

Professional Master's Degree Veterinary Anesthesiology in Large Animals





Professional Master's Degree Veterinary Anesthesiology in Large Animals

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/veterinary-medicine/professional-master-degree/master-veterinary-anesthesiology-large-animals

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Skills

p. 16

04

Course Management

p. 20

05

Structure and Content

p. 26

06

Methodology

p. 40

07

Certificate

p. 48

01

Introduction

Anesthetic procedures for large animals have a number of unique features that make them especially complex. Therefore, it is vital for the clinical veterinarian to keep abreast of the latest scientific findings in this area. With this in mind, we present this program, which will explore the most recent advances used in a multitude of surgical procedures, with the aim of establishing safe anesthetic protocols in ruminants, swine, camelids and equines. Aimed at clinical veterinarians with experience in the area of anesthesiology, this 100% online program not only brings together the most comprehensive content in the academic world, but also the most accomplished expert teaching staff in the industry.



“

Veterinary Anesthesiology in Large Animals has undergone great advances in recent years. Get up to speed and incorporate the latest scientific developments into your daily practice by taking this comprehensive Professional Master's Degree from TECH"

In the last 20 years, Veterinary Anesthesia in Large Animals has experienced significant advances thanks to the introduction of new techniques and drugs, as well as the development of monitors and specialized anesthetic machines.

The introduction of novel surgical techniques has resulted in the need to develop new anesthetic protocols. There is a growing concern about the impact of anesthesia and analgesia on animal welfare and the final outcome of surgical procedures.

The Professional Master's Degree in Veterinary Anesthesiology in Large Animals is programmed as a response to the need of clinical veterinarians to expand their expertise in anesthetic and analgesic protocols and techniques in large animals.

The teaching team for this Professional Master's Degree is made up of professionals specialized in Veterinary Anesthesiology in Large Animals, with extensive experience in teaching, both in undergraduate and graduate programs, most of them being university professors and graduates. These professors are practicing anesthesiologists at leading veterinary centers and directors or participants in various research projects, so that in addition to teaching and clinical work they also carry out research activities.

The topics covered in this Professional Master's Degree have been selected with the aim of offering a complete specialization in anesthesia, so that the student builds specific knowledge to safely address any situation that requires general or locoregional anesthesia and analgesia in ruminants, swine, camelids and equids.

At present, one of the issues that affects continuous postgraduate development is the reconciliation of work and personal life. Modern professional demands make it difficult to provide quality, specialized, on-site education, so the online format will allow students to combine this course with their daily professional practice.

The training offered by this program is aimed at experienced clinical veterinarians who wish to specialize in the field of Veterinary Anesthesiology in Large Animals in order to provide comprehensive and high-quality care to clients, meeting the current demands for highly specialized training in veterinary medicine.

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

- ◆ The latest technology in online teaching software
- ◆ Intensely visual teaching system, supported by graphic and schematic contents, easy to assimilate and understand
- ◆ Case studies 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 work for individual reflection
- ◆ Content that is accessible from any fixed or portable device with an Internet connection
- ◆ Supplementary documentation databases which are permanently available, even after the program



You will explore and broaden your knowledge of the vital signs that must be monitored during general anesthesia or sedation of the equine patient"

“ *A Professional Master's Degree that will enable you to work as an anesthesiologist in veterinary medicine, with the competence of a high-level professional*”

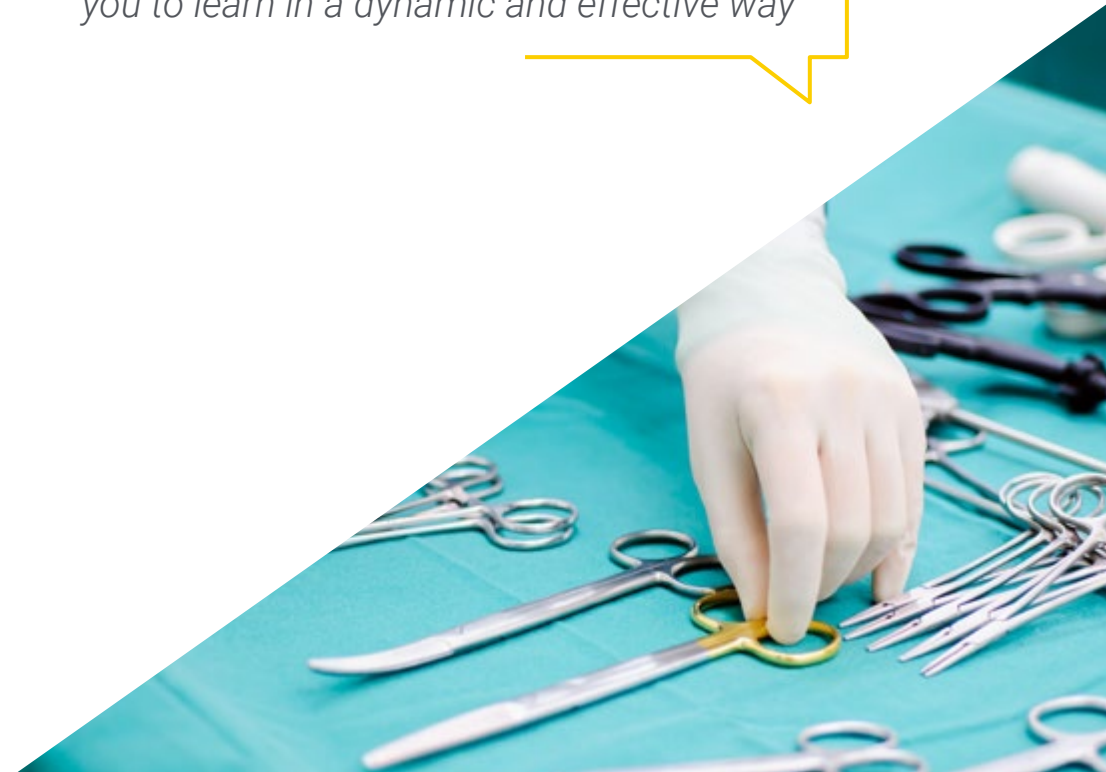
The teaching team is made up of professionals from different fields within this specialism. In this way, TECH ensures that it delivers educational results in line with its objectives. A multidisciplinary team of professionals, trained and experienced in different environments, who will develop the theoretical knowledge in an efficient way, but above all, they will bring their practical knowledge from their own experience to the program: one of the differential qualities of this training.

This mastery of the subject is complemented by the effectiveness of the methodological design used in this Professional Master's Degree in Veterinary Anesthesiology in Large Animals. Developed by a multidisciplinary team of e-Learning experts, it integrates the latest advances in educational technology. Students will be able to study with a range of convenient and versatile multimedia tools that will give them the operability they need while specializing in the subject.

The design of this program is based on Problem-Based Learning: an approach that views learning as a highly practical process. To achieve this remotely, TECH will use telepractice: with the help of an innovative, interactive video system, and Learning from an Expert, students will be able to acquire the knowledge as if they were facing the case they are learning in real time. A concept that will allow students to integrate and memorize what they have learnt in a more realistic and permanent way.

You will have the experience of expert professionals who will contribute their experience in this area to the program, making this course a unique opportunity for professional growth.

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



02 Objectives

The objective of this Professional Master's Degree is to create highly qualified professionals. The aim is focused on helping professionals reach a much greater level of expertise and control. A goal that can be achieved in only in a few months, with a high intensity and precision program.



