anti-inflammatory, diuretics, antimicrobial, antiparasitic, antifungal, antiviral, and anticancer drugs.

Pre-request course(s): VM 300

VM342 Veterinary Pharmacology and Therapeutics (2H: 2T, 0P)

This course is intended to provide a system-oriented therapeutic options, pharmacological effects, disposition, clinical indications and toxic effects of drugs acting on the autonomic, central nervous, endocrinology, cardiovascular, respiratory, gastrointestinal, and renal systems.

Pre-request course(s): VM 341

VM 352 Hematopathology and Cytology (2H: 1T, 3P)

This course will focus on understanding the diagnostic and prognostic value of pertinent laboratory tests as aids in the medical management of clinical cases and chemical data derived from blood serum or other body fluids is provided.

Pre-request course(s): VM 300

VM 353 Systemic Veterinary Pathology (4H: 3T, 3P)

This course will expose the student to the theoretical background of pathological conditions of different body systems of different animal species. Some major diseases of each system will be covered in more details and their pathological changes will be emphasized. Differential pathological diagnosis will be also presented. In the practical section, representative gross and histopathological findings of different selected animal diseases will be illustrated as either images and or glass slides.

Pre-request course(s): VM 252, VM 330

VM 361 Dairy Hygiene (2H: 2T, 0P)

This course will focus on the safety of milk and milk products in addition to hygienic practices during the production of milk from farm to consumer. The key topics include (1) the components of milk of different animal species such as cow, sheep, goat and camel milk, hygiene practice and sanitation at farm level, raw milk chemical and biological hazards, heat treatment of milk, dairy fermentation and dairy products. Special Middle Eastern products, hygiene and sanitation at dairy processing factors and environmental monitoring, HACCP and international regulation. In addition, egg safety is covered.

Pre-request course(s): VM 235

VM 362 Meat Hygiene and Inspection (2H: 2T, 0P)

This course will provide participants with knowledge and comprehension on: slaughtering, stunning an carcass handling and judgement at the abattoir, biochemistry of postmortem muscle characteristics of beef, sheep, goat, horse, camel and ostrich meat, meat spoilage and preservation, examination of meat adulteration and species determination, microbial and chemical meat hazards, meat fermentation and processing, new technologies to enhance the safety of meat and meat products, meat packaging, HACCP. In addition, fish and seafood safety is covered.

Pre-request course(s): VM 353 VM 330

VM 363 Poultry Management (2H: 2T, 0P)

This course will provide basic knowledge on the structure of the poultry industry, sound management of different poultry enterprises: breeder, layer, broiler flocks, and hatcheries. It also covers the poultry house design, drinking and feeding systems, sanitation, disinfection, and vaccination. The role of biosecurity in disease prevention is emphasized.

Pre-request course(s): VM101, VM 330

VM 364 Poultry Diseases (3H: 3T, 0P)

This course will discuss poultry (mainly chickens) diseases. Diseases etiology, transmission, clinical signs, gross lesions, and samples to be collected, diagnostic tests, treatment, vaccination, prevention and control strategies will all be discussed.

Pre-request course(s): VM330, VM 363, VM 353

VM 372 General Veterinary Internal Medicine (1H: 1T, 0P)

This course aims to teach students the skills of clinical diagnosis for both the individuals and the herds. It also aims to understand the general systemic status of animals, such as, pain, stress, toxemia, fever, septicemia, sudden death, body fluid and electrolytes disturbances, acid-base balance, allergies, appetite disturbances, poor growth, immune deficiency disorders and neonatal diseases.

Pre-request course(s): VM 353, VM 357

VM 374 Case History and Physical Examination (1H: 0T, 3P)

Introductory to clinical sciences, the aim of this course is to teach the students the skills and arts of receiving the sick animals and taking the case history of admitted animals, also to train them on the different clinical skills. This course aimed to bridge the knowledge between the basic and clinical sciences.

