Study Plan

School: School of Sciences and Technology
Degree: Integrated Master
Course: Veterinary Medicine (cód. 637)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12256I	Anatomy I	Veterinary Medicine	7	Semester	182
BIO12257I	Histology and Embryology I	Biological Sciences	6	Semester	156
QUI12258I	Biochemistry I	Biochemistry	6	Semester	156
FIS12259I	Biophysics	Physics	5	Semester	130
ZOO12260I	Exognosis	Animal Science	5	Semester	130
MVT12261I	Complementary Activities I	Animal Science	1	Semester	26

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12262I	Anatomy II	Veterinary Medicine	6	Semester	156
BIO12263I	Histology and Embryology II	Biological Sciences	6	Semester	156
QUI12264I	Biochemistry II	Biochemistry	5	Semester	130
FIT12265I	Basic Notions of Agriculture	Agronomy	4	Semester	104
MAT11462L	Statistics	Mathematics	6	Semester	156
INF12266I	Topics in Numeric Tools	Informatics	2	Semester	52
MVT12267I	Complementary Activities II	Veterinary Medicine	1	Semester	26

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12268I	Anatomy III	Veterinary Medicine	6	Semester	156
ZOO12269I	Genetics	Animal Science	4	Semester	104
ZOO12270I	Physiology I	Veterinary Medicine	6	Semester	156
MVT12271I	Veterinary Parasitology I	Veterinary Medicine	4	Semester	104
MVT12272I	Medical Microbiology and Immunology I	Veterinary Medicine	5	Semester	130
ZOO12273I	Applied Ethology and Welfare	Animal Science	4	Semester	104
MVT12274I	Complementary Activities III	Veterinary Medicine	1	Semester	26

2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12275I	Animal Breeding	Animal Science	4	Semester	104
ZOO12276I	Physiology II	Veterinary Medicine	6	Semester	156
MVT12277I	Veterinary Parasitology II	Veterinary Medicine	5	Semester	130
MVT12278I	Medical Microbiology and Immunology II	Veterinary Medicine	5	Semester	130
MVT12279I	General Pathology	Veterinary Medicine	5	Semester	130
MVT12280I	Epidemiology	Veterinary Medicine	4	Semester	104
MVT12281I	Complementary Activities IV	Veterinary Medicine	1	Semester	26

3rd Year - 5th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12282I	Pathologic Anatomy I	Veterinary Medicine	5.5	Semester	143
CMS12283I	Pharmacology and Toxicology I	Veterinary Medicine	5	Semester	130
ZOO12284I	Principles of Animal Nutrition	Animal Science	6	Semester	156
MVT12285I	Medical Semiology I	Veterinary Medicine	5.5	Semester	143
MVT12286I	Anaesthesiology	Veterinary Medicine	5	Semester	130
MVT12287I	Imaging	Veterinary Medicine	3	Semester	78

3rd Year - 6th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12288I	Pathologic Anatomy II	Veterinary Medicine	5.5	Semester	143
CMS12289I	Pharmacology and Toxicology II	Veterinary Medicine	6	Semester	156
ZOO12290I	Food and Animal Diet	Animal Science	6	Semester	156
MVT12291I	Medical Semiology II	Veterinary Medicine	5.5	Semester	143
MVT01465I	Hospital Activities I	Veterinary Medicine	2	Semester	52
MVT12292I	Surgery Semiology and Operating Techniques	Veterinary Medicine	5	Semester	130

4th Year - 7th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12293I	Animal Reproduction	Veterinary Medicine	5	Semester	130
MVT12294I	Clinical Surgery and Pathology I	Veterinary Medicine	6	Semester	156
MVT12295I	Pathology and Clinic of Infectious Diseases I	Veterinary Medicine	5	Semester	130

4th Year - 7th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12296I	Pathology and Clinic of Parasitic Diseases I	Veterinary Medicine	4	Semester	104
ZOO12297I	Animal Production I	Animal Science	5	Semester	130
MVT12298I	Deontology	Veterinary Medicine	3	Semester	78
MVT01596I	Hospital Activities II	Veterinary Medicine	2	Semester	52

4th Year - 8th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12299I	Animal Production II	Animal Science	5	Semester	130
MVT12300I	Andrology, Gynaecology and Obstetrics	Veterinary Medicine	5	Semester	130
MVT12301I	Clinical Surgery and Pathology II	Veterinary Medicine	6	Semester	156
MVT12302I	Pathology and Clinic of Infectious Diseases II	Veterinary Medicine	5	Semester	130
MVT12303I	Pathology and Clinic of Parasitic Diseases II	Veterinary Medicine	4	Semester	104
MVT01597I	Hospital Activities III	Veterinary Medicine	2	Semester	52

Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12316I	Aquaculture	Animal Science	3	Semester	78
BIO12318I	Toxic Plants Biology	Biological Sciences	3	Semester	78
ZOO12319I	Animal Production in Tropical and Subtropical Regions	Animal Science	3	Semester	78
ZOO12320I	Ethology Applied to Domestic Carnivores	Animal Science	3	Semester	78
MVT12321I	Pathology and Clinic of Wild Species	Veterinary Medicine	3	Semester	78
MVT12322I	Emergency Medicine and Intensive Care in Company Animals	Veterinary Medicine	3	Semester	78
MVT12323I	Animal Models in Research	Veterinary Medicine	3	Semester	78

5th Year - 9th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12304I	Pathology and Clinic of Livestock Species I	Veterinary Medicine	2	Semester	52
MVT12305I	Pathology and clinical practice of horses I	Veterinary Medicine	3	Semester	78
ZOO12306I	Animal Products Technology I	Food Engineering	5	Semester	130
MVT12307I	Sanitary Inspection I	Veterinary Medicine	5	Semester	130
MVT12308I	Hygiene and Public Health	Veterinary Medicine	4	Semester	104

5th Year - 9th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12309I	Pathology and Clinic of Companion Animals I	Veterinary Medicine	5	Semester	130
ECN00498I	Economics and Management	Economy	4	Semester	104
MVT01598I	Hospital Activities IV	Veterinary Medicine	2	Semester	52

5th Year - 10th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12310I	Pathology and Clinic of Livestock Species II	Veterinary Medicine	2.5	Semester	65
MVT12311I	Pathology and clinical practice of horses II	Veterinary Medicine	2.5	Semester	65
ZOO12312I	Animal Products Technology II	Food Engineering	5	Semester	130
MVT12313I	Sanitary Inspection II	Veterinary Medicine	5	Semester	130
MVT12314I	Preventive Medicine and Public Health	Veterinary Medicine	5	Semester	130
MVT12315I	Pathology and Clinic of Companion Animals II	Veterinary Medicine	5	Semester	130
MVT01599I	Hospital Activities V	Veterinary Medicine	2	Semester	52

Options

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
ZOO12316I	Aquaculture	Animal Science	3	Semester	78
BIO12318I	Toxic Plants Biology	Biological Sciences	3	Semester	78
ZOO12319I	Animal Production in Tropical and Subtropical Regions	Animal Science	3	Semester	78
ZOO12320I	Ethology Applied to Domestic Carnivores	Animal Science	3	Semester	78
MVT12321I	Pathology and Clinic of Wild Species	Veterinary Medicine	3	Semester	78
MVT12322I	Emergency Medicine and Intensive Care in Company Animals	Veterinary Medicine	3	Semester	78
MVT12323I	Animal Models in Research	Veterinary Medicine	3	Semester	78

6th Year - 11th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12317I	Curricular Internship	Veterinary Medicine	30	Semester	780

6th Year - 12st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
MVT12317I	* Curricular Internship	Veterinary Medicine	30	Semester	780

Conditions for obtaining the Degree:

Program Contents

Back

Anatomy I (ZOO12256I)

Domestic Mammals: Introduction to Anatomy. Anatomical nomenclature. Concepts of Symmetry. Osteology: morphostructural features of bones. Arthrology: characteristics and classification of the joints. Axial skeleton: regions – composition. Joint systems and ligaments of the rachis. Chest skeleton: Ribs, costal cartilages and sternum. Joint systems. Thoracic Girth and limb: bones and joints. Pelvic girdle and limb: bones and joints. Skull skeleton; jaw and hyoid skeleton. A comparative study in domestic animals. Comparative myology of the domestic animal species: Basic concepts the miology; generalaties, classification of muscles; muscle attachments - tendons, fascia, fascias, synovial bags; tendon sheaths; vaginal synovial. Morphology, insertions and actions of major groups of skeletal muscles of the head, neck, chest and abdominal wall and limbs. Muscles and tendons of the distal hind limb of the horse.