“

If your objective is to broaden your skills set to include new paths for success and development: this is the program for you: a Professional Master's Degree that aspires to excellence"



General Objectives

- ♦ Examine the anatomy and physiology of the cardiovascular system and the functioning of the respiratory system
- ♦ Establish the normal functioning of the digestive and renal systems
- ♦ Develop specialized knowledge on the functioning of the nervous system and its response to anesthesia
- ♦ Analyze the unique needs of the different species (ruminants, swine, camelids and equids)
- ♦ Examine the requirements of a pre-anesthetic evaluation and develop expertise in interpreting anesthetic risk
- ♦ Establish the pre-anesthetic preparation required for large animals
- ♦ Analyze the pharmacological properties of injectable drugs
- ♦ Determine available sedative and tranquilizing drugs
- ♦ Deepen your knowledge of the available protocols for deep sedation
- ♦ Gain advanced knowledge of pharmacology and clinical maneuvers in the induction and intubation period in small and large ruminants, swine and camelids
- ♦ Provide safe options for current and new combinations of these agents to perform effective and safe induction of general anesthesia in the equine patient
- ♦ Detail the procedures for endotracheal intubation in the equine patient
- ♦ Examine the main physiological, anatomical and clinical needs related to the different types of decubitus and limb positioning of the equine patient
- ♦ Determine the components and operation of anesthetic machines, respiratory systems, oxygen delivery systems and artificial ventilation
- ♦ Generate specialized knowledge of the pharmacology of halogenated inhalation anesthetics, injectable anesthetics, sedative adjuvants, as well as the most recent TIVA and PIVA techniques described for ruminants, swine and camelids, and for equine species
- ♦ Develop advanced knowledge on mechanical ventilation in order to recognize the need for mechanical ventilation and the most effective and safe Settings for ruminants, swine and camelids, as well as for equine species
- ♦ Determine the pharmacology and clinical application of neuromuscular blocking agents
- ♦ Build specialist knowledge on the anesthetic recovery phase in ruminants, swine, camelids and equine species
- ♦ Determine the vital importance of the correct use of the anesthetic records during general anesthesia
- ♦ Examine and deepen knowledge related to the vital signs that should be monitored during general anesthesia or sedation of the equine patient
- ♦ Establish the technical features of the main monitoring equipment used in the equine patient
- ♦ Build knowledge of the main special monitoring requirements in ruminants, swine and camelids
- ♦ Analyze the pathophysiological principles governing pain processes
- ♦ Determine the features and correct use correct of pain scales specific to the equine species
- ♦ Generate specialized knowledge of the pharmacology of the main families of analgesic agents

- ♦ To examine the special pharmacological qualities of analgesic agents in ruminants, swine and camelids
- ♦ Examine the anatomy relevant to the locoregional disease techniques to be performed
- ♦ Generate specialized knowledge on the clinical pharmacology of the local anesthetics to be used
- ♦ Determine the equipment necessary to perform the different loco-regional techniques
- ♦ Detail how to perform the different loco-regional techniques in large ruminants, small ruminants, swine and camelids
- ♦ Establish how to perform the different loco-regional techniques on horses
- ♦ Identify, prevent and resolve complications during the perianesthetic period in the horse
- ♦ Establish the appropriate clinical approach to cardiorespiratory resuscitation in the adult horse and neonatal foal
- ♦ Identify, prevent and resolve complications during the perianesthesia period in small and large ruminants, swine and camelids
- ♦ Establish the bases of body fluid and electrolyte physiology in the equine patient
- ♦ Determine the acid-base balance and interpret the most common alterations in equine patients
- ♦ Examine the skills and knowledge required for venous catheterization in the equine patient
- ♦ Establish the clinical and laboratory parameters important for monitoring of fluid therapy in the equine patient
- ♦ Establish the special physiological considerations related to fluid therapy in ruminants, swine and camelids
- ♦ Examine the main characteristics of crystalloid and colloid solutions frequently used in ruminants, swine and camelids
- ♦ Generate specialized knowledge related to therapeutic applications of fluid therapy in ruminants, swine and camelids
- ♦ Analyze the types of fluids available for the equine patient
- ♦ Know the main characteristics of the most frequent standing procedures performed under sedation
- ♦ Detail the most pertinent points on anesthetic management of the most common diagnostic and therapeutic procedures
- ♦ Generate specialized knowledge for the correct anesthetic management of animals intended for human consumption
- ♦ Become an expert on the legislation related animals for human consumption as well as experimental animals
- ♦ Detail the main logistical, pharmacological and clinical requirements for the correct anesthetic management of wild animals
- ♦ To specify the most characteristic special anesthetic management considerations for the most frequent diagnostic and therapeutic procedures in foals
- ♦ Perform euthanasia protocols that respect the physical and mental well-being of the horse



Specific Objectives

Module 1. Physiology Applied to Anesthesia in Large Animals

- ♦ Examine the special anatomical and physiological features of large and small ruminants relevant to the design of a safe anesthetic protocol in these species
- ♦ List the special anatomical and physiological features of swine and Camelids relevant to the design of a safe anesthetic protocol in these species
- ♦ Establish the hormonal and neuronal mechanisms involved in the control of the cardiovascular system
- ♦ List processes related to ventilation and gas exchange
- ♦ Analyze the clinical implications of respiratory alterations in anesthetized patients
- ♦ Determine the normal anatomy and physiology of the digestive system and the consequences of anesthesia on it
- ♦ Establish the excretion and hormonal processes related to the renal system
- ♦ Generate specialized knowledge on the anatomy and physiology of the nervous system
- ♦ Analyze the alterations produced by anesthetic drugs in the nervous system

Module 2. Evaluation, Preanesthetic Preparation and Sedation for Large Animals

- ♦ Determine the physical examination and common findings in the equine pre-anesthetic evaluation
- ♦ Consolidate the basics of pre-anesthetic laboratory evaluation
- ♦ Analyze, identify and interpret the patient's anesthetic risk
- ♦ Establish the necessary actions in the preparation of the patient for anesthesia
- ♦ Detail the special pharmacological considerations for the main sedative drugs in ruminants, swine and camelids

- ♦ Know the pharmacological properties and clinical implications of sedative and tranquilizing drugs
- ♦ Establish the most common standing procedures and protocols in the equine patient

Module 3. Induction of General Anesthesia in Large Animals

- ♦ Build specialist knowledge on the pharmacology of dissociative agents and barbiturates given the side effects and the main contraindications for their administration
- ♦ Examine the pharmacology of propofol, alfaxalone and etomidate, given the side effects and major contraindications for their administration
- ♦ Develop advanced knowledge of the pharmacology of muscle relaxants such as benzodiazepines and guaifenesin
- ♦ Examine the anatomical, physiological and pharmacological considerations necessary to perform effective and safe induction of general anesthesia and endotracheal intubation in small and large ruminates, swine and camelids
- ♦ Determine the physiological and anatomical considerations necessary to perform an effective and safe take-down for patients and staff in the equine population

Module 4. General Anesthesia and Equipment in Large Animals

- ♦ Analyze the most frequent problems in the anesthetic machine and circular circuit, in order to identify and solve them
- ♦ Know and understand the operation of oxygen delivery systems and artificial ventilation during the general anesthesia of large animals.
- ♦ Know the pharmacology of halogenated inhalation anesthetics and their adverse effects in large animals

- ♦ Explore injectable sedative and hypnotic agents that can be used as adjuvants or as general anesthetics, as well as the latest techniques prescribed for PIVA and TIVA in equines
- ♦ Detail the techniques of general anesthesia, both by inhalation and injectable, prescribed in large and small ruminants, swine and camelids
- ♦ Recognize the need for mechanical ventilation during anesthesia, know the positive and negative consequences of mechanical ventilation, as well as understanding the appropriate ventilatory parameters for its safe application
- ♦ Broaden your knowledge of specific special features of mechanical ventilation in large and small ruminants, swine and camelids
- ♦ Broaden your knowledge of the relevant anesthetic recovery considerations in large and small ruminants, swine and camelids

Module 5. Monitoring in Large Animals

- ♦ Detail the correct and regular use of the anesthetic record during general anesthesia
- ♦ Determine the importance and the most characteristic clinical signs of anesthetic depth monitoring in the equine patient
- ♦ Analyze the importance and main technical considerations relating to the monitoring of cardiovascular and hemodynamic rates
- ♦ Detail the leading role of arterial blood gases in the clinical monitoring of the equine patient during general anesthesia
- ♦ Detail the special monitoring considerations for other types of vital parameters, such as glucose, lactate, temperature or the degree of neuromuscular blockade
- ♦ Examine the main special anesthetic monitoring considerations in other species such as ruminants, swine and camelids

