

## Department of Anatomy & Embryology

Code and name	Contents
<u>ANE-3000</u> General Clinical Anatomy	Clinical Anatomical Studies on Different systems of the Body (Digestive, Respiratory, Urinary, Male, female, Osteology).
<u>ANE-3001</u> Superficial & Surface Anatomy	Paranasal Sinuses– Eye– nerve block (Head- Limbs – Abdomen and Thorax) – Nerve damage and Hoof Diseases.
<u>ANE-3002</u> Locomotors System	General Osteology, Arthrology-(general & special) Muscles of the Limbs – Stay Apparatus.
<u>ANE-3003</u> Digestive system	Upper Digestive System –stomach and Intestinal tract –Pancreas and Liver.
<u>ANE- 3004</u> Urogenital System	Anatomical studies of the Urinary, Male and Female genital Systems.
<u>ANE – 3005</u> Respiratory System	Conducting Portion - Respiratory portion – Para nasal Sinuses – Mediastinum and Pleura.
<u>ANE-3006</u> Cardio-vascular system	Heart, Pericardium, Arteries and Veins.
<u>ANE-3007</u> Immune System	Introduction– Lymph and Lymph Vessels – Lymph Centers –Spleen, Tonsils, Thymus Gland and Hemal Nodes.
<u>ANE - 3008</u> Nervous System and endocrine glands	Central Nervous System (Brain & Spinal Cord) – Meninges – cranial Nerves – peripheral Nervous System – Autonomic Nervous System – Endocrine Glands (pituitary – Thyroid- Parathyroid– adrenal).
<u>ANE-3009</u> Sensory organs, Skin and common integument	Eye – Ear– Tongue – Nose – Skin (Horn, Hoof, Claw, Udder ).
<u>ANE-3010</u> Birds Anatomy	Introduction – Bone – muscles - Abdominal cavity – Digestive, Respiratory, urinary and Genital Systems – Cloaca.
<u>ANE-3011</u> Fish Anatomy	Introduction – Bone – muscles - Abdominal cavity – Digestive, Respiratory, urinary and Genital System – Cloaca.
<u>ANE-3012</u> Embryology	General and special Embryology.
<u>ANE-3013</u> Lab. animal anatomy	Rabbit, Mice, Guinea pig, monkey.
<u>ANE-3014</u> Anatomical technique	Preparation of museum specimens, Construction of carrels – Radiological Anatomy – Uses of Anatomical facts in biological technology.

## Department of Biochemistry

Code and name	Contents
<b><u>BIC 3050</u></b> Biochemistry of tissues and body fluids	Chemical structure of different tissues - Chemical structure of cellular membranes - Biochemistry of membrane receptors - Biochemistry of blood plasma - Biochemistry of urine- Biochemistry of milk, semen, synovial and cerebrospinal fluids.
<b><u>BIC 3051</u></b> Biochemistry of Nutrition	Energy requirement of body - Nutritional requirement for different types of production - Chemistry of nutritive materials- Biological value of food stuffs - Methods for chemical analysis of food- Constituents of food stuffs.
<b><u>BIC 3052</u></b> Clinical Biochemistry	Metabolic disorders of carbohydrate, lipid, protein, nucleic acid, minerals, water & energy - Liver function tests - Renal function tests. Gastric function tests - Diagnostic enzymes - Acid-base balance - Hormone abnormalities.
<b><u>BIC 3053</u></b> Avian metabolism	Chemical constituents of rations for laying, non-laying & growing chicks - Biochemical effects of different rations on growth & egg Production - Biochemical evaluation of tissue and body fluids of domestic fowls - Metabolic pathways of Protein, Carbohydrate & lipid in poultry- Chemical structure of eggs - Determination of Protein, carbohydrate, fat, vitamins & minerals in rations & biological fluids of domestic fowls.
<b><u>BIC 3054</u></b> Fish Biochemistry	Metabolism in fish - Respiration and gas exchange in fish. Biochemistry of tissues and body fluids in fish.
<b><u>BIC 3055</u></b> Microbial Biochemistry	Biochemical structure of microbial cell - Biochemical structure of cell wall - Energy production in microbial cell- Protein biosynthesis in microbial cell.
<b><u>BIC 3056</u></b> Biochemistry of Radiation	Radioactive isotopes and their biochemical uses - Different types and sources of radiations - Biochemical effects of radiation- Biochemical detection of radioactive isotopes Principle of RIA.
<b><u>BIC 3057</u></b> Molecular Biology	Nucleic acid structure and functions -DNA replication - Molecular genetics of bacteria and virus - Protein synthesis - Gene mutation. Gene cloning - Gene transfer.
<b><u>BIC 3058</u></b> Ruminant metabolism	Fermentation in ruminants - Putrefaction in ruminants - Microbial utilization of non-protein nitrogenous in rumen - Carbohydrates, lipid and protein metabolism in ruminants - Metabolic differences between ruminant and non –ruminant.
<b><u>BIC 3059</u></b> Biochemistry of Ecology	Chemical pollutants - Ecological factors affecting food and air composition – Xenobiotic -Toxification and detoxification
<b><u>BIC 3060</u></b> Analytical methods in Biochemistry	Blood sampling -Measuring units - Laboratory instrumentation -Reliability and validity of laboratory methods - Separation techniques. DNA extraction - PCR application – Hybridization Gene sequencing. DNA micro-array - Gene cloning and expression.

<b><u>BIC 3061</u></b> <b>Biochemistry of hormones</b>	<b>Biochemistry of hormones and its action - Biochemistry of female reproduction - Biochemistry of semen.</b>
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## Department of Physiology

Code and name	Contents
<b><u>PHY – 3075</u></b> Physiology of Blood and immunity	Blood (character, contents, functions) Red blood cells, leucocytes, blood platelets (Function, life span)- Hemoglobin (types, functions) - Blood coagulation and its bettors – plasma proteins, functions-Body fluids (types and functions).
<b><u>PHY 3076</u></b> The digestive system	The function of the digestive system. Digestion in the mouth. Salivary digestion. Control of saliva secretion. Function of saliva. The esophagus - The swallowing (deglutition) - The stomach - Function, control of secretion motility, Pancreatic juice, control of secretion and function. Control of bile secretion and function. Small intestine control of secretion, function and motility. Large intestine function and motility.
<b><u>PHY 3077</u></b> Physiology of endocrine glands	Introduction of endocrine glands – Pituitary glands – Hypothalamus - Thyroid gland – Adrenal gland – Pancreas – Parathyroid gland- Tissue hormones.
<b><u>PHY 3078</u></b> Comparative Physiology of Reproduction	Primary gametes: origin morphological changes, puberty, sexual maturity in females and males, ovarian changes, estrous cycle, synchronization of estrus, spermatogenesis, spermatogenic cycles, fertilization, sperm capacitation, pregnancy and gestation period and parturition determination of sex by different ways.
<b><u>PHY 3079</u></b> Physiology of nervous system	Cell composition of nervous system - function of nervous system – transfer of information - nerve conduction – motion system – special function of nervous system – autonomic nervous system – neurotransmitters - function of autonomic nervous system - Hypothalamus and its function.
<b><u>PHY 3080</u></b> Cell Physiology	Types of cells – cell structure – plasma membranes – their role in transport – receptors and types of messengers – cell organelles and their functions.
<b><u>PHY - 3081</u></b> Environmental and adaptation physiology	Advanced studies for physiological reactions towards change in the surrounding environment. Physiological studies of mammalian, avian and fish adaptation towards different environmental changes. Mammalian, avian and fish migrations.
<b><u>PHY 3082</u></b> Physiology of muscles	Different types of muscles and their functions structures of muscles – changes that occur during contraction of muscles (electrical, mechanical, thermal changes and degree of response of muscles) – Nerves- nerve conduction and factors effecting it.
<b><u>PHY30 83</u></b> Physiology of Growth and Metabolism	Growth (definition, causes, measures, curve, factors affecting)- Growth Promotion – Energy sources –Respiratory Equation-specific Dynamic action – control of appetite – Metabolic balance – obesity – control of body temperature.
<b><u>PHY 3084</u></b> Physiology of the udder & lactation	- Function structural if the udder structure and lactation - Milk curve – Colostrum - Milk constituent - dry period - Method of increasing lactation.

	- Involution of the udder.
<b><u>PHY 3085</u></b> Physiology of heart and blood vessels	Types of blood circulation – heart properties – electrocardiogram (ECG) – cardiac cycle – heart sounds – control of heart – blood vessels and their control – blood pressure and arterial pulse – blood circulation of embryo and placenta – local blood circulation – lymphatic system.
<b><u>PHY 3086</u></b> Physiology of Respiration	Respiration – general functions of respiration-elements of respiratory systems –types of respiration – repertory cycle and respiratory rate –function of respiration- lung volumes and capacities- pulmonary gas exchange and transport of gases – oxygen-hemoglobin dissociation curve – control of respiration.
<b><u>PHY 3087</u></b> Physiology of the Kidneys	Kidney and nephrons- function of Bowman capsules – renal blood flow – function of renal tubules – role of kidneys in acid – base balance – urination reflex.
<b><u>PHY 3088</u></b> Behavioral Physiology	Stimuli that trigger behavior in animals and birds. Study the psychological, neuronal, and hormonal changes that underlie the behavior. Methods of animal bird communication. Animal population density and behavior. Interaction between organisms and the biotic and abiotic environment Abiotic: non-living, e.g., temperature, light, dissolved gas and water. Biotic: living., predators, prey and mates.
<b><u>PHY 3089</u></b> Physiology of wild birds and animals	Physiological studies of different body system of wild birds animals (nervous system - digestive - circulatory - blood immunity and respiratory - male and female reproductive systems) studies of the advanced technique in growth, production and reproduction.
<b><u>PHY 3090</u></b> Physiology of Experimental Animals	Physiological studies for different body systems of laboratory animals (nervous system – digestive system – circulatory system - blood immunity – respiratory system – male and female reproductive system. Advanced technique studies in growth production and reproduction.
<b><u>PHY 3091</u></b> Recent Techniques in Physiology Field	Recent techniques in hormones, reproduction, lactation – growth and immunity. Recent techniques used in synthesis, replication and transcription of hormones and other biological materials via Recombinant DNA technique.
<b><u>PHY 3092</u></b> Digestion in the ruminant stomach	Fermentation and its function -Microbial and enzymatic digestion-- Site of fermentation the structure and capacity of ruminant stomach. The esophageal groove. Cellulose digestion. -Control of ruminal pH -Ruminal motility -Ruminal zones- Arrangement and movement of food in the different zones. Rumination - Eructation. - Degradation of protein-Ammonia-urea cycle (protein regeneration cycle)-Lipid digestion --Dysfunction of rumen fermentation-Improvement of ruminal function.