Co-request course(s): VM 372

VM 376 Veterinary Infectious and Zoonotic Diseases (3H: 3T, 0P)

This course covers the most important infectious diseases that affect bovine, equine, ovine, caprine, and porcine. In addition, small animals (dogs and cats) diseases will be covered. Students will learn how to identify infected animals and manage cases with infectious diseases. This course also covers the most important zoonotic diseases that represent threat to humans (animal health providers, farmers, animal owners and food animal consumers). Issues related to biosecurity and self-protection will be discussed.

Pre-request course(s): VM 300

VM 400 Clinical Application and Integration of Basic Veterinary Sciences II (1H: 0T, 3P)

This course provides student-centered learning sessions with faculty facilitator for self-discovery of new information; based on specific clinical case or problem with integration of basic science (Animal Nutrition, Hematopathology and Cytology, General Veterinary Internal Medicine and Case History and Physical Examination). This course includes one week of clinical experience through participation in specific clinical rotations in Veterinary Teaching Hospital.

Pre-request course(s): VM 321, VM 352, VM 374 and VM 376

VM 402 Veterinary Biostatistics (2H: 1T, 2P)

This course will concentrate on the skill of collecting, classifying, summarizing and presenting data related to animal production and diseases. It also teaches applying essential statistical analysis tests to compare the mean and the rate of two populations. The software SPSS statistical package will be used in statistical problem solving in the practical section.

Pre-request course(s): VM 470

VM 406 Clinical Animal Nutrition (2H: 2T, 0P)

This course will discuss various disorders of livestock animals that are related directly (i.e., feeding) or indirectly (i.e., metabolism) to nutrition. Also, this course will emphasize on the mechanisms behind these metabolic disorders and how they could be prevented and/or treated via nutritional management.

Pre-request course(s): VM 321 and VM 471

VM 442 Veterinary Toxicology and Forensic Medicine (2H: 2T, 0P)

This course deals with pharmacological and pathological features of diseases caused by common toxic chemicals, plants and poisons of animal origin with emphasis on clinical manifestations, diagnosis, prevention and treatment. Moreover, the students will learn how to handle animal crime scenes, handle and interpret evidence.

Pre-request course(s): VM 400

VM 450 Diagnostic Pathology Clinic 1 (1H: 0T, 3P)

This course will focus how to perform detailed necropsy on dead animals and describe gross lesions using scientific terminology and how the student could translate this information into a scientific pathology report

Pre-request course(s): VM 353

VM 451 Veterinary Clinical Chemistry (2H: 1T, 3P)

This course will focus on understanding the diagnostic and prognostic value of pertinent laboratory tests as aids in the medical management of clinical cases. Interpretation of alterations in cytological samples from various organ systems, and chemical data derived from blood serum or other body fluids is provided. Extensive use is made of clinical cases to emphasize correct interpretation of reports.

Pre-request course(s): VM 450

VM 460 Abattoir and Food Animal Products Inspection (1H: 0T, 3P)

This course will teach the students practical sessions in cattle, sheep, goat and poultry ante-mortem inspection. The course also teaches practically the veterinary-sanitary examination of carcasses and internal organs that includes healthy carcasses, local and general pathological changes, and infected carcasses with bacterial, viral and parasitic diseases. In addition, the course teaches several testing methods of milk and dairy products, fish, and eggs.

Pre-request course(s): VM 361 and VM 362

VM 461 Poultry Diseases Clinic I (1H: 0T, 3P)

The students will learn to formulate differential list of poultry disease and will learn what samples to collect and what tests to order. In addition, they will learn disease prevention, management, and treatment options.

Pre-request course(s): VM 364

VM 470 Infectious Diseases and Herd Health Clinic I (1H: 0T, 3P)

This is a clinical rotation where students learn and handle real cases of infectious diseases. Students will practice logical approaches to reach definitive diagnosis and treatment strategies.

Pre-request course(s): VM 376

VM 471 Food Animal Medicine (2H: 2T, 0P)

This course covers most common diseases of food animals includes; cattle, sheep, goats, swine and camels. The students will learn about etiology, methods of diagnosis, treatment and prevention of these diseases. This course will emphasize also on pointing out the differences between the animal species in term of the general systemic status and clinical approaches for the diagnosis of the diseases.