Module 6. Analgesia in Large Animals

- ♦ Examine the definition of pain, as well as the different types of pain in relation to their pathophysiology and their evolution in time
- ♦ Determine the main physiological components associated with pain sensation
- ♦ Generate specialized knowledge relating to the nociception pathway
- ♦ Determine the main pathophysiological consequences of untreated pain
- ♦ Analyze theories on the use of pain scales in the equine patient
- ♦ Gain advanced knowledge of the pharmacology of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine and other co- analgesic drugs
- ♦ Establish the main side effects of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine and other co- analgesic drugs
- ♦ Determine the main contraindications to the administration of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine and other co- analgesic drugs
- ♦ Examine the clinical uses of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine, and other co- analgesic drugs

Module 7. Locoregional Anesthesia in Large Animals

- ♦ Determine the drugs to be administered
- ♦ Establish the equipment to be used
- ♦ Examine the anatomy of the head in relation to the nerve blocks performed
- ♦ Generate specialized knowledge on local head, forelimb and hind limb techniques
- ♦ Examine the anatomy of the forelimb and hind limb in relation to nerve blocks
- ♦ Detail the anatomy of the abdomen relevant to the nerve blocks performed

- ♦ Generate advanced knowledge on local abdominal techniques
- ♦ Examine the anatomy of the vertebral canal
- ♦ Detail the epidural technique
- ♦ Determine the main loco-regional techniques in other large animal species

Module 8. Anesthetic Complications and Cardiopulmonary Resuscitation

- ♦ Know the published studies on mortality and perianesthetic morbidity in horses
- ♦ Know the risk factors and causes for perianesthetic mortality
- ♦ Identify, anticipate and resolve complications that occur in the premedication phase
- ♦ Identify, anticipate and resolve complications that occur during the induction phase
- ♦ Identify, anticipate and resolve complications that occur in the maintenance phase
- ♦ Identify, anticipate and resolve complications that occur in the recovery and postoperative phase
- ♦ Early recognition of life-threatening cardiorespiratory emergencies in horses
- ♦ Develop effective cardiorespiratory resuscitation protocols
- ♦ Know the complications relating to improper positioning of the ruminant, swine or camelid patient
- ♦ Recognize the main cardiovascular complications in ruminants, swine and camelids
- ♦ Study the complications associated with the gastrointestinal system in camelids
- ♦ Recognize complications associated with intravenous catheter placement in ruminants, swine and camelids
- ♦ Broaden your knowledge of the pathophysiology of malignant hyperthermia
- ♦ Identify the complications that can occur during anesthetic recovery in ruminants, swine and camelids



Module 9. Fluid Therapy in Large Animals

- ◆ Detail the physiology and movement of bodily water
- ◆ Deepen your knowledge of the physiology and alterations of the most important electrolytes
- ◆ Determine the acid-base balance and its regulation
- ◆ Interpret pH alterations
- ◆ Reinforce the important factors for catheter and catheterization site selection
- ◆ Detail the most frequent complications of venous catheterization
- ◆ Analyze the most frequent crystalloid fluids
- ◆ Detail the properties of blood derivatives and know their complications
- ◆ Deepen your knowledge of the special physiological features of ruminants, swine and camelids in relation to fluid therapy
- ◆ Establish the properties of the isotonic, hypotonic and hypertonic crystalloid solutions most frequently used for ruminants, swine and camelids.

Module 10. Cases and Special Clinical Situations for Large Animals

- ◆ Gain specialized knowledge on the most frequent surgical and imaging procedures
- ◆ Establish the most appropriate protocols according to the procedure to be performed
- ◆ Detail the main differences in foal anesthesia in comparison to adults
- ◆ Know the risk factors and complications for colic anesthesia in order to adapt the anesthetic protocol
- ◆ Detail the physiological aspects to be taken into account for anesthesia in geriatric horses
- ◆ Deepen your knowledge of anesthetic management of the main diagnostic and therapeutic procedures in large and small ruminants

- ◆ Detail the anesthetic management of ruminant adnexal organs such as horns, hooves or tails
- ◆ Master the features of anesthesia in swine transplantation models, as well as for laparoscopy in experimental swine
- ◆ Establish basic characteristics of field anesthesia in pigs and castration of piglets
- ◆ Determine the basic principles of field anesthesia in camelids
- ◆ Define the main behavioral, physiological and anatomical characteristics of donkeys and mules
- ◆ Deepen your knowledge of the pharmacology of anesthetic and analgesic agents in donkeys and mules
- ◆ Broaden your knowledge of the logistics and pharmacological methods most appropriate for the capture and handling of wild species
- ◆ Master sedation and field anesthesia protocols for wild ruminants
- ◆ Determine sedation and field anesthesia protocols for wild swine
- ◆ Detail sedation and field anesthesia protocols for wild camelids
- ◆ Expand your knowledge related to monitoring alternatives in these non-domestic species



You will acquire the necessary knowledge to be able to carry out a preliminary anesthetic assessment"

03 Skills

This program has been created as a high-level course for veterinary professionals. This intensive program will enable you to intervene effectively in the different areas of anesthesiology. A compendium of knowledge that will provide you with the appropriate skills for all stages and occurrences in the anesthetic and analgesic process, from the initial assessment to the patient's discharge.





“

This Professional Master's Degree will provide you with the essential personal and professional skills to play an effective role in any professional situation in this field of intervention"



General Skills

- ◆ Acquire the necessary knowledge to be able to carry out a well-prepared anesthetic assessment
- ◆ Elaborate a specific anesthesia plan for each case
- ◆ Be familiar with and know how to use the necessary tools effectively
- ◆ Be familiar with and know how to implement existing protocols
- ◆ Be familiar with and know how to implement preoperative handling
- ◆ Be familiar with and know how to implement operative handling
- ◆ Be familiar with and know how to implement postoperative handling
- ◆ Master all aspects of anesthetic care for each patient individually
- ◆ Be able to create finalised plans for different specific situations: diseases, intolerances, critical states, etc,

“

A syllabus and professional growth path that will propel you towards a greater level of competitiveness in the employment market”





Specific Skills

- ♦ Examine equine cardiac anatomy, the basis of electrophysiological behavior of the heart and the stress response produced by anesthesia in the equine patient
- ♦ Determine the cardiac mechanical processes related to blood circulation
- ♦ Develop expertise in pharmacokinetics and pharmacodynamics of drugs for horses
- ♦ Compile the clinical and anatomical knowledge necessary for the safe performance of endotracheal intubation in the equine patient
- ♦ Generate specialized knowledge on blood oxygenation monitoring and the monitoring of proper ventilation
- ♦ Develop anatomical and physiological knowledge essential for the correct positioning of the equine patient in decubitus, in order to avoid the complications associated with decubitus
- ♦ Establish the main special pharmacological considerations for analgesic agents in ruminants, swine and camelids
- ♦ Detail the action mechanism of neuromuscular blocking agents as well as their pharmacology
- ♦ Identify and know the main arrhythmias in ruminants, swine and camelids
- ♦ Delve into the study of the use of colloids in ruminants, swine and camelids
- ♦ Determine analgesic techniques that can be applied in these non-domestic species
- ♦ Master the legislation applicable to the anesthesia of animals intended for human consumption
- ♦ Master the abundance of the veterinary prescription drugs
- ♦ Establish waiting times and maximum residue limits applicable to species for human consumption
- ♦ Master the legislation applicable to experimental animals
- ♦ Detail the unique anesthesia considerations for ruminants and swine
- ♦ Examine the main physical and chemical methods of euthanasia
- ♦ Apply clinical fluid therapy during the perioperative period, as well as to electrolyte and glucose imbalances in ruminants, swine and camelids
- ♦ Recognize the main respiratory complications in ruminants, swine and camelids
- ♦ Know the complications related to endotracheal intubation in swine
- ♦ Recognize the complications relating to the digestive tract of ruminants
- ♦ Know the techniques for monitoring neuromuscular blocks and the agents used to reverse this block
- ♦ Recognize the importance of recovery from general anesthesia in equines
- ♦ Expand your knowledge related to the techniques that can be used and the necessary preparation of the patient and the box

04

Course Management

TECH is proud to make available to students 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.





“

Our team of teachers, experts in Veterinary Anesthesiology in Large Animals, will help you reach success in your profession"

Management



Dr. Villalba Orero, María

- ♦ Scientific Advisor on cardiovascular and pulmonary ultrasound at the National Center for Cardiovascular Research
- ♦ Doctor of Veterinary Medicine, Complutense University Madrid
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ Master's Degree in Veterinary Sciences from the Complutense University Madrid
- ♦ Master's Degree in Veterinary Cardiology
- ♦ European Certificate in Veterinary Cardiology (ESVPS)
- ♦ Scientific publications in the area of equine cardiology and anesthesia, as well as in the area of cardiovascular diseases in humans

Professors

Dr. Martín Cuervo, María

- ♦ Head of the Internal Medicine Department of the Clínico Veterinario Hospital at the University of Extremadura
- ♦ PhD in Veterinary Medicine by the Extremadura University
- ♦ Degree in Veterinary Medicine from the University of Córdoba
- ♦ Veterinarian, FEI; member of the European Board of Veterinary Specialization (EBVS) and the European College of Equine Internal Medicine (ECVIM). Member of the Spanish Association of Equine Veterinarians (AVEE)
- ♦ Associate Professor of the Department of Animal Medicine and Surgery, Extremadura University

Dr. Salazar Nussio, Verónica

- ♦ Doctor of Medicine from the Complutense University Madrid
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ Certified by the American College of Veterinary Anesthesia and Analgesia
- ♦ Certificate recognized by the European College of Veterinary Anesthesia and Analgesia
- ♦ Her professional career has been mainly academic as a lecturer in Anesthesia and Veterinary Analgesia in several Universities and Reference Centers in several countries such as the United States, Spain and the United Kingdom
- ♦ In 2019 she becomes a RECOVER Certified Instructor in Basic and Advanced Life Support, a title awarded by the American College of Emergency and Critical Care. Since that same year, she has also been a RECOVER certified Rescuer in Basic and Advanced Life Support

Dr. Arenillas Baquero, Mario

- ♦ Veterinary Anesthesiology
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ He obtained the Diploma of Advanced Studies in 2011 and will defend the thesis for the achievement of the Doctorate in Veterinary Medicine
- ♦ Associate Professor in Clinical Rotation of the subject "Anesthesiology" as part of the Degree in Veterinary Medicine at the Faculty of Veterinary Medicine, Universidad Complutense, Madrid

Dr. Montefiori, Filippo

- ♦ Veterinary Anesthesiologist in the outpatient service at the Anesthesia and Veterinary Surgery in Madrid
- ♦ Degree in Veterinary Medicine from the University of Italy
- ♦ Lecturer in Small and Large Animal Anesthesia and Analgesia at the Veterinary School of the University of Edinburgh (UK)
- ♦ Collaborator in practical teaching at the Faculty of Veterinary Medicine of Complutense University Madrid
- ♦ Honorary collaborator at the Faculty of Veterinary Medicine at Complutense University, Madrid

Dr. Rioja, Eva

- ♦ Doctorate in Veterinary from Complutense University Madrid
- ♦ Doctor in Veterinary Science, University of Guelph (Canada)
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ Certified by the American College of Veterinary Anesthesia and Analgesia
- ♦ Certificate recognized by the European College of Veterinary Anesthesia and Analgesia
- ♦ Her professional career has been mainly academic as a professor of Veterinary Anesthesia and Analgesia at several universities in various countries such as Canada, South Africa and the United Kingdom

Dr. Santiago Llorente, Isabel

- ♦ Doctorate in Veterinary from Complutense University Madrid
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ Professor at the University of Lisbon (Portugal) in the Department of Medical Clinical Pathology II from 2019 to present
- ♦ Her professional career is focused on equine clinical practice and research, currently as a contract veterinarian in the large animal area of the Complutense Clinical Veterinary Hospital, Complutense University Madrid
- ♦ Head of Equine Internal Medicine and member of the Anesthesia Service at the Hospital Clínico Veterinario Complutense, Complutense University Madrid

Dr. Troya Portillo, Lucas

- ♦ Internal Medical and Anesthesia Service, Equine Unit, Clínic Veterinari Hospital
- ♦ Degree in Veterinary Medicine from Complutense University Madrid
- ♦ Postgraduate Diploma in Equine Clinic in the Autonomous University of Barcelona.
- ♦ Master's Degree in Clinic at Complutense University Madrid
- ♦ Associate Professor, Department of Animal Medicine and Surgery, Autonomous University of Barcelona, teaching equine internal medicine

- ♦ Professor at the Institute for Applied Studies (IDEA-Madrid)
- ♦ Associate Professor, Department of Animal Medicine and Surgery, Autonomous University of Barcelona
- ♦ Training placements in various national and European centers
- ♦ Member of the Spanish Association of Equine Veterinarians (AVEE)

Dr. Miralles, Jaime

- ♦ Veterinarian
- ♦ Degree in Veterinary Practice from the University of Zaragoza
- ♦ Graduated in Veterinary Anesthesia from Complutense University Madrid in 2003.
- ♦ Certified by the European College of Veterinary Anesthesia and Analgesia (ECVAA)
- ♦ Associate Professor of Veterinary Anesthesia in the Faculty of Pharmacodynamics of the Complutense University Madrid

Dr. Valero, Marta

- ♦ Veterinarian in the Department of Medicine and Large Animal Surgery at the University Clinical Hospital of the University of Extremadura
- ♦ Graduate in Veterinary Medicine from the University of Murcia
- ♦ Master's Degree in Medicine and Large Animal Surgery from the University of Extremadura
- ♦ Collaborator in practical teaching on the Large Animal Clinic course at the University of Extremadura

Dr. Roquet, Imma

- ♦ Veterinary surgeon in Spain and Portugal
- ♦ Degree in Veterinary Medicine, Autonomous University of Barcelona
- ♦ Master's Degree in Veterinary Science from the University of Saskatchewan (Canada)
- ♦ Professor of several Master's Degrees in Equine Veterinary Medicine at the University of Extremadura and the Autonomous University of Barcelona
- ♦ Professor of Surgery at the University of Lusófana

Dr. Jiménez, Alberto

- ♦ Veterinary Intern at the Large Animal Department of the Veterinary Clinic Hospital of the University of Extremadura
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Instruction and supervision of students belonging to the Department of Large Animal Surgery and students of the Clinical Rotation of the Faculty of Veterinary Medicine of the University of Extremadura

Dr. Peña Cadahía, Celia

- ♦ Clinical veterinarian at Eurocan Veterinary Centre
- ♦ Horse Anesthesia, Virgen de las Nieves Clinical Veterinary Hospital
- ♦ Graduated in Veterinary Medicine from the Complutense University Madrid Teaching Experience
- ♦ Collaborating Professor of Medicine and Surgery in the large animal area of the Complutense University Madrid Teaching Experience
- ♦ Emergency Anesthesia in the Area of Large Animals, Clinical Veterinary Hospital at the Complutense University Madrid

Dr. Ruiz García, Gemma

- ♦ Internal veterinarian of the Equine Service of the HCVC
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Director of Radiodiagnostic Facilities
- ♦ Collaborating student of the Equine Medicine and Surgery Service of the HCVC

Dr. Bercebal, Lucía

- ♦ Internal Veterinary, Rotatory in Equine Clinic at the Complutense Clinical Veterinary Hospital, Madrid
- ♦ Doctorate in Veterinary Medicine, Complutense University Madrid
- ♦ Course "Director of Veterinary Radiodiagnostic Facilities" - Official College of Veterinarians of Madrid
- ♦ Course "Vets with Horse Power 10: The virtual event 21" - Vets with Horse Power
- ♦ Course "Diagnosis of Lameness in the CDE" - EquiVet Academy

Dr. Villalba, Marta

- ♦ Collaboration as an ambassador of the Complutense Clinical Veterinary Hospital (HCVC).
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Delivery of Training Days at the Complutense Equine Clinic: equine ophthalmology, diagnostic imaging of the cervical spine and locoregional anesthesia and standing procedures in horses

Dr. Pérez, Rocío Jiménez - Arellano

- ♦ Complutense Clinical Veterinary Hospital – Rotatory Intern in Equine Clinic
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Equine Neonatology Training Day
- ♦ Training Days at the Complutense Equine Clinic: locoregional anesthesia in the horse

05

Structure and Content

The contents of this Professional Master's Degree have been developed by a range of experts. A very complete and well-structured program that will propel the student to the highest standards of quality and success.





“

This Professional Master's Degree in Veterinary Anesthesiology in Large Animals contains the most complete and up-to-date scientific program on the market”

Module 1. Physiology Applied to Anesthesia in Large Animals

- 1.1. Physiology Applied to Anesthesia
 - 1.1.1. Introduction
 - 1.1.2. History of Anesthesia in Large Animals
- 1.2. Cardiovascular System Physiology in Horses
 - 1.2.1. Cardiac Anatomy
 - 1.2.2. Cardiac Electrophysiology
 - 1.2.3. Mechanic Cardiac Function
 - 1.2.4. Vascular System
- 1.3. Respiratory System Physiology in Horses I
 - 1.3.1. Anatomy of the Respiratory System
 - 1.3.2. Pulmonary Ventilation
- 1.4. Respiratory System Physiology in Horses II
 - 1.4.1. Pulmonary Blood Circulation
 - 1.4.2. Gas Exchange
 - 1.4.3. Breathing Control
- 1.5. Digestive System in the Horse
 - 1.5.1. Anatomy of the Digestive System
 - 1.5.2. Nervous and Hormonal Control of Digestive Function
- 1.6. Horse Renal System
 - 1.6.1. Anatomy of the Renal System
 - 1.6.2. Urine Formation
 - 1.6.3. Effects of Anesthetics on Renal Function
- 1.7. Horse Nervous System
 - 1.7.1. Central Nervous System Anatomy
 - 1.7.2. Anatomy of the Peripheral Nervous System
 - 1.7.3. Neuronal Function
 - 1.7.4. Assessment of Neurological Function During Anesthesia
- 1.8. Autonomous Nervous System and Anesthetic-Related Stress
 - 1.8.1. Autonomic Nervous System
 - 1.8.2. Stress Response Associated with Anesthesia



- 1.9. Anatomy and Physiology of Small and Large Ruminants
 - 1.9.1. Applied Anatomy of Large Ruminants
 - 1.9.2. Applied Physiology of Large Ruminants
 - 1.9.3. Applied Anatomy of Small Ruminants
 - 1.9.4. Applied Physiology of Small Ruminants
- 1.10. Anatomy and Physiology of Swine and Camelids
 - 1.10.1. Applied Anatomy of Swine
 - 1.10.2. Applied Physiology of Swine
 - 1.10.3. Applied Anatomy of Camelids
 - 1.10.4. Applied Physiology of Camelids

Module 2. Evaluation, Preanesthetic Preparation and Sedation in Large Animals

- 2.1. Physical Examination and Blood Analysis
- 2.2. Anesthetic Risk and Preanesthetic Preparation in the Equine Patient
- 2.3. Pharmacology of Injectable Drugs in Horses
 - 2.3.1. Important Pharmacokinetic Concepts
 - 2.3.2. Important Pharmacodynamic Concepts
 - 2.3.3. Physiological and Pathological Factors that Modify Pharmacological Properties
 - 2.3.4. Pharmacological Interactions
 - 2.3.5. Routes of Administration
- 2.4. Phenothiazines
 - 2.4.1. Action Mechanism
 - 2.4.2. Pharmacology
 - 2.4.3. Clinical Use and Antagonism
 - 2.4.4. Complications and Adverse Effects
- 2.5. Benzodiazepines
 - 2.5.1. Action Mechanism
 - 2.5.2. Pharmacology
 - 2.5.3. Clinical Use and Antagonism
 - 2.5.4. Complications and Adverse Effects
- 2.6. Adrenergic Alpha-2 Receptor Agonists
 - 2.6.1. Action Mechanism
 - 2.6.2. Pharmacology
 - 2.6.3. Clinical Use and Antagonism
 - 2.6.4. Complications and Adverse Effects
- 2.7. Opioids
 - 2.7.1. Action Mechanism
 - 2.7.2. Pharmacology
 - 2.7.3. Clinical Use and Antagonism
 - 2.7.4. Complications and Adverse Effects
- 2.8. Sedation for In-Station Procedures
 - 2.8.1. Types of Procedures
 - 2.8.2. Clinical Objectives
 - 2.8.3. Administration Methods
 - 2.8.4. Prescribed Combinations
- 2.9. Evaluation and Anesthetic Preparation in Ruminants, Swine and Camelids
- 2.10. Special Pharmacological Considerations for Ruminant, Swine and Camelid Patients.
 - 2.10.1. Small Ruminants
 - 2.10.2. Large Ruminants
 - 2.10.3. Swine
 - 2.10.4. Camelids

Module 3. Induction of General Anesthesia in Large Animals

- 3.1. Dissociative Anesthetics (Ketamine)
 - 3.1.1. Pharmacology
 - 3.1.2. Side Effects
 - 3.1.3. Contraindications
 - 3.1.4. Dosage and Protocol
- 3.2. Barbiturates (Thiopental)
 - 3.2.1. Pharmacology
 - 3.2.2. Side Effects
 - 3.2.3. Contraindications
 - 3.2.4. Dosage and Protocol
- 3.3. Propofol, Alfaxalone, Etomidate
 - 3.3.1. Pharmacology
 - 3.3.2. Side Effects
 - 3.3.3. Contraindications
 - 3.3.4. Dosage and Protocol
- 3.4. Benzodiazepines and Guaifenesin
 - 3.4.1. Pharmacology
 - 3.4.2. Side Effects
 - 3.4.3. Contraindications
 - 3.4.4. Dosage and Protocol
- 3.5. Main Takedown Techniques in the Equine Patient
- 3.6. Endotracheal Intubation, Nasotracheal Intubation and Tracheostomy in the Equine Patient
- 3.7. Physiological Consequences of Different Decubitus, Padding and Limb Positioning in the Equine Patient
- 3.8. Special Considerations in the Induction Period for Large and Small Ruminants.
 - 3.8.1. Pharmacology Inducing Agents
 - 3.8.2. Takedown Techniques
 - 3.8.3. Intubation Techniques
- 3.9. Special Considerations in the Induction Period for Swine and Camelids
 - 3.9.1. Pharmacology Inducing Agents
 - 3.9.2. Takedown Techniques
 - 3.9.3. Intubation Techniques
- 3.10. Positioning of the Ruminant, Swine and Camelid Patient after Induction

Module 4. General Anesthesia and Equipment in Large Animals

- 4.1. Anesthetic Equipment (I)
 - 4.1.1. Anesthetic Machine.
 - 4.1.2. Circular Circuit
- 4.2. Anesthetic Equipment (II)
 - 4.2.1. Mechanical Ventilators
 - 4.2.2. Demand Valve
- 4.3. General Information on Inhalation Anesthesia
 - 4.3.1. Pharmacokinetics of Inhalation Agents (Absorption, Distribution, Metabolism, Elimination, Physical and Chemical Characteristics)
 - 4.3.2. Pharmacodynamics of Inhalation Agents (CNS Effects, Cardiovascular and Respiratory Effects, Other Effects)
 - 4.3.3. Inhalation Agents
 - 4.3.3.1. Isoflurane
 - 4.3.3.2. Sevoflurane
- 4.4. Partial and Total Intravenous Anesthesia (PIVA and TIVA)
 - 4.4.1. Injectable Agents Used and Techniques
- 4.5. Neuromuscular Blockers
 - 4.5.1. Action Mechanism
 - 4.5.2. Pharmacokinetics and Pharmacodynamics
 - 4.5.3. Monitoring
 - 4.5.4. Pharmacology of Reversing Agents
- 4.6. General Anesthesia in Other Species (Small and Large Ruminants, Swine and Camelids)
- 4.7. Mechanical Ventilation
 - 4.7.1. Respiratory Mechanism
 - 4.7.2. Consequences of VM
 - 4.7.3. Ventilatory Parameters
- 4.8. Mechanical Ventilation in Other Species (Small and Large Ruminants, Swine and Camelids)
- 4.9. Anesthetic Recovery
 - 4.9.1. Recovery Techniques
 - 4.9.2. Patient Preparation
 - 4.9.3. Box Preparation
- 4.10. Anesthetic Recovery (Small and Large Ruminants, Swine and Camelids)

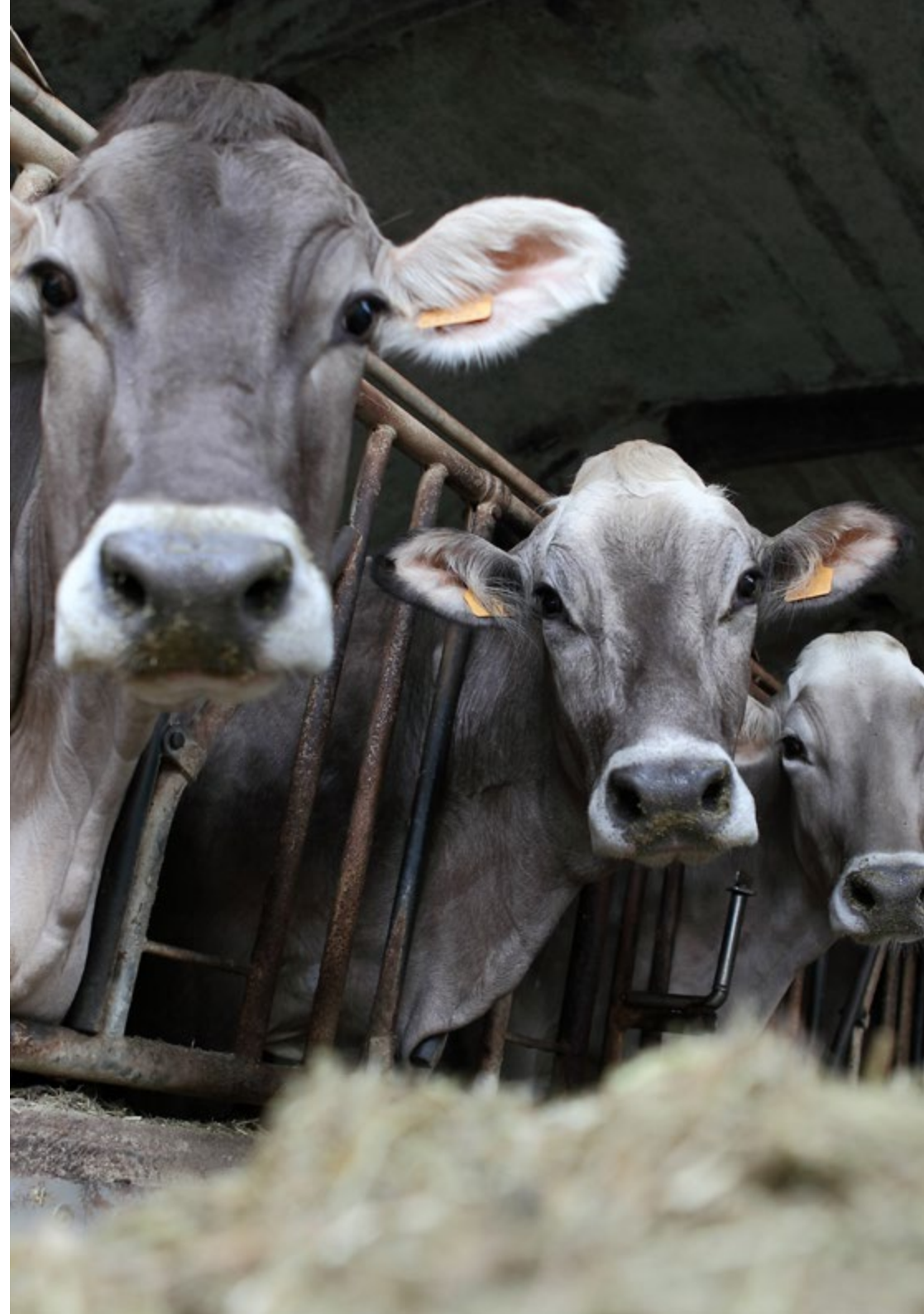


Module 5. Monitoring in Large Animals

- 5.1. The Anesthetic Record
- 5.2. Anesthetic Depth Monitoring
- 5.3. Monitoring of CV and Hemodynamic Status. (I)
 - 5.3.1. Clinical Monitoring
 - 5.3.2. Electrocardiogram
- 5.4. Monitoring of CV and Hemodynamic Status. (II)
 - 5.4.1. Indirect Arterial Pressure
 - 5.4.1.1. Oscillometry
 - 5.4.1.2. Doppler
 - 5.4.2. Direct Blood Pressure
- 5.5. Monitoring of in Oxygenation Status. (I)
 - 5.5.1. Clinical Monitoring
 - 5.5.2. Arterial Blood Gas (PaO₂)
- 5.6. Monitoring of Oxygenation Status (II)
 - 5.6.1. Pulse Oximetry
- 5.7. Monitoring of Ventilation Status (I)
 - 5.7.1. Clinical Monitoring
 - 5.7.2. Arterial Blood Gas (PaCO₂)
- 5.8. Monitoring of Ventilation Status (II)
 - 5.8.1. Capnography
- 5.9. Other Types of Monitoring
 - 5.9.1. Temperature
 - 5.9.2. Glucose
 - 5.9.3. Lactate
 - 5.9.4. Ions
 - 5.9.5. Neurostimulation
 - 5.9.6. Others
- 5.10. Monitoring in Other Species (Small and Large Ruminants, Swine and Camelids)
 - 5.10.1. Monitoring Considerations for Small Ruminants
 - 5.10.2. Monitoring Considerations for Large Ruminants
 - 5.10.3. Monitoring Considerations for Swine
 - 5.10.4. Monitoring Considerations for Camelids

Module 6. Analgesia in Large Animals

- 6.1. Definition of Pain and Pathophysiology of Pain
 - 6.1.1. Definition of Pain
 - 6.1.2. Types of Pain
 - 6.1.3. Pathophysiology of Pain
 - 6.1.3.1. Nociceptors
 - 6.1.3.2. Axons
 - 6.1.3.3. Neurotransmitters
 - 6.1.3.4. Nociception Monitoring
- 6.2. Multimodal and Preventative Analgesia
 - 6.2.1. Clinical Analgesia
 - 6.2.2. Multimodal Analgesia
 - 6.2.3. Preventative Analgesia
- 6.3. Consequences of Untreated Pain
- 6.4. Pain Detection Systems
 - 6.4.1. Physiological Signs
 - 6.4.2. Equine Pain Scales
 - 6.4.3. Pain Scales in Other Species
- 6.5. Opioids
 - 6.5.1. Pharmacology
 - 6.5.2. Side Effects
 - 6.5.3. Contraindications
 - 6.5.4. Clinical Use
- 6.6. NSAIDs
 - 6.6.1. Pharmacology
 - 6.6.2. Side Effects
 - 6.6.3. Contraindications
 - 6.6.4. Clinical Use
- 6.7. Agents $\alpha 2$ Agonists
 - 6.7.1. Pharmacology
 - 6.7.2. Side Effects
 - 6.7.3. Contraindications
 - 6.7.4. Clinical Use



- 6.8. Ketamine and Lidocaine
 - 6.8.1. Ketamine
 - 6.8.1.1. Pharmacology
 - 6.8.1.2. Side Effects
 - 6.8.1.3. Contraindications
 - 6.8.1.4. Clinical Use
 - 6.8.2. Lidocaine
 - 6.8.2.1. Pharmacology
 - 6.8.2.2. Side Effects
 - 6.8.2.3. Contraindications
 - 6.8.2.4. Clinical Use
- 6.9. Others: Gabapentin, Amantadine, Amitriptyline, Tramadol, Paracetamol
 - 6.9.1. Gabapentin
 - 6.9.1.1. Pharmacology
 - 6.9.1.2. Side Effects
 - 6.9.1.3. Contraindications
 - 6.9.1.4. Clinical Use
 - 6.9.2. Amantadine
 - 6.9.2.1. Pharmacology
 - 6.9.2.2. Side Effects
 - 6.9.2.3. Contraindications
 - 6.9.2.4. Clinical Use
 - 6.9.3. Amitriptyline
 - 6.9.3.1. Pharmacology
 - 6.9.3.2. Side Effects
 - 6.9.3.3. Contraindications
 - 6.9.3.4. Clinical Use
 - 6.9.4. Tramadol
 - 6.9.4.1. Pharmacology
 - 6.9.4.2. Side Effects
 - 6.9.4.3. Contraindications
 - 6.9.4.4. Clinical Use

- 6.9.5. Paracetamol
 - 6.9.5.1. Pharmacology
 - 6.9.5.2. Side Effects
 - 6.9.5.3. Contraindications
 - 6.9.5.4. Clinical Use
- 6.10. Pharmacology in Other Species (Small and Large Ruminants, Swine and Camelids)
 - 6.10.1. Observations on Pharmacology Analgesics in Small Ruminants
 - 6.10.2. Observations on Pharmacology Analgesics in Large Ruminants
 - 6.10.3. Observations on Pharmacology Analgesics in Swine
 - 6.10.4. Observations on Pharmacology Analgesics in Camelids

Module 7. Locoregional Anesthesia in Large Animals

- 7.1. Pharmacology of Local Anesthetics
 - 7.1.1. Action Mechanism
 - 7.1.2. Clinical Differences
 - 7.1.3. Complications
 - 7.1.4. Adjuvants
- 7.2. Instruments and Equipment
 - 7.2.1. Needles
 - 7.2.2. Neurostimulation
 - 7.2.3. Ultrasound
- 7.3. Locoregional Head Blocks (i)
 - 7.3.1. Maxillary Nerve Block
 - 7.3.2. Infraorbital Nerve Block
 - 7.3.3. Mandibular Nerve Block
 - 7.3.4. Mentonian Nerve Block
- 7.4. Locoregional Head Blocks (ii)
 - 7.4.1. Backbulbar/Peribulbar Block
 - 7.4.2. Eyelid Block
 - 7.4.3. Auriculopalpebral Block
 - 7.4.4. Ear Block
 - 7.4.5. Cervical Block

- 7.5. Locoregional Forelimb Blocks
 - 7.5.1. Surgical Blocks
- 7.6. Locoregional Hind Limb Blocks
 - 7.6.1. Surgical Blocks
- 7.7. Locoregional Laparotomy Blocks
 - 7.7.1. Paravertebral Lumbar Block
 - 7.7.2. Inverted "L" Block and Infiltration
 - 7.7.3. Flat Transverse Abdominal Block
- 7.8. Epidural Anesthesia
 - 7.8.1. Realization of a Single Technique
 - 7.8.2. Epidural Catheter Placement
 - 7.8.3. Drugs Used
- 7.9. Locoregional Anesthesia for Large Ruminants
 - 7.9.1. Most Common Techniques
- 7.10. Locoregional Anesthesia for Small Ruminants, Swine and Camelids
 - 7.10.1. Most Common Techniques

Module 8. Anesthetic Complications and Cardiopulmonary Resuscitation

- 8.1. Morbidity and Mortality
 - 8.1.1. Mortality
 - 8.1.1.1. General Considerations
 - 8.1.1.2. Mortality Studies
 - 8.1.1.2.1. Mortality Compared
 - 8.1.1.3. Risk Factors
 - 8.1.1.3.1. Related to the Horse
 - 8.1.1.3.2. Related to Surgical Procedure
 - 8.1.1.3.3. Related to Anesthesia
 - 8.1.1.4. Causes of Death Related to Anesthesia
 - 8.1.1.4.1. Cardiovascular
 - 8.1.1.4.2. Respiratory
 - 8.1.1.4.3. Others
 - 8.1.2. Morbidity
- 8.2. Complications in Premedication and Induction I
 - 8.2.1. Intra-arterial and Perivascular Injection
 - 8.2.2. Anaphylactic Reactions
 - 8.2.3. Drug-Induced Priapism
 - 8.2.4. Incomplete or Inadequate Sedation/Induction
- 8.3. Complications in Premedication and Induction II
 - 8.3.1. Hypoventilation
 - 8.3.2. Inability to Intubate/Laryngeal Trauma
 - 8.3.3. Hypotension.
- 8.4. Complications in Maintenance I
 - 8.4.1. Hypoxemia
 - 8.4.2. Hypercapnia
 - 8.4.3. Inadequate Anesthetic Plan and Alternative Anesthetic Plans
 - 8.4.4. Malignant Hyperthermia
- 8.5. Complications in Maintenance II
 - 8.5.1. Hypotension.
 - 8.5.2. Hypertension
 - 8.5.3. Bleeding
 - 8.5.3.1. Alterations in Heart Rate and Rhythm
- 8.6. Complications in Recuperation I
 - 8.6.1. Hypoxemia/Hypercapnia
 - 8.6.2. Nasal Edema
 - 8.6.3. Airway Obstruction
 - 8.6.4. Pulmonary Edema
 - 8.6.5. Fractures and Soft Tissue Damage
 - 8.6.6. Neuropathologies
 - 8.6.7. Myopathies
- 8.7. Complications in Recovery II
 - 8.7.1. Myelopathies
 - 8.7.2. Periodic Hyperkalemia Paralysis
 - 8.7.3. Delay/Excitation in Recovery
 - 8.7.4. Immediate Postoperative Complications
 - 8.7.5. Human Error



- 8.8. Cardiopulmonary Resuscitation (CPR) I
 - 8.8.1. Causes of Cardiopulmonary Emergencies
 - 8.8.2. Diagnosis of Cardiopulmonary Emergencies
 - 8.8.3. Cardiac Massage
 - 8.8.4. CPR Maneuver
 - 8.8.4.1. Foal CPR Maneuver
 - 8.8.4.2. Adult CPR Maneuver
- 8.9. Complications in Small and Large Ruminants
 - 8.9.1. Complications Associated with Poor Patient Positioning
 - 8.9.2. Cardiovascular Complications
 - 8.9.3. Tympanism, Regurgitation, Salivation
 - 8.9.4. Respiratory Complications.
 - 8.9.5. Hypothermia.
 - 8.9.6. Other Complications
- 8.10. Complications in Ruminants, Swine and Camelids
 - 8.10.1. Complications Related to Improper Placement of Ruminants, Swine and Camelids
 - 8.10.2. Cardiovascular Complications in Ruminants, Swine and Camelids
 - 8.10.3. Respiratory Complications in Ruminants, Swine and Camelids
 - 8.10.4. Digestive Complications in Ruminants and Camelids
 - 8.10.4.1. Anesthetic Recovery Complications in Ruminants, Swine and Camelids
 - 8.10.4.2. Complications Associated with Intravenous Catheterization in Ruminants, Swine and Camelids
 - 8.10.4.3. Complications Related to Endotracheal Intubation in Swine
 - 8.10.4.4. Malignant Hyperthermia in the Porcine Patient

Module 9. Fluid Therapy in Large Animals

- 9.1. Physiology: Bodily Water and Electrolytes
 - 9.1.1. Physiological Body Spaces
 - 9.1.2. Fluid Balance
 - 9.1.3. Sodium Physiology and Alterations
 - 9.1.4. Potassium Physiology and Alterations
 - 9.1.5. Calcium Physiology and Alterations
 - 9.1.6. Chlorine Physiology and Alterations
 - 9.1.7. Magnesium Physiology and Alterations
- 9.2. Acid-Base Balance I
 - 9.2.1. Regulation of Acid-Base Homeostasis
 - 9.2.2. Consequences of Acid-Base Alterations
 - 9.2.3. Interpretation of Acid-Base Status
 - 9.2.3.1. Traditional Method
 - 9.2.3.2. New Approaches
- 9.3. Acid-Base Balance II
 - 9.3.1. Metabolic Acidosis
 - 9.3.2. Respiratory Acidosis
 - 9.3.3. Metabolic Alkalosis
 - 9.3.4. Respiratory Alkalosis
 - 9.3.5. Mixed Alterations
- 9.4. Catheterization in the Equine Patient
 - 9.4.1. Catheter Selection
 - 9.4.2. Catheterization Points
 - 9.4.3. Catheter Placement and Maintenance
- 9.5. Catheterization Complications
 - 9.5.1. Thrombophlebitis
 - 9.5.2. Catheter Breakage
 - 9.5.3. Perivascular Injection
 - 9.5.4. Venous Air Embolism
 - 9.5.5. Exsanguination



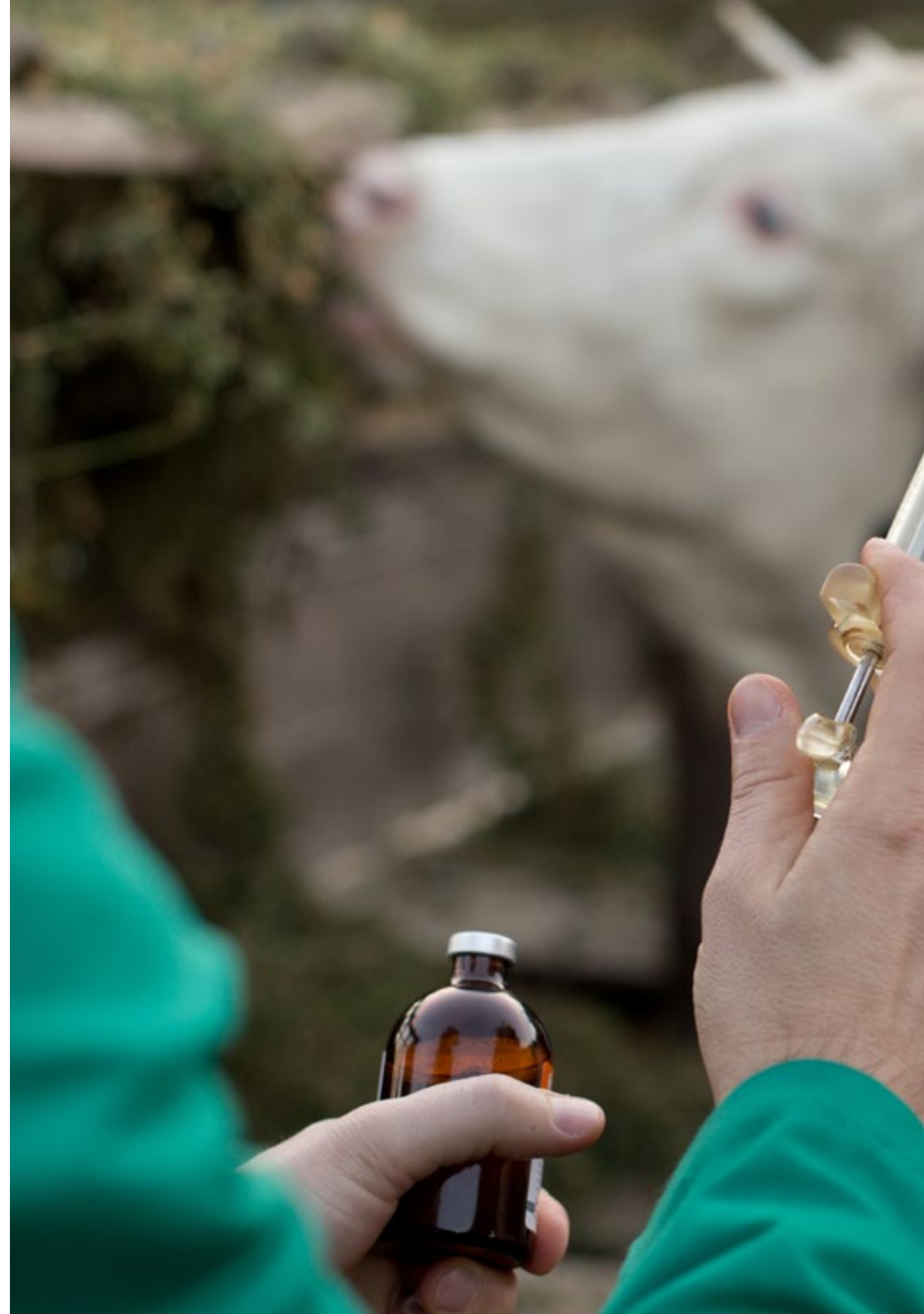
- 9.6. Clinical Examination of Water Status in the Equine Patient
 - 9.6.1. Physical Examination
 - 9.6.2. Laboratorial Parameters
 - 9.6.3. Hemodynamic Parameters
- 9.7. Types of Fluid I
 - 9.7.1. Replacement Fluids
 - 9.7.2. Maintenance Fluids
- 9.8. Types of Fluid II
 - 9.8.1. Colloids
- 9.9. Transfusion of Blood Derivatives
 - 9.9.1. Plasma
 - 9.9.2. Erythrocyte Concentrate
 - 9.9.3. Whole Blood
 - 9.9.4. Complications
- 9.10. Fluid Therapy in Ruminants, Swine and Camelids
 - 9.10.1. Physiology Applied to Fluid Therapy in these Species
 - 9.10.2. Isotonic, Hypertonic and Hypotonic Solutions Available for These Species
 - 9.10.3. Colloid Solutions Available for These Species
 - 9.10.4. Fluid Therapy for the Perioperative Period in These Species
 - 9.10.5. Imbalances of Glycemia and Ions and Their Correction through Fluid Therapy in These Species

Module 10. Cases and Special Clinical Situations in Large Animals

- 10.1. Special In-Station Cases for Equines
 - 10.1.1. Diagnostic Procedures (TC, IRM)
 - 10.1.2. Laryngeal Surgery
 - 10.1.3. Laparoscopy
 - 10.1.4. Dental Procedures
 - 10.1.5. Ophthalmologic Procedures
 - 10.1.6. Perineal Surgeries
 - 10.1.7. Obstetric Maneuvers
- 10.2. Anesthesia Special Cases in Equine (I)
 - 10.2.1. Geriatric Patient
 - 10.2.2. Approach Acute Abdominal Syndrome
 - 10.2.3. Cesarean Section

- 10.3. Anesthesia Special Cases in Equines (II)
 - 10.3.1. Elective Anesthetic Management in Foals
 - 10.3.2. Urgent Anesthetic Management in Foals
- 10.4. Anesthesia Special Cases in Equines (III)
 - 10.4.1. Anesthetic Management of Respiratory Surgery
 - 10.4.2. Anesthetic Management of Diagnostic and Therapeutic Procedures for Pathologies of the Nervous System
- 10.5. Anesthesia in Special Cases in Ruminants
 - 10.5.1. Anesthetic Considerations and Perioperative Management in Orthopedic Procedures in Ruminants
 - 10.5.2. Anesthetic Considerations and Perioperative Management for Wounds, Bruises and Abscesses in Ruminants
 - 10.5.3. Anesthetic Considerations and Perioperative Management Laparotomy in Ruminants
 - 10.5.4. Anesthetic Considerations and Perioperative Management in Obstetric and Procedures in Ruminants
 - 10.5.5. Anesthetic Considerations and Perioperative Management of Procedures for Distal Extremities, Hooves and Horns in Ruminants
 - 10.5.6. Anesthetic Considerations and Perioperative Management of Specific Procedures for Udders and Teats in Ruminants
 - 10.5.7. Anesthetic Considerations and Perioperative Management of Procedures for Eyes and Adjacent Areas in Ruminants
 - 10.5.8. Anesthetic Considerations and Perioperative Management of Surgical Procedures for Umbilical Hernia Resolution in Ruminants
 - 10.5.9. Anesthetic Considerations and Perioperative Management for Perianal and Tail Areas in Ruminants
- 10.6. Anesthesia and Analgesia in Donkeys and Mules
 - 10.6.1. Anatomical, Physiological and Behavioral Variations
 - 10.6.2. Reference Values Required for Anesthesia
 - 10.6.3. Variations in Responses to Common Drugs Used in Anesthesia
 - 10.6.4. Premedication and Sedation for Foot Procedures in Donkeys and Mules
 - 10.6.5. Induction and Maintenance Anesthesiology: Injectable and Inhalation Techniques
 - 10.6.6. Anesthetic Monitoring
 - 10.6.7. Recovery from Anesthesia
 - 10.6.8. Preoperative, Intraoperative and Postoperative Analgesia
 - 10.6.9. Local Anesthetic Techniques in Donkeys and Mules

- 10.7. Anesthesia in Special Cases for Swine and Camelids
 - 10.7.1. