

# Postgraduate Certificate

## Horse Digestive, Blood and Nutrition Pathologies





## Postgraduate Certificate Horse Digestive, Blood and Nutrition Pathologies

- » Course Modality: **Online**
- » Duration: **12 weeks**
- » Certificate: **TECH Technological University**
- » **12 ECTS Credits**
- » Teaching Hours: **300 hours**

Website: [www.techtute.com/us/veterianry-medicine/postgraduate-certificate/horse-digestive-blood-nutrition-pathologies](http://www.techtute.com/us/veterianry-medicine/postgraduate-certificate/horse-digestive-blood-nutrition-pathologies)

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# 01

# Introduction

The field veterinarian is one of the professionals in the specialty who most needs the extensive knowledge that gives him/her the ability to react immediately and adapt to resources outside the clinic. The approach to digestive and blood pathologies, depending on the speed and efficiency with which the clinician acts, can compromise the animal's life. This Postgraduate Certificate will allow you to achieve the efficiency in these areas you need. A high-quality program that will drive you to the highest levels of competence in the industry.



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*A complete and total update in Horse Digestive, Blood and Nutrition Pathologies with the most complete and effective Educational program in the online educational market"*

Digestive pathologies are the main cause of death in domestic horses. Therefore, they constitute an area of equine medicine and surgery in constant progress and research and for which the clinician practicing ambulatory veterinary medicine must be equipped with a high level of specialization, to ensure the best results for their patients, ensuring at all times the knowledge of diagnostic tools and innovative and quality treatments.

Most digestive pathologies present with symptoms characteristic of what we call acute abdominal syndrome (AAS), or in other words, colicky pain. Addressing these problems is therefore always a challenge for the equine veterinarian. Some of them are mild, almost asymptomatic, but if not detected in time they can lead to loss of sporting performance, animal welfare disorders or serious systemic involvement. Others are conditions of extreme urgency, posing a real danger and even endangering the life of the animals.

They all encompass issues that require an advanced level of knowledge to be able to deal with situations that the specialist-qualified ambulatory clinician will have to deal with on a day-to-day basis.

These topics will deal with the in-depth study of the alterations related to the hematopoietic and immune system, identifiable through the laboratorial study of blood components and detectable through a hemogram and serum biochemistry.

An advanced analysis of the pathophysiological mechanism of allergies, as well as the latest trends in their diagnosis and treatment will be carried out.

Endotoxic shock, a serious complication secondary to certain pathologies of high incidence in equines and in which, without a clear and updated vision to stabilize the patient quickly and effectively, the animal's life can be compromised, will be addressed.

Horse feeding will be covered. Providing proper nutrition with appropriate guidelines is one of the fundamental factors in basic horse care and a frequent reason for consultation in daily clinical practice. Basic physiological functions and physical activity require energy on a continuous basis, so energy metabolism ensures the storage of that energy and provides efficient supply routes. Therefore, the different metabolic pathways, aerobic and anaerobic, and their role in the performance of different sports disciplines will be discussed in depth.

This **Postgraduate Certificate in Horse Digestive, Blood and Nutrition Pathologies** offers you the characteristics of a high-level scientific teaching and technological course. These are some of its most notable features:

- ◆ The latest technology in online teaching software
- ◆ Intensely visual teaching system, supported by graphic and schematic contents, easy to assimilate and understand
- ◆ Practical cases presented by practising experts
- ◆ State-of-the-art interactive video systems.
- ◆ Teaching supported by telepractice
- ◆ Continuous updating and recycling systems
- ◆ Autonomous learning: full compatibility with other occupations
- ◆ Practical exercises for self-evaluation and learning verification
- ◆ Support groups and educational synergies: questions to the expert, debate and knowledge forums.
- ◆ Communication with the teacher and individual reflection work
- ◆ Availability of content from any fixed or portable device with internet connection
- ◆ Banks of complementary documentation permanently available, even after the end of the program.



*Join the elite, with this highly effective educational specialization and open new paths to your professional progress"*

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*A complete educational program that will allow you to acquire the most advanced knowledge in all the areas of intervention of the equine veterinarian"*

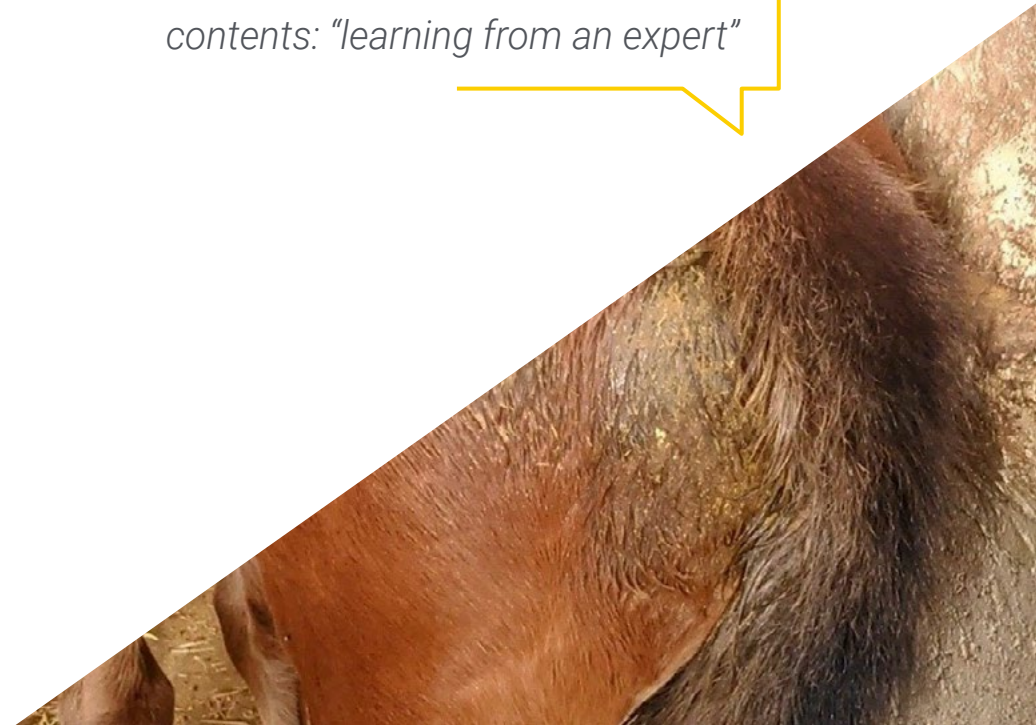
Our teaching staff is made up of professionals from different fields related to this specialty. In this way we ensure that we deliver the educational update we are aiming for. A multidisciplinary team of professionals trained and experienced in different environments, who will develop the theoretical knowledge in an efficient way, but, above all, will put at your disposal their practical knowledge from their own experience: one of the differential qualities of this specialization.

The efficiency of the methodological design of this Professional Master's Degree, enhances the student's understanding of the subject. Developed by a multidisciplinary team of e-learning experts, it integrates the latest advances in educational technology. This way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your training.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as a highly practical process. To achieve this remotely, we will use telepractice: with the help of an innovative interactive video system, and learning from an expert, you will be able to acquire the knowledge as if you were actually dealing with the scenario you are learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

*With a methodological design based on proven teaching techniques, this innovative course will take you through different teaching approaches to allow you to learn in a dynamic and effective way.*

*Our innovative telepractice concept will give you the opportunity to learn through an immersive experience, which will provide you with a faster integration and a much more realistic view of the contents: "learning from an expert"*



# 02 Objectives

Our goal is to prepare highly qualified professionals for work experience. An objective that is complemented, moreover, in a global manner, by promoting human development that lays the foundations for a better society. This objective is materialized in helping professionals to reach a much higher level of competence and control. A goal that, in just a few months you can consider achieved, with a high intensity and effective specialization.







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*If your goal is to redirect your skills towards new paths of success and development, this is the place for you: a specialization that aspires to excellence"*



## General Objectives

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- ♦ Identify the different anatomical structures and pathologies of the digestive tract of the horse.
- ♦ Develop and advance in the most frequent procedures to solve oral cavity pathologies.
- ♦ Recognize the symptoms of digestive disorders.
- ♦ Enable the clinician to correctly assess the systemic state of the animal and the consequent severity of the pathology.
- ♦ Establish diagnostic protocols and generate optimized treatments and prognoses.
- ♦ Establish optimal preventive medicine criteria and good management guidelines.
- ♦ Train the clinician in the approach to the patient with advanced alterations in the hemogram, biochemistry or hematopoiesis disorders.
- ♦ Develop an innovative and up-to-date methodology for patients with immune-mediated disorders.
- ♦ Develop and expand knowledge of endotoxic shock in order to provide the patient with the latest treatments.
- ♦ Examine the physiology of food consumption and the physical distribution and transport of the food bolus through the small and large intestine, as well as the processes of nutrient absorption in the different digestive compartments.
- ♦ Determine the conversion of nutrients into energy available for the different organic functions of the horse.
- ♦ Establish the different nutritional needs in the horse's diet, as well as its energy requirements according to sporting discipline, productive objective or maintenance as a domestic animal.
- ♦ Assess the cachectic horse: history and nutritional status, possible differentials, knowledge of metabolic consequences and requirements for subsequent dietary adjustment.
- ♦ Generate specialized knowledge on new developments in antibiotic therapy and antibiotic resistance.
- ♦ Examine prebiotics, probiotics as well as the use of medicinal plants in accordance with the high market demand that exists today in this area of medicine.
- ♦ Develop sedation and ambulatory anesthesia procedures.
- ♦ Determine the necessary tools for the assessment of the critically ill patient, providing the knowledge that enables the student to perform hospital treatments, such as advanced pain management, correction of hydro-electrolyte balance and acid-base balance, intensive care in the neonate and intensive care in the adult.
- ♦ Deepen in the fundamental medicinal and pharmacological considerations for high level sport horses.
- ♦ Delve into equine toxicology.
- ♦ Develop the application of humane euthanasia protocols.



*A path to achieve specialization and professional growth that will propel you towards a greater level of competitiveness in the employment market"*



## Specific Objectives

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- ♦ Define correct methods of anamnesis, evaluation and assessment of the patient with digestive pathology.
- ♦ Develop and advance in the most frequent procedures to solve oral cavity pathologies.
- ♦ Establish anesthetic blocking protocols for oral surgery and dental extractions.
- ♦ Recognize and resolve mandibular and maxillary pathologies.
- ♦ Properly develop general examination procedures such as rectal palpation, nasogastric probing, abdominocentesis, interpretation of analytical tests and diagnostic imaging in field conditions, and establish the appropriate treatments and issue the correct prognosis in the horse with abdominal pain.
- ♦ Develop and advance in depth in the diseases affecting the digestive tract from the stomach to the rectum, assessing the stage of the pathologies that appear.
- ♦ Develop and advance in depth on liver and biliary tract diseases in the horse and their possible treatments.
- ♦ Develop and advance in depth in infectious and parasitic diseases of the digestive tract, as well as their various treatments.
- ♦ Expand knowledge, establish and develop the correct decision criteria to treat abdominal syndrome in the horse in the field, or in case of requiring surgical treatment, to be able to correctly inform the owner and advise the referral of cases to the hospital in case they need surgery.
- ♦ Delve into the study of blood components, as well as to attend in detail to the serological biochemical markers, all of them analytical parameters that the clinical specialist must know in depth, in order to be able to relate possible alterations in this sense to pathological situations of any kind.
- ♦ Develop advanced knowledge on possible alterations related to hematopoiesis, as well as alternatives in terms of leading-edge treatments.
- ♦ Achieve a high degree of knowledge of the pathophysiological mechanisms of immune-mediated disorders in order to select the latest diagnostic tests and appropriate treatment.
- ♦ Deepen in the pathophysiological mechanisms of endotoxemia and the development of endotoxic shock, in order to prevent secondary complications associated with this process and to apply the most up-to-date treatments.
- ♦ Understand the processes of digestion and absorption of nutrients in the different anatomical compartments of the horse's digestive tract.
- ♦ Provide the basic knowledge on nutrients necessary for the development of feeding programs.
- ♦ Estimate a horse's weight and determine its body condition.
- ♦ Easy calculation of daily fodder and grain or compound feed requirements
- ♦ Differentiate and know how to apply the terms gross, digestible and net energy.
- ♦ Delve deeper into the knowledge of antibiotic treatment alternatives, as well as the development of antibiotic resistance, in order to train the clinician in decision making in situations where there is an important restriction of antibiotic use, either by the patient's category or by the appearance of bacterial resistance.
- ♦ Update on prebiotics, probiotics as well as the use of medicinal plants and their relevance as important tools in preventive medicine as well as in the treatment of specific pathologies.

03

# Course Management

Within the concept of total quality of our program, we are proud to put at your disposal a Teaching Staff of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.





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*Leading professionals in the field have come together to teach you the latest advances in Digestive and Blood Disorders and Horse Nutrition”*

## International Guest Director

As one of the foremost veterinary surgeons in equine patient care, Dr. Andy Fiske-Jackson is the Deputy Director of the Royal Veterinary College Equine in the United Kingdom. This is one of the leading institutions in both equine patient care and veterinary development, education and innovation. This has allowed him to develop in a privileged environment, even receiving the James Bee Educator Awards for excellence in educational work.

In fact, Dr. Andy Fiske-Jackson is also part of the team of surgeons at the Equine Referral Hospital, focusing his work on orthopedic and soft tissue surgery. Thus, his main areas of focus are low performance, back pain, dental and sinus issues, digital flexor tendinopathies and regenerative medicine.

In terms of research, his work leans between diagnostic techniques for digital flexor tendinopathies, clinical uses of objective gait analysis and objective evaluation of back pain. His efficiency in this field has led him to actively participate in various international events and conferences, including congresses in Portugal, Czech Republic, Finland, Belgium, Hungary, Switzerland, Austria, Germany, Ireland, Spain and Poland.



## Dr. Fiske-Jackson, Andy

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- Deputy Director at the Royal Veterinary College Equine. Hertfordshire, United Kingdom
- Associate Professor of Equine Surgery at the Royal Veterinary College.
- Equine Surgeon at the Equine Referral Hospital. Hertfordshire, United Kingdom
- Veterinarian at Axe Valley Veterinary
- Veterinarian at Liphook Equine Hospital.
- Veterinarian at the Society for the Protection of Animals Abroad. Morocco
- Graduate of the University of Liverpool
- Master's Degree in Veterinary Medicine from the Royal Veterinary College

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*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Dr. Varela del Arco, Marta

- Clinical Veterinarian in Equine Medicine, Surgery and Sports Medicine
- Head of the Large Animals Area of the Complutense Veterinary Clinic Hospital of Madrid (UCM).
- Associate Professor, Department of Animal Medicine and Surgery, Complutense University of Madrid (UCM)
- Head of Large Animal Unit at Complutense Clinical Veterinary Hospital of Madrid
- Assistant Professor in the Department of Animal Medicine and Surgery at UCM in 2007, she has been an Associate Professor in that Department from 2015 to the present.
- She teaches in different undergraduate and graduate courses, university specialization programs and Professional Master's Degrees.
- She actively participates as director of final projects in the Veterinary Degree and as a member of the tribunal of different doctoral theses.



### Dña. De la Cuesta Torrado, María

- Veterinarian with clinical specialty in Equine Internal Medicine
- Associate Professor, Department of Equine Medicine and Surgery, Cardenal Herrera Ceu University of Valencia since 2012.
- Member of the Organizing Committee of the "12th European College of Equine Internal Medicine Congress 2019 (ECEIM)".
- Member of the Board of Directors of Spanish Society of Ozone Therapy
- Member of the Equine Clinicians Commission of the Official College of Veterinarians of Valencia.
- Member of the Spanish Association of Equine Veterinarians (AVEE).
- Member of the scientific committee and coordinator of courses and congresses in the area of ozone therapy, supported by continuing education credits (CEC) granted by the National Health System.



## Professors

### Dr. Aguirre Pascasio, Carla

- ◆ Degree in Veterinary Medicine from Santiago de Compostela University (1995-2000)
- ◆ Doctor in Veterinary Medicine from the University of Murcia (2009). After obtaining the Certificate of Advanced Studies (2005), he concluded his doctorate at the same university with the thesis "Doppler in digital ultrasonography in horses with laminitis", obtaining a grade of Outstanding Cum Laude.
- ◆ Certified in Internal Medicine by the Royal Veterinary College of London, University of Liverpool, 2012 (CertAVP EM - Equine Medicine).
- ◆ Graduate Certificate in Soft Tissue Surgery from the Royal Veterinary College of London, University of Liverpool, 2015 (CertAVP ESST - Equine Surgery Soft Tissue).
- ◆ Spanish Certificate in Equine Clinic, 2019 (CertEspCEq by the Veterinary Council of Spain)
  
- ◆ Postgraduate in Physiotherapy in horses (2001-2002. Barcelona University)
- ◆ Máster in Business and Administration (MBA) (2010. ENAE Business School, Murcia)
- ◆ Residency at the European College of Internal Medicine. Eleggible en el ECEIM (European College of Equine Internal Medicine)
- ◆ Professional stays in Equine Hospitals in England, USA and Europe (Liphook Equine Hospital-UK; Rood and Riddle-USA; Hagyard-USA, Blue Ridge-USA; Alamo Pintado-USA; San Luis Rey-USA; University of Liverpool-UK; University of Ghent-Belgium; University of Edinburgh-UK; University of London-UK).
- ◆ Consecutive scholarships and internship at Murcia University Veterinary Clinic Hospital (2002-2007).
- ◆ Fellowship at Casal do Rio Equine Hospital (2002)

### Alonso de Diego, María

- ◆ Equine Internal Medicine Service at Clinical Veterinary Hospital of the Alfonso X El Sabio University
- ◆ Associate Professor of the Faculty of Veterinary Medicine of the Alfonso X El Sabio University.
- ◆ Spanish Certificate in Equine Clinic
- ◆ Member of the Association of Equine Veterinary Specialists
- ◆ Member of the Spanish Society of Ozone Therapy

### Benito, Irene

- ◆ Degree in Veterinary Medicine (2011). Extremadura University (UEX), Cáceres Veterinary School
- ◆ Completion of an internship in Equine Medicine and Surgery at the Clinical Veterinary Hospital of the UAB (Autonomous University of Barcelona) during the year 2013-2014.
- ◆ (2012) Professional internship through the Quercus Scholarship (Leonardo Da Vinci Program) for graduates of the University of Extremadura, lasting half a year, at Hippiatrica Equine Medical Center, Lisbon (Portugal), under the coordination of Dr. Manuel Torrealba (clinical director).

### D. Cervera Saiz, Álvaro

- ◆ Graduated in veterinary medicine by the Valencian Catholic University "San Vicente Mártir". 2013-2018
- ◆ Attendance to specific courses and conferences in the equine area of the HUMECO group.
- ◆ Attendance at training and refresher courses and seminars given by Spanish universities.
- ◆ Collaboration as an internship teacher during the internship at CEU Cardenal Herrera University.
- ◆ Clinical equine veterinarian in ambulatory service in the company " Equine Veterinary MC " since February 2020, in Valencia and directed by Maria de la Cuesta.

#### **D. Corradini, Ignacio**

- ♦ Degree in Veterinary Medicine
- ♦ Certified by the European College of Equine Internal Medicine (ECEIM).
- ♦ Residency in Equine Internal Medicine at University Hospital Veterinary Clinic - Autonomous University of Barcelona.
- ♦ Official Master's Degree in Veterinary Research at the Veterinary Faculty - Autonomous University of Barcelona.

#### **León Marín, Rosa**

- ♦ Clinical veterinarian specialized in Equine Dentistry
- ♦ Graduated in Veterinary Medicine, from the Complutense University of Madrid, September 1994.
- ♦ PhD in Veterinary Medicine from the Complutense University of Madrid with the qualification of "Outstanding cum Laude unanimously" (2011) for the thesis "Possible role of proinflammatory mediators in equine dental eruption".
- ♦ External tutor of the subject "Internships", tutoring second cycle students of the Faculty of Veterinary Medicine of the Complutense University of Madrid, the Alfonso X el Sabio University of Madrid and the CEU Cardenal Herrera University of Valencia.

#### **D. Manso Díaz, Gabriel**

- ♦ Clinical veterinarian, member of the Diagnostic Imaging Service at Complutense Veterinary Clinical Hospital (HCVC).
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid (UCM), obtaining the Extraordinary National Award.
- ♦ D. from the UCM in 2015 with which he obtained the European Mention and the Extraordinary Doctorate Award.
- ♦ Master's Degree in Veterinary Science Research 2011

#### **D. Marín Baldo Vink, Alexandra**

- ♦ Degree in Veterinary Medicine by Murcia University.
- ♦ Advanced Studies Certificate. Animal Medicine and Reproduction. Murcia University 2005
- ♦ Professor of the Faculty of Veterinary Medicine of the Alfonso X El Sabio University (2008-2020).
- ♦ Teaching of the theoretical and practical teaching related to the equine species of the subjects: Parasitic diseases, proaedeutics and supervised practice.

#### **Dr. Varela del Arco, Marta**

- ♦ Clinical Veterinarian in Equine Medicine, Surgery and Sports Medicine
- ♦ Head of the Large Animals Area of the Complutense Veterinary Clinic Hospital of Madrid (UCM).
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid, 1999 After obtaining the Bachelor's Degree Diploma (1999) and the Advanced Studies Diploma (2007), he concluded his PhD at the same university in 2016, with the thesis "Horse racing in Spain 2011-2014: characteristics and relationship with the Incidence of catastrophic musculoskeletal injuries" with Sobresaliente cum Laude.
- ♦ PhD and degree in Veterinary Medicine by Madrid Complutense University (UCM).
- ♦ Associate Professor, Department of Animal Medicine and Surgery, Complutense University of Madrid (UCM)
- ♦ Head of Large Animal Unit at Complutense Clinical Veterinary Hospital of Madrid
- ♦ Assistant Professor in the Department of Animal Medicine and Surgery at UCM in 2007, she has been an Associate Professor in that Department from 2015 to the present.
- ♦ She teaches in different undergraduate and graduate courses, university specialization programs and Professional Master's Degrees.
- ♦ She actively participates as director of final projects in the Veterinary Degree and as a

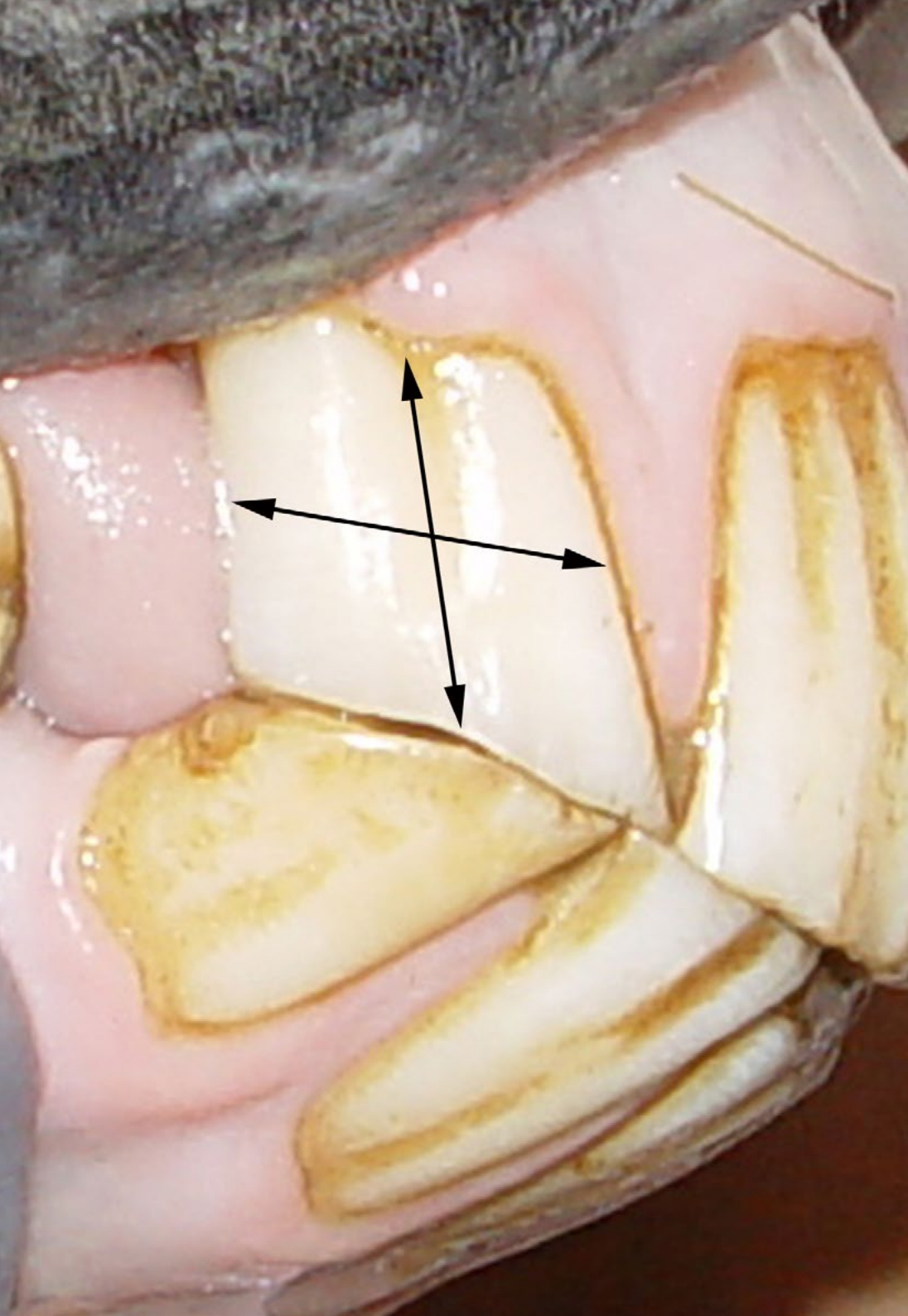
member of the tribunal of different doctoral theses.

**Dña. Rodríguez Hurtado, Isabel**

- ◆ Specialist in Internal Medicine of Horses
- ◆ Veterinary Degree from the Complutense University of Madrid.
- ◆ Doctorate in Veterinary Medicine in 2012.
- ◆ Graduate of the American College of Veterinary Internal Medicine (ACVIM) in 2007.
- ◆ Internship and Residency in Equine Internal Medicine at Auburn University (USA).
- ◆ Master's Degree in Biomedical Sciences.
- ◆ Master's Degree in Research Methodology in Health Sciences

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*An impressive teaching staff, made up of professionals from different areas of expertise, will be your teachers during your specialization: a unique occasion not to be missed”*

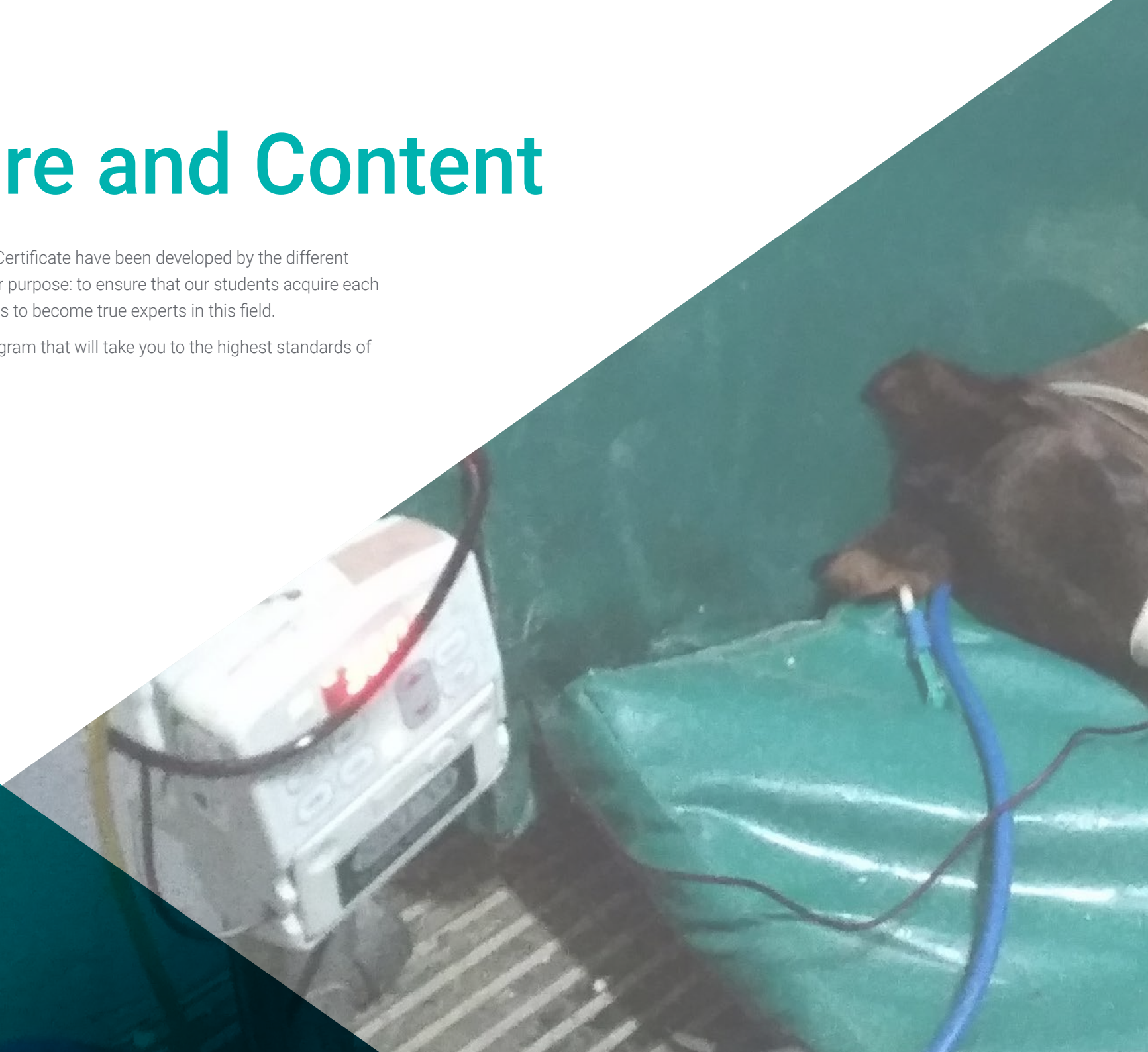


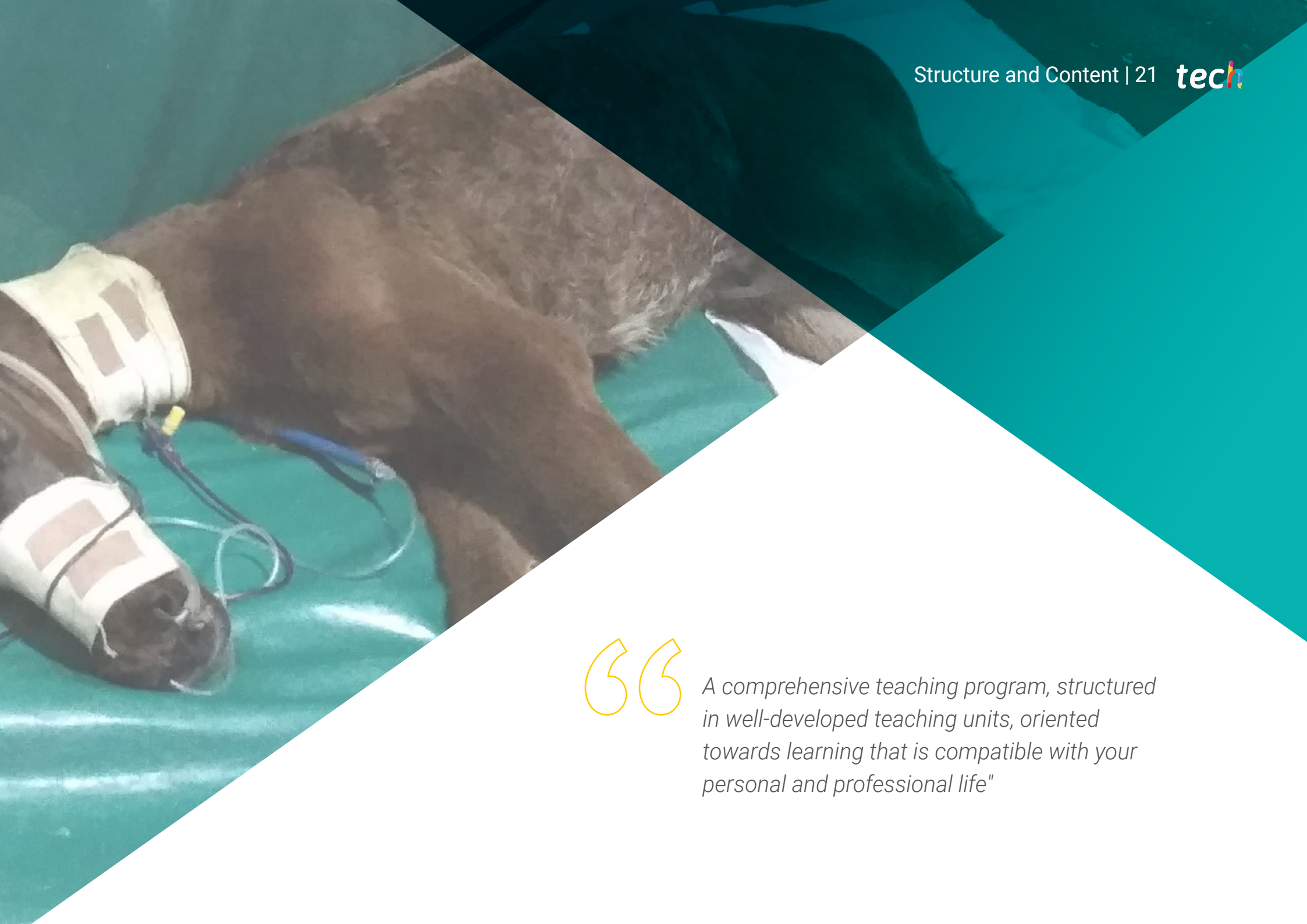
# 04

# Structure and Content

The contents of this Postgraduate Certificate have been developed by the different experts of this program, with a clear purpose: to ensure that our students acquire each and every one of the necessary skills to become true experts in this field.

A complete and well-structured program that will take you to the highest standards of quality and success.





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*A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"*

## Module 1. Digestive system

- 1.1. Approach to Acute Abdominal Syndrome Evaluation. Treatment Decision
  - 1.1.1. Introduction
    - 1.1.1.1. Epidemiology of Colic and Predisposing Factors
    - 1.1.1.2. Categorization of Diseases Causing Colicky Conditions
  - 1.1.2. General Screening Methods
    - 1.1.2.1. Medical History
    - 1.1.2.2. Assessment of General Condition and Degree of Pain
    - 1.1.2.3. Measurement of Vital Signs, Degree of Dehydration, Degree of Tissue Perfusion and Mucous Membranes Status
    - 1.1.2.4. Auscultation, Palpation and Percussion of the Abdomen
    - 1.1.2.5. Rectal Examination
    - 1.1.2.6. Nasogastric Catheterization
  - 1.1.3. Advanced Diagnostic Methods
    - 1.1.3.1. Blood Biopathology in the Diagnosis of Colic
    - 1.1.3.2. Abdominocentesis
    - 1.1.3.3. Ultrasound, Radiology, Endoscopy
  - 1.1.4. Treatment Decision: Medical or Surgical? When to refer
- 1.2. Diagnostic Imaging of the Digestive System in the Field
  - 1.2.1. Introduction to Diagnostic Imaging in the Field
  - 1.2.2. Technical Basis
    - 1.2.2.1. Radiology
    - 1.2.2.2. Ultrasound
  - 1.2.3. Oral Pathology
  - 1.2.4. Esophageal Pathology
  - 1.2.5. Abdominal Pathology
    - 1.2.5.1. Digestive system
      - 1.2.5.1.1. Stomach.
      - 1.2.5.1.2. Small Intestine
      - 1.2.5.1.3. Large Intestine
    - 1.2.5.2. Peritoneal Cavity
- 1.3. Oral cavity Examination Exodontia
  - 1.3.1. Exploration of the Head
  - 1.3.2. Oral cavity Examination
  - 1.3.3. Regional Nerve Blocks for Surgery and Dental Extractions
    - 1.3.3.1. Maxillary Nerve
    - 1.3.3.2. Mandibular Nerve
    - 1.3.3.3. Infraorbital Nerve
    - 1.3.3.4. Mental Nerve
  - 1.3.4. Exodontia Indications and Techniques
- 1.4. Malocclusions. Tumors. Maxillary and Mandibular Fractures Temporomandibular Joint Pathology
  - 1.4.1. Malocclusions. Filing
    - 1.4.1.1. Wear Alterations
  - 1.4.2. Tumors. Classification
  - 1.4.3. Maxillary and Mandibular Fractures Reparation
  - 1.4.4. Temporomandibular Joint Pathology
    - 1.4.4.1. Alterations and Clinical Signs
    - 1.4.4.2. Examination and Diagnosis
    - 1.4.4.3. Treatment and Prognosis
- 1.5. Diseases of the Esophagus and Stomach
  - 1.5.1. Oesophageal
    - 1.5.1.1. Esophageal Obstruction
    - 1.5.1.2. Oesophagitis
    - 1.5.1.3. Other Esophageal Alterations
  - 1.5.2. Stomach.
    - 1.5.2.1. Gastric Ulcers
    - 1.5.2.2. Gastric Impaction
    - 1.5.2.3. Squamous Cell Carcinoma
    - 1.5.2.4. Other Stomach Alterations

- 1.6. Small Intestine Diseases
  - 1.6.1. Simple Obstruction
  - 1.6.2. Proximal Enteritis
  - 1.6.3. Inflammatory Bowel Disease
  - 1.6.4. Intestinal Lymphoma
  - 1.6.5. Strangulating Alterations
  - 1.6.6. Small Intestinal Alterations
- 1.7. Large Intestinal Diseases
  - 1.7.1. Impactions
    - 1.7.1.1. Large Colon
    - 1.7.1.2. Cecum
    - 1.7.1.3. Minor Colon
  - 1.7.2. Large Colon Displacement
  - 1.7.3. Colitis
  - 1.7.4. Peritonitis
  - 1.7.5. Enterolithiasis
  - 1.7.6. Other Large Intestinal Alterations
- 1.8. Liver and Biliary Tract Diseases
  - 1.8.1. Approach to the Patient with Liver Disease
  - 1.8.2. Acute Liver Failure
  - 1.8.3. Cholangiohepatitis
  - 1.8.4. Chronic Hepatitis
  - 1.8.5. Neoplasms
  - 1.8.6. Other Liver and Biliary Tract Alterations
- 1.9. Infectious and Parasitic Diseases of the Digestive Tract
  - 1.9.1. Infectious Diseases of the Digestive Tract
    - 1.9.1.1. Salmonellosis
    - 1.9.1.2. Proliferative Enteropathy
    - 1.9.1.3. Clostridiosis
    - 1.9.1.4. Rotavirus
    - 1.9.1.5. Potomac Equine Fever
    - 1.9.1.6. Equine Coronavirus

- 1.9.2. Parasitic Diseases of the Digestive Tract
  - 1.9.2.1. Gastrointestinal Myiasis
  - 1.9.2.2. Intestinal Protozoa
  - 1.9.2.3. Intestinal Cestodes
  - 1.9.2.4. Intestinal Nematodes
- 1.10. Treatment of Medical Colic in the Field
  - 1.10.1. Management of the Patient with Colicky Pain
  - 1.10.2. Pain Control in Colicky Patients
  - 1.10.3. Fluid Therapy and Cardiovascular Support
  - 1.10.4. Treatment for Endotoxemia


## Module 2. Hematopoietic System, Immunology and Nutrition

- 2.1. Analytical Interpretation: Blood Count and Serum Biochemistry
  - 2.1.1. General Considerations for the Interpretation of Analytical Reports
    - 2.1.1.1. Essential Patient Data
    - 2.1.1.2. Sample Collection and Handling
  - 2.1.2. Interpretation of Blood Count
    - 2.1.2.1. Red Blood Cells
    - 2.1.2.2. White Blood Cells
    - 2.1.2.3. Platelet Cells
    - 2.1.2.4. Smears
  - 2.1.3. Interpretation of Serum or Plasma Biochemistry
    - 2.1.3.1. Electrolytes
    - 2.1.3.2. Bilirubin
    - 2.1.3.3. Creatinine, Blood Urea Nitrogen (BUN), Urea and Symmetrical Dimethylarginine (SDMA)
    - 2.1.3.4. Proteins: Albumin and Globulins
    - 2.1.3.5. Acute-Phase Proteins: Fibrinogen, Serum Amyloid A
    - 2.1.3.6. Enzymes
    - 2.1.3.7. Glucose
    - 2.1.3.8. Bicarbonate
    - 2.1.3.9. Lactate
    - 2.1.3.10. Triglycerides and Bile Acids

- 2.2. Hematopoietic System Pathologies
  - 2.2.1. Hemolytic anemia
    - 2.2.1.1. Immune-Mediated Hemolytic Anemia
    - 2.2.1.2. Equine Infectious Anemia
    - 2.2.1.3. Piroplasmosis
    - 2.2.1.4. Other Causes
  - 2.2.2. Hemorrhagic Anemia
    - 2.2.2.1. Hemoperitoneum and Hemothorax
    - 2.2.2.2. Gastrointestinal Losses
    - 2.2.2.3. Losses From Other Origin
  - 2.2.3. Non-Regenerative Anemias
    - 2.2.3.1. Iron Deficiency Anemia
    - 2.2.3.2. Anemia due to Chronic Inflammation/Infection
    - 2.2.3.3. Aplastic Anemia
  - 2.2.4. Coagulation Alterations
    - 2.2.4.1. Platelet Alterations
      - 2.2.4.1.1. Thrombocytopenia
      - 2.2.4.1.2. Platelet Functional Alterations
    - 2.2.4.2. Alterations of Secondary Hemostasis
      - 2.2.4.2.1. Hereditary
      - 2.2.4.2.2. Acquired
    - 2.2.4.3. Thrombocytosis
    - 2.2.4.4. Lymphoproliferative Disorders
    - 2.2.4.5. Disseminated Intravascular Coagulation (DIC)





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- 2.3. Endotoxic Shock
    - 2.3.1. Systemic Inflammation and Systemic Inflammatory Response Syndrome (SIRS)
    - 2.3.2. Causes of Endotoxemia in Horses
    - 2.3.3. Pathophysiological Mechanisms
    - 2.3.4. Endotoxic Shock
      - 2.3.4.1. Hemodynamic Changes
      - 2.3.4.2. Multiorgan Dysfunction
    - 2.3.5. Clinical Signs of Endotoxemia and Endotoxic Shock.
    - 2.3.6. Diagnosis
    - 2.3.7. Management
      - 2.3.7.1. Endotoxin Release Inhibitors
      - 2.3.7.2. Endotoxin Uptake and Inhibition
      - 2.3.7.3. Cell Activation Inhibition
      - 2.3.7.4. Inhibition of the Synthesis of Inflammatory Mediators
      - 2.3.7.5. Other specific therapies
      - 2.3.7.6. Support Treatments
  - 2.4. Treatment of Hematopoietic Alterations Transfusion Therapy
    - 2.4.1. Indications for Transfusion of Whole Blood
    - 2.4.2. Indications for Plasma Transfusion
    - 2.4.3. Indications for Transfusion of Platelet Products
    - 2.4.4. Donor Selection and Compatibility Testing
    - 2.4.5. Technique for Whole Blood Collection and Processing of Plasma
    - 2.4.6. Administration of Blood Products
      - 2.4.6.1. Volume of Administration
      - 2.4.6.2. Administration Techniques
      - 2.4.6.3. Adverse Reaction Monitoring

- 2.5. Immune System Alterations Allergies.
  - 2.5.1. Hypersensitivity Types
  - 2.5.2. Pathologies Associated with Hypersensitivity
    - 2.5.2.1. Anaphylactic Reaction
    - 2.5.2.2. Hemorrhagic Purpura
  - 2.5.3. Autoimmunity
  - 2.5.4. Most Important Immunodeficiencies in Equines
    - 2.5.4.1. Diagnostic Tests
    - 2.5.4.2. Primary Immunodeficiencies
    - 2.5.4.3. Secondary Immunodeficiencies
  - 2.5.5. Immunomodulators:
    - 2.5.5.1. Immunostimulants
    - 2.5.5.2. Immunosuppressants
- 2.6. Nutrition Basic Principles I
  - 2.6.1. Physiology of Gastrointestinal Tract
    - 2.6.1.1. Oral cavity, Esophagus, Stomach
    - 2.6.1.2. Small Intestine
    - 2.6.1.3. Large Intestine
  - 2.6.2. Diet Components, Nutrients
    - 2.6.2.1. Water
    - 2.6.2.2. Proteins and Amino Acids
    - 2.6.2.3. Carbohydrates
    - 2.6.2.4. Fats and Fatty Acids
    - 2.6.2.5. Minerals and Vitamins
  - 2.6.3. Estimation of Horse Weight and Body Condition
- 2.7. Nutrition Basic Principles II
  - 2.7.1. Energy and Available Energy Sources
    - 2.7.1.1. Forage
    - 2.7.1.2. Starches
    - 2.7.1.3. Fats
  - 2.7.2. Metabolic Pathways of Energy Production
  - 2.7.3. Energy Needs of the Horse
    - 2.7.3.1. In Maintenance
    - 2.7.3.2. For Breeding and Growth
    - 2.7.3.3. For the Show/Race Horse
- 2.8. Cachectic Horse Nutrition
  - 2.8.1. Metabolic Response
  - 2.8.2. Physical Examination and Clinical Signs
  - 2.8.3. Blood Analysis
  - 2.8.4. Differential Diagnoses
  - 2.8.5. Nutritional Requirements
- 2.9. Use of Probiotics, Prebiotics and Medicinal Plants
  - 2.9.1. Role of the Microbiota in the Large Intestine
  - 2.9.2. Probiotics, Prebiotics, and Symbiotics
  - 2.9.3. Medicinal Plants Use
- 2.10. Rational Use of Antibiotics. Bacterial Resistance
  - 2.10.1. Responsible Antibiotic Use
  - 2.10.2. New Antibiotic Therapies
  - 2.10.3. Resistance Mechanisms
  - 2.10.4. Main Multi-resistant Pathogens



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*A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"*

05

# Methodology

This training provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

This teaching system is used 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 Re-learning, 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

In a given clinical situation, what would you do? 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 abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you can 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 potential or because of its uniqueness or rarity. It is essential that the case be based on current professional life, trying to recreate the real conditions in the 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 achieve the assimilation of concepts, but also a development of their mental capacity through exercises to evaluate real situations and the application of knowledge.
2. The learning process has a clear focus on 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.



## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our 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, which represent a real revolution with respect to simply studying and analyzing 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 Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

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

*Re-learning 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 to success.*

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

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



In this program you will have access to the best educational material, prepared with you 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### Latest Techniques and Procedures on Video

We bring you closer to the latest Techniques, to the latest Educational Advances, to the forefront of current Veterinary Techniques and Procedures. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

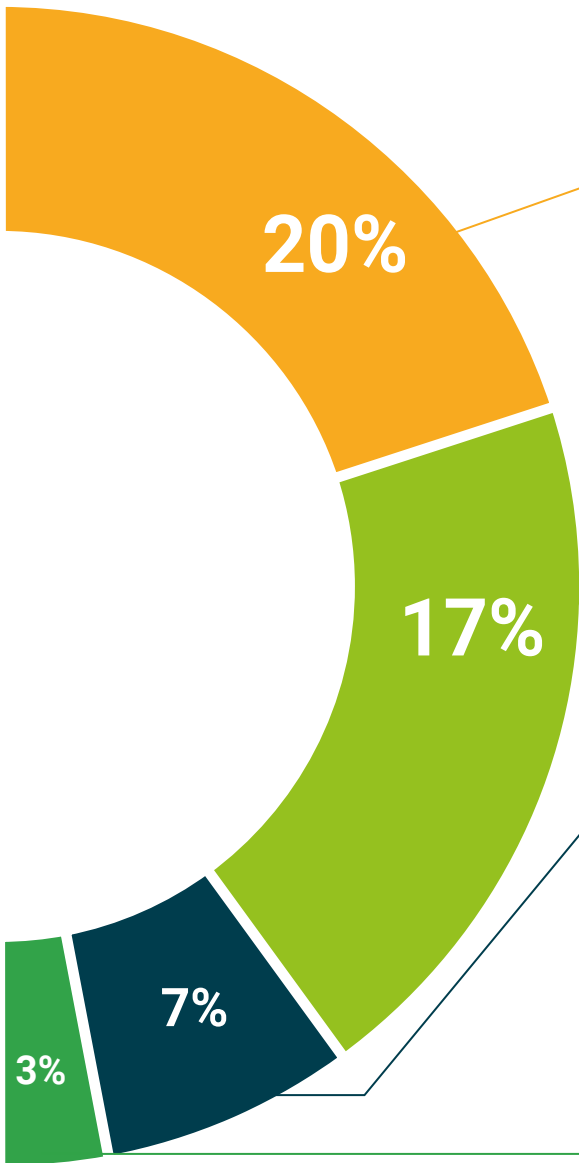
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



### Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.





**Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**Testing & Re-testing**

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your 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 our future difficult decisions.



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



06

# Certificate

This **Postgraduate Certificate in Horse Digestive, Blood and Nutrition Pathologies** guarantees you, in addition to the most rigorous and up-to-date training, access to a Postgraduate Certificate issued by **TECH Technological University**.



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*Postgraduate Certificate in Horse Digestive, Blood and Nutrition Pathologies: a highly qualified added value for any medical professional"*

This **Postgraduate Certificate in Horse Digestive, Blood and Nutrition Pathologies** includes the most complete and up-to-date scientific program on the market.

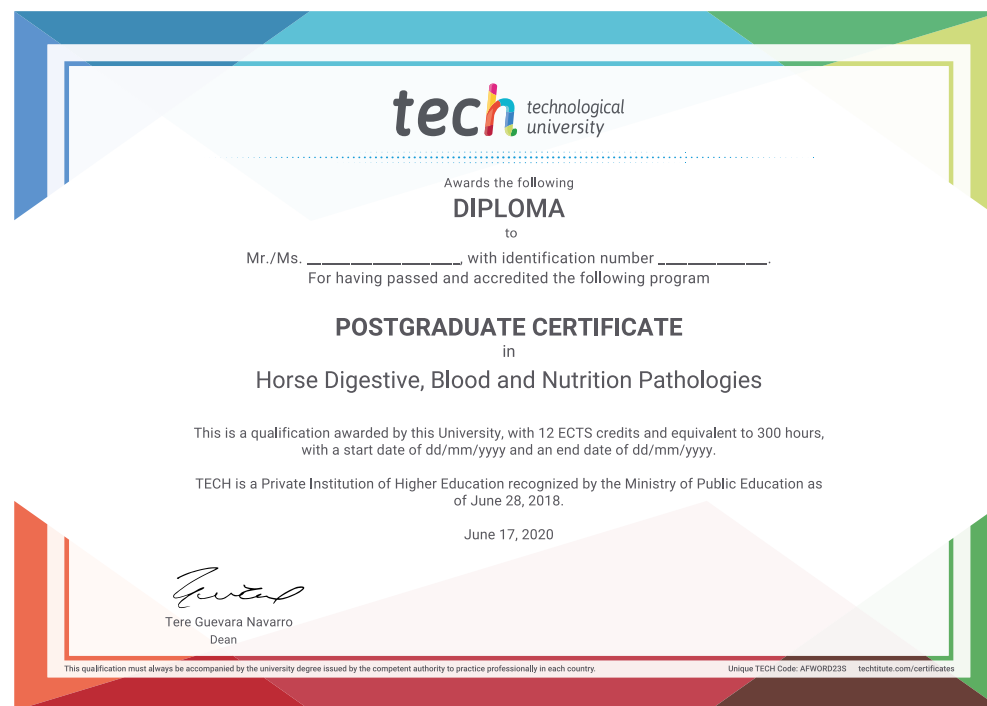
After the student has passed the assessments they will receive their corresponding Postgraduate Certificate issued by **TECH Technological University** via tracked delivery.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the program, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Horse Digestive, Blood and Nutrition Pathologies**

ECTS: **12**

Official Number of Hours: **300**



\*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.



**Postgraduate Certificate**  
Horse Digestive,  
Blood and Nutrition  
Pathologies

- » Course Modality: **Online**
- » Duration: **12 weeks**
- » Certificate: **TECH Technological University**
- » **12 ECTS Credits**
- » Teaching Hours: **300 hours**

# Postgraduate Certificate

## Horse Digestive, Blood and Nutrition Pathologies