Back

Histology and Embryology I (BIO12257I)

Theoretical:

1. Introduction to the study of embryology and animal histology
2. Morphological and biological determinants of embryonic development of amphibians, birds and mammals.

3 General Histology: the four basic tissues - embryonic origin and morpho-functional characteristics of animal tissues; morpho-functional analysis of epithelial, connective, muscular and nervous tissues.

Practical

1. Methods and techniques used in embryology and histology.
2. Observation of histological slides containing successive stages of embryonic development of amphibians, birds and mammals.
3. Microscopic observation and diagnosis of various types of epithelial muscle, connective, blood, and nervous tissues from mammals, birds, amphibians and fish.

4 Implementation of the various steps of the routine technique for light microscopy.
5 Staining of paraffin-embedded sections using hematoxylin-eosin, trichrome and PAS.

6. Performing the Streptavidin-biotin-peroxidase technique.
7. Micrometry.

Back

Biochemistry I (QUI12258I)

1. The scope of Biochemistry.
2. The water as life medium support.
3. Biological buffers systems. Preparation of buffers solutions.
4. Nomenclature, structure, reactivity of carbon hydrates lipids, isoprenoids, aminoacids, peptides, polipeptides, proteins and nucleic acids. Peptides, polypeptides and nucleic acids sequencing.
5. HDL, LDL, VLDL e chylomicron lipoproteins
6. Enzymes, EC classification. Equation of Michaelis-Menten. Mechanisms of reaction. Metabolic regulators. Inhibitors. Alosterie and cooperativity. Determination of enzyme activities. Ribozymes.
7. Coenzymes and vitamins.
8. Structure and proprieties of biological membranes.

Back

Biophysics (FIS12259I)

Mechanics: movement and Newton's laws, ork and energy, rotational movement.

Physics of continuous media: density, elasticity, and mechanics of fluids.

Thermodynamics: temperature, heat, expansion, heat transfer, diffusion, thermoregulation.

Waves physics: mechanical waves, sound and the bioacoustics of the ear, ultrasonic waves and echolocalization.

Electricity: the electric field, the electric potential of cellular membranes, electric currents, conduction through nerve cells, physiological effects of currents.

Light: the nature of light, the microscope, biophysics of vision.

Física atómica e nuclear: nature of the atom, the electron microscope, X-rays and Cat scanners, lasers, radioactivity and radiation therapy, the biological effects of radiation, and magnetic resonance imaging.

Back

Exognosis (ZOO12260I)

Lectures: Specific livestock language and terms used in Exognósia.
The exterior, mechanics, the evolution of teeth and age determination by teeth in horses.
Legislation, regulations and documentation necessary for identification, registration and transit of horses.
Ditto for Cattle, Sheep, Goats, Pigs, Dogs and Cats.
Practical classes: E-search of legislation and regulations.
Restrain and presentation of animals for observation / outline diagramme / judging, under the objectives of the course.
Age determination by teeth and horns in the various livestock and companion species.
Handling identification and transit documents of different species under study.
Study visits to seize the opportunity to observe/participate in activities / acts of management ... in the discipline (branding, fairs / competitions of farm animal species, dogs and cats ..., identity verification and judging / evaluation at fairs, auctions, sport events etc.).

Back

Complementary Activities I (MVT12261I)

Activities at the Veterinary Hospital:
-Cleaning of animal cages, following ongoing treatments, feeding and daily hygiene, etc.
Activities in the farm in Herdade da Mitra:
-Milking, cleaning stalls, sheepfold, stables, etc.. Help with animal treatments of the farm.

Back

Anatomy II (ZOO12262I)

Comparative splancnology: digestive (and accessory glands), respiratory, urinary and male and female genital systems.
Angiology: general and placental circulation. Heart: conformation; attachment means; coronary circulation. Large aa. emerging from the heart. Pulmonary circulation. Aortic arch, braquicefalic trunk and thoracic aorta: parietal and visceral branches; bicarotid trunk. Abdominal aorta and collaterals; arterial supply of the pelvic cavity; internal and external iliac aa. and collaterals Venous system: cranial cava v. and its roots, thoracic cavity vv.; jugular vein and its tributaries; azygos v.; caudal cava v.; portal v.; internal and external iliac vv.;
Lymphatic system: constitution; lymph collectors trunks; regional lymph nodes and their areas of drainage. Lymphoid organs: spleen and thymus. Organs of the endocrine system

Back

Histology and Embryology II (BIO12263I)

Theoretical: Morpho-functional study and histogenesis of the major organs and systems that constitute the body of domestic vertebrates and other species of veterinary interest. Histology of body membranes and cavities. Cardiovascular system. Immune system and lymphatic organs. Integumentary system: skin and appendages. Muscular-skeletal system. Digestive system. Respiratory system. Urinary system. Male genital system. Female genital system. Endocrine system. Nervous system and sense organs.

Practical: Observation of histological sections through light microscopy, of the various organs of the different systems studied in lectures. Reading, analysis and discussion of research papers. Conducting a small work based on slides and/or research paper.

Back

Biochemistry II (QUI12264I)

1. Bioenergetic.
2. The main metabolic pathways, stequiometry, control and energetic.
3. Carbohydrates Metabolism. Pasteur effect.
4. Pyruvate oxidation.
5. Citrate Cycle.
6. Glyoxylate Cycle.
7. Penthoses- Phosphate pathway, oxidant and non-oxidant phases.
8. Photosynthesis.
9. Gluconeogenesis pathway.
10. Glycogen metabolism.
11. Lipids metabolism, digest, absorption, activation and control of fatty acids oxidation.
12. Fatty acids biosynthesis, elongation and unsaturation.
13. Cholesterol, steroid hormones and biliar acids metabolism.
14. Eicosanóids metabolisms.
15. Urea Cycle.
16. Hormonal regulation of metabolism.
17. Metabolism of nucleic acids, replication, repair and recombination. Transcription, posttranscriptional regulation and translation.

Back

Basic Notions of Agriculture (FIT12265I)

The climate and soil; crops; pastures; forages and conservation methods; crop rotations; agricultural machinery used in installing and harvesting of different cultures, particularly in forages; forests and biodiversity.

Back

Statistics (MAT11462L)

1. Descriptive Statistics
2. Basic Probability Notions
3. Conditional Probability and Independence
4. Discrete and Continuous Random Variables
5. The Most Important Families of Discrete and Continuous Probabilities Distributions
6. Point and Interval Estimation
7. Hypothesis testing
8. Analysis of Variance (one-way)
9. Non-parametric Tests
10. Simple Linear Regression

Use of statistical software.

Back

Topics in Numeric Tools (INF12266I)

1. Fundamentals of spreadsheet environment
1. Main features
2. Main areas of application
3. Spreadsheet organization
4. Data integration
5. Using application's help system

2. Worksheet organization
1. Worksheet, cell and range name management
2. Insert, move, copy, and delete cells, rows and columns
3. Cell and range reference
4. Range definition

3. Formulas and Functions
1. Operators and conditions
2. Formulas classes
3. Worksheet functions
4. Natural language formulas
5. Functions types

4. Charts
1. Creation
2. Formatting and modifying charts
3. Work with embedded charts

5. Business intelligence and PivotTables
1. Data analysis
2. Create, modify and format pivot table reports

Back

Complementary Activities II (MVT12267I)

Attending activities at the University veterinary hospital
Attending activities related to several animal production systems existing at Mitra farm.

Back

Anatomy III (ZOO12268I)

Irrigation of the brain and spinal cord. Internal carotid a.; cerebrospinal circulation; external carotid a.; jugular vein and tributaries. Axillar a. and collaterals; irrigation of the distal thoracic and pelvic limbs. Venous drainage of the thoracic and pelvic limbs. Lymphatic drainage of the thoracic and pelvic limbs. Lymph nodes of the limbs.
Nervous system: development and morphology of the CNS (brain stem, spinal cord and brain hemispheres). Brain and spinal cord meninges. Ventricular system and cerebrospinal fluid. Morphology of the peripheral nervous system. Cranial and spinal nerves. Brachial and lumbosacral plexus; Innervation of the thoracic and pelvic limbs; Autonomic nervous system;
Anatomy of the visual, auditory, vestibular and olfactory systems.
Anatomy of the domestic birds, reptiles and fish: external anatomy, osteology and splanchnology - anatomical characteristics with clinical and zootechnical interest.

Back

Genetics (ZOO12269I)

1-Population genetics:
1.1-Gene and genotype Frequencies.
1.2-Factors influencing gene and genotype frequencies.
1.3. Parameters of a population at equilibrium.
1.4-genetic Variance.
1.5-Detecting carriers of recessive genes.
2-Simgle Genes in animal breeding.
3-Chromosomes and chromosomal abnormalities.
4-Inbreeding:
4.1-Inbreeding to the level of the individual and of a population.
4.2 coefficient of inbreeding.
4.3-Benefits and drawbacks of inbreeding.
4.4-Inbreeding and selection.
4.5-Maintenance of genetic variability.
5-Molecular genetics:
5.1-Importance and applications of molecular genetics.
5.2-DNA Replication.
5.3 -Gene expression. Transcription and translation. The genetic code.
5.4-Genetic mutations.
5.5-Control of gene expression. Promoters.
6-Genetic engineering:
6.1-Cloning genes.
6.2-DNA Amplification by PCR. Sequencing of genomes.
6.3-Transgenic Organisms. Genetic therapy.
7. Conservation Genetics.

Back

Physiology I (ZOO12270I)

1. Introduction to the General Physiology. The cellular basis of medical Physiology. Homeostasis.
2. Neurophysiology. Physiology of nerve cell. Synaptic and junctional transmission. Glia. Physiology of muscle cell. Sense organs and receptors. Reflexes. Cutaneous, deep and visceral sensation. The senses: vision, hearing and equilibrium, smell and taste. Control of posture and movement. The autonomic nervous system. Central regulation of visceral function. Higher functions of nervous system.
3. Endocrinology Hormones and mechanisms of hormonal action. Regulation mechanisms of hormonal secretion. Hypothalamic function. Anterior and posterior pituitary secretion. The pineal gland. The thyroid and parathyroid glands. The adrenal medulla and cortex. Endocrine functions of the pancreas. Prostaglandins. Endocrine function of the kidneys, heart and adipose tissue.
4. Male and female reproductive function. Pregnancy and Lactation

Back

Veterinary Parasitology I (MVT12271I)

Theoretical: the phenomenon of parasitism, definition of parasite, parasitic specificity and its relationship with the hosts, types of parasitism, biological cycles, host types, access roads, and output dissemination of parasites, reactions of the host organism to parasite, parasitic adaptation, survival strategies of parasitic populations. Taxonomy and Systematics.
Introduction to Helminthology. Study on speciality of parasites representatives of families Nematoda, Cestoda and Trematoda Classes.

Practice: methods of collection, preservation and processing laboratory for identification of parasitic forms present in samples of blood, stool, urine and environment. Laboratory diagnosis.

Back

Medical Microbiology and Immunology I (MVT12272I)

1 - Estrutura bacteriana. Estruturas externas e estruturas internas
2 - Nutrição bacteriana: Nutrientes essenciais. Condições físicoquímicas requeridas para o crescimento bacteriano.
3 - Reprodução bacteriana e crescimento. Definição de crescimento. Natureza e expressão matemática do crescimento
4 - Fermentação. Tipos. Bioquímica das fermentações.
5 - Genética bacteriana. Mutações. Tipos de mutação. Despiste de mutantes. Selecção e adaptação. Agentes mutagénicos. Engenharia genética: considerações gerais.
7 - Antibióticos e outros agentes quimioterápicos. – Bases moleculares do mecanismo de acção dos antibióticos.
8 – Descrição de géneros bacterianos com interesse clínico.
8 - Fungos. Conceito e características gerais: - Ecologia. - Caracteres morfológicos e estruturais. - Metabolismo e requerimentos nutricionais. - Modelos de reprodução. - Taxonomia. – Sensibilidade dos fungos aos agentes antimicrobianos. – Importância infecciosa e industrial.

Back

Applied Ethology and Welfare (ZOO12273I)

Theoretical-practical lectures: The program of the course is similar to the approach contained in the chapters of the textbook (Jensen).

Part 1 Basics of Animal Behavior
1. The study of animal behavior and their applications;
2. Beavior Genetics, Evolution and Domestication;
3. Behavior and Physiology;
4. Motivation and the Organization of Behavior;
5. Learning and cognition;
6. Social and Reproductive Behavior;
7. Abnormal behavior, stress and welfare;
8. Human-animal relations.

Part 2 Species-Specific Behavior of some important domestic animals
9.Behavior of fowl and other domesticared birds;
10. Behavior of Horses;
11. Behavior of Cattle;
12. Behaviour of Sheep and Goats;
13. Behavior of Pigs;
14. Behavior of Dogs;
15. Behavior of Cats;
16. Behavior of laboratory mice and rats.

Back

Complementary Activities III (MVT12274I)

Follow-up of hospital and experimental farm activities under the supervision of clinical staff a, teachers and tutorial support of the responsible.

Back

Animal Breeding (ZOO12275I)

1. Animal breeding;
1.1. Genes in population;
1.2. Simply-inherited and polygenic traits;
2. Quantitative genetics;
2.1. Selection;
2.1.2. Heritability and repeatability;
2.1.3. Factors affecting the rate of genetic change;
2.1.4. Genetic prediction;
2.1.5. Large-scale genetic evaluation;
2.1.6. Correlated response to selection;
2.1.7. Multiple-trait selection;
3. Mating systems;
3.1. Matting systems for simply inherited traits;
3.1.2. Mating strategies based on animal performance: random and assortative mating;
3.1.3. Mating strategies based on pedigree relationship: inbreeding and outbreeding.
4. Crossbreeding;
4.1. Crossbreeding systems.
5. Biotechnology in animal breeding and on the preservation of endangered domestic livestock breeds

Back

Physiology II (ZOO12276I)

1. Blood and cardiovascular system.
1.1. Blood: components, functions and hemostasis.
1.2 The Immune system: nonspecific and specific defenses.
1.3. The heartbeat and cardiac output.
1.4. Dynamics of blood and lymph flow.
1.5. Cardiovascular regulatory mechanisms.
2. Respiration.
2.1. Pulmonar ventilation and mechanics of respiration.
2.2. Gas transport and exchange.
2.3. The regulation of respiratory activity.
3. The gastrointestinal function.
3.1. The enzymatic and microbial digestion.
3.2. Absorption.
3.3. The regulation of gastrointestinal function.
4. The urinary system: the renal function.
4.1. Formation and excretion of urine.
4.2. Diuresis and its regulation.
5. The regulation of body fluids, electrolytes and acid-base balance.
6. The regulation of body temperature.

Back

Veterinary Parasitology II (MVT12277I)

Theoretical:
parasitic specificity and their relationship with the host; parasitic adaptation, types of parasitism, biological cycles, host types, access roads, and output dissemination of parasites; pre-patent and patent and reactions of the host organism to parasite; Taxonomy and Systematics.
Study on speciality of Arthropoda, Insecta and Protozoa.

Study:
Methods of collection, conservation and laboratory processing for identification of parasitic forms present in samples of skin scraping, feces, and peripheral blood. Execution of blood smears and its coloration to parasitic forms search presents.

Practice:
methods of collection, preservation and processing laboratory for identification of parasitic forms present in samples of blood, stool, urine and environment. Laboratory diagnosis.

Back

Medical Microbiology and Immunology II (MVT12278I)

- Virus: definition; methods for studying; chemical composition; nucleic acids structure and replication;
- Basic Immunology
- The role of immune system: the antibody and cellular response
- Histocompatibility.
- Immunoprofilaxy and seroprevention

Back

General Pathology (MVT12279I)

THEORICAL:
Cell pathology: celular lesion and necrosis; Defence mechanisms and inflammation: defence mechnisma of tissues and organs, inflammation and granuloma; Hemodynamic perturbations: Thrombosis. Embolism, Infarct and shock; Metabolism pathology: lipids metabolism and its anomalies, sugars metabolism alterations, proteins metabolism perturbations, Calcium and pigments metabolism alterations. Cell multiplication and differentiation pathology (hyperplasia, atrophy, metaplasia, displasia and anaplasia). Oncology
PRACTICAL:
Macroscopic lesions observation in different organs; Specific dyes used in histopathology Immunohistochemistry; Observation of histopathological preparations related to the theorical lectures.

Back

Epidemiology (MVT12280I)

Interdependence Agent-Host Environment
Study of distribution and determinants of health and disease in populations.
Incidence and prevalence. Other measures used in epidemiology. Notion of animals / time point. Incidence rates (incidence density)
Types of studies in epidemiology: Case Studies, Cross-Sectional, Case-Control, cohort and Experimental.
Measures of association. Assessment of risk.
Concepts and criteria of causality. Chance, bias and confounding.
Sampling: Basic concepts. Surveys. Construction of a questionnaire.
Direct and indirect standardization. Interpretation of the values resulting from standardization
The validity of a diagnostic method. Sensitivity and specificity. Predictive values of the results of a diagnostic test.
Surveillance and monitoring. Prevention, control and eradication

Back

Complementary Activities IV (MVT12281I)

Os alunos ficam com capacidade suficiente para processar amostras clínicas/alimentares e assim identificar a causa das doenças.

Back

Pathologic Anatomy I (MVT12282I)

Theoretical:
Subject I – Pathology of the Alimentary System, Liver and Biliary System. Pathology of the Exocrine Pancreas
Subject II – Pathology of the Respiratory System
Subject III – Pathology of the Cardiovascular System
Subject IV – Pathology of the Urinary System
Subject V – Pathology of the Peritoneum and Retroperitoneum
Practical:
I – Methodology and techniques to study lesions;
II - Necropsy technique in domestic mammals and birds;
III – Interpretation and characterization of lesions in organs fixed in 10% buffered formaldeid ;
IV – Interpretation of microscopic lesions in tissues fragments collected in necropsies.

Back

Pharmacology and Toxicology I (CMS12283I)

General principles of pharmacology and toxicology.
Origin, chemical nature and nomenclature. Dosage forms.
Classification, preparation and properties. Legislation and classification of medicinal products for veterinary use.
Routes of administration at various animal species and absorption of drugs. Distribution, biotransformation and excretion
Pharmacokinetic models. Mechanisms of action and effects of drugs. Drug-receptor interactions
Toxic effects and mechanisms of toxicity. Natural and synthetic toxic
Pharmacology, Toxicology, Public Health and Animal Health
Principles of Analytical Toxicology and Food Toxicology. Adverse reactions and toxicity of drugs and their residues.
Pharmacovigilance
Principles of Clinical Toxicology
Regulating the use and prescription of pharmaceutical formulations for veterinary use in the teaching of pharmacology and toxicology
Antiparasitic, antimicrobial and antiviral chemotherapy
Antineoplastic chemotherapy, immunomodulation and gene therapy

Back

Principles of Animal Nutrition (ZOO12284I)

Class sessions: There is some overlap between the class material and the first 16 chapters of the text book.
1. The components of food: water, carbohydrates, fiber, lipids, protein.
2. The digestion and metabolism of nutrients;
3. Quantifying the nutrient value of foods: digestibility, energy and protein values;
4. The nutrient requirements of animals;
5. Evaluation of foods: systems for expressing the energy and protein content of foods
6. Pet Nutrition. What does it mean to be a carnivore? Importance of breed, age, and level of activty

Back

Medical Semiology I (MVT12285I)

Theoretical:
1. Introduction to Medical Semiotics:Clinical examination methodology; diagnostic, prognostic and clinical trends; clinical thermometry and fever.
2. Special Semiology:Digestive system; hepatobiliary system; pancreas.
Practical:
Physical Examination:
1. General physical examination; direct and indirect methods; temperature measurement and registration;
2. Digestive system examination – physical and complementary methods (simple and contrast radiology; echography). Laboratory Tests:
1. Collection, identification and sample preparation;
2. Principles of clinical refractometry and spectroscopy for determination of total serologic and urinary protein;
3. Digestive and absorption tests; search of blood in feces;
4. Analysis of rumen contents;
5. Hepatic laboratorial semiotics (evaluation of liver function by adaptation of the Macdonald's test – excretion of bromosulphalein – BSP); hepatic enzymology;
6. Endocrine pancreas laboratory semiotics (glucose tolerance test).

Back

Anaesthesiology (MVT12286I)

A- Theoretical classes
I. Introduction to anaesthesiology
II. Pre-anaesthetic care:
III. Fluid therapy and acid-base control
IV. Local anaesthesia
V. Pre-anaesthetic medication:
VI. General anaesthesia
VII. Intra-anaesthetic care
VIII. General anaesthesia on different species:
1. Horses.
2. Ruminants.
3. Pigs.
4. Small animals.
IX. Special anaesthesia
1. Anaesthesia in young and old animals.
2. Anaesthesia and surgery of the
a) gastrointestinal system,
b) nervous,
c) cardiopulmonary,
d) endocrine,
e) urinary systems.
3. Anaesthesia during pregnancy.
4. Euthanasia.
B – Practical classes
I. Animal restraint:
1. Physical methods.
2. Chemical/drug usage methods;
II. Drug administration;
III. Local and regional anaesthesia.
1. Large animal and equine.
2. Small animal;
IV. Equipment for general anaesthesia
VI. General anaesthesia
1. Injectable anaesthetics
2. Inhalant anaesthetics.

Back

Imaging (MVT12287I)

RADIOLOGY:
Properties of X-ray Radiation. Corpuscular radiation, electromagnetic radiation. Production of X-ray Accessories. Technical defects: Amplification, distortion, definition, contrast, exposure defects. Radiobiology and radiation protection: Mechanisms of action and cellular responses to radiation. Protection against X-ray Interpretation of radiographic images. Positions and projections. Contrast media. Radiology of the apendicullar system head and spine Radiographic study of the digestive system, thoracic cavity and genito-urinary system.
Ultrasound:
Physical fundamentals. Abdominal ultrasound in small animals: ultrasonographic image artifacts. Monitoring of pregnancy by ultrasound: Echocardiography in small animals. Ultrasound of equine tendons.
Endoscopy: Flexible and Rigid. Digestive and respiratory system.
Computerized axial tomography. MRI and Nuclear Medicine Principles and concepts

Back

Pathologic Anatomy II (MVT12288I)

Theoretical:
Subject I – Pathology of the Hemopoietic organs
Subject II – Pathology of the Endocrine Glands
Subject III – Pathology of the Female Genital System entral Nervous System
Subject IV – Pathology of the Male Genital System
Subject V – Pathology of the Central Nervous System
Subject VI – Pathology of the Integumentary System
Practical:
I – Methodology and techniques to study lesions;
II - Necropsy technique in domestic mammals and birds;
III – Interpretation and characterization of lesions in organs fixed in 10% buffered formaldeid ;
IV – Interpretation of microscopic lesions in tissues fragments collected in necropsies.

Back

Pharmacology and Toxicology II (CMS12289I)

Pharmacology of the nervous system.
Pharmacology and cellular mediators of inflammation.
Pharmacology of the cardiovascular system.
Pharmacology of renal function and fluid-electrostatic balance.
Pharmacology of blood and its components.
Pharmacology of the respiratory, digestive and endocrine systems.
Preparation and handling of drugs and evaluation of their effects.
Routes of administration at various animal species
Regulating the use and prescription of pharmaceutical formulations for veterinary use in the teaching of pharmacology
Legislation and guidelines for the responsible use of medicines.

Back

Food and Animal Diet (ZOO12290I)

THEORY:
Influence of animal nutrition in livestock production
Study of different feeds and their importance in animal feeding: fibrous feeds: Pastures and forages, hays and artificially dried forages, silages, straws, energy concentrates: Cereal grains and cereal by-products, roots and tubers, oils and fats, protein concentrates: oilseed cakes and meals, leguminous seeds, animal protein concentrates, amino acids, non-protein compounds, macrominerals sources, additives.
Compound feeds: Classification and characteristics. Dietetic and medicated feeds.
Nutrition and feeding of pig, poultry, equine, companion animal, dairy and meat cattle.
PRATICALS:
Introduction to the formulation of compound feeds.
Techniques for formulation of compound feeds: Pearson Square. Replacement technique.
Systems of equations, matrices / linear programming.
Formulation of compound feeds for poultry and pigs: Manually. Computer program.
Formulation of diets for dairy and beef cattle: Manually, Computer program.

Back

Medical Semiology II (MVT12291I)

Theoretical: Special semiology - respiratory system; cardiovascular system; urinary system; dermatological examination; ophthalmic examination; neurological examination.
Practical: hysical Examination - Respiratory system examination by physical and complementary methods; cardiovascular system examination by physical and complementary methods; urinary system examination by physical and complementary methods; Dermatological examination – physical and complementary methods; Ophthalmologic examination; neurological examination.
Laboratory Tests - Analysis of thoracic and peritoneal effusions; haematology – complete blood count; erythrocyte sedimentation rate; blood cell morphology; evaluation of blood clotting time and haemorrhage time; urinalysis

Back

Hospital Activities I (MVT01465I)

Back

Surgery Semiology and Operating Techniques (MVT12292I)

Theoretical:
I. Terminology.
II. Sutures. Surgical knots. Ligatures. Suture patterns
III. Methods of tissue restoring. Suture materials and sutures.
IV. Trauma / injury. Grafts.
V. Inflammation, healing and tissue regeneration
VI. Haemorrhage and haemostasis
VII. Surgical planning
VIII. Preoperative evaluation of the patient. Monitoring of the patient.
IX. Shock syndrome
X. Blood transfusion Compatibility tests/matches.
XI. Introduction to osteosynthesis. Fracture classification. Orthopaedic surgical instruments.
XII. Introduction to non-invasive surgery.Techniques of endoscopies.
Practical classes:
I. Operating room behaviour
II. Tissue manipulation and surgical instruments
III. Practicing of the main sutures
IV. Operatives techniques: nodulectomy, exploratory laparotomy, ovariohysterectomy (feline), orchiectomy (feline and canine), esplenectomy, enterotomy and enterectomy. Force-feeding techniques – oro/naso gastric intubation, esophagostomy, gastrostomy.
V. Bandaging techniques.

Back

Animal Reproduction (MVT12293I)

1-Etymology: synonymy and definition. Importance and UC's relations with other related disciplines.
2 –Embryonic development of sex and gender differentiation. Concepts of genetic sex, gonophoric sex and somatic sex.
3 anatomic and physiological Bases-of male and female reproductive system.
4-endocrinológical Bases of reproduction.
5 – Natural Control of ovulation and spermatogenesis.
6 – Reproductive Cycles of mammals.
7- Poultry reproductive cycle.
8-Artificial semen Collection, processing, preservation and artificial insemination doses.
9- Artificial control of oestrus and ovulation including superovulation.
10-embryo Transfer. Cloning and genetic engineering

Back

Clinical Surgery and Pathology I (MVT12294I)

BASIC CONCEPTS.
TRAUMATIC INJURIES MECHANICAL, CHEMICAL AND PHYSICAL AGENT
DIGESTIVE TRACT. Esophagus: FB, stenosis , vascular ring anomalies. Stomach, FB, hypertrophic pyloric gastropathy. Syndrome dilatation / gastric torsion. Small Intestine: obstruction. Large intestine: megacolon. Anus and rectum: anal and rectal prolapse, perianal fistulae, saculitis. Peritonitis: open and closed peritoneal drainage. Cattle: Rumen and Abomasum. Equinos: internal hernias. Colic
RESPIRATORY SYSTEM. Injuries of the upper airway tract in dogs and horses. Thoracic lesions: obstruction Compression. Pleura. Hydro / Pio / Kilo / pneumothorax. Methods of thoracic cavity drainage
URINARY TRACT. Lithiasis, renal and ureteral trauma, ureteral obstruction. Bladder: urolithiasis, neoplasia and trauma, Urachal anomalies. Nephrectomy, uretrostomy
REPRODUCTIVE SYSTEM. OVH, orchiectomy, Cesarean section, Episioplasty, mammary tumours, pyometra, vaginal prolapse and hyperplasia, prostatic pathology

Back

Pathology and Clinic of Infectious Diseases I (MVT12295I)

Theorical course:
Viral and prionic diseases: aetiology and microbial agent particularities, taxonomy, cell and tissue tropism, resistance and persistence in the environment; epidemiology: entry in the host, transmission of infected material; Pathogenesis in different affected animals, macroscopic and microscopic lesions due to the etiological agent; symptoms directly or indirectly induced by the etiological agent; Etiological and complementary laboratory diagnostic procedures; Therapy and prophylactic measures, legislation when applicable
PRACTICAL COURSE:
Infectious disease laboratory diagnosis
Laboratory immunological and molecular diagnostic tests, Bioinformatics and molecular epidemiology tools, interpretation of results and practical exercise resolution, European and Portuguese Disease legislation; Eradication programmes and herd health management. Clinical case reports discussion of viral and/or prionic diseases.

Back

Pathology and Clinic of Parasitic Diseases I (MVT12296I)

Theoretical:
knowledge of theoretical and practical order of parasitic diseases of domestic and wild animals, particularly on the etiology, epidemiology, pathogenesis, diagnosis, prognosis lesional framework, management of morbidity, health prevention and police, and yet with special attention to parasitic zoonoses.
Practice:
1. methods and techniques used in the diagnosis of parasitic affections direct and indirect;
2. the preparation and observation of material for diagnosis of parasitic affections; interpretation and discussion of results;
3. appropriateness of prophylactic and therapeutic procedures of management leading to herd health management;
4. development of health monitoring programs of effective parasite adjusted the reality of different species and production systems

Back

Animal Production I (ZOO12297I)

Framings of the productions of sheep, goats and cattle. Aspects of the social, reproductive, maternal, feeding and milking behaviour. Biological and productive cycle. Physiological influence on the meat and milk production and its practical implications. The distribution of the nutrients throughout the lactation. Particularities of the digestion of the ruminants related with the productive performance of dairy and beef cows, goats and sheep. Management of the reproducers and reproductive efficiency. Effect of the composition of the diet in the milk and meat production. The efficiency in the milk and meat production and planning the herd. The young animal: rear, growing and fattening. The synthesis and ejection of milk. (principles and effect). Projects brief of selection and animal improvement (adequate examples to the species and inside of the species).

Back

Deontology (MVT12298I)

Theoretical foundations. Phenomenology of the human self and acting.
The question of the foundations of ethics and the structure of worldviews.
Theories of philosophical ethics. Large drifts of contemporary ethics: civic ethics, the ethics of responsibility, bioethics, animal ethics, environmental ethics.
Bioethics and technological advances. Bioethics and animal welfare.
Deontology: concepts, perspectives and professional environment; The Veterinary Professional Association and its Statute. The veterinary code of ethics.
Applied ethics (case studies). Ethical and moral challenges in veterinary professional practice, most particularly regarding the ethical dimension of health and disease and its relationship with the profession; animal experimentation - euthanasia; animal production and animal welfare; environmental ethics and GMOs; animal health and public health; animal cloning and biodiversity; animals and economy; other, depending on student interest.

Back

Hospital Activities II (MVT01596I)

Back

Animal Production II (ZOO12299I)

SWINE
Origin and domestication. Swine breeds. Swine production in the world in the European Union and in Portugal. Cycle production and objectives of intensive systems. Pig Reproduction. Productivity. Nutrition and feeding. Piglets and growing pigs management. Technologies to reduce the environmental impacts. Alternative production systems. Technical-economic analysis
POULTRY
Origin and domestication. Types, breeds and strains of poultry. Poultry production. Organization of poultry industry. Breeding and selection in egg and meat poultry. Nutrition and feeding of poultry. Production systems and management of layers. Production systems and management of broilers. Alternative poultry productions
RABBIT
Breeds. Rabbits production. Reproduction and reproductive management. Nutrition and feeding. Production systems of rabbit meat
FISH
Principles and objectives of production in aquatic environment. Importance of aquaculture. Species produced in Portugal and respective production systems.

Back

Andrology, Gynaecology and Obstetrics (MVT12300I)

Bovine Infertility. Non-infectious and infectious causes. Examination and evaluation of records and objectives of livestock units. Individual examination of the cow, Bull Infertility. Infertility: Equine infertility : horse breeding, noninfectious causes of infertility, acquired and functional. Infectious causes of infertility. Management of abortive epidemic cases in Mares, placental pathology. Examination, evaluation and individual treatment of infertile mares. Infertility in the Stud. Infertility in sheep and goats: non-infectious and infectious aspects. Individual examination of mutton and goat. Infertility in pigs: infectious and noninfectious aspects. Infertility in cats and dogs: causes of infertility in each species. Infectious and noninfectious causes. Clinical examination and investigation of infertility in the dog and cat. Pathologies of pregnancy and birth, dystocia. Andrological exams (BSE). Fertility/infertility of a collective group of animals; methods of approach.

Back

Clinical Surgery and Pathology II (MVT12301I)

VIII. ORTHOPEDIC SURGERY Preoperative care, bone healing, complications. Orthopedic examination. MANAGEMENT OF FRACTURE Fixing systems of fractures. Specific fractures management.
IX. JOINT DISEASE OCD, fragmentation of the coronoid process, non-union of anconeal process, luxations. Hip dysplasia, rupture of the cranial cruciate ligament, patella luxation.
Immature skeleton diseases. EQUIDAE Tenectomia (cuneano, lateral digital extensor. Desmotomy accessory ligament Tenotomy of the superficial, the annular ligament, palmar or plantar
X. PODIATRISTS IN CATTLE
XI. NEUROSURGERY neurological examination, location of injury, cervical spine surgery, , thoracic spine surgery, lumbo-sacral surgery,
VII. ONCOLOGY Surgical therapy, Radiotherapy, immunotherapy, chemotherapy and criocirurgia.
XI.OFTALMOLOGY Traumatic Proptose, Microftalmie, Conjuntival and corneal Lacerations, Ulcers, Entropion, ectropion, Tumors, Tarsorrafie, Enucleation, Exenteration, Evisceration

Back

Pathology and Clinic of Infectious Diseases II (MVT12302I)

Theoretical: Bacterial and fungi diseases of domestic animals. Aetiology with particular emphasis for the characteristics of the aetiological agent, its taxonomy, tropism and survival in the environment. Epidemiology including infection, transmission and contagious charge of infected materials. Pathogenic disorders in different affected species. Macroscopic and histological lesions accountable to the infectious agent. Symptoms induced directly or indirectly by the infectious agent. Laboratory analysis for complementary examination and aetiological diagnosis. Therapeutics and prophylactic measures.
Practical: Sample collection for laboratory examination. Isolation of infectious agents. Test results interpretation and problem resolution simulations. Immune prophylactic approaches and vaccination. Antimicrobial therapy, with particular emphasis for the antimicrobial susceptibility testing and study of the antimicrobial agents.

Back

Pathology and Clinic of Parasitic Diseases II (MVT12303I)

Theoretical:
knowledge of theoretical and practical order of parasitic diseases of domestic and wild animals, particularly on the ethiology, epidemiology, pathogenesis, diagnosis, prognosis lesional framework, management of morbidity, health prevention and police, and yet with special attention to parasitic zoonoses.
Practice:
1. methods and techniques used in the diagnosis of parasitic affections direct and indirect;
2. the preparation and observation of material for diagnosis of parasitic affections; interpretation and discussion of results;
3. appropriateness of prophylactic and therapeutic procedures of management leading to herd health management; 4. development of health monitoring programs of effective parasite adjusted the reality of different species and production systems

Back

Hospital Activities III (MVT01597I)

Accompaniment of hospital work, assisting clinicians in medical consultations and inpatient work: daily tasks of consultation, procedure, methods and means of diagnosis, administration of drugs, and other tasks associated with medical consultations, all care of hospitalized animals, as well as the hygiene of the same and of the facilities, and all other requests made by the clinicians in the scope of the consultations and hospitalization. Includes the monitoring of clinical cases of all type of animals of the Herdade da Mitra and Veterinary Hospital.

Back

Aquaculture (ZOO12316I)

I) Introduction to Aquaculture: Definition, objectives, history of aquaculture (aquatic animal and plants for food and ornamental use); organization of aquaculture farms; advantages/disadvantages of aquaculture vs. other food producing activities; world aquaculture situation (production, value vs. species, systems), basic principles of aquaculture, levels of culture, commercial vs. subsistence aquaculture, economies of systems, marketing and consumption of aquatic products; site selection, species selection, exotic vs. native species, mono- vs. polyculture, agro/aquaculture.
II) Water Quality Management in Aquaculture and Environment
III) Aquaculture systems and engineering
VI)Nutrition and Feed Management
V) Reproduction and genetic selection
VI) Eco-pathologies: Topics on main maladies link with environmental factors and management
VII) Introduction to Fish, Shrimp, Mollusc farming

Back

Toxic Plants Biology (BIO12318I)

1. Biology of poisonous plants: an introductory approach;

2. Taxonomic and chemical characterization of toxigenic plant families and species;

3. Toxicoses symptoms associated with plant ingestion;

4. Treatment adequacy to clinical symptoms.

Back

Animal Production in Tropical and Subtropical Regions (ZOO12319I)

1. Presentation of the tropical world - socio-economic and ethnographic.
2. Tropical climates and soils.
3. Tropical biomes: features relevant to animal production.
4. Bioclimatology animal.
5. Health in the tropics.
6. Tropical Parasitology
7. Ruminant species.
8. Tropical pastures I. Characteristics of C4 photosynthesis in grasses.

Back

Ethology Applied to Domestic Carnivores (ZOO12320I)

1 The evolution of the genus Canis sp .;
2 The domestication of the dog;
3 Biology and behavior;
4 The ontogenic development of the dog;
5 The genetic influence on behavior;
6 Learning and training - dog basic education, training procedures, training of herding dog;
7 Behavioral Disorders
1 Biology and evolution of the cat;
2 Sensory skills;
3 Ontogenic development;
4 Social behavior;
5 Communication;
6 Behavioral disorders in the cat.

Back

Pathology and Clinic of Wild Species (MVT12321I)

I – Introduction: anatomical and physiological, ecological and behavioral aspects with clinical importance in different wild animals.
II – Diagnosis in wild species: restraint, physical examination and collection of biological samples. Complementary examinations (Clinical pathology, imagiological and anatompathological).
III – Clinical prescriptions – Profilactic and therapeutic objectives: Profilactic and therapeutic management. Medical and surgical therapeutics. Study of clinical cases.

Back

Emergency Medicine and Intensive Care in Company Animals (MVT12322I)

Emergency medicine and intensive care(EMIC): assessment, triage and monitoring.Shock, pathophysiology. Vascular access and fluid therapy in EMIC. Oxygen therapy and nebulization.
Electrolyte and acid-base imbalances: diagnosis and therapy. Enteral and parenteral nutrition in EMIC. Analgesia in urgent and critical patient. Pharmacology of drugs used in EMIC.
Pediatric emergencies:Pathophysiology, Diagnosis, Pharmacology and syndromes.
The dyspneic patient: diagnostic and therapeutics. Cardiac arrhythmias in emergency.
Acute abdomen: diagnostic and therapeutic approach.
Heat stroke: pathophysiology, diagnosis and therapy.
Politrauma patient: relevant pathophysiology, diagnostic and therapeutics, emergency imagiology. Cardiopulmonary resuscitation. Sepsis and Shock.
Coagulation disorders in emergency medicine(EM):Pathophysiology of DIC. General treatment of coagulation disorders.
Poisoning in EM: the main toxic and antidotes. Neurological Emergencies. Rapid tests in EM. Cytology and clinical analysis of effusions.

Back

Animal Models in Research (MVT12323I)

1-Overall perspective of animals and their utility models; The concept of experimental animal.
2-Bioethics applied to the use of animals for experimental purposes:
Biological foundations of bioethics, ethical aspects relating to animal handling used in educational activities and scientific experimentation, case studies
3-Applicable laws, rules and historical background, ethical and socio-cultural
Selection of standards, maintenance, handling and animal sacrifice model
4. Examples of relevant models:
Use of mice.
Use of small ruminants in the development of biomaterials for orthopaedic and cardiovascular application.
5. Preparation of suitable anaesthetic and analgesic protocols.

Back

Pathology and Clinic of Livestock Species I (MVT12304I)

LABORATORY TESTS IN LIVESTOCK SPECIES
Sampling and interpretation of data
SWINE DISEASES
A. Production and practice in pig production;
B. Major disorders: etiology, epidemiology, diagnosis and treatment;
C. Prevention; biosecurity. Hygiene and disinfestation;
SWINE DISEASES:
Diseases of sows
Diseases of boars
Diseases of piglets
DATA EVALUATION IN SWINE FARMS
DISEASES OF POULTRY
Anatomophysiological review
Production and health management
Diagnostic in poultry diseases
Main affections in production systems, prophylaxis and therapy
DISEASES OF RABBITS
Production systems
Biosecurity
Major diseases
ASSESSMENT OF DATA IN DAIRY AND BEEF CATTLE FARMS
Importance of records; evaluation of the productivity and fertility in cattle farms.
DATA EVALUATION IN SMALL RUMINANT
Importance of records; evaluation of the productivity and fertility

Back

Pathology and clinical practice of horses I (MVT12305I)

Upper respiratory tract disease
Lower respiratory tract disease
Respiratory infectious diseases
Clinical examination of the respiratory system: undergoing procedures
DISEASES OF THE CARDIOVASCULAR SYSTEM
Arrhythmias in horses
Disorders of the heart and vessels
Anemia
Examination of the cardiovascular system: Clinical cases
URINARY SYSTEM DISORDERS
Renal failure
Infectious diseases of the urinary tract
NEUROLOGY
Neurological examination in horses
Neurology: Clinical cases
NEONATOLOGY
Approach to the premature foal
Septicemia
Diseases of the digestive system
Diseases of the respiratory system
Diseases of the cardiovascular system
OPHTHALMOLOGY
Eye examination in horses
Ophthalmology: clinical cases

Back

Animal Products Technology I (ZOO12306I)

Principles of technological processing of food and food hygiene
Hygiene of the personnel, installations and equipment
Sanitation and cleaning in food industry
Quality concepts
Quality management
Hazard Analysis and Critical Control Point
Unit Operations
Classification in function of the objective and in function of transference phenomena
Food conservation by chilling and freezing
Meat technology.
Slaughtering operations of cattle, pig, lamb and poultry.
Preservation methods for carcass and meat.
Carcass quality and grading by subjective and objective methods. Meat cuts.
Chemical composition and structure of muscle. Post-mortem changes in muscle and its conversion into meat. PSE and DFD meats. Meat quality. Chemical and physical characteristics of meat: water holding capacity, colour, and texture
Factors affecting meat quality: Production and technological. Conditioning of meat.

Back

Sanitary Inspection I (MVT12307I)

THEORETICAL

1 FOOD SAFETY AND HYGIENE: Food Safety and Food Security in Europe and in the World ; Health Hazards in food.

2 HEALTH INSPECTION OF MEAT IN UNGULATES SLAUGHTERHOUSES:

Species slaughtered in Portugal, volume of slaughter, meat consumption and self-consumption; Slaughterhouses; Transport of animals for slaughter; Flowchart of obtaining meat; Animal by-products; Ante-mortem Sanitary Inspection; Sanitary Inspection in and post-mortem; Abnormal Meat – non-specific abnormalities; Specific Pathology; Legal and scientific criteria for inspection

Applicable Law

PRACTICAL PROGRAM-

1 HYGIENE AND FOOD SAFETY: General food analysis; Microbiological Criteria for Foods Evaluation of hygiene in surfaces; Survey of parasites in meat.

2 HEALTH INSPECTION OF MEAT IN UNGULATES:Visit to the premises of a slaughterhouse;Observation of slaughter and processing of carcasses;Implementation of procedures for ante-mortem inspection; Implementation of required postmortem inspection procedures

Back

Hygiene and Public Health (MVT12308I)

Main methods of effluent treatment and destruction of carcasses and products not usable in human, resulting feed processing animal food industry.

The environmental impact and environmental contamination arising from livestock production practiced.

The correct use of veterinary medicines and veterinary grounds.

Hygiene standards in the animal / food production industry: issues related to the production, collection, transportation, processing, storage and consumption of animal products.

Structure and hygiene facilities. Training and worker hygiene. Biosafety in primary production.

Chemical agents and toxic pathogens of importance to the food industry and public health.

Aspects related to society, economy and its importance in food production: "Food safety"and "Food security"in a globalized world.

Back

Pathology and Clinic of Companion Animals I (MVT12309I)

I - DERMATOLOY

Clinical approach to patients with skin disease. Etiopathophysiology, clinical signs, differential diagnosis, diagnosis, treatment and prognosis in microbial, allergic, autoimmune, endocrine and keratinization affections.

II - NEPHRO-UROLOGY

Clinical approach. The IRIS recommendations for diagnosis and treatment. Etiology and pathogenesis, clinical signs, plan diagnosis, treatment and prognosis in acute kidney disease, chronic kidney disease and affections of the urinary tract: infection, urolithiasis, feline lower urinary tract disease, neoplasia.

III - GASTROENTEROLOGY

The clinical approach to the patient with gastrointestinal disease; Etiopathophysiology, clinical signs, plane diagnosis, treatment and prognosis of diseases of the oral cavity, oropharynx, esophagus, stomach, intestine, liver, biliary tract and exocrine pancreas.

Back

Economics and Management (ECN00498I)

Back

Hospital Activities IV (MVT01598I)

Back

Pathology and Clinic of Livestock Species II (MVT12310I)

DISEASES OF THE DIGESTIVE SYSTEM IN RUMINANTES
Disorders of the oral cavity and associated organs (actinobacillosis, actinomycosis, contagious ecthyma).
Indigestion in ruminants.
Acute rumen lactic acidosis. Chronic rumen acidosis, vena cava syndrome and liver abscesses
Rumen alkalosis.
Traumatic reticuloperitonitis and vagal indigestion syndrome
Ruminal timpany: bloat and foamy
Intestinal obstruction in cattle
Diarrhea in adult cattle
POSTPARTUM DISEASES IN DAIRY CATTLE
Metabolic diseases: downer cow syndrome, hypocalcaemia, hypafosfatemia, hypokalemia, ketosis and fatty liver
Diseases of the digestive system: displaced abomasum, abomasal ulcers
Diseases of the reproductive system: retention of fetal membranes / metritis, mastitis, cystitis.
DISEASES OF RUMINANTS IN FEEDLOT SYSTEMS
Sub-clinical acidosis / laminitis
Recurrent chronic bloat
Urolithiasis
Metabolic diseases: deficiency in vitamin A, deficiency in vitamin B1,
Bovine Respiratory Disease Complex
Establishment of prophylactic plans for feedlot systems
NEONATOLOGY
Neonatal diarrhea
Prevention and treatment of neonatal diarrhea: caring for the newborn. Colostrum.
Respiratory disease.
Omphalitis
RUMINANT DISEASES IN EXTENSIVE SYSTEMS
Metabolic diseases: hypomagnesaemia , ovine pregnancy toxaemia. deficiency of copper, cobalt, selenium and vitamin E.
Infectious diseases and parasitic diseases in ruminants in extensive systems: prophylactic plans
CARDIOVASCULAR AND HEMATOLOGY
Anemia

Back

Pathology and clinical practice of horses II (MVT12311I)

DISEASES OF THE DIGESTIVE SYSTEM
Disorders of the oral cavity and esophagus
Dentistry
Colic in horses
Clinical management of equine colic
Gastroduodenal ulceration
Liver disease in horses
Diarrhea
ENDOTOXAEMIA
DISEASES OF THE LOCOMOTOR SYSTEM:
Clinical examination for lameness
Complementary diagnostic tests in clinical examination of lameness
Forelimb and hindlimb lameness
Diseases of the distal extremity: sub-solar abscess, laminitis syndrome and podotroclerar syndrome
Tendinitis and desmitis
Arthritis and tenosynovitis. Degenerative joint disease
ENDOCRINOLOGY
Diagnosis and Treatment of Pituitary Pars Intermedia Dysfunction (PPID)
Equine metabolic syndrome
DERMATOLOGY
Dermatology in horses
Cases of clinical dermatology
Wound care

Back

Animal Products Technology II (ZOO12312I)

Meat technology: Processing principles of meat manufacturing. Mechanisms of meat preservation: drycured, cooked, smoked and fermented.
Additives. Technological processes of dry-cured products, cooked hams, sausages and emulsion sausages. Meat products microbiology.
Fish and fish products: as food and raw matter. Quality of fresh fish.
Preservation of fish quality by chilling and freezing. Processing of fish. Dry-cured, smoked and canning fish.
Eggs and egg products: Chemical and physical characterization of the egg and its structure.
Quality criteria and functional proprieties. Factors affecting the quality and functional proprieties. Norms for commercialization.
Egg products: pasteurized, dried and cooked.
Milk and Dairy products: dairy chemistry, physics and microbiology. Technological milk quality. Dairy processing.
Dairy products: fluid milk products, concentrated and dried milk products, dried dairy products, cultured dairy products, butter and ice cream.

Back

Sanitary Inspection II (MVT12313I)

THEORETICAL:
SANITARY INSPECTION OF MEAT FROM POULTRY AND LAGOMORPHS:Volume of slaughter,consumption and self-consumption; Slaughterhouses;Transport ;Flowchart of obtaining meat Animal By-products;SI ante, in and post-mortem; Inespecific abnormalities; Specific Pathology; Legislation
SANITARY INSPECTION OF EGGS; Production and supply; Structure, genesis and defense mechanisms of the egg Changes of fresh and stored eggs.
SANITARY INSPECTION OF FISHERY: Current situation of fisheries;Anatomy and physiology of fish;Fishing gear and general operations of fishing;S I post fishing; Legislation.
PRACTICAL:
SANITARY INSPECTION OF MEAT FROM POULTRY AND LAGOMORPHS; Procedures and decisions for ante and post-mortem
inspection;
TSWS, TSWW and TUSW;
SANITARY INSPECTION OF EGGS: Changes in fresh and stored eggs.
SANITARY INSPECTION OF FISHERY:Identification of species, trading conditions in auctions and procedures for SI; Safety control of establishments;Legal requirements;
APPLICATION OF HACCP

Back

Preventive Medicine and Public Health (MVT12314I)

Risk Analysis. Development of capacity in risk assessment and communication.
Practical approach for some applied cases related to communicable and noncommunicable diseases phenomena of public health importance
Programs of prevention, control and eradication of major zoonoses at national and global level.
Zoonoses and occupational diseases.
Emerging and reemerging zoonoses.
Social role of animals.
The role of the veterinarian in situations of natural or man-caused emergency.
Knowledge of applicable legislation

Back

Pathology and Clinic of Companion Animals II (MVT12315I)

ENDOCRINOLOGY:Clinical approach for endocrine disease. Pathophysiology, diagnosis, treatment and prognosis in affections of the pituitary, adrenal glands, thyroid, parathyroid and endocrine pancreas.
HEMATOLOGY: Clinical approach in anemia and hemostatic disorders; etiopathophysiology, diagnosis, treatment and prognosis.
ONCOLOGY: Clinical approach. Paraneoplasic syndromes. Therapeutic aproach and chemotherapeutic agents. Metronomic chemotherapy. Pain management in oncology. Frequent neoplasms and therapeutic protocols.
NEUROLOGY: Clinical approach to neurological disease; diseases of the brain, spinal cord and peripheral nerves.
RESPIRATORY: Clinical management of respiratory disease, clinical manifestations, diagnosis and treatment
CARDIOLOGY: Clinical management of cardiovascular disease. Etiopathophysiology, diagnosis and treatment of diseases of the myocardium, endocardium and valves.
OPHTHALMOLOGY: Clinical management of ophthalmic disease. Ophthalmic diseases.

Back

Hospital Activities V (MVT01599I)

Back

Curricular Internship (MVT12317I)

EC is an UC integrated on the 11th semester of the course of study. The EC can assume the form of a professional internship with its respective report or the form of an original work purposely done for this internship and therefore will culminate with a scientific dissertation or a research project. Both the type of work and the student's chosen area will determine a specific program's contents.