<p><b><u>PHY 3093</u></b> Fish Physiology</p>	<p><b>Types of fish (Taxonomy):</b>  - Circulatory system and cardiac cycle.  -Digestive system and digestion.  -The respiratory system and mechanism of respiration.  -Types and function of endocrine glands.  -Fish reproduction Fish production and culture of mono-sex species.  Tilapia Production and culture.  -Fish anesthesia.</p>
<p><b><u>PHY 3094</u></b> Pet Animal Physiology</p>	<p><b>Studies of deferent body systems in pet animals (nervous system – digestive- circular- blood immunity – urinary - male and female reproductive system - Advanced technique in growth and reproduction.</b></p>
<p><b><u>PHY 3095</u></b> General sensory system</p>	<p>-Special senses (visual – auditory – equilibrium system)  -The chemical senses (taste and smell).</p>
<p><b><u>PHY 3096</u></b> Bird physiology</p>	<p><b>Advanced technique for different body systems of birds (nervous system - digestive - circulatory - blood immunity and respiratory – urinary - male and female reproductive.</b></p>
<p><b><u>PHY 3097</u></b> Rabbit physiology</p>	<p><b>Advanced studies for different body system of rabbit (Nervous system - digestive - circulatory - blood immunity and respiratory – urinary - male and female reproductive systems) studies of the advanced technique in growth and reproduction.</b></p>

## Department of Pathology

Code and name	Contents
<b><u>PAT-3100</u> pathology of Sheep and Goat diseases</b>	<b>Viral diseases- Bacterial diseases- Parasitic diseases- Pathological effect of radiation- Toxic pathology- Essential nutrients deficiency pathology.</b>
<b><u>PAT-3101</u> Pathology of Camel diseases</b>	<b>General pathology (Degeneration &amp; necrosis- Disturbances in circulation- Inflammation and Healing- Disturbances in Growth- Neoplasia (Tumors)- Special Pathology (Digestive system pathology- Urinary system pathology- Genital system pathology- - Nervous system pathology) – Parasitic diseases of camel.</b>
<b><u>PAT-3102</u> Equine pathology</b>	<b>Respiratory system diseases and pathology- Cardiovascular system diseases and pathology- Digestive system diseases and pathology- Urinary system diseases and pathology- Genital system diseases and pathology- Nervous system diseases and pathology- Lymphatic system pathology- Musculoskeletal system pathology- postmortem examination of equine.</b>
<b><u>PAT-3103</u> pathology of Cattle diseases</b>	<b>Respiratory system diseases and pathology Digestive system diseases and pathology- Urinary system diseases and pathology- Genital system diseases and pathology- Nervous system diseases and pathology- Lymphatic system pathology- Musculoskeletal system pathology- postmortem examination.</b>
<b><u>PAT-3104</u> Fish pathology</b>	<b>Hints on Histology, anatomy and physiology of fish- Industrial pathology- Manifestations of fish diseases in hatcheries and farms-Heavy metals toxicity- Parasitic, viral, bacterial and mycotic diseases in fish-Malnutrition diseases- Tumors and deformities.</b>
<b><u>PAT- 3105</u> Poultry pathology</b>	<b>General hints on poultry pathology- infectious diseases (bacterial- mycotic- viral- parasitic)- Non-infectious diseases (nutrition and toxins- genetic disturbances- tumors).</b>
<b><u>PAT-3106</u> pathology of Pet animals</b>	<b>Cardiovascular system pathology- Genital system pathology- Digestive system pathology- urinary system pathology- Musculoskeletal system pathology- Respiratory system pathology- nervous system pathology- lymphatic system pathology- Viral, bacterial, mycotic and parasitic diseases.</b>
<b><u>PAT-3107</u> Wild animal pathology</b>	<b>Cardiovascular system pathology- Genital system pathology- Digestive system pathology- urinary system pathology- Musculoskeletal system pathology- Respiratory system pathology- nervous system pathology- lymphatic system pathology- Viral, bacterial, mycotic and parasitic diseases.</b>
<b><u>PAT-3108</u> Lab animal pathology</b>	<b>General &amp; special pathology in different lab animals- Infectious diseases in lab animals (bacteria, viral, mycotic and parasitic diseases) and non-infectious diseases (malnutrition, toxins, genetic disorders and tumors).</b>
<b><u>PAT-3109</u> pathology of Malnutrition diseases</b>	<b>Vit. D deficiency- Mineral deficiency- Protein deficiency- Fat deficiency.</b>

<b><u>PAT-3110</u> pathology of Environmental pollution</b>	Diseases caused by natural factors (environmental pollution and noise-irradiation- Light shock- Increased heat and burns) - Diseases caused by chemical factors (organic toxins- inorganic toxins- mycotoxin- plant toxins- snake poisons).
<b><u>PAT-3111</u> Immunopathology</b>	Study of cells responsible for immune response in animal body- Study the comparison between their role in animals and poultry-hypersensitivity- Immunodeficiency diseases.
<b><u>PAT-3112</u> Neonate pathology</b>	Prenatal diseases – Malformations - diseases caused by natural and environmental factors- Neonatal infection- Omphalitis –hemophilia- Inherited immunodeficiency in neonatal Arabic foals.
<b><u>PAT-3113</u> pathology of reproduction</b>	Pathology of female genital system (ovaries- Fallopian tubes- uterus- placenta and mammary gland) - diseases causing abortion (bacterial-viral-parasitic)- pathology of male genital system (testis- spermatic cord- penis- accessory male genital glands).
<b><u>PAT-3114</u> Tumors</b>	Definition- Nomenclature- behavior- gross and microscopic criteria of benign and malignant tumors- Metastasis- acquired cases- classification of tumors- pathological effect of tumors.
<b><u>PAT-3115</u> Toxicopathology</b>	Introduction on the effect of toxins- interaction between toxin and the body- response to toxins- apparent evaluation of toxicity- chemical carcinogenic materials- pathological effect of toxins including degeneration and necrosis- disturbances in circulation- inflammation and healing.
<b><u>PAT-3116</u> Surgical pathology</b>	Disturbances in circulation- inflammation and healing with special reference to bone and skin healing- degeneration and necrosis- advanced study of tumors especially skin tumors.
<b><u>PAT-3117</u> pathology of Nervous system</b>	Disturbances in circulation- inflammation- degeneration and necrosis- advanced study of nervous system tumors- nutritional deficiencies- infectious diseases (bacterial, viral, parasitic).



## Department of Virology

Code and name	Contents
<b><u>VIR-3175</u></b> <b>Diagnostic Virology</b>	The basics of virology diagnostic laboratory design – The principles of biosafety in diagnostic laboratories – The principles of serological techniques used in diagnosis of virus infections – The basics of molecular diagnosis of viruses – Virus spread in the host – Virus genetics and evolution – Molecular epidemiology of viruses.
<b><u>VIR-3176</u></b> <b>Molecular Biology of Viruses</b>	Virus structure – The relationships between viruses and host cells – Genome replication – Synthesis of viral mRNA – Reverse transcription – post-transcriptional modifications - Recombination into host genomes – Virus gene expression regulation – Transport of virus components inside host cells – Virus assembly, maturation and egress.
<b><u>VIR-3177</u></b> <b>Viruses of Wild Animals and Birds</b>	The impact of wildlife viruses on veterinary and public health – Possible mechanisms of emergence of new viruses in wildlife - Strategies for control of viral infections in wildlife species – Viruses of Cervids (BTV - EHDV) - Viruses of Wild Sheep and Goats (Crimean-Congo hemorrhagic fever virus - Caprine Arthritis Encephalitis Virus – Shallenberger virus - RVFV) - Viruses of Artiodactyls (FMDV – RPV - IBRV – BVDV – LSDV – MCFV) - Viruses of [Equines (Equine morbillivirus (Hendra), Equine Herpes Virus 1- AHS – EIV - Viral Arteritis – EIA] - Viruses of Canids (Rabies and Rabies-like- CDV) - Viruses of Mustelids (Canine Distemper-Aleutian Disease Virus - Mink enteritis) - Viruses of primates (Influenza Viruses-Herpesvirus- Simian hemorrhagic fever virus - Hepatitis Viruses- Yellow fever virus – Ebola virus – Orth poxviruses – Simian immunodeficiency virus) - Viruses of Pinnipeds and Cetaceans (Poxviruses-Influenza A Viruses- Marine mammal morbilliviruses) - Viruses of Felids (Rabies-Feline calicivirus – Orth poxviruses – Feline herpesvirus 1) - Viruses of rodents (Hantaviruses - Cowpox – Rodent parvovirus - Murine leukemia/sarcoma viruses - Murine parainfluenza virus 1 - Lymphocytic choriomeningitis virus – Lactate dehydrogenase elevating virus) - Viruses of rabbits and hares (Rabbit hemorrhagic disease virus – Myxomatosis virus) - Viruses of Gallinaceous Birds (Avian influenza virus- NDV - avian pox viruses – Egg drop syndrome virus – Quail bronchitis virus - Hemorrhagic enteritis virus of turkeys and marble spleen disease virus of pheasants) - Viral infections of wild waterfowl (Anatid herpesvirus 1 – Duck parvovirus – Avian influenza virus) - Psittacine beak and feather disease virus).
<b><u>VIR-3178</u></b> <b>Viral Vaccinology</b>	The role of vaccination in integrated disease control strategies – Danger, antigen presentation and immunological memory - Advantages and limitations of conventional vaccines - Alternative approaches to increase vaccine efficiency - Critical aspects of novel vaccine design - Recombinant, sub-unit, and DNA vaccines - Mucosal vaccines - Innovative delivery systems and routes - Vaccine quality control and quality assurance - The ethical and economic aspects of vaccine development.
<b><u>VIR-3179</u></b> <b>Oncogenic Viruses</b>	Virus structure – Replication – Host pathogen interaction – Productive infection with oncogenic viruses – Oncogenes and tumor suppressive genes – oncogenesis – Viral oncogenesis – The mechanism of retrovirus oncogenesis – How DNA viruses induce tumor formation – Basics of diagnosis of oncogenic viruses.
<b><u>VIR-3180</u></b> <b>Poultry Viruses</b>	Virus structure – Virus pathogenesis in avian hosts – Viral vaccines and vaccination – Oncogenesis – Orthomyxoviruses (Avian influenza viruses) – Paramyxoviruses (NDV) – Picornaviruses (Avian encephalomyelitis virus and infectious hepatitis virus in ducks) – Avian reoviruses – Avian retroviruses (Avian leucosis virus) – Birnaviruses

	(Infectious bursal disease virus) – Herpesviruses (Marek’s disease virus – Infectious laryngotracheitis virus – Avi- poxviruses.
<b><u>VIR-3181</u></b> Arthropod-borne Viruses	Definition and classification of arboviruses – Structural and genomic features of arboviruses – Replication – Epidemiology of arboviruses - Viruses causing encephalitis (EEV-WNV) – Laboratory diagnosis of arboviruses causing encephalitis - Viruses causing hemorrhagic fever (Rift valley fever virus – Crimean Congo hemorrhagic fever virus) - Laboratory diagnosis of viruses causing hemorrhagic fevers - Epidemiological and phylogenetic relationships of arboviruses – Vaccination against arboviruses.
<b><u>VIR-3182</u></b> Fish Viruses	Virus structure – Replication – Virus spread in fish – Oncogenesis – Classification – Rhabdoviruses – Birnaviruses – Reoviruses – Retroviruses – Iridoviruses – Herpesviruses – Papovaviruses.
<b><u>VIR-3183</u></b> Advanced Viral Immunology	Components of the immune system – The basic immunologic response to viruses – Activation and regulation of the immune response to viruses – The role of dendritic cells in antigen presentation – The role of phagocytic cells in virus infection – B and T cells in adaptive immunity to viruses – Cytokines and interferons - Virus evasion of host immune defenses – Immunotherapy in the control of viral infections – Virus vaccines and vaccination – Vaccination failure.
<b><u>VIR-3184</u></b> Farm Animal Viruses	Virus structure – Spread of viruses in the animal body – Viral vaccines and vaccination – Oncogenesis – Paramyxoviruses (Parainfluenza 3 virus – Rinderpest virus – Pest des petits ruminant virus) – Flaviviruses (BVDV – BDV – WNV – Louping ill disease virus) – Picornaviruses (FMDV) – Reoviruses (Blue tongue virus – Bovine rotavirus) – Coronaviruses (Bovine coronavirus) – Retroviruses (Bovine leucosis virus – caprine arthritis encephalitis virus – Jaagsiekte sheep retrovirus) – Bunyaviruses (Rift valley fever virus – Akabane virus - Nairovirus) – Herpesviruses (BHV-1 – BHV-2 – OHV-2) – Poxviruses (LSDV – Cowpox virus – Sheepox virus – ORF) – Prions (Mad cow disease - Scrapie).
<b><u>VIR-3185</u></b> Pet Animal Viruses	Virus structure - Virus spread inside the bodies of animals and man – Viral vaccines and vaccination – Paramyxoviruses (Canine distemper virus – Parainfluenza 2 virus – Adenoviruses (Canine adenovirus 1) – Parvoviruses (Canine parvovirus – Feline panleukopenia virus) – Reoviruses (Feline rotavirus) – Retroviruses (Feline immunodeficiency virus – Feline leukemia virus) – Papoviruses in dogs – Herpesviruses (Canine herpesvirus 1 – Feline herpesvirus 1) – Caliciviruses (Feline calicivirus) – Rhabdoviruses (Rabies virus).