Pre-request course(s): VM 400

VM 473 Production Medicine and Electronic Farming (2H: 1T, 3P)

This course will focus on production animal agriculture and the veterinarian's present and future role in these enterprises. Cattle production is emphasized. Cattle production, economics, disease prevention and health programs will be discussed. In addition, in this course students will learn how to incorporate technologies (such as computer programs) in animal production and record keeping.

Pre-request course(s): VM 470

VM 475 Small Animal Medicine (2H: 2T, 0P)

This course will provide the students with core knowledge of pathophysiological changes, diagnostic procedures, treatment and prognosis of medical conditions of dogs and cats.

Pre-request course(s): VM 400

VM 481 General Veterinary Surgery (2H: 2T, 0P)

The basic principles of modern veterinary surgery including asepsis, wound healing and management, suturing patterns, suture materials, and patient management in the peri-operative period will be presented.

Pre-request course(s): VM 400

VM 482 Small Animal Surgery (3H: 2T, 3P)

This course will provide the students with core knowledge of pathophysiological changes, diagnostic procedures, treatment and prognosis of surgical conditions of dogs and cats.

Pre-request course(s): VM 481

VM 483 Veterinary Anesthesiology (1H: 0T, 3P)

It covers basic and new trends in the field of veterinary anesthesia with emphasis on local analgesia, regional analgesia, general anesthesia and emergency medications.

Pre-request course(s): VM 342

VM 486 Veterinary Diagnostic Imaging (1H: 0T, 2P)

The course will cover in details the principles of radiography, including the various potential hazards of radiation. Radiographic imaging techniques utilized in large and small animals along with other imaging methods such as ultrasonography, CT, and MRI will be discussed. The course will focus on proper interpretation of radiographs and ultrasonographic images.

Pre-request course(s): PHYS 10, VM 483

VM 491 Food Animal Theriogenology (3H: 3T, 0P)

This course covers the physiology and pathology of female reproductive systems in swine, cattle and small ruminants. This course is divided into two major parts: the first part deals with gynecological aspects of the non-pregnant female, fertility monitoring and control programs; in the second part, normal and abnormal pregnancy, parturition and postpartum period will be covered.

Pre-request course(s): VM 400

VM 492 Small Animal Theriogenology (2H: 2T, 0P)

This course covers the physiology and pathology of female reproductive systems in dogs and cats. This course is divided into two major parts: the first part deals with gynecological aspects of the non-pregnant female, fertility monitoring and control of reproduction; in the second part, normal and abnormal pregnancy, parturition and postpartum period will be covered.

Pre-request course(s): VM 491

VM 493 Diagnostic Techniques in Animal Reproduction I (1H: 0T, 3P)

In this practical course, students will explore the clinical practice of veterinary gynecology and reproductive diagnostic techniques used in ruminants.

Pre-request course(s): VM 491 VM 495

VM 494 Equine Theriogenology (2H: 2T, 0P)

This course covers the physiology and pathology of female reproductive systems in horse. This course is divided into two major parts: the first part deals with gynecological aspects of the non-pregnant female, fertility monitoring and control schemes; in the second part, normal and abnormal pregnancy, parturition and postpartum period will be covered.

Pre-request course(s): VM 493

VM 496 Diagnostic Techniques in Animal Reproduction II (1H: 0T, 3P)

In this practical course, students will explore the clinical practice of veterinary gynecology and reproductive diagnostic techniques used in horses and small animals.

Co-request course(s): VM 492 VM 494

VM 502 Veterinary Practice Management, Economics and Professional Communication (1H: 1T, 0P)

This course provides students with the basic principles of professional communications skills, basic personal and business finances skills, and legal aspects of veterinary practice.

Pre-request course(s): VM 101, VM 563

VM 504 Veterinary Ethics and Legislations (1H: 1T, 0P)

This is an interdisciplinary seminar in ethics to familiarize the students with updated veterinary ethics and laws as they pertain to a professional practice. The presented topics

should cover a wide range of areas in bioethics, business and professional ethics, and ethics of technology. This course provides an introduction to national and international legislations related to animal movement, trade, and production with special reference to professional conducts and morals within the veterinary community and in society.

Pre-request course(s): VM 101, VM 563

VM 550 Veterinary Clinical Pathology Clinic I (1H: 0T, 3P)

This course is an introduction to identify the diagnostic value of several laboratory tests and their use in the treatment of diseased animals

Pre-request course(s): VM 451

VM 551 Diagnostic Pathology Clinic II (1H: 0T, 3P)

In this course, the student will learn how to approach a dead animal and how to take the representative tissue samples in order to reach the cause of death or the disease.

Pre-request course(s): VM 450

VM 552 Diagnostic Pathology Clinic III (1H: 0T, 3P)

In this course, the student will learn how to describe concisely and anatomically precisely the macroscopic manifestations of disease in organs, tissues, and body cavities and reporting correctly the useful diagnostic findings and appropriate morphologic diagnosis in order to know the direct cause of the insult if possible.

Pre-request course(s): VM 551

VM 553 Veterinary Clinical Pathology Clinic II (1H: 0T, 3P)

This course will include small group discussion of topics related to clinical chemistry, hematology and cytological cases in dogs, cats, swine, cattle, sheep and goat and horses with emphasis on Interpretation of alterations in cytological samples from various organ systems

Pre-request course(s): VM 550

VM 554 Veterinary Clinical Pathology Clinic III (1H: 0T, 3P)

This course will include small group discussion of topics related to clinical chemistry, hematology and cytological cases of diseased animal and how to translate this information into a scientific report to reach disease diagnosis in several animal species. Extensive use is made of clinical cases to emphasize correct interpretation of reports

Pre-request course(s): VM 553

VM 561 Poultry Diseases Clinic II (1H: 0T, 3P)

The students will learn to formulate differential list of poultry disease and will learn what samples to collect and what tests to order. In addition, they will learn disease prevention, management, and treatment options.

Pre-request course(s): VM 461

VM 562 Poultry Diseases Clinic III (1H: 0T, 3P)

This course covers skills concerning diagnosis and treatment of diseases in poultry cases referred to the Veterinary Health Center or through field services.

Pre-request course(s): VM 561

VM 563 Veterinary Epidemiology and Herd Health (3H: 3T, 0P)

This course will cover the principles in veterinary epidemiology and types of epidemiological studies. It also teaches preventive techniques of animal infectious diseases and its relation to human and environmental health.

Pre-request course(s): VM 402, VM 470

VM 570 Large Animal Medicine Clinic I (1H: 0T, 3P)

This course is designed to provide the students with the principles of large animal medicine including acquisition of an unbiased medical history, performance of a complete physical examination and knowledge of various diagnostic and therapeutic procedures performed on large animal patients presented to the Teaching clinic. Students will work with patients, attend daily rounds and have additional time for individual study.

Pre-request course(s): VM 471, VM 473

VM 571 Equine Medicine (2H: 2T, 0P)

A comprehensive course covering the etiology, epidemiology, pathogenesis, clinical and laboratory findings, diagnosis, treatment and appropriate management, and prognosis of common and/or important, non-infectious, food animal medical diseases affecting each body system. This course will cover medical (non-infectious) diseases of the respiratory, cardiac, gastrointestinal, nervous, muscular, integumentary, and urinary systems.

Pre-request course(s): VM 486, VM 570

VM 572 Small Animal Medicine Clinic I (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 475

VM 573 Large Animal Medicine Clinic II (1H: 0T, 3P)

This clinical course is designed to provide senior student with clinical and hands on experience in medical diseases of large animal species. The student will be working with the faculty and clinical support staff in the management of large animal cases presented to the veterinary health center. Etiology, epidemiology, methods of diagnosis and treatment, and control of common non-infectious diseases cases are reviewed.

Pre-request course(s): VM 570

VM 574 Infectious Diseases and Herd Health Clinic II (1H: 0T, 3P)

In this course students will be exposed to herd problems and management of herd problems related to infectious diseases. Students will have hand experience on data and sample collection, analysis, and logical analysis.

Pre-request course(s): VM 470

VM 575 Small Animal Medicine Clinic II (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 572

VM 576 Large Animal Medicine Clinic III (1H: 0T, 3P)

This clinical course is designed to provide senior student with advanced clinical training in medical diseases of large animal species. Students are expected to handle, examine, and treat presented cases, and are responsible for case admission and discharge, under the senior clinician supervision.

Pre-request course(s): VM 573

VM 577 Swine Medicine and Production (online) (1H: 1T, 0P)

This course provides students with the basic principles of swine farm management, swine husbandry and management related diseases including animal welfare.

Pre-request course(s): VM 372, VM 400

VM 578 Small Animal Medicine Clinic III (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 575

VM 579 Exotic and Marine Animal Medicine (online) (1H: 1T, 0P)

This course is an introduction to the basic principles of fish and other marine animal medicine including basic husbandry, handling and clinical procedures. The course also covers diagnosis, treatment, and management of exotic animals, including the common laboratory animals.

Pre-request course(s): VM 400

VM 580 Large Animal Surgery Clinic 1 (1H: 0T, 3P)

This course will introduce the students to the basic principles of surgery with emphasis on aseptic techniques and minor surgical techniques.

Pre-request course(s): VM 481

VM 581 Large Animal Surgery Clinic II (1H: 0T, 3P)

The course will cover in details the diagnosis, treatment, management, and specific surgical techniques of surgical conditions, encountered in food animals and horses. Student will have the chance to refine and master learned clinical skills.

Pre-request course(s): VM 580

VM 582 Large Animal Surgery Clinic III (1H: 0T, 3P)

This clinical course is designed to provide senior student with advanced clinical training in surgery in large animal species. Students are expected to handle, examine, and treat presented surgical cases, and are responsible for case admission and discharge, under the senior clinician supervision.

Pre-request course(s): VM 580

VM 583 Large Animal Surgery (3H: 2T, 3P)

Students will learn in this course the surgical conditions of different body systems in large animal species including ruminants, equine, and camels. Detailed discussions of various diagnostic methods, treatment options, pre-operative preparations, surgical procedures and post-operative management and complications, and prognosis are included in the course.

VM 585 Small Animal Surgery Clinic I (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 482

VM 587 Small Animal Surgery Clinic II (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 585

VM 588 Small Animal Surgery Clinic III (1H: 0T, 3P)

This is a practical course in the diagnosis and treatment of diseases of dogs and cats. This course will train students to admit, take history, examine, outline diagnostic and treatment plan, and discharge the animals from the clinic. This course introduces the use of problem-oriented approach to study medical and surgical conditions in dogs and cats.

Pre-request course(s): VM 587

VM 590 Theriogenology Clinic I (1H: 0T, 3P)

This course is designed to instruct last-year veterinary students on clinical examination and diagnoses of problems of the reproduction system of all animal species. Instruction is provided on treatment and correction of clinical problems such as infertility and obstetrical procedures of the cases presented at the Veterinary Health Center.

Pre-request course(s): VM 496

VM 591 Theriogenology Clinic II (1H: 0T, 3P)

This course is designed to instruct last-year veterinary students on clinical examination and diagnoses of problems of the reproduction system of all animal species. Instruction is provided on treatment and correction of clinical problems such as infertility and obstetrical procedures of the cases presented at the Veterinary Health Center.

Pre-request course(s): VM 590

VM 592 Theriogenology Clinic III (1H: 0T, 3P)

Instructions will be provided on treatment and correction of reproductive diseases, and investigating herd fertility problems in different animals. Student will have the chance to refine and master learned clinical skills.

Pre-request course(s): VM 591

VM 594 Case Report Seminar (1H: 1T, 0P)

In this seminar, student must give a general description to a particular case under the supervision of a clinical instructor. This includes the description of detailed case history, complete physical examination, samples collection and laboratory analysis. Discussion of the clinical and laboratory results. Establishing a precise differential list, rolling in and out

the component of this list and reporting the final diagnosis. Describing the protocol of treatment and the preventive measurements.

Co-request course(s): VM 502