

# Hybrid Professional Master's Degree

Internal Medicine in Large Animals





## Hybrid Professional Master's Degree Internal Medicine in Large Animals

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

Website: [www.techtitute.com/us/veterinary-medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-internal-medicine-large-animals](http://www.techtitute.com/us/veterinary-medicine/hybrid-professional-master-degree/hybrid-professional-master-degree-internal-medicine-large-animals)

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# 01

# Introduction

The treatment, diagnosis, control and management of large animal diseases are of great value to veterinarians due to the multiple high-risk interventions that professionals perform and the immense responsibility they will have to acquire in practice. That is why, due to the transcendence and impact that this field has generated, this program has been developed, which is characterized by having a theoretical framework 100% online and a practical phase of 3 weeks of duration in a leading veterinary center. This is a unique opportunity for updating through a disruptive pedagogical methodology.







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*This Hybrid Professional Master's Degree offers you an exclusive content on Internal Medicine in Veterinary Medicine that will allow you to update your knowledge with guarantees"*

Improvements in diagnostic imaging equipment, specific pharmacological therapies and surgical techniques have led to better disease detection procedures and treatments in large species. Given this reality, veterinary professionals have better tools to face the challenges posed by new emerging pathologies or more precise intervention in cardiac, respiratory or neurological problems.

Given the relevance of these advances in the field of Internal Medicine, TECH has developed this 12-month Hybrid Professional Master's Degree that is distinguished by providing a 100% online teaching methodology, applied to the theoretical framework and by a face-to-face practical stay in a prestigious veterinary center.

Thus, the graduate will have the excellent opportunity to obtain a complete update on a wide range of medical areas such as Cardiology, Neurology, Respiratory, Neonatology, Ophthalmology, Endocrinology, Dermatology, among others. For this purpose, numerous teaching resources are available, accessible 24 hours a day, from any electronic device with an Internet connection.

The veterinarian will culminate the academic experience with a 3-week stay in a prestigious center, where they will be guided by professionals with an excellent background in this field. A process that will lead the student to test the procedures and working methods used by experts in the clinical care and assistance of large animals.

The professional is thus faced with a unique academic proposal that will allow them to keep abreast of the most notorious advances in this field with a flexible pedagogy that adapts to the real needs of the graduates.

This **Hybrid Professional Master's Degree in Internal Medicine in Large Animals** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ Development of more than 100 clinical cases presented by expert veterinary professionals based on the treatment and diagnosis of diseases with university professors with extensive experience in internal medicine in larger species
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ◆ Presentation of case studies in the care of the main pathologies in Major Species
- ◆ Implementation of the Relearning system, providing greater dynamism in teaching with audiovisual resources such as video summaries and specialized readings
- ◆ Performing detailed clinical examinations, interpreting diagnostic test results and formulating individualized treatment plans to address a variety of medical conditions
- ◆ All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection
- ◆ In addition, you will be able to carry out a clinical internship in one of the best veterinary centers in the world



*Add to your online update the execution of your clinical practice in a veterinary center with the highest standards of quality and technological level"*

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*Take an intensive 3-week internship in a recognized center in the sector and acquire the skills for your personal and professional growth"*

In this Professional Master's Degree proposal, of a professionalizing nature and blended learning modality, the program is aimed at updating veterinary professionals who develop their functions in specialized veterinary centers, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge in veterinary practice, and the theoretical-practical elements will facilitate the updating of knowledge and will allow decision making in animal management.

Thanks to their multimedia content developed with the latest educational technology, they will allow the veterinary professional to obtain situated and contextual learning, that is, a simulated environment that will provide immersive learning programmed to train in real situations. The design of this program focuses on Problem Based Learning, through which the student will have to try to solve the different professional practice situations that will arise throughout the program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*This Hybrid Professional Master's Degree provides you with the best practical preparation with specialized veterinary centers of the highest standards in the sector.*

*Enhance your diagnostic skills through the Hybrid Professional Master's Degree in Internal Medicine in Major Species, in a practical way and adapted to your needs.*





02

# Why Study this Hybrid Professional Master's Degree?

In order to achieve high professional quotas, it is not enough to master theoretical concepts; it is also necessary to put them into practice. For this reason, TECH has designed this program, which is characterized by a perfect combination of theory and practice. Thus, the graduate will be up to date with advances in the management of disorders of the gastrointestinal system, disorders such as encephalopathy or laboratory diagnosis in equines. All this, through a syllabus developed by professionals in the sector and also complemented by a practical experience in a veterinary center where you will have access to cutting-edge technology and the mentoring of an expert with an excellent background in Internal Medicine in Major Species.







“TECH is the only university that offers you the possibility of getting into real clinical cases of maximum demand, together with the best specialists in Internal Medicine in Major Species”

### 1. Updating from the Latest Technology Available

In recent years, technological advances have had a significant impact on the control and management of pathological alterations in Major Species. These advances have improved the accuracy of diagnostics, enabling more effective treatments and facilitating the monitoring of animal health. In this way and with the intention that TECH can keep the specialist at the forefront, this Hybrid Professional Master's Degree has been designed to bring the latest developments in the area of Internal Medicine.

### 2. Deepening knowledge from the experience of the best veterinarians

In this Hybrid Professional Master's Degree, TECH has brought together the best veterinarians in charge of developing an advanced and updated syllabus in Internal Medicine. All this, thanks to the meticulous selection of each and every one of the teachers that make up this program. In addition to this, the experience of the professional of the center where the graduate will stay, which will allow him/her to obtain a complete update from the best.

### 3. Entering First-Class Clinical Environments

This academic institution focuses its efforts on offering high quality programs. In this sense, this blended program is not only characterized by advanced content, but also by access to first class clinical environments. In this way, the veterinarian will be involved from the first day in clinical care and assistance in a space that meets the main quality standards in the sector.







#### 4. Combining the Best Theory with State-of-the-Art Practice

Many institutions apply pedagogical programs with a low percentage of adaptability to the daily and real part of the professional practice, requiring many hours of teaching load. Thus, TECH provides a current model that perfectly combines an advanced theoretical framework with a first class practical stay, which responds to the needs of veterinary professionals for updating and flexibility.

#### 5. Expanding the Boundaries of Knowledge

Thanks to this Hybrid Professional Master's Degree, the veterinary professional will expand his or her frontiers and will be alongside other specialists practicing in top-level veterinary centers. In this way, you will be able to integrate into your daily practice the advances in Internal Medicine in both national and international clinical settings. A unique opportunity that only TECH, the world's largest digital university, can offer.



*You will have full practical immersion at the center of your choice"*



# 03 Objectives

This Hybrid Professional Master's Degree in Internal Medicine in Major Species has been created primarily to provide the professional with the most recent updates in the field of Veterinary Medicine. Therefore, TECH provides different tools of academic innovation, ensuring the successful development of the program. At the end of this program, the graduate will have strengthened their competencies in the analysis of the mechanisms of endotoxemia and systemic inflammatory response syndrome, as well as in the methods to examine the particularities of antibiotherapy, fluid therapy and other treatments in the neonatal foal.





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*This Hybrid Professional Master's Degree gives you the opportunity to update your knowledge in real scenarios, with high productivity and scientific efficiency from an institution at the forefront of technology"*



## General Objective

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- The overall objective of the Hybrid Professional Master's Degree in Internal Medicine in Large Animals is to ensure that the professional is aware of therapeutic and diagnostic advances in a wide range of areas. In this way, you will design evaluation protocols with the appropriate complementary tests, through a clinical practice developed with the clinical and academic demands required by the intervention. All this, from the hand of recognized professionals in the field of veterinary medicine



*With TECH you will increase your competences related to neurological examination and main diagnostic tests through practice with real cases"*







## Specific Objectives

### Module 1. Alterations of the Cardiovascular System in Large Animals

- ◆ Recognize the specific anatomy, physiology and pathophysiology underlying cardiac disease
- ◆ Know in depth the mechanisms of action of drugs used in diseases of the heart and blood vessels
- ◆ Specify the information necessary in the clinical examination of the cardiac patient
- ◆ Propose a work methodology for the patient with murmur and for the patient with arrhythmias
- ◆ Establish diagnostic and therapeutic protocols for horses with syncope
- ◆ Address in detail the heart failure in large animals

### Module 2. Alterations of the Respiratory System in Large Animals

- ◆ Carry out a complete physical examination of upper and lower airways
- ◆ Examine the diagnostic procedures used in cases of suspected respiratory pathology and the interpretation of their results
- ◆ Precisely recognize the specific symptoms of upper and lower airway pathologies
- ◆ Establish the main pathologies that affect the regions of the nasal cavity, guttural pouches, pharynx and larynx
- ◆ Develop knowledge of the main diseases which affect the trachea, bronchi and lungs



### **Module 3. Neurologic Alterations in Large Animals**

- ♦ Examine the specific anatomy, physiology and pathophysiology underlying neurological disease in the Large Animals (ruminants, bovines, camelids and equids)
- ♦ Identify the main pathologies affecting the central and peripheral nervous system
- ♦ Specify the information needed in the clinical examination of the neurological patient
- ♦ Locate the injuries in a patient who has suffered a Central Nervous System trauma
- ♦ Establish management measures and treatment protocols
- ♦ Identify horses with spinal cord compressions and establish their prognosis in sports
- ♦ Recognize patients affected with parasitic diseases and determine their treatment options
- ♦ Identify patients affected with viral diseases and establish management and containment measures
- ♦ Recognize patients with neuromuscular plaque disorders
- ♦ Establish prognostication and treatment options for patients with neuromuscular plaque pathologies
- ♦ Establish the clinical signs of patients with congenital and degenerative disorders and the signs of patients with motor neuron disorders
- ♦ Specify treatment and prognostic guidelines in intoxicated patients

### **Module 4. Alterations of the Gastrointestinal System in Large Animals**

- ♦ Develop the main gastrointestinal pathologies affecting cattle, small ruminants and camelids
- ♦ Recognize the clinical and laboratory signs of the main pathologies affecting the Gastrointestinal System
- ♦ Develop the main pathologies affecting the stomach
- ♦ Establish treatment protocols in horses with EGUS
- ♦ Determine the origin of the problem and establish the prognosis of strangulating lesions
- ♦ Recognize the signs of horses with obstructive lesions and their possible treatment regimens
- ♦ Propose a treatment regimen in the horse with IBD
- ♦ Establish the prognosis of horses with hepatic alterations and propose therapeutic options
- ♦ Analyze the mechanisms of endotoxemia and systemic inflammatory response syndrome
- ♦ Identify the symptoms of colitis/enteritis and propose treatment options
- ♦ Examine in depth the possible complications of horses with gastrointestinal disorders
- ♦ Establish action protocols to avoid complications in horses suffering from digestive pathologies
- ♦ Develop in depth other less frequent digestive diseases such as intoxications or congenital alterations

**Module 5. Alterations of the Urinary System in Large Animals**

- ♦ Develop specialized knowledge in the clinical examination with urinary and renal problems
- ♦ Perform renal controls to avoid renal toxicity
- ♦ Identify the alterations inherent to the different renal diseases
- ♦ Establish an appropriate diagnostic plan for the main clinical manifestations of renal problems
- ♦ Correctly diagnose the different renal problems and issue a prognosis for these animals
- ♦ Determine a treatment plan, both short and long term, for major urinary and renal problems

**Module 6. Neonatology in Large Animals**

- ♦ Determine how to perform a complete physical examination by systems on the neonatal foal
- ♦ Analyze the diagnostic procedures used in neonatology and their interpretation
- ♦ Recognize the diseases of neonates and the particularities of those that also occur in adult horses
- ♦ Establish neonatal intensive care, care of the recumbent foal, and enteral and parenteral feeding of the non-breastfeeding foal
- ♦ Determine the need for and how to perform cardiopulmonary resuscitation
- ♦ Identify critical foals and establish prognosis based on clinical and laboratorial parameters
- ♦ Examine the particularities of antibiotherapy, fluid therapy and other treatments in the neonatal foal
- ♦ Analyze the main pathologies affecting neonatal calves, sheep, goats and camelids

**Module 7. Ophthalmology in Large Animals**

- ♦ Generate specialized knowledge to perform a correct ophthalmologic examination in large animals
- ♦ Accurately recognize the clinical signs of ocular pain
- ♦ Establish differential diagnoses of ocular clinical signs
- ♦ Propose a working methodology for the patient with corneal ulcers and/or infectious keratitis
- ♦ Determine a working methodology for the patient with stromal abscess, immune-mediated keratitis and equine recurrent uveitis
- ♦ Establish a working methodology for the patient with an ocular neoplasm

**Module 8. Endocrinology and Dermatology in Large Animals**

- ♦ Identify the main pathologies affecting the skin
- ♦ Analyze the origin of the problem and establish the prognosis of dermatitis
- ♦ Recognize the clinical and laboratory signs of the main dermatological diseases
- ♦ Determine the symptoms of skin diseases of bacterial and viral origin and fungal and parasitic origin and propose therapeutic options
- ♦ Establish the symptoms of allergic and immune-mediated skin diseases and propose therapeutic options
- ♦ Examine the different types of skin neoplasms and propose an appropriate treatment and determine the prognosis
- ♦ Identify the symptoms of other skin diseases as , well as their prognosis and treatment options
- ♦ Specify the diagnostic procedures used in endocrinology and their interpretation
- ♦ Determine the endocrine influence on some alterations in principle attributed to other etiologies: in horse laminitis, sepsis, decreased performance, bone pathologies



- ♦ Establish the main endocrine pathologies that can be found in both adult and neonatal horses, how to diagnose them and how to treat them
- ♦ Establish a working methodology for cattle, small ruminants and camelids with an ocular neoplasm

### Module 9. Laboratory diagnosis in horses. Hematopoietic system alterations and immunology in Large Animals

- ♦ Develop an advanced methodology to carry out a correct diagnosis of red series and white series alterations
- ♦ Identify and implant the necessary therapy in case of clotting disorders
- ♦ Perform a basic cytological interpretation of both blood smear and peritoneal fluid and cerebrospinal fluid
- ♦ Correctly interpret analyses with biochemical alterations in adults and foals
- ♦ Identify and treat immunomediating pathologies
- ♦ Perform a complete analysis of the acid base state in a critical patient
- ♦ Implement an appropriate fluid therapy plan based on the imbalances presented by the patient





### Module 10. Infectious and parasitic diseases in Large Animals

- ◆ Identify the main infectious diseases affecting Large Animals
- ◆ Establish differential diagnoses of clinical signs of major infectious and contagious diseases in large animals
- ◆ Propose a work methodology for patients with infectious and contagious disorders
- ◆ Provide specialized knowledge to treat and prevent the main infectious and contagious pathologies in Large Animals
- ◆ Identify the clinical signs of parasitic diseases affecting Large Animals
- ◆ Specify the diagnostic procedures used in parasitology and their interpretation
- ◆ Determine a theoretical-practical methodology for the patient with parasitic diseases
- ◆ Provide specialized knowledge to establish programs for the control and management of parasites in Large Animals

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*You will combine theory and professional practice through a demanding and rewarding educational approach”*

# 04 Skills

After passing the evaluations of the Hybrid Professional Master's Degree in Internal Medicine in Large Animals, the specialist will have increased the professional competences sufficient for the intervention in treatments and diseases in this type of animals. For this purpose, not only case studies will be provided by the teaching staff, but also real patients will be seen during the practical stay.







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*Through this program you will update your knowledge in clinical cardiovascular pathophysiology through the most outstanding didactic resources"*



## General Skills

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- Identify all clinical signs associated with cardiovascular disease
- Analyze the differences between pathologies of the upper and lower airways
- Identify all clinical signs associated with each neurological disease
- Develop specialized knowledge about the most common gastrointestinal problems
- Identify all clinical signs associated with kidney disease
- Establish an appropriate methodology for emergency care of a newborn baby
- Identify all the clinical signs associated with ocular alterations in Large Animals







## Specific Skills

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- ♦ Analyze the general and specific treatment for the main ocular pathologies
- ♦ Establish the specific clinical approach for each pathology and determine the prognosis and the most appropriate treatment for each skin disease
- ♦ Develop the basis of hemostasis and coagulation, as well as the pathologies associated with their failure
- ♦ Compile the complementary methods available to diagnose the main infectious and parasitic pathologies

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*Numerous teaching materials are available, accessible 24 hours a day, from a computer with an Internet connection”*



05

# Course Management

TECH offers elite hands-on teaching of the highest academic standards. In this way, students will have access to a syllabus developed by a teaching staff specialized in Biomedical Sciences, Equine Endocrinology and Animal Medicine and Health. His wide experience and deep knowledge will allow the graduate to achieve the updating process in Internal Medicine. Likewise, thanks to the proximity of the teaching staff, the veterinarian will be able to resolve any doubts he/she may have about the content during the course of this program.



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*Leading professionals in the veterinary field will provide you with the most relevant technological and scientific advances in the field of Internal Medicine in Major Species”*

## Management



### Dr. María Martín Cuervo

- Head of the Internal Medicine Service at the Veterinary Clinical Hospital of the University of Extremadura
- Researcher specializing in large animals
- Associate Professor of the Department of Animal Medicine and Surgery, Extremadura University
- PhD in Veterinary Medicine by the Extremadura University
- Degree in Veterinary Medicine from the University of Córdoba
- Veterinarian Specialist
- First prize in the IV edition of the awards of the Royal Academy of Veterinary Sciences and the Tomas Pascual Sanz Institute
- Pizarro Pious Work Foundation Award of the XLVI Historical Colloquiums of Extremadura
- Member of: European Board of Veterinary Specialization (EBVS), European College of Equine Internal Medicine (ECEIM), Asociación Española de Veterinarios Especialistas en Équidos (AVEE)





### **Dr. Martha Barba Recreo**

- ♦ Head of the Equine Internal Medicine Service, Clinical Veterinary Hospital, CEU Cardenal Herrera University
- ♦ Outpatient equine clinical veterinarian clinic in Gres-Hippo
- ♦ Assistant Professor, Department of Animal Medicine and Surgery, Faculty of Veterinary Medicine, CEU Cardenal Herrera University
- ♦ Professor and specialist veterinary surgeon in the Equine Internal Medicine service and research associate at the University of Glasgow
- ♦ Professor, researcher and clinical veterinarian in the Equine Internal Medicine Service, Faculty of Veterinary Medicine, CEU Cardenal Herrera University
- ♦ Ph.D. in Biomedical Sciences from Auburn University
- ♦ Diplomate by the American College of Large Animal Internal Medicine
- ♦ Rotating internship in Equine Medicine and Surgery at the University of Lyon
- ♦ Residency in Equine Internal Medicine in Alabama

## Professors

### Dr. Elisa Díez de Castro

- Veterinary specialist in Equine Internal Medicine
- Veterinarian at the Veterinary Clinic Hospital of the University of Córdoba
- Researcher in Equine Internal Medicine
- Teacher in university veterinary studies
- Doctorate in Veterinary Medicine from the University of Córdoba
- Degree in Veterinary Medicine from the University of Córdoba
- Master's Degree in Animal Medicine, Health and Improvement from the University of Córdoba

### Dr. Judit Viu Mella

- Equine Internal Medicine at Judit Viu
- Service of Equine Internal Medicine and Anesthesia in the Veterinary Hospital Sierra de Madrid
- Anaesthetist of the equine unit of the Autonomous University of Barcelona(UAB Veterinary Clinical)
- Associate Researcher at the Autonomous University of Barcelona
- Cum Laude PhD in Medicine and Animal Health from the Autonomous University of Barcelona
- Extraordinary award for the Acid-base imbalances in newborn foals and adult horses evaluated by the quantitative approach"
- Graduate of the European College of Equine Internal Medicine
- Degree in Veterinary Medicine, Autonomous University of Barcelona
- Member of: Association of Veterinary Specialists of Spain (AVEDE)





**Dr. María Villalba Orero**

- ♦ Scientific Advisor on Cardiovascular and Pulmonary Ultrasound at the National Center for Cardiovascular Research
- ♦ Head and Founder of Equine Cardiology MVO
- ♦ Head of the Equine Anesthesia Service at Asurvet Equidos
- ♦ Doctor of Veterinary Medicine, Complutense University of Madrid
- ♦ Degree in Veterinary Medicine from the Complutense University Madrid
- ♦ Master's Degree in Veterinary Sciences from the Complutense University of Madrid
- ♦ Master's Degree in Veterinary Cardiology
- ♦ Certificate European Certificate in Veterinary Cardiology by the European School of Veterinary Postgraduate Studies (ESVPS)

**Dr. Carlos Eduardo Medina Torres**

- ♦ Head of the Section of Internal Medicine at Pferdeklinik Altforweiler and Pferdeklinik Leichlingen
- ♦ Assistant Professor of Large Animal Internal Medicine at the National University of Colombia
- ♦ Research associate and clinical instructor at Ludwig-Maximilians-University of Munich
- ♦ Doctor of Veterinary Science from the University of Queensland
- ♦ Degree in Veterinary Medicine from Universidad Nacional de Colombia
- ♦ Master of Science from the University of Liverpool



# 06

## Educational Plan

This program has been designed and conceived according to the most recent research in diagnosis, treatment and diseases with different types of alterations, establishing a curriculum that provides a great content on Internal Medicine in Major Species. This Hybrid Professional Master's Degree is oriented to provide advanced information on neurological examinations and main diagnostic tests. This update can be carried out by means of the multiple multimedia tools that offer dynamism and a greater attractiveness to this university program. All this from a global point of view, incorporating all the fields of work involved in the development of its functions.





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*Update yourself directly with TECH,  
accompanied by professionals  
with great expertise in the use  
of arrhythmogenic mechanisms”*

## Module 1. Alterations of the Cardiovascular System in Large Animals

- 1.1. Anatomy and clinical pathology cardiovascular
  - 1.1.1. Embryonic development and heart anatomy
  - 1.1.2. Fetal circulation
  - 1.1.3. The heart cycle
  - 1.1.4. Ionic channels and potential for action
  - 1.1.5. Neurohormonal control of the heart
  - 1.1.6. Arrhythmogenic Mechanisms
- 1.2. Cardiovascular examination
  - 1.2.1. Medical History
  - 1.2.2. Cardiovascular examination
- 1.3. Diagnostic Tests
  - 1.3.2. Tensiometry
  - 1.3.3. Electrocardiography
  - 1.3.4. Echocardiography
  - 1.3.5. Vascular Ultrasound
- 1.4. Congenital heart and valve diseases in the horse
  - 1.4.1. Ventricular Septal Defect
  - 1.4.2. Tetralogy of Fallot
  - 1.4.3. Patent Ductus Arteriosus
  - 1.4.4. Aortic Insufficiency
  - 1.4.5. Mitral Insufficiency
  - 1.4.6. Tricuspid Regurgitation
- 1.5. Arrhythmias on the horse
  - 1.5.1. Supraventricular Arrhythmias
  - 1.5.2. Ventricular Arrhythmias
  - 1.5.3. Conduction Disturbances
- 1.6. Pericarditis, myocarditis, endocarditis and vascular alterations in the horse
  - 1.6.1. Pericardial Disorders
  - 1.6.2. Myocardial Disorders
    - 1.6.2.1. Alterations of the endocardium
    - 1.6.2.2. Aorto-cardiac and aorto-pulmonary fistulas
- 1.7. Cardiovascular diseases in bovine animals
  - 1.7.1. Cardiovascular System Examination in Bovines
  - 1.7.2. Congenital Cardiovascular Pathologies
  - 1.7.3. Arrhythmias
  - 1.7.4. Heart Failure and Cor Pulmonale
  - 1.7.5. Valvular and Endocardial Diseases
  - 1.7.6. Myocardial Diseases and Cardiomyopathies
  - 1.7.7. Pericardial Diseases
  - 1.7.8. Thrombosis and Embolism
  - 1.7.9. Neoplasty
- 1.8. Cardiovascular diseases in small ruminants
  - 1.8.1. Cardiovascular System Examination in Small Ruminants
  - 1.8.2. Congenital Cardiovascular Pathologies
  - 1.8.3. Acquired Cardiovascular Pathologies
  - 1.8.4. Toxic or Nutritional Deficiency Cardiopathies
  - 1.8.5. Vascular Diseases
- 1.9. Cardiovascular diseases in camelids
  - 1.9.1. Exploration of the cardiovascular system in camelids
  - 1.9.2. Congenital Cardiovascular Pathologies
  - 1.9.3. Acquired Cardiovascular Pathologies
  - 1.9.4. Toxic or Nutritional Deficiency Cardiopathies
  - 1.9.5. Anemia, polycythemia and erythrocytosis
  - 1.9.6. Neoplasty
- 1.10. Cardiovascular Pharmacology
  - 1.10.1. Vasodilators
  - 1.10.2. Positive inotropes
  - 1.10.3. Diuretics
  - 1.10.4. Antiarrhythmics
  - 1.10.5. Treatment of Heart Failure



**Module 2. Alterations of the Respiratory System in Large Animals**

- 2.1. Clinical Examination and Main Diagnostic Techniques of the Upper Respiratory Tract
  - 2.1.1. Anamnesis and General Physical Examination
  - 2.1.2. Examination of Upper Respiratory Tract
  - 2.1.3. Endoscopy at Rest
  - 2.1.4. Dynamic Endoscopy
  - 2.1.5. Ultrasound and Radiography of Upper Respiratory Tract
  - 2.1.6. Culture and Antibigram
- 2.2. Clinical Examination and Main Diagnostic Techniques of the Lower Respiratory Tract
  - 2.2.1. Examination of Lower Respiratory Tract
  - 2.2.2. Thoracic Ultrasound Scan
  - 2.2.3. Thoracic Radiography
  - 2.2.4. Sample Collection: Tracheal Aspirate, Bronchoalveolar Lavage and Thoracocentesis
  - 2.2.5. Arterial Blood Gases
  - 2.2.6. Pulmonary Function Tests
  - 2.2.7. Pulmonary Biopsy
- 2.3. Diseases of the Upper Respiratory Tract in Horses
  - 2.3.1. Ethmoidal Hematoma
  - 2.3.2. Sinusitis
  - 2.3.3. Sinus Cysts
  - 2.3.4. Guttural Pouch Pathologies: Tympanism, Mycosis, Empyema
  - 2.3.5. Lymphoid Hyperplasia
  - 2.3.6. Epiglottic Entrapment
  - 2.3.7. Pharyngeal Collapse
  - 2.3.8. Dorsal Displacement of the Soft Palate
  - 2.3.9. Recurrent Laryngeal Papillomatosis
  - 2.3.10. Arytenoid Chondritis
  - 2.3.11. Rostral Displacement of Palatopharyngeal Arch
- 2.4. Equine Respiratory Viruses
  - 2.4.1. Influenza
  - 2.4.2. Herpesvirus
  - 2.4.3. Other Respiratory Viruses
- 2.5. Exercise-Induced Pulmonary Hemorrhage in Horses
  - 2.5.1. Clinical Signs
  - 2.5.2. Pathogenesis
  - 2.5.3. Diagnosis
  - 2.5.4. Treatment
  - 2.5.5. Prognosis
- 2.6. Pleuropneumonia and Bacterial Pneumonia in Equidae
  - 2.6.1. Clinical Signs
  - 2.6.2. Pathogenesis
  - 2.6.3. Diagnosis
  - 2.6.4. Treatment
  - 2.6.5. Prognosis
- 2.7. Severe or Acute Asthma in Equidae
  - 2.7.1. Clinical Signs
  - 2.7.2. Pathogenesis
  - 2.7.3. Diagnosis
  - 2.7.4. Treatment
  - 2.7.5. Prognosis
- 2.8. Respiratory Pathologies in Cattle
  - 2.8.1. Examination of the Respiratory System in Cattle
  - 2.8.2. Alterations in the Upper Respiratory Tract
  - 2.8.3. Bovine Respiratory Syndrome
  - 2.8.4. Interstitial Pneumonia and Other Causes of Pneumonia in Bovines
  - 2.8.5. Alterations of the Thoracic Cavity
- 2.9. Respiratory Pathologies in Small Ruminants
  - 2.9.1. Examination of the Respiratory System in Sheep and Goats
  - 2.9.2. Alterations in the Upper Respiratory Tract
  - 2.9.3. Pneumonia
  - 2.9.4. Alterations of the Thoracic Cavity
- 2.10. Respiratory Pathologies in Camelids
  - 2.10.1. Examination of the respiratory system in camelids
  - 2.10.2. Alterations in the Upper Respiratory Tract
  - 2.10.3. Pneumonia and Other Pulmonary and Thoracic Pathologies
  - 2.10.4. Neoplasty

### Module 3. Neurologic Alterations in Large Animals

- 3.1. Neurological examination and main diagnostic tests
  - 3.1.1. Clinical Examination and Clinical Signs
  - 3.1.2. Dynamic Assessment and Localization of the Lesion
  - 3.1.3. Diagnostic Tests: Extraction and analysis of cerebrospinal fluid
  - 3.1.4. Other Diagnostic Tests
- 3.2. Epilepsy, convulsions, congenital and degenerative diseases in the horse
  - 3.2.1. Epilepsy and seizures
  - 3.2.2. Sleep Disorders
  - 3.2.3. Cerebellar abiotrophy
  - 3.2.4. Shivers
  - 3.2.5. Degenerative myeloencephalopathy
  - 3.2.6. Polyneuritis
- 3.3. Central nervous system trauma and vestibular syndrome in equidae
  - 3.3.1. Brain trauma
  - 3.3.2. Spinal Cord Trauma
  - 3.3.3. Vestibular Syndrome
- 3.4. Compressive diseases of the spinal cord in the horse
  - 3.4.1. Pathogenesis and clinical signs
  - 3.4.2. Diagnosis
  - 3.4.3. Treatment and Prognosis
- 3.5. Viral diseases affecting the Central Nervous System (CNS) in horses
  - 3.5.1. Myeloencephalopathy due to equine herpesvirus
  - 3.5.2. Togavirus encephalitis (WEE, EEE and VEE)
  - 3.5.3. West Nile virus encephalitis
  - 3.5.4. Rabies
  - 3.5.5. Bornavirus and other viral encephalitis
- 3.6. Other diseases affecting the CNS in horses
  - 3.6.1. Equine Motor Neuron Disease (EMND)
  - 3.6.2. Grass disease (equine dysautonomia)
  - 3.6.3. Neoplasms
  - 3.6.4. Metabolic alterations that cause neurological symptoms
  - 3.6.5. Toxins
  - 3.6.6. Headsaking
  - 3.6.7. Lyme Disease
- 3.7. Tetanus and Botulism
  - 3.7.1. Tetanus
  - 3.7.2. Botulism
- 3.8. Neurological diseases of bovine animals
  - 3.8.1. Examination of the nervous system in cattle
  - 3.8.2. Alterations Mainly Affecting the Brain in Bovines
  - 3.8.3. Disorders Mainly Affecting the Brainstem in Bovines
  - 3.8.4. Disorders Mainly Affecting the Cerebellum in Bovines
  - 3.8.5. Alterations Mainly Affecting the Spinal Cord in Bovines
  - 3.8.6. Alterations Mainly Affecting the Peripheral Nerves in Bovines
- 3.9. Neurological diseases of small ruminants
  - 3.9.1. Nervous system examination in sheep and goats
  - 3.9.2. Disorders Mainly Affecting the Brain in Small Ruminants
  - 3.9.3. Disorders Mainly Affecting the Brainstem in Small Ruminants
  - 3.9.4. Disorders Mainly Affecting the Cerebellum in Small Ruminants
  - 3.9.5. Disorders Mainly Affecting the Spinal Cord in Small Ruminants
- 3.10. Neurological diseases of camelids animals
  - 3.10.1. Nervous system examination and diagnostic techniques in camelids
  - 3.10.2. Congenital pathologies and nervous system development
  - 3.10.3. Infectious meningoencephalitis
  - 3.10.4. Noninfectious primary neuropathies
  - 3.10.5. Secondary neuropathies
  - 3.10.6. Myopathies and vertebral pathologies
  - 3.10.7. Neurological visual and hearing impairments

**Module 4. Alterations of the Gastrointestinal System in Large Animals**

- 4.1. Clinical examination and diagnostic tests
  - 4.1.1. Physical Examination
  - 4.1.2. Imaging Techniques
  - 4.1.3. Endoscopy
  - 4.1.4. Absorption and digestion test
  - 4.1.5. Other Tests
- 4.2. Disorders affecting the stomach of horses
  - 4.2.1. Gastric ulceration syndrome
  - 4.2.2. Stomach impactions
  - 4.2.3. Other diseases affecting the stomach
- 4.3. Strangulating injuries on the horse
  - 4.3.1. Strangulating lesions of the small intestine
  - 4.3.2. Strangulating lesions of the large intestine
- 4.4. Obstructive injuries on the horse
  - 4.4.1. Obstructive lesions of the esophagus
  - 4.4.2. Obstructive lesions of the small intestine
  - 4.4.3. Obstructive lesions of the large intestine
- 4.5. IBD: inflammatory diseases/malabsorption syndrome in horses
  - 4.5.1. Clinical Approach
  - 4.5.2. Dietary lymphosarcoma
  - 4.5.3. Granulomatous enteritis
  - 4.5.4. Eosinophilic enterocolitis
  - 4.5.5. Lymphocytic-plasmocytic enterocolitis
  - 4.5.6. Proliferative Enteropathy
  - 4.5.7. Others
- 4.6. Pathologies that affect the liver
  - 4.6.1. Liver disease and liver failure
  - 4.6.2. Clinical signs of liver disease
  - 4.6.3. Acute liver disease
  - 4.6.4. Chronic liver disease
  - 4.6.5. Vascular and Congenital Diseases
- 4.7. Colitis, enteritis and peritonitis
  - 4.7.1. Colitis
  - 4.7.2. Enteritis
  - 4.7.3. Treatment options for horses with acute diarrhea
  - 4.7.4. Peritonitis
- 4.8. Gastrointestinal disorders in cattle
  - 4.8.1. Examination of the gastrointestinal system in cattle
  - 4.8.2. Disorders of the Oral Cavity
  - 4.8.3. Indigestion
  - 4.8.4. Traumatic Reticuloperitonitis
  - 4.8.5. Abomination displacements and other alterations of the abomaso
  - 4.8.6. Obstructive bowel disorders
  - 4.8.7. Diarrhea in adult cattle
- 4.9. Gastrointestinal Disorders of Small Ruminants
  - 4.9.1. Exploration of the gastrointestinal system in small ruminants
  - 4.9.2. Disorders of the Oral Cavity
  - 4.9.3. Indigestion and Other Pre-stomach Disorders
  - 4.9.4. Enterotoxemia
  - 4.9.5. Diarrhea in Adult Sheep and Goats
- 4.10. Gastrointestinal alterations in camelids
  - 4.10.1. Anatomy and physiology of the gastrointestinal tract of camelids
  - 4.10.2. Diagnostic Techniques
  - 4.10.3. Congenital Gastrointestinal Pathologies
  - 4.10.4. Diseases of the Oral Cavity
  - 4.10.5. Diseases of the Esophagus
  - 4.10.6. Pathologies of gastric compartments or pre-estomachs
  - 4.10.7. Enteritis and diarrhea
  - 4.10.8. Acute or colic abdomen
  - 4.10.9. Neoplasms of the gastrointestinal tract



## Module 5. Alterations of the Urinary System in Large Animals

- 5.1. Anatomy, physiology and diagnostic tests
  - 5.1.1. Anatomy
  - 5.1.2. Physiology
    - 5.1.2.1. Elimination of nitrogen components
    - 5.1.2.2. Electrolyte removal and recovery (tubular function)
    - 5.1.2.3. Water Balance
- 5.2. Haematology and blood biochemistry
  - 5.2.1. Urinalysis
    - 5.2.1.1. Density
    - 5.2.1.2. Test strip
    - 5.2.1.3. Microscopy
    - 5.2.1.4. Enzimuria
    - 5.2.1.5. Excretional fractions
    - 5.2.1.6. Culture
  - 5.2.2. Imaging Techniques
    - 5.2.2.1. Ultrasound
    - 5.2.2.2. Radiology
    - 5.2.2.3. Endoscopy
    - 5.2.2.4. Gammagraphy
  - 5.2.3. Renal Biopsy
  - 5.2.4. Quantification of renal function (clearance)
- 5.3. Acute Kidney Failure (ARI) in the horse
  - 5.3.1. Causes
  - 5.3.2. Pathophysiology
  - 5.3.3. Renal tubular necrosis
  - 5.3.4. Acute interstitial nephritis
  - 5.3.5. Acute glomerulonephritis
  - 5.3.6. Diagnosis
  - 5.3.7. Treatment
  - 5.3.8. Prognosis
- 5.4. Chronic kidney failure in the horse
  - 5.4.1. Predisposing Factors
  - 5.4.2. Glomerulonephritis
  - 5.4.3. Chronic interstitial nephritis
  - 5.4.4. Other Causes
  - 5.4.5. Diagnosis
  - 5.4.6. Treatment
  - 5.4.7. Prognosis
- 5.5. Renal tubular acidosis in the horse
  - 5.5.1. Pathophysiology
  - 5.5.2. Type 1
  - 5.5.3. Type 2
  - 5.5.4. Type 3
  - 5.5.5. Quantitative/traditional approximation to imbalances
  - 5.5.6. Diagnosis
  - 5.5.7. Treatment
- 5.6. Research and differential diagnosis of polyuria/polydipsia
  - 5.6.1. Diagnostic Protocol
  - 5.6.2. Causes
    - 5.6.2.1. Renal Insufficiency
    - 5.6.2.2. *Cushing*
    - 5.6.2.3. Primary polydipsia
    - 5.6.2.4. Excess salt consumption
    - 5.6.2.5. Diabetes Insipidus
    - 5.6.2.6. Diabetes Mellitus
    - 5.6.2.7. Sepsis
    - 5.6.2.8. Latrogenic
- 5.7. Research and differential diagnosis of pigmenturia (renal hemorrhage, urolithiasis, urethritis)
  - 5.7.1. Urethritis/urethral defects
  - 5.7.2. Cystitis
  - 5.7.3. Pyelonephritis
  - 5.7.4. Urolithiasis
    - 5.7.4.1. Urethral stones
    - 5.7.4.2. Bladder Stones

- 5.7.5. Idiopathic renal hematuria
- 5.7.6. Hematuria associated with exercise
- 5.7.7. Pigmenturia due to systemic pathology
- 5.8. Genitourinary diseases in cattle
  - 5.8.1. Congenital Genitourinary Pathologies
  - 5.8.2. Renal Damage and Failure
  - 5.8.3. Other Kidney Diseases
  - 5.8.4. Diseases of the Ureters, Bladder and Urethra
- 5.9. Genitourinary diseases in small ruminants
  - 5.9.1. Congenital Genitourinary Pathologies
  - 5.9.2. Renal Damage and Failure
  - 5.9.3. Other Kidney Diseases
  - 5.9.4. Urinary Obstruction
  - 5.9.5. Diseases of the Ureters, Bladder and Urethra
- 5.10. Genitourinary diseases in camelids
  - 5.10.1. Congenital Genitourinary Pathologies
  - 5.10.2. Renal Damage and Failure
  - 5.10.3. Other Kidney Diseases
  - 5.10.4. Urinary Obstruction
  - 5.10.5. Diseases of the Ureters, Bladder and Urethra
  - 5.10.6. Neoplasty

## Module 6. Neonatology in Large Animals

- 6.1. Clinical approach to the neonatal foal
  - 6.1.1. Examination of the newborn foal
  - 6.1.2. System assessment
  - 6.1.3. Exploration of the mother and placenta
- 6.2. Sepsis in foals
  - 6.2.1. Risk Factors
  - 6.2.2. Clinical Signs
  - 6.2.3. Diagnosis
  - 6.2.4. Treatment
  - 6.2.5. Prognosis
- 6.3. Neonatal hypoxia syndrome in foals
  - 6.3.1. Etiopathogenesis
  - 6.3.2. Clinical Signs
  - 6.3.3. Diagnosis
  - 6.3.4. Treatment
  - 6.3.5. Prognosis
- 6.4. Respiratory disturbances of newborn foals
  - 6.4.1. Choanal Atresia
  - 6.4.2. Wry nose
  - 6.4.3. Pneumonia
  - 6.4.4. Acute respiratory distress syndrome
  - 6.4.5. Rib fracture
  - 6.4.6. Management of foals with pulmonary pathologies
- 6.5. Genitourinary alterations of newborn foals
  - 6.5.1. Patent Urachus
  - 6.5.2. Uroperitoneum
  - 6.5.3. Renal Insufficiency
  - 6.5.4. Inguinal and scrotal hernias
  - 6.5.5. Ectopic ureters
- 6.6. Digestive disorders of newborn foals
  - 6.6.1. Dysphagia
  - 6.6.2. Gastric ulceration syndrome
  - 6.6.3. Approach to the newborn with colic
  - 6.6.4. Meconium Impaction
  - 6.6.5. Diarrhea/enterocolitis
- 6.7. Intensive care, treatments and procedures
  - 6.7.1. Neonatal monitoring
  - 6.7.2. Care of the foal recumbent
  - 6.7.3. Fluid Therapy
  - 6.7.4. Feeding the sick foal
  - 6.7.5. Antibiotherapy
  - 6.7.6. Cardiopulmonary Resuscitation

- 6.8. Main Calf Problems
  - 6.8.1. Congenital Diseases
  - 6.8.2. Trauma and Death During Labor
  - 6.8.3. Prematurity, Dysmaturity and Neonatal Maladjustment
  - 6.8.4. Perinatal Diseases and Problems
  - 6.8.5. Diseases Associated with Reproductive Biotechnologies
  - 6.8.6. Failure of Colostral Immunoglobulins Transfer
  - 6.8.7. Diarrhea in calves
- 6.9. Main Problems of Neonatal Small Ruminants
  - 6.9.1. Congenital Diseases
  - 6.9.2. Prematurity, Dysmaturity and Neonatal Maladjustment
  - 6.9.3. Perinatal Problems
  - 6.9.4. Gastrointestinal Tract Diseases
  - 6.9.5. Locomotor System Diseases
  - 6.9.6. Failure of Colostral Immunoglobulins Transfer
- 6.10. Main Problems of Neonatal Camelids
  - 6.10.1. Congenital Diseases
  - 6.10.2. Prematurity, Dysmaturity and Neonatal Maladjustment
  - 6.10.3. Perinatal Problems
  - 6.10.4. Gastrointestinal Tract Diseases
  - 6.10.5. Locomotor System Diseases
  - 6.10.6. Failure of Colostral Immunoglobulins Transfer

## Module 7. Ophthalmology in Large Animals

- 7.1. Anatomy and Diagnostic Tests
  - 7.1.1. Anatomy and Physiology of the Eyeball
  - 7.1.2. Optic Nerve Blocks
  - 7.1.3. Ophthalmologic examination
  - 7.1.4. Basic Diagnostic Tests
  - 7.1.5. Tonometry
  - 7.1.6. Direct and Indirect Ophthalmoscopy
  - 7.1.7. Ocular Ultrasonography
  - 7.1.8. Other diagnostic imaging tests
  - 7.1.9. Electroretinography
  - 7.1.10. Sub-palpebral Catheter Placement
- 7.2. Alterations of the eyelids, conjunctiva and nasolacrimal duct in horses
  - 7.2.1. Anatomy of Adnexal Tissues
  - 7.2.2. Abnormalities of the Ocular Orbit
  - 7.2.3. Eyelid Alterations
  - 7.2.4. Abnormalities of the Ocular Conjunctive
  - 7.2.5. Alterations of the nasolacrimal duct
- 7.3. Corneal ulcers in the horse
  - 7.3.1. General Aspects
  - 7.3.2. Classification of Corneal Ulcers
  - 7.3.3. Simple, Complex and Severe Ulcers
  - 7.3.4. Indolent Ulcer
  - 7.3.5. Iridocele and eye piercing
  - 7.3.6. Keratomalacia (melting)
- 7.4. Infectious keratitis and stromal abscesses in horses
  - 7.4.1. Parasitic Keratitis
  - 7.4.2. Viral keratitis
  - 7.4.3. Fungal keratitis
  - 7.4.4. Bacterial Keratitis
  - 7.4.5. Stromal Abscess
  - 7.4.6. Corneal Surgery
- 7.5. Immune-mediated diseases and idiopathic non-ulcerative keratitis of the cornea in equines
  - 7.5.1. General Aspects. Classification
  - 7.5.2. Superficial immunomediated keratitis
  - 7.5.3. Deep-mid-stromal immunomediated keratitis
  - 7.5.4. Immunomediated endothelial keratitis
  - 7.5.5. Other immunomediated diseases of the cornea
- 7.6. Recurrent equine uveitis and other alterations of the uvea in horses
  - 7.6.1. Anatomy and physiology of the uveal tract
  - 7.6.2. Congenital diseases of the uvea
  - 7.6.3. Acute uveitis
  - 7.6.4. Equine Recurrent Uveitis



- 7.7. Other ocular alterations of horses
  - 7.7.1. Crystalline Lens Alterations
  - 7.7.2. Alterations of the retina and glaucoma
  - 7.7.3. Ocular neoplasms and associated structures
- 7.8. Ocular disorders in cattle
  - 7.8.1. Infectious Keratoconjunctivitis
  - 7.8.2. Ocular carcinoma
  - 7.8.3. Other alterations of the eyelids, conjunctiva and related tissues
  - 7.8.4. Other ocular alterations
- 7.9. Ocular Disorders in Small Ruminants
  - 7.9.1. Orbital Diseases
  - 7.9.2. Infectious Keratoconjunctivitis
  - 7.9.3. Parasitic Keratitis
  - 7.9.4. Retinal Degeneration
  - 7.9.5. Blindness
- 7.10. Ocular disorders in camelids
  - 7.10.1. Congenital Diseases
  - 7.10.2. Ulcerative Keratitis
  - 7.10.3. Parasitic Keratitis

## Module 8. Endocrinology and Dermatology in Large Animals

- 8.1. Clinical Approach and Diagnostic Tests in Equine Dermatology
  - 8.1.1. Medical History
  - 8.1.2. Sampling and Main Diagnostic Methods
  - 8.1.3. Other Specific Diagnostic Techniques
- 8.2. Infectious, immunomediated and allergic diseases in the horse
  - 8.2.1. Viral Diseases
  - 8.2.2. Bacterial Diseases
  - 8.2.3. Fungal Diseases
  - 8.2.4. Parasitic Diseases
  - 8.2.5. Hypersensitivity reactions: types
  - 8.2.6. Insect Sting Allergy
  - 8.2.7. Other allergies and skin reactions
- 8.3. Skin neoplasms in equidae
  - 8.3.1. Sarcoids
  - 8.3.2. Melanoma
  - 8.3.3. Squamous Cell Carcinoma
  - 8.3.4. Other Skin Tumors
- 8.4. Thyroid and adrenal gland alterations in horses
  - 8.4.1. Thyroid functions
  - 8.4.2. Factors affecting the measurement of thyroid hormones
  - 8.4.3. Diagnostic test of thyroid function
  - 8.4.4. Hypothyroidism
  - 8.4.5. Hyperthyroidism
  - 8.4.6. Neoplasms of the thyroid
  - 8.4.7. Adrenal insufficiency in adults
  - 8.4.8. Adrenal insufficiency in foals
  - 8.4.9. Hyperadrenocorticism
  - 8.4.10. Adrenocortical neoplasms
- 8.5. Pituitary pars intermedia dysfunction in horses
  - 8.5.1. Etiopathogenesis
  - 8.5.2. Clinical Signs
  - 8.5.3. Diagnosis
  - 8.5.4. Treatment
- 8.6. Equine Metabolic Syndrome
  - 8.6.1. Etiopathogenesis
  - 8.6.2. Clinical Signs
  - 8.6.3. Diagnosis
  - 8.6.4. Treatment
- 8.7. Alterations of the metabolism of calcium, phosphorus and magnesium in the horse. Anhidrosis
  - 8.7.1. Alterations that cause hypocalcemia
  - 8.7.2. Pathologies that cause hypercalcemia
  - 8.7.3. Diseases that cause hypophosphatemia
  - 8.7.4. Pathologies associated with hyperphosphatemia
  - 8.7.5. Hypomagnesemia
  - 8.7.6. Hypermagnesemia
  - 8.7.7. Anhidrosis

- 8.8. Dermatological, metabolic and endocrine disorders in cattle
  - 8.8.1. Congenital Dermatological Pathologies
  - 8.8.2. Skin and Hair Diseases
  - 8.8.3. Subcutaneous Diseases
  - 8.8.4. Hoof and Horn Diseases
  - 8.8.5. Cutaneous Neoplasms
  - 8.8.6. Ketosis
  - 8.8.7. Calcium, Magnesium and Phosphorous Disorders
  - 8.8.8. Other Endocrinopathies
- 8.9. Dermatological and endocrine disorders in small ruminants
  - 8.9.1. Congenital Dermatological Pathologies
  - 8.9.2. Infectious Dermatitis
  - 8.9.3. Vesicular and Mucocutaneous Junction Diseases
  - 8.9.4. Hair and Wool Parasitic Diseases
  - 8.9.5. Caseous Lymphadenitis
  - 8.9.6. Skin and Adnexal Diseases Associated with Toxicity and Nutritional Problems
  - 8.9.7. Neoplasty
  - 8.9.8. Pregnancy Toxemia
  - 8.9.9. Stump, Rickets
- 8.10. Dematological and Endocrine Disorders in Camelids
  - 8.10.1. Infectious Dermatitis
  - 8.10.2. Mucocutaneous Junction Diseases
  - 8.10.3. Diseases which Affect the Quality of Fiber

**Module 9.** Laboratory diagnosis in horses. Hematopoietic system alterations and immunology in Large Animals

- 9.1. Hematology in the adult horse: alterations in the red series
  - 9.1.1. Physiology of red blood cells and platelets
  - 9.1.2. Interpretation of alterations in the red series
  - 9.1.3. Iron metabolism
  - 9.1.4. Thrombocytopenia/thrombocytosis
  - 9.1.5. Polycythemia





- 9.1.6. Anaemia
  - 9.1.6.1. Loss: Bleeding
  - 9.1.6.2. Destruction
    - 9.1.6.2.1. Infectious and parasitic diseases causing anemia: piroplasmosis, EIA and other diseases
    - 9.1.6.2.2. Immunomediated hemolysis
    - 9.1.6.2.3. Isoerythrolysis Neonatal
    - 9.1.6.2.4. Oxidative damage
  - 9.1.6.3. Lack of production
    - 9.1.6.3.1. Anemia chronic inflammation
    - 9.1.6.3.2. Myeloptosis/spinal aplasia
- 9.1.7. Physiology of the white series
  - 9.1.7.1. Neutrophils
  - 9.1.7.2. Eosinophils
  - 9.1.7.3. Basophils
  - 9.1.7.4. Lymphocytes
  - 9.1.7.5. Mast cells
  - 9.1.7.6. Leukaemias
- 9.2. Biochemistry in the adult horse
  - 9.2.1. Renal profile
  - 9.2.2. Liver profile
  - 9.2.3. Proteins acute phase
  - 9.2.4. Muscle profile
  - 9.2.5. Other determinations
- 9.3. Haematology and biochemistry in foals/geriatric horses
  - 9.3.1. Differences in hematology
  - 9.3.2. Differences in biochemistry
    - 9.3.2.1. Differences kidney function
    - 9.3.2.2. Differences in liver function
    - 9.3.2.3. Differences muscle profile
- 9.4. Immune response of foals and geriatric horses
  - 9.4.1. Peculiarities of the immune system of newborn foals
  - 9.4.2. Evolution during the first year of age of the immune response
  - 9.4.3. Aging: peculiarities of the geriatric immune system



- 9.5. Hypersensitivity Reactions Immunomediated diseases
  - 9.5.1. Hypersensitivity type 1
  - 9.5.2. Hypersensitivity type 2
  - 9.5.3. Hypersensitivity type 3
  - 9.5.4. Hypersensitivity type 4
  - 9.5.5. Immunocomplexes manifestations of immunomediated diseases
- 9.6. Hemostasis Disorders
  - 9.6.1. Primary Hemostasis
  - 9.6.2. Secondary Hemostasis
  - 9.6.3. Intrinsic and extrinsic pathway-based coagulation vs. Cell-based coagulation model (initiation, propagation and amplification)
  - 9.6.4. Anticoagulation
  - 9.6.5. Fibrinolysis/Antifibrinolysis
  - 9.6.6. Disseminated Intravascular Coagulation
  - 9.6.7. Purpura hemorrhagic
  - 9.6.8. Hereditary problems
  - 9.6.9. Procoagulant/anticoagulant treatments
- 9.7. Basic principles acid base balance. Fluid Therapy
  - 9.7.1. Introduction. Why is acid-base balance important?
  - 9.7.2. Basic Concepts
  - 9.7.3. Protection mechanisms: short- and long-term compensation
  - 9.7.4. Interpreting Methods
  - 9.7.5. Step by step, how do I interpret acid-base to get the most information?
    - 9.7.5.1. Lactate
    - 9.7.5.2. Electrolytes
      - 9.7.5.2.1. Hyponatremia ( $>145\text{mmol/l}$ )
      - 9.7.5.2.2. Hyponatremia (horse $<134\text{ mmol/l}$ )
      - 9.7.5.2.3. Hyperkalemia or hyperkalemia ( $>4.5\text{mmol/l}$ )
      - 9.7.5.2.4. Hypokalemia or hypokalemia ( $<3.5\text{ mmol/l}$ )
      - 9.7.5.2.5. Hyperchlorémia ( $>110\text{ mmol/l}$ )
      - 9.7.5.2.6. Hypochlorism ( $<90\text{ mmol/l}$ )
    - 9.7.5.3. SIDm
    - 9.7.5.4. Atot
    - 9.7.5.5. SIG
- 9.7.6. Classification of the Alterations
- 9.7.7. Basic principles of Fluid Therapy
- 9.7.8. Body composition of fluids and electrolytes
- 9.7.9. Dehydration estimate
- 9.7.10. Types of Fluid
  - 9.7.10.1. Crystalloid solutions
    - 9.7.10.1.1 Ringer-lactate
    - 9.7.10.1.2 Isofundin®
    - 9.7.10.1.3 Saline solution (0.9% NaCl)
    - 9.7.10.1.4 Sterovet®
    - 9.7.10.1.5 Baking soda
    - 9.7.10.1.6 Glucosaline 0.3/3.6%
    - 9.7.10.1.7 Hypertonic saline solution (7.5% NaCl)
  - 9.7.10.2 Colloidal solutions
    - 9.7.10.2.1 IsoHes®
    - 9.7.10.2.2 Plasma
- 9.8. Interpretation of analytical and immunological and hematopoietic alterations in cattle
  - 9.8.1. Blood Count:
  - 9.8.2. Blood Biochemistry
  - 9.8.3. Allergies
  - 9.8.4. Immune-Mediated Anemia
  - 9.8.5. Thrombocytopenia
- 9.9. Interpretation of analytical and immunological and hematopoietic alterations in small ruminants
  - 9.9.1. Blood Count:
  - 9.9.2. Anemia and the FAMACHA System
  - 9.9.3. Blood Biochemistry
- 9.10. Interpretation of analytical and immunological and hematopoietic alterations in camelids
  - 9.10.1. Blood Count:
  - 9.10.2. Anaemia
  - 9.10.3. Blood Biochemistry

**Module 10. Infectious and parasitic diseases in Large Animals**

- 10.1. Prevention and Control of Infectious Diseases
  - 10.1.1. Laboratory Diagnostic Tests
  - 10.1.2. Antimicrobial Treatments and Resistance
  - 10.1.3. Use of Vaccines
  - 10.1.4. Biosecurity and Control Measures
- 10.2. Main infectious diseases in horses
  - 10.2.1. Notifiable Diseases
  - 10.2.2. Bacterial Diseases
  - 10.2.3. Viral diseases
  - 10.2.4. Fungal Diseases
- 10.3. Main Bovine Infectious and Contagious Diseases
  - 10.3.1. Notifiable Diseases
  - 10.3.2. Bacterial Diseases
  - 10.3.3. Viral diseases
  - 10.3.4. Fungal Diseases
  - 10.3.5. Prion Diseases
- 10.4. Main infectious diseases in small ruminants
  - 10.4.1. Notifiable Diseases
  - 10.4.2. Bacterial Diseases
  - 10.4.3. Viral diseases
  - 10.4.4. Fungal Diseases
  - 10.4.5. Prion Diseases
- 10.5. Main infectious diseases in camelids
  - 10.5.1. Notifiable Diseases
  - 10.5.2. Bacterial Diseases
  - 10.5.3. Viral diseases
  - 10.5.4. Fungal Diseases
- 10.6. Main parasites affecting the horse
  - 10.6.1. Hemoparasites
  - 10.6.2. Small strongyles or ciatostomas
  - 10.6.3. Great stringers
  - 10.6.4. Roundworms
  - 10.6.5. Other nematodes
  - 10.6.6. Cestodes
- 10.7. Main Parasites Affecting Bovines
  - 10.7.1. Hemoparasites
  - 10.7.2. Gastrointestinal Nematodes
  - 10.7.3. Nematodes Affecting the Respiratory Tract
  - 10.7.4. Cestodes
  - 10.7.5. Trematodes
  - 10.7.6. Coccidia
- 10.8. Main Parasites Affecting Small Ruminants
  - 10.8.1. Hemoparasites
  - 10.8.2. Gastrointestinal Nematodes
  - 10.8.3. Nematodes Affecting the Respiratory Tract
  - 10.8.4. Cestodes
  - 10.8.5. Trematodes
  - 10.8.6. Anthelmintic Resistance in Small Ruminants
  - 10.8.7. Management, Treatment and Control Programs (FAMACHA)
- 10.9. Main parasites affecting camelids
  - 10.9.1. Hemoparasites
  - 10.9.2. Coccidia
  - 10.9.3. Nematodes
  - 10.9.4. Cestodes
- 10.10. Prevention and Treatment of Parasitic Diseases
  - 10.10.1. Diagnostic Techniques
  - 10.10.2. Therapeutic Principles
  - 10.10.3. Resistance Development
  - 10.10.4. Management and Control Programs

07

# Clinical Internship

Passing through the online theoretical stage, this Hybrid Professional Master's Degree requires a period of practical training in a veterinary center with the standards required by TECH. Students will have the support and guidance of a tutor, who will accompany them throughout the process, from the preparation to the clinical internship process.







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*Do your clinical practice in one of the best veterinary centers that TECH has for you"*

The Hybrid Professional Master's Degree of this program of Veterinary Internal Medicine consists of a 3-week development in the field of Major Species, which days must be completed by the professional according to the practical day of the veterinary medical center assigned. This internship will allow the student to demonstrate and intervene in real cases together with a professional team of great recognition in the field of veterinary Internal Medicine, applying the most recent and innovative treatments and diagnoses in the sector.

The activities to be carried out in this purely practical training are focused on the adequate procedures and the technical update of the interventions to the different animals according to their alterations or diseases, 100% oriented to the detailed training for the correct execution of the activity, carrying out an optimal professional performance and guaranteeing the animal's safety.

This is undoubtedly the best way to carry out the profession by performing the procedures in real time and with real protagonists, together with the technological innovations offered by the medical center for the respective interventions. Being a new way to implement the different animal health processes together with a high quality teaching team to make this a better educational experience in which TECH is at the forefront.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners that facilitate teamwork and multidisciplinary integration as transversal competences for veterinary praxis (learning to be and learning to relate).



*Train in a Specialized Veterinary Center that can offer you all these possibilities, with an innovative academic program of the highest standards"*



The procedures described below will form the basis of the practical part of the internship, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:

Module	Practical Activity
<b>Management of Imaging Techniques</b>	Directly check airways and other internal organs
	Perform through the nares or mouth examination of the trachea, bronchi and lungs
	Design more specific treatments through the respiratory dynamics of each animal
	Obtain detailed three-dimensional images of internal organs, including the lungs, using advanced technology
<b>Analysis of genitourinary diseases</b>	Examine the different congenital genitourinary pathologies, finding the cause of renal damage and failure
	Intervene in cases of urinary obstruction and diseases of the ureters, bladder and urethra
	Explore other diseases of the kidneys
	Approach the neoplasm maximizing the chances of successful treatment of the animal
<b>Exploration of respiratory and digestive alterations</b>	Provide respiratory support and supportive therapy with supplemental oxygen, mechanical ventilation and anti-inflammatory medications according to lung injury
	Perform surgery to improve normal airflow through the airways and improve the animal's quality of life
	Promote ulcer healing through dietary changes, stress management, medication to reduce gastric acidity, etc
	Perform surgery to remove the impacted meconium and unblock the bowel
<b>Review Ophthalmology in Large Animals</b>	Establish differential diagnoses of ocular clinical signs
	Determine a working methodology for the patient with stromal abscess, immune-mediated keratitis and equine recurrent uveitis
	Propose a working methodology for patients with corneal ulcers and/or infectious keratitis
	Generate specialized knowledge to perform a correct ophthalmologic examination in large animals



## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.



08

# Where Can I Do the Clinical Internship?

TECH provides the student with the opportunity to take this Hybrid Professional Master's Degree in different Veterinary Medical Centers around the world. In this way, this institution offers students the possibility of broadening their field of action.








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*Complete your theoretical update with the best practical stay in the market thanks to this academic proposal from TECH”*

## tech 52 | Where Can I Do the Clinical Internship?



The student will be able to complete the practical part of this Hybrid Professional Master's Degree at the following centers:



CLINICA AMBULANTE  
EQUINA  
URGENCIAS 24 H  
AGAR VETERINARIOS EQUINOS  
611 700

**Pharmacodynamics.**

### AGAR Veterinarios equinos

Country	City
Spain	Asturias

Address: Barrio Belmonte,  
33590 Boquerizo, Asturias

Equine Veterinarian Services in Asturias and  
Cantabria

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**Related internship programs:**

- Internal Medicine in Large Animals
- Equine Medicine and Surgery







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*Delve into the most relevant theory in this field, subsequently applying it in a real work environment”*



09

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*



## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the actual conditions in a veterinarian's professional practice.



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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. The feeling that the effort invested is effective becomes a very important motivation for veterinarians, which translates into a greater interest in learning and an increase in the time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.



*Veterinarians will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology more than 65,000 veterinarians have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. Our teaching method is developed in a highly demanding environment, where the students have a high socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.





This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Latest Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current and procedures of veterinary techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

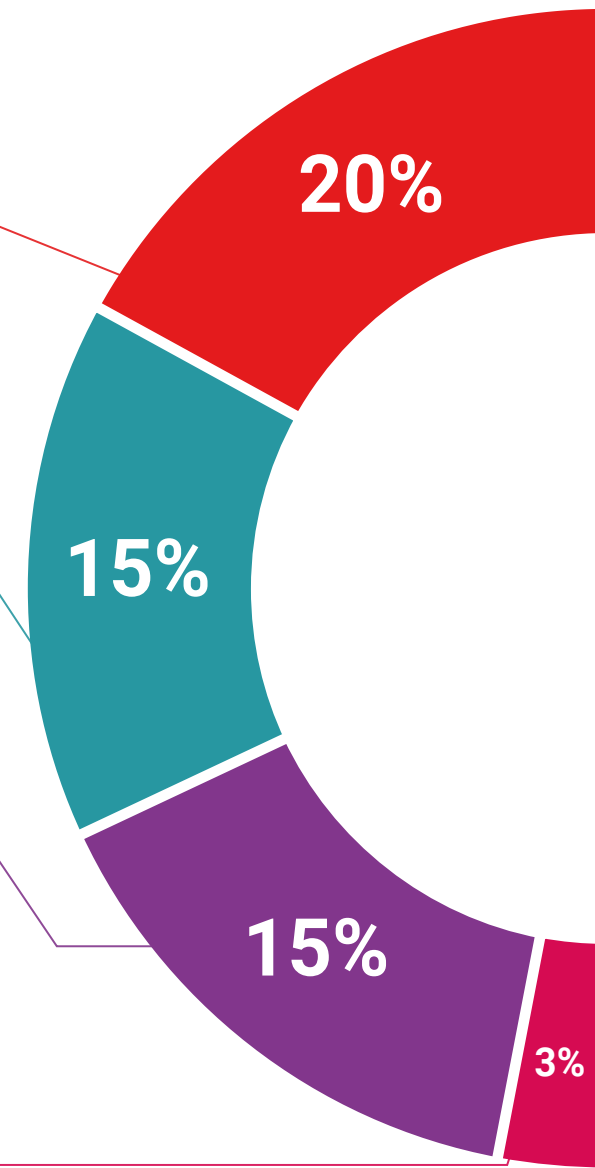
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



# 10 Certificate

The Hybrid Professional Master's Degree in Internal Medicine in Large Animals guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree diploma issued by TECH Technological University.





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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"*

This **Hybrid Professional Master's Degree in Internal Medicine in Large Animals** contains the most complete and up-to-date program on the professional and academic scene.

After the student has passed the assessments, they will receive their corresponding Hybrid Professional Master's Degree diploma issued by TECH Technological University via tracked delivery\*.

In addition to the diploma, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.

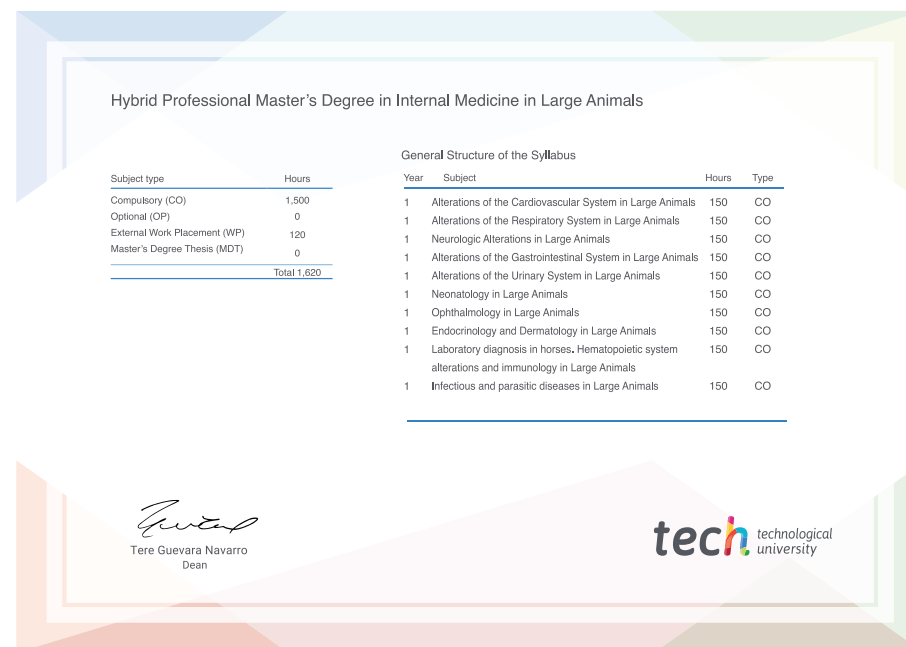
Title: **Hybrid Professional Master's Degree in Internal Medicine in Large Animals**

Course Modality: **Hybrid (Online + Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



## Hybrid Professional Master's Degree Internal Medicine in Large Animals

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.



# Hybrid Professional Master's Degree

## Internal Medicine in Large Animals