## Department of Microbiology

Code and name	Content
<b><u>MIC - 3200</u></b> Classification taxonomy of bacteria	Classification of bacteria - the diversity of bacteria - the basic rules for the classification and identification of bacteria – The recent classification of bacteria - Bioterrorism - Isolation of bacteria in pure form from different environments – Bacterial structures - Physiology of bacteria - Genetics in bacteria - Applications of the importance of bacteria to the environment - Factors affecting the growth of bacteria – Recent practical methods to identify bacteria.
<b><u>MIC - 3201</u></b> Advanced Bacteriology	Structure, physiology, heredity, and immunity of bacterial pathogen - Bacterial applications in medicine and food industry - Medicine and biotechnology - Basic techniques for growing, studying and identifying bacteria.
<b><u>MIC - 3202</u></b> Diagnostic Bacteriology and Mycology	Identification of bacterial and fungal pathogens - laboratory diagnosis of bacteria and fungi - Biosafety in the laboratory - Laboratory diagnosis of bacteria and fungi cause mastitis. Laboratory diagnosis of bacteria and fungi cause septicemia. Laboratory diagnosis of bacteria and fungi cause diarrhea. Laboratory diagnosis of bacteria and fungi cause respiratory diseases. Laboratory diagnosis of bacteria and fungi cause neurological diseases. Laboratory diagnosis of bacteria and fungi cause skin diseases. Laboratory diagnosis of bacteria and fungi cause abortion. Diagnostic methods to identify bacteria and fungi causing diseases- Diagnostic biochemical, serological and molecular tests to identify bacterial and fungal pathogens.
<b><u>MIC - 3203</u></b> Molecular Bacteriological and Mycology	Pathogenesis of bacterial infections in animals and an introduction to the basic characteristics of bacteria and fungi - Antibiotic treatment of bacterial - The most important bacterial pathogens in domestic animals - The mechanism of infection and disease and the role of the host - Basic techniques to identify bacteria and fungi -The basics of immunity - The genetic material of bacteria and fungi – Genetic structure of bacterial and the mechanism of genetic variation - The concepts of genetic diagnosis of the bacteria.
<b><u>MIC - 3204</u></b> Clinical bacteriology	Introduction to the structures of bacterial and fungal cell, - Biosafety in the laboratory - The best method to collect samples of skin, wounds, eyes, udder, the digestive system, respiratory system and genital tract for bacterial or fungal examination to detect the most important pathogens – Sterilization - Isolation of microbe in pure form - Antibiotic treatment of microbial infection.
<b><u>MIC - 3205</u></b> Clinical molecular bacteriology	The bacterial morphology and structure - The physiology of pathogenic bacteria – Characterization of food poisoning bacteria - Bacteria growth and reproduction - Bacterial pathogens and food poisoning bacteria – Characteristics of bacteria transmitted to humans through the vertebrates - Methods of bacteriological analysis of food and water - laboratory diagnosis of food poisoning bacteria - Total bacterial count and how to isolate bacteria in samples of water and food - Serological and molecular tests for bacterial diagnosis - Polymerase chain reaction - Some molecular bacterial

	diagnostics concepts - Conventional bacterial vaccines and vaccines genetically engineered.
<b><u>MIC - 3206</u></b> Advanced Immunology	Overview of the mechanism of the immune system - Characterization of recent discoveries in cellular and molecular immunity – Mechanism of the immune receptors - Antigens – Stimulation of T and B lymphocytes - Organ transplants - Autoimmune - The interaction and performance of cytokines - the relationship between the pathogen and the immune system - Genetics immune.
<b><u>MIC - 3207</u></b> Diagnostic Molecular Immunology	Types of the immune system cells - The relationship between cellular and humoral immunity - Antibodies and measurement - Diagnosis of immunodeficiency diseases - The immune system and cancer - Bacterial vaccines and vaccinations - Serological and cellular tests to measure the immune responses - The safety in molecular biology - Proteins and DNA separations - Applications of molecular biology.
<b><u>MIC - 3208</u></b> Genetics and biotechnology of microbes	Genetic System of Microorganisms- Genetic materials, genetic codes, plasmids and chromosomes of microorganisms- Bacterial DNA- Bacterial replication- Antibiotics that affect nucleic acid and protein synthesis- Adaptation and variation;- Gene expression- Regulation of gene action- Cell division- Bacteriophages- Application of microbial genetics, recombination- Basic techniques in genetic engineering- Analysis of recombinant DNA- Nucleic acid hybridization- Nucleotide sequencing and chromosome mapping.
<b><u>MIC - 3209</u></b> Molecular biology of microbial	Properties and replication of microbes - Bacterial mutations - Bacterial DNA extraction - Bacterial replication - Conjugation - Transmission of antibiotic resistance plasmids – Ames test for detecting carcinogens - Bacterial gene expression - Gene sequencing – Prokaryotic genes - Detection of bacterial toxins and other virulence factors genes - The basics of bioinformatics and its applications in bacteria - Genetic engineering and the future.
<b><u>MIC - 3210</u></b> Advanced Mycology	Morphology, physiology and genetic structures of fungi - Structures of fungi and their functions - The importance of chemical structures of fungi - Growth and shapes of hyphae - The growth of fungus and the factors influencing it - The life cycle, reproduction and the metabolism in the fungi - Immunity to fungi - Mycotoxins - Prevention and treatment of fungal infections.
<b><u>MIC - 3211</u></b> Mycobacteriology	Rapid identification of TB - Microscopic examination – Identification of <i>Mycobacterium</i> strains in practice - The division of mycobacteria - Isolation and classification of mycobacteria – The sensitivity test of the strains - Genetic identification of mycobacteria. The relationship between the immunity and the <i>Mycobacterium</i> diseases.
<b><u>MIC - 3212</u></b> Mycoplasmology	<i>Mycoplasma</i> and <i>Mycoplasma</i> like organisms - Isolation and identification of <i>Mycoplasma</i> , <i>Ureaplasma</i> and <i>Acholeplasma</i> species – Serological tests for mycoplasmae in animals and birds - Prepare media - ELSA test for serum samples - fluorescent test for lung samples - Polymerase chain reaction for mycoplasmae - Indirect hemagglutination test- Identification of mycoplasmae by of genetic sequence and immunoblot.

<p><b><u>MIC - 3213</u></b>  <b>Spirochaetology</b></p>	<p>Introduction to spirochetes - Classification of spirochetes - Spirochetes biological movement - Virulence factors - The ability of spirochetes to cause disease - The importance and epidemiology of <i>Leptospira</i>, <i>Borrelia</i>, <i>Treponema</i> species and other spirochetes - Ticks and its role in the transfer of spirochetes - Antibiotics - Recent techniques to identify spirochetes.</p>
<p><b><u>MIC - 3214</u></b>  <b>Anaerobes</b></p>	<p>Introduction to anaerobes - Physiological characteristics of anaerobes – Culture characters and the growth of anaerobes – Cultivation of microaerophiles – Biochemical characteristics of anaerobes - epidemiology and toxins of anaerobes - characteristics of anaerobic infection – Identification of <i>Clostridium</i> species and their toxins - Gram negative and positive anaerobic bacilli - Gram negative and positive anaerobic cocci- Identification of anaerobes by serological and recent molecular methods.</p>
<p><b><u>MIC - 3215</u></b>  <b>Bacterial and fungal veterinary vaccines</b></p>	<p>Overview of natural immunity against pathogens - Antibodies - Antigens - Immune cells - Cellular immunity - The properties of vaccine - Types of vaccines - The basics of vaccine production - Production of killed, live and attenuated vaccines - Production of a DNA vaccine - Important veterinary vaccines - Immune responses associated with different vaccines - Methods of vaccine administration – Preservation and dealing with vaccines – Adjuvants and their immunological effects Production of antibodies and Ig- Non-specific protein therapy - Risks of vaccines - Evaluation of vaccine and quality standards of vaccines production.</p>
<p><b><u>MIC - 3216</u></b>  <b>Bacteriology, Mycology and immunity of the udder</b></p>	<p>Relationship between host and pathogen - Cellular and molecular basis of mechanical host defense against infection - Virulence factors and strategy of bacteria to cause diseases - Microbes and milk products - the role of micro flora of udder – The most important microbes that cause mastitis - Udder immunity and cytokine.</p>
<p><b><u>MIC - 3217</u></b>  <b>Bacteriology and Mycology of the reproductive system</b></p>	<p>The most Gram negative and positive bacteria causing reproductive tract infections - Fungal reproductive system - Control of bacterial and fungal infections and bacterial vaccines - Diagnostic serology and biotechnology for bacteria reproductive system.</p>
<p><b><u>MIC - 3218</u></b>  <b><i>Enterobacteriaceae</i></b></p>	<p>General characteristics of the family <i>Enterobacteriaceae</i> - Classification and taxonomy of <i>Enterobacteriaceae</i> – Physiology and morphology of <i>Enterobacteriaceae</i> – Identification of <i>Enterobacteriaceae</i> - the epidemiology and importance of <i>Enterobacteriaceae</i> - Genetic structures - a strategy of <i>Enterobacteriaceae</i> to resist the complement – Virulence factors - Invasion - iron and siderophore production - toxins - the diversity and opportunistic of the <i>Enterobacteriaceae</i> - Treatment, prevention and control of the <i>Enterobacteriaceae</i> - Resistance to antibacterial agents - The relationship between the immunity and the <i>Enterobacteriaceae</i> diseases.</p>
<p><b><u>MIC - 3219</u></b>  <b>Pathogenic bacteria and fungi of wild animals and birds</b></p>	<p>Identification of characteristics of the pathogenic bacteria and fungi to wild animals and birds such as <i>Salmonella</i> and <i>Campylobacter</i>, <i>Enterobacteriaceae</i> , spirochetes and <i>Treponema</i> - Infections caused by <i>Streptococcus</i>, <i>Staphylococcus</i>, anaerobic bacteria, <i>Mycoplasma</i>, <i>Chlamydia</i>, <i>Aspergillus</i> and <i>Candida</i> species - Different methods for cultivation of bacteria and fungi at the laboratory - Factors affect growth of the pathogen</p>

	– bacteriological, serological and molecular laboratory techniques to identify bacteria and fungi.
<b>MIC - 3220</b> Bacteriology, Mycology and Immunity of birds	Bacteria and fungi and their importance - Structures - Morphology - Types - Detection of bacteria and fungi that cause avian diseases - methods of spread and infection - Disease resistance – Host pathogen relationship and immunity of the bird - Characteristics and types of mycotoxins, - biochemical and serological tests for the diagnosis of bacterial and fungal diseases - Bird bacteria vaccines.
<b>MIC - 3221</b> Environmental Microbiology	Microbial Ecology - The role of bacteria in the changing environment - Self-purification - Methods of pollution control - Microbial activities – Treatment of the environment from organic and mineral pollutions by bacteria - The most important soil microorganisms and their importance in agriculture - Sewage treatment and purification - Food poisoning bacteria and microbial toxins -Spoilage of food - Methods of measuring of bacteria in food - Remediation and biotransformation- Bacteria treatment of environmental pollution - Microbial biodegradation of pollutants.
<b>MIC - 3222</b> Industrial Microbiology	Application of scientific principles to use of microorganisms in the manufacture of food or industrial products and synthesis of useful products - Pharmaceutical importance - Microbial fermentation - Probiotics, lactic acid bacteria and bifidobacteria - Yeast products of microbial activity - Food additives, alcohol, and ration- fuel production - Enzymes as antimicrobial agents - Vaccines - Biotechnology – Mutation selection - Different approaches in utilization of mutation and genetic recombination for strain improvement
<b>MIC - 3223</b> Properties of microbes causing zoonotic diseases	Introduction to bacteria and fungi - Lab safety - The importance of imported and wild animals and birds – Characteristics of bacteria and fungi that cause zoonotic diseases (anthrax, plague, <i>Chlamydia</i> , Q fever, contagious abortion, glander, <i>Salmonella</i> , uremia, ring worm and fungal diseases) - Different methods of sterilization and disinfection - Samples collection for lab examination - Classification of bacteria and fungi, morphological characters and structures of each group – Virulence factors and pathogenicity of microbe - different methods for cultivation of bacteria and fungi - laboratory techniques to identify bacteria and fungi.
<b>MIC - 3224</b> Bacteriology, Mycology and fish immunity	Aquatic bacteria and fungi that cause fish diseases - Methods of bacterial and fungal infections - Fish immunity - Serological and molecular methods for diagnosis of bacterial and fungal fish diseases - Bacterial vaccines and immunizations.
<b>MIC - 3225</b> Pathogenic fungi of body organs.	An overview of classification of fungi- General characteristics, natural habitat, disease association - laboratory diagnosis of fungi- Systematic study of diseases caused by the important fungi -Dermatophytes: Trichophyton, Microsporum, Epidermophyton- Pathogenic yeasts: Candida, Trichosporum, Dimorphic fungi- Sporothrix, Blastomyces, Histoplasma, Coccidioides, etc. Zygomycetes: Absidia, Mucor, Rhizopus, etc. - Mycotoxins and their general features - Mycotoxin formation and characteristics.

<b><u>MIC - 3226</u></b> yeasts	<b>Biology of yeast – Classification, identification and preservation of yeast - Genetics and strain improvements - Industrial significance - Product from yeast and their technologies - Fermentation kinetics - Yeast Genetics and its significance – Cultivation and identification of yeast in lab.</b>
<b><u>MIC - 3227</u></b> Prion and its diseases	<b>Definition of prion - prion diseases - A list of prion diseases (diseases caused by prion in humans and animals) - Characterization of the disease - Modes of transmission, infection and how it is spread - The gene responsible for prion disease - Treatment.</b>

## Department of Pharmacology

Code and name	Contents
<b><u>PHA – 3250</u></b> Hormones and Drugs used for Treatment of Genital Diseases	Hormones, Drugs used for treatment of genital diseases and disturbances, Hormonal therapy, Uses and its side effects precisions and dosage regimen, Drugs used for treatment of mastitis.
<b><u>PHA - 3251</u></b> Drug Metabolism and Veterinary Drug Residues	Drug metabolism and metabolic enzymes and Biotransformation, Excretion of drugs and their metabolites, Factors affecting drug metabolism and biotransformation, Veterinary and withdrawal time of drugs, Veterinary drug residues and control.
<b><u>PHA - 3252</u></b> Clinical Pharmacology of Pet Animals	Clinical pharmacology of different groups of drugs, Ideal Selection of drugs used for treatment of bacterial, fungal parasitic and viral diseases in pet Animals, Dosage regimens, Method of administration, Interactions, Side effects and contraindications of drugs used in pet animals.
<b><u>PHA - 3253</u></b> Antibacterial, Antifungal and Antiviral Drugs and Disinfectants	Antibiotics, Antibacterial, Antifungal agents, Antiviral agents, Antiseptics and disinfectants, Mechanisms, Efficacy, Indications and Contraindications, Side effects and dosage regimen.
<b><u>PHA - 3254</u></b> Antiparasitic Drugs	Ideal uses of anthelmintics, Antiprotozoals, Uses of insecticides against external parasites, Efficacy, Indications, Dosage, Method of administration, Contraindications and drug interactions.
<b><u>PHA - 3255</u></b> Drug Toxicity	Types of drug toxicity, Toxicokinetic, Diagnosis and general treatment of drug toxicity, Toxicity of organic and inorganic agents and methods of treatment.
<b><u>PHA - 3256</u></b> Drug Evaluation	General principals' evaluation of new drugs. Evaluation of drug efficacy, mechanisms, Acute and chronic toxicity of drugs, Pharmacokinetic pattern, Pharmacological properties and therapeutic uses.
<b><u>PHA - 3257</u></b> Pharmacology of Anaesthetics and Antiinflammatory Agents	Efficacy, Mechanism of action dosage, methods of administration of preanesthetic drugs, General anesthetics, Local anesthetics, Hypnotics, Sedatives, Anti-inflammatory agents and skeletal muscle relaxants.
<b><u>PHA - 3258</u></b> Drugs Used for treatment of Diseases of Food producing Animals and Growth promoters	Emetics and antiemetics, Antiacids, Carminatives, Intestinal antispasmodics, Fluid therapy, Therapeutic bases for treatment of spasmodic colic, Diarrhea and Gastro-intestinal inflammation, Types of growth promoters.



<b><u>PHA - 3259</u></b> <b>Drugs Influencing Immune System</b>	<b>Efficacy and mechanism of action of immunostimulants and immunosuppressive agents, Pharmacology and toxicity of anticancer agents, Dosage regimens, Interactions and contraindications.</b>
<b><u>PHA - 3260</u></b> <b>Drugs Used in Poultry</b>	<b>Pharmacological action, Mechanisms of action, Dosage regimens, Side effects and interactions of groups of drugs used for treatment of poultry diseases.</b>
<b><u>PHA - 3261</u></b> <b>Drugs Used in Equines</b>	<b>Pharmacological action, Mechanisms of action, Dosage regimens, Methods of administration, Interactions, Contraindication of different drugs used for treatment of different diseases of equines.</b>
<b><u>PHA - 3262</u></b> <b>Drugs Used in Fish</b>	<b>Pharmacological action, Mechanisms of action, Dosage regimens, Contraindications, Side effects, Interactions of different drugs used for treatment of diseases affecting fish.</b>
<b><u>PHA - 3263</u></b> <b>Clinical Pharmacokinetics of Different Veterinary Drugs</b>	<b>Pharmacokinetic pattern of veterinary drugs used in cases of different diseases and Factors affecting their kinetic disposition, Calculation of biological half-life and volume of body distribution are well rate of elimination of different drugs in animals and poultry.</b>

## Department of Toxicology Forensic Medicine and Veterinary Regulations

Code and name	Contents
<b><u>TFM 3300</u></b> Venomous Animals	<b>Venomous snakes - Classification of venomous animals – Venom apparatus – How to detect the venomous snakes – Chemical composition of venom – Treatment – viper venom – differentiation between cobra and viper – the toxic effect of viper venom – treatment – scorpion poison – the toxic effect – treatment – protective measures for snakes and scorpion.</b>
<b><u>TFM 3301</u></b> Industrial Toxicology	<b>Types of industrial poisons and its sources – Exposure to industrial poisons – Classification of industrial poisons – the toxic effect of painting – Ceramic industry – glass industry and printing industry – Hazards of industrial poisons and evaluation of chronic toxicity – Detection of industrials poisons – the toxic effect on blood, liver, kidney and brain – prevention – How to deal with industrial poisons – treatment – Regulations.</b>
<b><u>TFM 3302</u></b> Forensic Medicine	<b>Introduction – External and internal examination of carcass – Collection and preservation of samples– Full examination of organs – Preparation of forensic reports – Identification of living and dead animals – Death – Wounds - Death from physical agents – Asphyxia.</b>
<b><u>TFM 3303</u></b> Systemic Toxicology	<b>Haematotoxicity - Immunotoxicity - Hepatotoxicity - Nephrotoxicity – Neurotoxicity - Reproductive toxicity - Inhalation toxicity - GI toxicity - Ocular and dermal toxicity.</b>
<b><u>TFM 3304</u></b> Advanced Aquatic Toxicology	<b>Definition – Exposure to toxic substances in aquatic environment – Aquatic pollution – Pollution of aquatic organisms – Sources of water pollution – Pollution of aquaculture – Aquaculture problems – Toxic properties of chemicals – Hazards from toxic substances – Hazards from nutrition – Effect of carcinogenic compounds on aquatic organisms – Diagnosis of toxicity in aquaculture – Evaluation of toxicity – Treatment and prevention.</b>
<b><u>TFM 3305</u></b> In vitro Toxicology	<b>Introduction – Advantages of in vitro toxicology – In vitro toxicology on tissue sample – In vitro toxicology of skin – Sensitivity skin test - In vitro genetic toxicology - In vitro nephrotoxicology - In vitro hepatotoxicity - In vitro neurotoxicology – Treatment.</b>

<p><b><u>TFM 3306</u></b>  <b>Biochemical Toxicology</b></p>	<p><b>Introduction – Biochemical methods for carcinogenic materials – Hepatocyte death - Biochemical mechanisms of renal toxicity – Lung affection – Adverse toxic effects of drugs – Biochemical mechanisms of physiological effects - Biochemical mechanisms for protein receptors interaction - Biochemical mechanisms of neurotoxicity - Biochemical mechanisms of reproductive toxicity - Biochemical mechanisms for immunotoxicity - Biochemical mechanisms for heavy metals poisoning.</b></p>
<p><b><u>TFM 3307</u></b>  <b>Microbial Toxicology</b></p>	<p><b>Introduction – Definition – Food poisoning (Internal and External poisoning, Diagnosis, prevention and treatment) – Mycotoxins – Effect of mycotoxins on animals and poultry – Isolations and identification methods – Prevention and treatment.</b></p>
<p><b><u>TFM 3308</u></b>  <b>Poisonous Plants</b></p>	<p><b>Introduction - Evaluations of poisonous plants -The toxic effect of poisonous plants -Hypersensitivity induced by poisonous plants - Cyanide and cyanide containing plants - Plants causing vitamin A deficiency - Oxalic acid producing plants - Plants causing anticoagulative effect - Plants causing reproductive toxicosis - Plants causing neurotoxic effect - Hepatotoxic plants - Nephrotoxic plants - Plants causing cardiovascular toxicosis - Laboratory methods for isolation, identification, classification and evaluation of toxic principles.</b></p>
<p><b><u>TFM 3309</u></b>  <b>Genetic Toxicology</b></p>	<p><b>Introduction - Types of mutations – Classifications of mutagens – Causes of mutation – Consequences of mutation – Experimental diagnosis for mutations – Classifications of carcinogens – Mechanisms of carcinogenesis – Experimental protocol for diagnosis of carcinogens – Environmental carcinogens – Natural carcinogens – Prevention from cancer.</b></p>
<p><b><u>TFM 3310</u></b>  <b>Forensic Toxicology</b></p>	<p><b>Sample Collection – Extraction of toxicant from samples – The advanced methods for diagnosis of toxicity from medicolegal importance - The different toxic effects of the toxicant related to forensic medicine - Drugs Abuse</b></p>
<p><b><u>TFM 3311</u></b>  <b>Reproductive Toxicology</b></p>	<p><b>Toxicants and reproductive system of male and female – Mechanism of toxicants on male and female reproductive system – Methods used for evaluation of the effect of different toxicants on male and female reproductive system – Methods used for prevention and treatment of problems resulting from exposure of reproductive system to different toxicants.</b></p>

<b><u>TFM 3312</u></b> <b>Immunotoxicology</b>	<b>Anatomy of the immune system – Adverse effect of toxicants on immunity – Evaluation of the toxic effect of some compounds – Toxicological pathological study – Host resistance – Cellular immunity – Response of lymphatic system – Measurement of phagocytes function – Evaluation of bone marrow mother cells – Delayed hypersensitivity – Clinical immune toxicants – Clinical immune evaluation.</b>
<b><u>TFM 3313</u></b> <b>Behavioral Toxicology</b>	<b>Epidemiology of exposure to toxic substances – Main effect of poison – Diagnosis strategy and definition of exposure to toxicants – Toxicants and their effect on nervous system and animal behavior – Animal toxicity experiments – Effect of toxicants on movement, sensation and neuropsychiatric state.</b>

## Department of Veterinary Hygiene and Management

Code and name	Contents
<b><u>VHM -3325</u></b> Environment Hygiene.	Requirements for Examination of air, water and soil.
<b><u>VHM -3326</u></b> Hygiene of Animal Houses.	Hygienic programs in animal farmhouse (dairy, beef, sheep) pets, and experimental animals.
<b><u>VHM -3327</u></b> Combating of Epidemic Diseases.	Source of infection Methods of disease transmission Combating disease strategies: outbreak notification, isolation of diseased animals, treatment of diseased animal, follow hygienic measurements and application of disinfection programs Hygienic disposal of dead carcasses Eradication of external parasite. Role of veterinarian in prevention of disease transmission and improvement of general health.
<b><u>VHM -3328</u></b> Study Of The Incidence And Prevalence Of Diseases.	Study of epidemiology, descriptive epidemiology Diagnostic epidemiology Study methods of disease transmission through carrier (diseased animals, insect and intermediate host) Role of Host, causative agent and environmental relationship in disease transmission.
<b><u>VHM -3329</u></b> Advanced Animal Hygiene.	Effect of environmental factor on animal Modern house design. Combating disease strategies.
<b><u>VHM -3330</u></b> Advanced Poultry Hygiene.	Hygienic measurement for hatching eggs in hatcheries and breeder, layer farms Disinfectants and disinfection in poultry farms Environmental conditions in poultry farms Method of housing. Preventive and hygienic measurement which followed in poultry industry.
<b><u>VHM -3331</u></b> Systems of fish farming and hatcheries.	
<b><u>VHM -3332</u></b> Environmental pollution.	Air pollution and its effect on human and animal health Water pollution Soil pollution Radiation.
<b><u>VHM -3333</u></b> Hatchery hygiene.	Systems of egg incubation Disinfection of eggs Storage of hatching eggs Hatchery disinfection Incubation and hatching operations Environmental factor necessary for hatching successes

	<b>Cope of indoor hatchery obstacles.</b>
<b><u>VHM -3334</u> Pesticides And Public Health.</b>	<b>Classification of pesticide and insecticide and their mode of action Safe method for use of pesticides and their effect on the environment, living organisms and human. Eradication of external parasite and insect transmitting disease.</b>
<b><u>VHM -3335</u> Disinfection and Disinfectants</b>	<b>Classification of disinfectants Mode of action of disinfectants recommended to be used. Evaluation of disinfectants Methods of disinfectant application.</b>
<b><u>VHM -3336</u> Farm Animal Wastes '' Biological Disposal of Animal Wastes''</b>	
<b><u>VHM -3337</u> Prevention of The Occurrence and Spread of Epidemic Diseases</b>	<b>General rules for prevention of occurrence and spread disease Environmental factor and its effect on animal health and productivity Hygienic measures for prevention of disease occurrence Hygienic methods that followed in dangerous cases and their method of application.</b>
<b><u>VHM -3338</u> Veterinary Extension</b>	<b>Health regulation follow by veterinarian producers and farms including control and combating (vaccination, dipping, treatment, diagnostic tests, etc.).</b>
<b><u>VHM -3339</u> Health Problems in Fish Farms and Hatcheries</b>	<b>Problem associated with water quality Methods of water analysis Benefits of mud and methods of treatment Predators and pets Control of phytoplankton and weeds Special calculation of aquacultures Ways of life fish transportation Hygienic methods used for aquaculture disinfection.</b>
<b><u>VHM -3340</u> Health requirements for transfer of animals and biological products</b>	<b>Aim and methods of live animal transportation with considering animal welfare Kinds of biological Product and method of transportation National regulation of transportation and marketing.</b>
<b><u>VHM -3341</u> Poultry Farms Hygiene.</b>	<b>Systems of poultry housing Hygienic design for open and closed farms Environmental factors required to achieve high performance index. Disinfection in poultry farms.</b>
<b><u>VHM -3342</u> Biosecurity In Poultry Industry</b>	<b>Hygienic systems associated to poultry farms Personal hygiene for workers and employee Eradication of rodents Water and feeder sanitation Establishing national plan for diseases control Hygienic measures used for disinfection of poultry farms and hatcheries.</b>
<b><u>VHM -3343</u></b>	<b>Disposing poultry waste</b>

**Treatment Of Poultry  
Farms Wastes**

**Recycling poultry waste (litter and droppings)  
Chemicals and biological methods used for disinfection of litter and  
poultry wastes.**

**Department of Food Hygiene and Control**  
**1- Meat Hygiene and Control**

<b>Code and name</b>	<b>Contents</b>
<b><u>FHC-3375</u></b> <b>Food animal hygiene</b>	<b>Study the effect of different methods of rearing on food animal hygiene and its effect on meat quality- Study the effect of environmental and other factors on ant-mortem condition of the animal and its relation to meat quality- Quality parameters of meat and the factors affect these parameters.</b>
<b><u>FHC-3376</u></b> <b>Sanitation and management of slaughterhouse</b>	<b>The health requirements which should be present in abattoirs- Abattoir's design- Quality control system in abattoirs.</b>
<b><u>FHC-3377</u></b> <b>Inspection of poultry and rabbits' meats</b>	<b>Inspection of poultry and rabbits' meats- chemical composition of poultry and rabbit meat- Affections of poultry and rabbit meat.</b>
<b><u>FHC-3378</u></b> <b>Meat technology</b>	<b>Different meat products- Production of traditional Egyptian meat products.</b>
<b><u>FHC-3379</u></b> <b>Poultry meat technology</b>	<b>Technological properties of poultry meats and its relation to its processing- Production of different poultry meat products.</b>
<b><u>FHC-3380</u></b> <b>Fish technology</b>	<b>Technological properties of fish meats- Production of fish meat products.</b>
<b><u>FHC-3381</u></b> <b>Factors affects growth of microorganisms in foods</b>	<b>Food poisoning microorganisms- The effect of temperature, humidity, pH and other environmental factors that affect the growth of microorganisms- Control of microbial growth rate in foods.</b>
<b><u>FHC-3382</u></b> <b>Microbiology of meat and meat products</b>	<b>Study the microbial standard in meat and meat products- Study the source of contaminations- The health importance of food microbes on consumer health.</b>
<b><u>FHC-3383</u></b> <b>Microbiology of poultry meat and its products</b>	<b>Microbial, viral and parasitic affections of poultry and the methods of its control- Laboratory examination of poultry- poultry products.</b>
<b><u>FHC-3384</u></b> <b>Microbiology of ready to eat cooked meat and offal</b>	<b>Methods for preparations of ready to eat cooked meat- Sources of contamination- The health importance of ready to eat cooked meat on consumer health.</b>
<b><u>FHC-3385</u></b> <b>Microbiology of animal byproducts and its products</b>	<b>Animal byproducts which fit for human consumption- Animal byproducts which are unfit for human consumption- The importance of microorganisms which present in animal byproducts and its effect on the product and the consumer.</b>
<b><u>FHC-3386</u></b> <b>Microbiology of fish and its products</b>	<b>The natural microbes of fish- Source of contamination in fish- Standard specifications of fish and its products.</b>



<b><u>FHC-3387</u></b> <b>Analysis of meat, fish and its products</b>	<b>Chemical analysis of meat and meat products- Chemical analysis of fish- Standard specifications of meat, fish and its products.</b>
<b><u>FHC-3388</u></b> <b>Control of hygiene of meat and fish factories</b>	<b>Design and preparation of meat and fish processing plants- Food handling in meat processing plants- The health of workers in meat processing plants.</b>
<b><u>FHC-3389</u></b> <b>Food poisoning due to meat, fish and its products</b>	<b>Food poisoning microorganisms in meat and meat products- Food poisoning microorganisms in fish and its products- The effect of presence of these microorganisms on consumer health and the methods of its prevention.</b>

**Department of Food Hygiene and Control**  
**2- Milk and Dairy Products Hygiene and Control**

<b>Code and Name</b>	<b>Content</b>
<b><u>FHC3400</u></b> Hazards associated with milk and dairy products	Definition of hazards, types of hazards, sources, how to prevent
<b><u>FHC340</u></b> Sources of contamination of dairy products & subclinical mastitis	Role of animals in contamination of milk and dairy products, environment as a source of contamination, subclinical mastitis (methods of detection in milk examination)
<b><u>FHC3402</u></b> Chemical analysis of milk and dairy products	Methods and conditions for taking samples for chemical examination - Chemical analysis of milk and its products - Nutritional value of milk and its products - conformity of chemical analyzes to standard specifications.
<b><u>FHC3403</u></b> Suitability of oils and fats for human consumption	Different types of oils and fats - Methods used in analyzing oils and fats to determine their suitability for human use - Studying the special specifications of oils and fats to detect fraud cases
<b><u>FHC3404</u></b> Cleaning and Sanitation in dairy farm and plant	Definition of disinfectants and detergents - Different types of detergents and disinfectants - Different methods of cleaning and disinfection in dairy farms and factories.
<b><u>FHC3405</u></b> Food poisoning	Sampling methods for examination of food and their sources - Different types of food poisoning, the different causes of food poisoning - Methods of isolating and classifying food poisoning microbes - Factors that affect the growth and multiplication of microbes in food - Various methods of preventing and controlling food poisoning.
<b><u>FHC3406</u></b> Micro-organism causing spoilage in milk and dairy products	The different types of spoilage of milk and its products Sensory examination for the evaluation of milk and its products -Microbes that cause spoilage – Methods of isolating and classifying spoiling microbes - Methods of preventing spoilage.
<b><u>FHC3407</u></b> Suitability of eggs and egg products for human consumption	The different methods of examining eggs and their conformity with the standard specifications to determine their suitability for human consumption - Methods of isolating and classifying the different microbes from eggs - The different methods of preserving eggs - The different methods of manufacturing eggs.

<b><u>FHC3408</u></b> <b>Isolation and identification of micro-organisms in milk and dairy products</b>	<b>The different types of microbes that can be found in milk and dairy products - the different methods used to isolate and classify different microbes.</b>
<b><u>FHC3409</u></b> <b>Management systems and safety in factories and dairy farms</b>	<b>Introducing the different systems – Good Manufacturing Practices - Good Hygienic Practices.</b>
<b><u>FHC3410</u></b> <b>Dairy technology and preservation</b>	<b>Different methods of manufacturing milk and products Standard specifications for milk and dairy products - Defects resulting from the industry</b>

## Department of Zoonoses

Code and name	Contents
<u>Zon-3575</u> Introduction and applying terms in zoonotic diseases.	Introduction, classification of Zoonoses and factors affecting on spread of zoonoses, some terms for describing epidemiological data of these diseases.
<u>Zon-3576</u> Epidemiology of zoonotic diseases	Study epidemiology of zoonotic diseases with concerning to etiology, geographical distribution, the susceptibility in man and animal, the ways of infection and their reservoir.
<u>Zon-3577</u> The zoonotic diseases and environmental pollution	Study epidemiology of important zoonotic diseases, animal role in shedding of etiological pathogens to environment which lead to environmental contamination and so disease spread and transmit to human.
<u>Zon-3578</u> Human diseases that transmitted by animals	Study human diseases that transmit to animal, discuss animal role in spread of these diseases and their retransmission to human, and Strategies for prevention and control plans.
<u>Zon-3579</u> Bacterial zoonotic diseases	Study bacterial diseases that transmit from animal to human & vice versa, epidemiology, sources and ways of transmission, diagnostic ways and control strategies.
<u>Zon-3580</u> Chlamydial and Rickettsia zoonotic diseases	Study zoonotic diseases that caused by Chlamydial and Rickettsial pathogens, epidemiology, prevalence, diagnostic ways and prevention and control protocols of these diseases.
<u>Zon-3581</u> Viral zoonotic diseases	Study viral diseases that transmit from animal to human (Yellow fever, RVF, Avian Influenza, Rabies, etc) Epidemiology, sources and ways of transmission, diagnostic ways and control strategies.
<u>Zon-3582</u> Mycotic zoonotic diseases	Study the mycotic diseases that transmit from animal to human, their epidemiology, prevalence, diagnosis and prevention and control ways.
<u>Zon-3583</u> Parasitic zoonotic diseases	Study the parasitic zoonotic diseases that transmit from animal to human (protozoal diseases, helminthic diseases) their epidemiology, prevalence, diagnosis and control measures.
<u>Zon-3584</u> Food-borne bacterial and viral zoonotic diseases	Study food-borne bacterial and viral zoonotic diseases that transmit from animal to human, their epidemiology, diagnostics and control measures.

<p><b><u>Zon-3585</u></b>  <b>Food-borne parasitic zoonotic diseases</b></p>	<p><b>Study food-borne parasitic zoonotic diseases that transmit from animal to human, their epidemiology, prevalence, sources and their ways of transmission, diagnostics and control measures.</b></p>
<p><b><u>Zon-3586</u></b>  <b>Role of rodents in transmission of diseases to humans</b></p>	<p><b>Study the role of rodents in transmission of zoonotic diseases to human, diseases epidemiology, prevalence in both animal and human, diagnosis and preventive and control measures.</b></p>
<p><b><u>Zon-3587</u></b>  <b>Role of wild animals in transmission of diseases to human</b></p>	<p><b>Study the role of wild animals in transmission of zoonotic diseases to human (introduction include descriptive terms, epidemiology and hazards of these diseases, diagnostic ways and preventive and control measures.</b></p>
<p><b><u>Zon-3588</u></b>  <b>Role of arthropods in transmission of diseases to human</b></p>	<p><b>Study the zoonotic diseases that transmit from animal to human by arthropods (yellow fever, human plaque, RVF, etc) epidemiology of these diseases, diagnostic tool and ways of prevention and control.</b></p>
<p><b><u>Zon-3589</u></b>  <b>Occupational diseases in veterinary medicine</b></p>	<p><b>Study occupational zoonotic diseases that transmit to whom work in veterinary medicine field like veterinarian and others, epidemiology of these diseases, prevalence in both human and animal, diagnostic ways and how to protect the susceptible groups from acquiring infection with these diseases with regarding to control measures.</b></p>

## Department of Theriogenology

Code and name	Contents
<b><u>THR- 3550</u></b> <b>Reproductive Biology in the Female</b>	Sexual differentiation and Intersexes - Oogenesis and folliculogenesis - Neuroendocrine control of female reproduction - Puberty - The estrous cycle; endogenous and exogenous control of ovarian cyclicity and follicular dynamics – Fertilization and gamete transport -Maternal recognition of pregnancy- Parturition and the postpartum period - Molecular biology of reproduction - Reproductive Biotechnologies - Effect of environment on reproduction; nutrition and heat stress.
<b><u>THR- 3551</u></b> <b>Reproductive Biology in the male</b>	– Genetic control of testis determination – Cell biology of testicular development – Patterns of expression and potential function of proto – oncogenes during mammalian spermatogenesis – Gene expression during spermatogenesis – Molecular basis of signaling in spermatozoa – Paracrine mechanisms in testicular control – Molecular biology of testicular steroid synthesis – Hormonal control mechanisms of interstitial cells of the testis – Growth factors in the control of testicular function – Effect of immune system on testicular and epididymal function – Vascular control in testicular physiology.
<b><u>THR- 3552</u></b> <b>Bovine Gynecology and obstetrics</b>	<p style="text-align: center;"><b><u>Obstetrics</u></b></p> – Topographical anatomy of genital system and pelvis – Gestational disorders - Dystocia (causes and different methods of treatment) – Puerperium (normal and abnormal). <p style="text-align: center;"><b><u>Gynecology</u></b></p> - Functional anatomy of the reproductive system of the cow – Estrous cycle – Estrus detection and synchronization - Effects of environment and nutrition on fertility - Infertility (hereditary, hormonal, environmental and pathological causes). – Assisted reproductive technique (IVF, embryo transfer and cloning) – Sexual health control of herd - Record analysis.
<b><u>THR- 3553</u></b> <b>Equine Gynecology and obstetrics</b>	<p style="text-align: center;"><b><u>Obstetrics</u></b></p> – The genital system of mare (comparative anatomy) – Gestational disorders – Dystocia (causes and different methods of treatment) – Puerperium (normal and abnormal). <p style="text-align: center;"><b><u>Gynecology</u></b></p> – Functional anatomy of the reproductive system of the mare – Clinical examination of genital system. – Estrous cycle – Detection of estrus – Irregularities of the estrous cycle and ovulation – Effects of environment and nutrition on fertility – Infertility (hereditary, hormonal, environmental and pathological causes) – Bacterial, viral and fungal causes of infertility and abortion.

<p><b><u>THR- 3554</u></b>  <b>Artificial Insemination and Andrology in Bovine.</b></p>	<p>-Functional Anatomy of the male Reproductive System - Sire Selection – Collection, evaluation, dilution and preservation of Semen – Effect of season on semen characteristics – Technique of A.I. in Bovine – Sexual behavior in cattle – Manifestations and measurement of sex desire – Causes of infertility – Congenital and acquired disorders of the male reproductive system.</p>
<p><b><u>THR- 3555</u></b>  <b>Artificial Insemination and Andrology in Equines</b></p>	<p>-Functional Anatomy of the male Reproductive System - Sire Selection – Collection, evaluation, dilution and preservation of semen– Effect of season on semen characteristics – Technique of A.I. in Equines – Sexual behavior and sex desire – Infertility. – Congenital and acquired disorders of the male reproductive system.</p>
<p><b><u>THR- 3556</u></b>  <b>Gynecology and obstetrics in sheep and goat</b></p>	<p><b><u>Gynecology</u></b>  - Functional anatomy of the female genital system.  - Estrous cycle and factors affecting it - Sexual behavior - Estrus synchronization in sheep and goat flocks - Pregnancy diagnosis (Clinical, hormonal and ultrasonographic methods) - Infertility (Hereditary, hormonal, pathological and environmental causes).  <b><u>Obstetrics</u></b>  - Fertilization, embryo and fetal development - Dam and embryo gestational disorders - Disorders of fetal membranes and fluids - Stages of parturition in sheep and goat – Dystocia - Birth help - Various maneuvers (Cesarean section, Fetal extraction)- Puerperium (Normal and abnormal).</p>
<p><b><u>THR- 3557</u></b>  <b>Artificial Insemination and Andrology in sheep and goat</b></p>	<p>– Functional anatomy of the male reproductive system - Collection, evaluation, dilution and preservation of Semen - Technique of artificial insemination – Sexual behavior – Infertility – Congenital and acquired disorders of the male reproductive system extraction)</p>
<p><b><u>THR- 3558</u></b>  <b>Gynecology and obstetrics in Camels Gynecology</b></p>	<p><b><u>Gynecology</u></b>  Functional anatomy of the female genital system- Estrus in camels and factors affecting it - Sexual behavior - In vitro fertilization and embryo transfer - Pregnancy diagnosis (Clinical, hormonal and ultrasonographic methods) - Infertility (Hereditary, hormonal, pathological and environmental causes).  <b><u>Obstetrics</u></b>  - Fertilization, embryo and fetal development - Dam and embryo gestational disorders - Disorders of fetal membranes and fluids - Stages of normal parturition in camels - Dystocia - Birth help (Cesarean section, Fetal extraction, Fetotomy, extraction) - Puerperium (Normal and abnormal).</p>
<p><b><u>THR- 3559</u></b>  <b>Artificial Insemination and Andrology</b></p>	<p>– Functional anatomy of the male reproductive system - Collection, evaluation, dilution and preservation of Semen - Technique of artificial insemination – Sexual behavior – Infertility – Congenital and acquired disorders of the male reproductive system.</p>

<p><b><u>THR- 3560</u></b>  <b>Reproduction and artificial insemination in Poultry, Rabbits and Ostriches</b></p>	<p>- <b>Functional anatomy of female and male genital systems in poultry, rabbits and ostrich – Physiology of reproduction – mating and fertilization – Semen collection, evaluation and preservation – Techniques of artificial insemination in poultry, rabbits and ostrich – Male and female infertility and reproductive disorders.</b></p>
<p><b><u>THR- 3561</u></b>  <b>Reproductive Immunology</b></p>	<p>– <b>The immune system – an overview – Innate and acquired immunity – Blood – Testis barrier – Sperm antigens and antibodies – Post – mating immune response of female to inseminated sperm – Immunological aspects of sperm transport in the female genital tract – Immunology of fertilization.</b>  – <b>Immune reactions of the female against the developing embryo – Role of cytokines in male and female reproduction – Immune reactions against reproductive hormones – Immune contraception.</b></p>



## Department of Surgery, Anesthesiology and Radiology

Code and name	Contents
<b><u>SAR-3525</u></b> Ultrasonographic diagnosis	introduction – types of probes- image take and recording –image artifacts- diagnosis of different affections of different body systems
<b><u>SAR-3526</u></b> Experimental surgery	-types of experimental animals-strategy of animal selection for experimental surgery- different methods for obtaining samples (blood- tissues-urine-saliva) – methods of animal control by drugs- different methods of merciful euthanasia – common mistakes in pathological samples-some experimental surgical operations.
<b><u>SAR-3527</u></b> Eye surgery	Surgical affections of eye lids and different parts of the eye (cornea-lacrimal system-conjunctiva-lens-sclera, pupil-iris-choroid-fovea-vitreous body-retina)- cataract-vitreous body- different eye surgical affections in different animals.
<b><u>SAR-3528</u></b> Surgical affections of the digestive system in farm animals	Surgical affections of teeth – tongue – salivary glands- esophagus- compound stomach- intestine- rectum and anus
<b><u>SAR-3529</u></b> Urogenital surgical affections in ruminants	Anatomical notes-anesthesia-diagnostic imaging-surgical affections of kidney, ureter, urinary bladder, urethra, testes and penis-calculi
<b><u>SAR-3530</u></b> Surgical affections in calves and small ruminants	<b><u>Surgical affections of calves:</u></b> Anesthesia-diagnostic imaging- surgical affections of the digestive system-surgical affections of urogenital system-surgical affections of the abdominal wall-surgical affections of musculoskeletal system-eye affections-skin affections <b><u>Surgical affections of small ruminants:</u></b> Anesthesia-diagnostic imaging- surgical affections of the digestive system-surgical affections of urogenital system-surgical affections of the abdominal wall-surgical affections of musculoskeletal system-surgical affections of the udder-eye affections-skin affections
<b><u>SAR-3531</u></b> Surgical affections in camels	Control and anesthesia-diagnostic imaging-surgical affections of the digestive system-surgical affections of urogenital system-surgical affections of the abdominal wall-surgical affections of musculoskeletal system-udder and teat affections-eye affections-different surgical affections
<b><u>SAR-3532</u></b> Lameness in equine	Introduction- Fore limb affections-Hind limb affections- Hoof affections

<b><u>SAR-3533</u></b> Equine surgery	Control and anesthesia- Digestive system disorders- Urinary system- Musculoskeletal- Surgical approaches for colic- Abdominal wall disorders- Eye and Ear affections- Different surgical techniques.
<b><u>SAR-3534</u></b> Small animals Surgery	Anesthesia- Diagnostic imaging- Eye affections- Musculoskeletal disorders- Digestive system disorders- Urinary system disorders- Different surgical techniques.
<b><u>SAR-3535</u></b> Musculoskeletal and claw surgery in cattle	Fore limb affections - Hind limb affections - Claw affections.
<b><u>SAR-3536</u></b> Orthopedic surgery	Anatomical studies of the musculoskeletal system- The different disorders of bones and joints- Different tools for diagnosis bones and joints disorders- Line of treatment different bones and joints disorders.
<b><u>SAR-3537</u></b> Wild animal surgery	Introduction- Control and anesthesia- Diagnostic imaging- Eye affections- Musculoskeletal disorders- Digestive system disorders- Urinary system disorders- Various surgical techniques.
<b><u>SAR-3538</u></b> Surgical endoscopes in Veterinary practice	Introduction- Anesthesia- approach- Clinical applications on urogenital system- The Digestive system and its accessory glands- Musculoskeletal system- Various uses.
<b><u>SAR-3539</u></b> Computed tomography (CT) and Magnetic resonance imaging (MRI)	Introduction- Anesthesia- approach- Clinical applications and uses on skull, Abdomen and soft tissues.
<b><u>SAR-3540</u></b> Laser and its uses in Veterinary practice	Introduction- Anesthesia- Clinical applications on the tissues of different animals.
<b><u>SAR-3541</u></b> Advanced surgery and anesthesia	Laser surgery- Cryosurgery- Endoscopic surgery- Orthopedic surgery- Inhalation anesthesia.

## Department of Clinical Pathology

Code and name	Contents
<b><u>CLP-3275</u></b> Organ function tests and study of electrolytes and acid/base balance	Imbalances in the functions of the liver, kidneys and pancreas - the imbalance in the balance of salts and electrolytes and the determination of the amount of water in the body - the imbalance in the acid-base balance of body fluids.
<b><u>CLP-3276</u></b> Diagnosis of immune mediated blood diseases and hemostasis	The study of various immunological blood diseases and their diagnosis methods - blood diseases associated with defects in the clotting process and their diagnosis.
<b><u>CLP-3277</u></b> Diagnosis by cytological and clinical cytogenetic techniques	The study of cellular and biochemical changes of different body fluids and organs - cytogenetic changes of different body fluids and organs to diagnose mutations and some genetic diseases.
<b><u>CLP-3278</u></b> Clinical pathology of laboratory animals	Changes in blood parameters of experimental animals and methods of evaluation - Disruption in the functions of red and white blood cells and platelets - Cellular changes in bone marrow in experimental animals - Imbalance in the functions of the liver, kidneys, pancreas and various body fluids of experimental animals.
<b><u>CLP-3279</u></b> Clinical pathology of fish and poultry	Changes in blood parameters of birds and fish and methods of their evaluation - Imbalance in the functions of red and white blood cells in birds and fish - Imbalance in the functions of the liver, kidneys, pancreas and various body fluids in birds and fish.
<b><u>CLP-3280</u></b> Clinical pathology of wild animal and birds.	The study of various blood parameters and imbalance in the functions of red and white blood cells and platelets of wild animals and birds – the study of the marrow of wild animals and birds - study of organ functions and body fluids of wild animals and birds
<b><u>CLP-3281</u></b> Clinical pathology of pet animals	The study of various blood parameters and imbalance in the functions of red and white blood cells and platelets of domestic animals – the study of the marrow of domestic animals - study of organ functions and body fluids of domestic animals.
<b><u>CLP-3282</u></b> Diagnosis of hemopoietic neoplasia	Tumor markers and cytological examination of tumors (tissue and fluids).
<b><u>CLP-3283</u></b> Laboratory tests for diagnosis of endocrine disorders	The study of hormonal imbalances and methods of diagnosing them in the laboratory.
<b><u>CLP-3284</u></b> The study of body fluids, electrolytes and acid /base imbalance.	The study of the imbalance of body fluids, acid-base balance and electrolytes - evaluation of the results of samples in pathological cases.
<b><u>CLP-3285</u></b> Laboratory tests for evaluation of organ function tests	The study of the imbalance in the functions of various organs and body fluids.

## Department of Internal Medicine and Infectious Diseases

### 1- Infectious Diseases

Code and name	Content
<b><u>MID-3500</u></b> Infectious Diseases of Cattle	Study the viral, bacterial, parasitic and fungal diseases of cattle and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3501</u></b> Infectious Diseases of Sheep and goats	Study the viral, bacterial, parasitic and fungal diseases of sheep and goats and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3502</u></b> Infectious Diseases of Camels	Study the viral, bacterial, parasitic and fungal diseases of camels and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3503</u></b> Infectious Diseases of Equines	Study the viral, bacterial, parasitic and fungal diseases of equines and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3504</u></b> Infectious Diseases of Pets	Study the viral, bacterial, parasitic and fungal diseases of pets and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3505</u></b> Infectious Diseases of Buffaloes	Study the viral, bacterial, parasitic and fungal diseases of buffaloes and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3506</u></b> Infectious Diseases of Pigs	Study the viral, bacterial, parasitic and fungal diseases of pigs and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3507</u></b> Infectious Diseases of Newly born calves	Study the viral, bacterial, parasitic and fungal diseases of newly born calves and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3508</u></b> Infectious Diseases of Lab animals	Study the viral, bacterial, parasitic and fungal diseases of lab animals and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3509</u></b> Infectious Diseases of Wild animals	Study the viral, bacterial, parasitic and fungal diseases of wild animals and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3510</u></b> Exotic Infectious Diseases	Study the viral, bacterial, parasitic and fungal exotic diseases that recently appeared in Egypt and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3511</u></b> Infectious Diseases of Fattening cattle	Study the viral, bacterial, parasitic and fungal diseases of fattening cattle and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3512</u></b> Infectious Diseases of Dairy cattle	Study the viral, bacterial, parasitic and fungal diseases affecting dairy cattle and focusing on the methods of the diagnosis, the control and prevention
<b><u>MID-3513</u></b> Infectious Diseases causing abortion in farm animals	Study the viral, bacterial, parasitic and fungal diseases causing abortion in farm animals and focusing on the methods of the diagnosis, the control and prevention

<b><u>MID-3514</u></b> <b>Infectious Diseases of Skin</b>	<b>Study the viral, bacterial, parasitic and fungal diseases causing skin lesions and focusing on the methods of the diagnosis, the control and prevention</b>
<b><u>MID-3515</u></b> <b>Field vaccines against Infectious Diseases</b>	<b>Study the different types of vaccines used in Egypt for the control and prevention of the viral, bacterial, parasitic and fungal diseases that affecting different animal species and evaluation of these vaccines and the causes of the vaccination failure.</b>

## Department of Internal Medicine and Infectious Diseases

### 2- Internal Medicine

<b>Code and name</b>	<b>Contents</b>
<b><u>MID-3475</u> Internal Medicine of Cattle</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, udder, metabolic diseases, and deficiency diseases in cattle kept for milk or meet production.
<b><u>MID-3476</u> Internal Medicine of Sheep and Goat</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, udder, metabolic diseases, and deficiency diseases in sheep and goat.
<b><u>MID-3477</u> Internal Medicine of Camel</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, udder, metabolic diseases, and deficiency diseases and affections related to racing of camels.
<b><u>MID-3478</u> Internal Medicine of Equine</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, metabolic diseases, and deficiency diseases and affections related to racing or work of equine.
<b><u>MID-3479</u> Internal Medicine of Pet Animals</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, endocrine problems in pet animals.
<b><u>MID-3480</u> Internal Medicine of Wild an Zoo Animals</b>	Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, endocrine problems in free living and captured wild animals. Effect of management and medical care, in mammals, birds and reptiles.

<p><b><u>MID-3481</u></b>  <b>Internal Medicine of Pigs</b></p>	<p>Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, endocrine problems in pigs.</p>
<p><b><u>MID-3482</u></b>  <b>Internal Medicine of newly born animals</b></p>	<p>Academic and applied studies on examination, diagnosis and treatment of internal diseases and field problems of digestive, respiratory, urinary, cardiovascular, nervous, musculoskeletal, skin, sense organs, endocrine problems, medical care after birth and immune states of dams in foals, calves, kids, camel calves, puppies, kittens and other newly born animals</p>
<p><b><u>MID-3483</u></b>  <b>Sport Medicine</b></p>	<p>Academic and applied studies on evaluation of equine and racing camels' performance, causes of ill performance and exhaustion, regulation and rules of racing and detection of doping different therapies and in sports.</p>
<p><b><u>MID-3484</u></b>  <b>Emergency Medicine and Emergency Cases</b></p>	<p>Academic and applied studies on evaluation of emergency cases which need rapid interference and intensive care in different animals, different regimens for conservation of affected cases and therapies to rescue such cases.</p>
<p><b><u>MID-3485</u></b>  <b>Production Medicine</b></p>	<p>Academic and applied studies on carbohydrate, protein, fat, electrolytes, vitamins, minerals, trace elements metabolism, effect of pollutants, xenobiotics and their effect on animal production of meat, milk, hide and wool with application of recent diagnostic and therapeutic methods to improve animal production.</p>
<p><b><u>MID-3486</u></b>  <b>Fluid Therapy</b></p>	<p>Academic and applied studies on dehydration, shock, alterations related to body fluid losses, body electrolytes, and anemia. Acid- base imbalance and treatment with suitable fluid therapies, acidifiers, alkalizers, expanders, maintaining replacing fluids. Risks related to overload or deficit of fluids.</p>
<p><b><u>MID-3487</u></b>  <b>Diseases of Xenobiotic Pollution</b></p>	<p>Academic and applied studies on diseases related to pollution with different xenobiotics in soil, water, plant, animal tissues of that kept on borders of cities and beside factories. Detection of types and sources of xenobiotics and assessment of their level and methods of protection. Impact of consumption of polluted meet and milk on man health.</p>

## Department of Nutrition and Clinical Nutrition

Code and name	Content
<p><b><u>NCN-3125</u></b>  <b>Nutrition and clinical nutrition of cattle and buffaloes</b></p>	<p><b>Study of nutrient digestion in the rumen of ruminants Symptoms of malnutrition and nutrient requirements Metabolic disorders and methods of prevention in cattle and buffalo</b></p>
<p><b><u>NCN-3126</u></b>  <b>Nutrition and clinical nutrition of sheep and goats</b></p>	<p><b>Study of nutrient digestion in the rumen of sheep and goats Symptoms of malnutrition and nutrient requirements Metabolic diseases and methods of prevention in sheep and goats</b></p>
<p><b><u>NCN-3127</u></b>  <b>Nutrition and clinical nutrition of camels</b></p>	<p><b>Study of nutrient digestion in the rumen of camels Use of urea in feeding camels Symptoms of malnutrition and nutrient requirements Metabolic diseases and methods of prevention in camels</b></p>
<p><b><u>NCN-3128</u></b>  <b>Nutrition and clinical nutrition of equines</b></p>	<p><b>Study of nutrient digestion in horses Feed additives in horse feeding Detailed study of horse diseases related to nutrition and methods of prevention and control</b></p>
<p><b><u>NCN- 3129</u></b>  <b>Nutrition and clinical nutrition of fish and aquatic animals</b></p>	<p><b>Study of nutrient digestion in fish and other marine life Feed additives in fish feed and marine life under different farming conditions Detailed study of fish diseases related to nutrition and methods of prevention and control</b></p>
<p><b><u>NCN- 3130</u></b>  <b>Nutrition and mal-nutritional disorders of poultry</b></p>	<p><b>Study of nutrient digestion in poultry Nutrient requirements in (broilers, layers and breeders) Feed additives in different poultry diets Feed formulation for different types of poultry Detailed study of poultry diseases related to nutrition and methods of prevention and control</b></p>



<p><b><u>NCN-3131</u></b> <b>Clinical nutrition</b></p>	<p><b>The study of proper nutrition for farm animals to prevent metabolic disorders</b> <b>The use of different nutrients to support and treat contagious and non-contagious diseases or metabolic disorders</b></p>
<p><b><u>NCN- 3132</u></b> <b>Nutrition in relation to immunity and disease resistance</b></p>	<p><b>Study of optimum use of nutrients to preserve health and immunity in animals</b> <b>Study of metabolic diseases and how to prevent their occurrence by using proper nutrition for farm animals.</b></p>

## Department of Poultry Disease

Code and name	Content
<p><b><u>POD-3450</u></b>  <b>Bacterial diseases of birds</b></p>	<p>Study common bacterial diseases in farms Arab Republic of Egypt - Diagnosis Clinical and Pathology and various common - a bacterial disease etiology and pathogenesis of bacterial properties to choose the means of prevention - the study of the epidemiology of the disease (modes of transmission - how transmission) - Laboratory diagnosis of the causes of pathological bacterial various updated bacterial disease in birds and rabbits - to isolate and classify bacterial microbes that cause these diseases - methods of prevention and control of these diseases.</p>
<p><b><u>POD-3451</u></b>  <b>Viral diseases of birds</b></p>	<p>Study common viral diseases in the plantations of the Arab Republic of Egypt - Diagnosis Clinical and Pathology and various common - a viral disease etiology and pathogenesis of viral properties to choose the means of prevention - the study of the epidemiology of the disease (modes of transmission - how transmission) - Laboratory diagnosis of the causes of pathological viral various updated bacterial disease in birds and rabbits - to isolate and classify viral microbes that cause these diseases - methods of prevention and control of these diseases.</p>
<p><b><u>POD-3452</u></b>  <b>Fungal diseases and fungal poisoning in birds</b></p>	<p>The study of fungal diseases and poisoning Common innate farms Arab Republic of Egypt - Diagnosis Clinical and Pathology of fungal diseases, poisoning and various common fungal properties - etiology of fungal poisoning innate to choose the means of prevention - the study of the epidemiology of the disease (infection ways - how transmission) - diagnostics laboratory of the causes of pathological fungal updated various bacterial diseases in birds and rabbits - to isolate and classify fungal microbes that cause these diseases - to determine the level of mycotoxins in various types of poultry diets or components - methods of prevention and control of these diseases.</p>
<p><b><u>POD-3453</u></b>  <b>Parasitic diseases for the birds:</b></p>	<p>Study common parasitic on farms in the Arab Republic of Egypt diseases - Diagnosis Clinical and Pathology and various common - a parasitic disease etiology parasitic properties to choose the means of prevention - the study of the epidemiology of the disease (modes of transmission - how transmission) - Laboratory diagnosis of the causes of pathological parasitic various updated bacterial disease in birds and rabbits - to isolate and classify parasitic microbes that cause these diseases - methods of prevention and control of these diseases.</p>

<p><b>POD-3454</b>  <b>Nutritional deficiency in avian diseases:</b></p>	<p>Study common food deficiency diseases in the plantations of the Arab Republic of Egypt - Methods used to determine the bird needs of different breeding purposes of different food ingredients so pure herds of occurrence of such eating disorders - how to behave and control in the event of the occurrence of such pathological conditions caused by a lack of both in the basic components of the diets or the appropriate quantities for the purpose of education - to maintain poultry diets so that does not occur with changes of poor storage or ventilation and so on, leading to medical conditions or have the nutritional value of their ways - ways to use feed additives in poultry diets in order to avoid these additions interact with each other or conflict with some patients who infect birds and rabbits.</p>
<p><b>POD-3455</b>  <b>Wild and migratory bird diseases:</b></p>	<p>The study of common diseases in wild and migratory birds - Clinical and Pathology diagnosis of disease wild birds and various common and migratory - the characteristics of pathogens to choose the means of prevention - the study of the epidemiology of the disease (modes of transmission - how transmission) - diagnostics laboratory various pathological causes updated for these diseases - to isolate and classify microbes causing these diseases - the study of the role of these birds in the transfer of infectious diseases of poultry farms - methods of prevention and control of these diseases.</p>
<p><b>POD-3456</b>  <b>Rabbit disease:</b></p>	<p>The study of common diseases in rabbits - Diagnosis Clinical and Pathology of the disease and various common - rabbits etiology properties to choose the means of prevention - the study of the epidemiology of the disease (modes of transmission - how transmission) - Laboratory diagnosis of different pathological causes updated for these diseases - to isolate and classify microbes that cause these condition- the study of fertility problems and birth in rabbits - methods of prevention and control of these diseases.</p>

## Department of Parasitology

Code and Name	Contents
<p><b><u>PAR 3150</u></b> Clinical Parasitology</p>	<p><b>1 Methods of collection and examination of fresh and preserved samples namely; blood, feces, vomitus, milk, skin, biopsy specimens.</b></p> <p><b>2. Use of special techniques for a particular parasite specimens on the microscope or software mounted.</b></p> <p><b>Morphological description of some important parasites</b></p> <p><b>3- Idea about symptoms of some parasitic diseases.</b></p>
<p><b><u>PAR-3151</u></b> Parasites of Birds and Rabbits</p>	<p><b>Through theoretical and practical classes, the protozoal parasites, Arthropods and helminths infecting birds and rabbits will be study.</b></p> <p><b>Diagnosis and control methods for different Parasites</b></p>
<p><b><u>PAR-3152</u></b> Parasites of Farm animals</p>	<p><b>Through theoretical and practical classes, the protozoal parasites, Arthropods and helminths infecting different farm animal will be study.</b></p> <p><b>Diagnosis and control methods for different Parasites</b></p>
<p><b><u>PAR-3153</u></b> Laboratory diagnosis of Parasites</p>	<p><b>Studying how to collect samples from live and dead animals in addition to soil, water and ration. Also study how to preserve and prepare the samples for direct and indirect examination. Detailed study on the diagnostic stage of parasites and their identification methods.</b></p>
<p><b><u>PAR-3154</u></b> Veterinary entomology</p>	<p><b>Study on arthropods and their veterinary medical importance and effect on animals and human. Identification and biological studies of different parasitic arthropods of animals and birds. Also studying methods of biological and chemical control.</b></p>

## Department of Animal and Poultry Behavior and Management

<p><b>VHM-3350</b></p> <p><b>Animal Behavior and Environmental Pollution</b></p>	<p><b>Know the different sources of environmental pollution and their impacts and potential hazards on animal and human health and behavior.</b></p>
<p><b>VHM-3351</b></p> <p><b>Advanced Animal Management (Assessment of Management system in animal, poultry and fish farm)</b></p>	<p><b>Assess farm animals and fish farms based on the following: construction characteristics of the farm, steps of management, animal welfare assessment, social characteristics, productive performance, and risk factors recorded.</b></p>
<p><b>VHM-3352</b></p> <p><b>Behavior and Management of Cattle</b></p>	<p><b>Construct management plan for ruminant animal farms to achieve high performance (production and reproduction) - Recognize the different breed of cattle and buffaloes- Detail the important features of reproductive behavior of Cattle and Buffaloes- Give instructions in the principles of management practices during different stages of animal's life - Describe outlines of dairy cow herd annual management with emphasis on production and reproduction events and the essentials of feeding and housing systems.</b></p>
<p><b>VHM-3353</b></p> <p><b>Behavior and Management of Sheep and Goats.</b></p>	<p><b>Recognize the different breed of Sheep &amp; Goats - Provide an understanding of the behavioral, environmental and nutritional requirements which are necessary for the optimum management of sheep and Goats at various life stages. - Provide a basic understanding of ovine and caprine reproduction and breeding management. - Detail the important features of reproductive behavior of Sheep and goats. - Give instructions in the principles of management practices during different stages of animal's life.</b></p>
<p><b>VHM-3354</b></p> <p><b>Behavior and Management of Camel</b></p>	<p><b>Provide a basic information of environment and management that promote good health of camel. - Detail the important features of reproductive cycle in camel. - give instructions in the principles of management practices during different stages of animal's life.</b></p>
<p><b>VHM-3355</b></p> <p><b>Behavior and Management of Horse</b></p>	<p><b>Recognize the different breed of Horses. - Know the behavioral, environmental and nutritional requirements of Horse at different life stages. - Know basic equine reproductive data. -Detail the important features of reproductive behavior of Horses. - Know prophylactic measures commonly employed for effective health management of horses.</b></p>

<p><b>VHM-3356</b></p> <p><b>Behavior and Management of Dogs and Cats.</b></p>	<p><b>Know basic biological data of dogs and cats. - Aware of the diversity of uses of companion animals. - Give instructions in the principles of management practices during different stages of animal's life. - To understand and know dog/cat reproductive biology including behavioral aspects of the reproductive cycle and be able to advise on breeding/parturition management and contraception. - To know the common breeds and be aware of the common diseases that have a genetic component.</b></p>
<p><b>VHM-3357</b></p> <p><b>Behavior and Management of Experimental Animals and Rabbit</b></p>	<p><b>Construct management plan for different laboratory animals Which achieves high performance and fulfill the needs of animals. - Provide information on the standard requirements for the care of Laboratory animals.</b></p>
<p><b>VHM-3358</b></p> <p><b>Behavior and Management of Poultry and Turkey</b></p>	<p><b>knowledge about raising a flock of chickens and have a full understanding of all aspects of the poultry industry.</b></p>
<p><b>VHM-3360</b></p> <p><b>Behavior and Management of fish</b></p>	<p><b>Constructing management plan in fish farms which achieves high performance and fulfill the needs of fishes. Also, focus on all husbandry practices in order to put up a good management program.</b></p>
<p><b>VHM-3362</b></p> <p><b>Behavior and Management of Wild and Zoo Animals</b></p>	<p><b>The curriculum has a strong foundation in the biological, physical, and social sciences with the focus on solving current and future issues related to conservation and sustainability of wild animals and their habitats.</b></p>
<p><b>VHM-3363</b></p> <p><b>Experimental Design Measuring Behavior of Animal and Poultry</b></p>	<p><b>Comprehensive understanding the principles of measuring different behavioral patterns and the recording methods</b></p>
<p><b>VHM-3364</b></p> <p><b>Animal Welfare and Animal Rights</b></p>	<p><b>Understand the basic principles of biological needs and drives. - Recognize the concept of animal welfare and rights. Know animal alternatives and three Rs.</b></p>

## Department of Cytology and Histology

Code and name	Content
<p><b><u>CYH-3025</u></b></p> <p><b>Histological and Histochemical structure of circulatory and lymphatic system</b></p>	<p><b>Histological and Histochemical structure, functions of heart, arteries and veins in the body, illustration of importance or absence of some structures, lymphatic system and its contents of lymphatic vessels and capillaries, excretion of excretory substances from the body parts.</b></p>
<p><b><u>CYH-3026</u></b></p> <p><b>Histological and Histochemical structure of respiratory system</b></p>	<p><b>Histological and Histochemical structure of respiratory system components (nose, nasopharynx, pharynx, larynx, trachea, lungs)- structure-function correlations of these different structures in completion of respiratory process.</b></p>
<p><b><u>CYH-3027</u></b></p> <p><b>Histological and Histochemical structure of digestive system</b></p>	<p><b>Histological and Histochemical structures of digestive system from oral cavity to anus, associated digestive glands (liver, pancreas, salivary glands)- role of these components in food prehension and digestion to its initial forms, absorption of essential substances for body building and diseases resistance</b></p>
<p><b><u>CYH-3028</u></b></p> <p><b>Immune system and immunohistochemistry</b></p>	<p><b>Primary immune system (thymus and bone marrow) and secondary (spleen, lymph nodes, other lymphatic structures which spread in the body) in the body from histological and histochemical aspects- relationship between primary and secondary immune system -how the immune reactions essential for body protection happen.</b></p>
<p><b><u>CYH-3029</u></b></p> <p><b>Histological and Histochemical structure of urinary system</b></p>	<p><b>Histological and Histochemical structure of kidneys, ureters, urinary bladder, urethra in both males and females, illustration of suitability of this structure with the performance of these organs to its function in excretion of urine with its contents of excretory substances from the blood through the kidney.</b></p>
<p><b><u>CYH-3030</u></b></p> <p><b>Histological and Histochemical structure of genital system</b></p>	<p><b>Histological and Histochemical structure of all male genital system components (testes, epididymis, ductus deference, urethra, penis, associated glands) and female genital system (ovaries, cervix, uterus, ovarian tubes, vagina, vestibule) in different animals.</b></p>
<p><b><u>CYH-3031</u></b></p> <p><b>Histological and</b></p>	<p><b>Histological and Histochemical structure of glandular system (pituitary gland, thyroid gland, thymus gland, others) link statement of endocrine glands with each other, with nervous system, and with</b></p>

<b>Histochemical structure of endocrine glands</b>	<b>target tissues.</b>
<b><u>CYH-3032</u></b> <b>Histological and Histochemical structure of nervous system:</b>	<b>Histological and Histochemical structure of central and peripheral nervous systems, the role of nervous system in receiving different body sensations either external or internal, physiological connection of both systems to each other.</b>
<b><u>CYH-3033</u></b> <b>Histological and Histochemical structure of the skin and its associations</b>	<b>Histological and Histochemical structure of the skin, keratin formation, detailed study of skin associated glands (sweat glands, sebaceous glands associated with hair, udder or mammary glands, and others), hair follicles.</b>
<b><u>CYH-3034</u></b> <b>Fish histology</b>	<b>Study of microscopic structure for different body systems (digestive, respiratory, locomotory, urinary, genital....) in osseous and cartilaginous fishes with its chemical contents.</b>
<b><u>CYH-3035</u></b> <b>Bird histology</b>	<b>Histological structure of different body systems (respiratory, digestive, urinary, genital, immune systems ..... ) for birds and ostriches with its chemical contents.</b>
<b><u>CYH-3036</u></b> <b>Wild animals' histology</b>	<b>Histological and histochemical structure of different body systems (respiratory, digestive, urinary, genital, immune systems) for some wild animals, differences in structure and its suitability for ways of living.</b>



## Department of Aquatic Animal Medicine and Management

<b>Code and Name</b>	<b>Content</b>
<b>FDM 1160</b> <b>Fish diseases and management</b>	
<b>FDM 1161</b> <b>Crustacean diseases and management</b>	
<b>FDM 2160</b> <b>Advanced studies on Fish diseases and management</b>	
<b>FDM 2161</b> <b>Advanced studies on crustacean diseases and management</b>	
<b>FDM 3425</b> <b>Principles of aquaculture and health of fishes and crustaceans</b>	
<b>FDM 3426</b> <b>Bacterial and viral diseases of fishes</b>	
<b>FDM 3427</b> <b>Mycotic diseases of fishes</b>	
<b>FDM 3428</b> <b>Parasitic diseases of fishes</b>	
<b>FDM 3429</b> <b>Non-infectious diseases of fishes</b>	
<b>FDM 3430</b> <b>Biological indicators of fish diseases</b>	

<b>FDM 3431</b> <b>Comparative diagnosis of fish diseases in fish farms</b>	
<b>FDM 3432</b> <b>Epidemic fish diseases in fish farms</b>	
<b>FDM 3433</b> <b>clinical immunology and immunosuppressive diseases of fishes</b>	
<b>FDM 3434</b> <b>Diseases of crustacean and mollusks</b>	
<b>FDM 3435</b> <b>Disease problems of ornamental fishes</b>	
<b>FDM 3436</b> <b>Disease problems in Fish hatcheries</b>	
<b>FDM 3437</b> <b>Principles of disease control of infectious diseases of fishes and crustaceans and aquatic animals</b>	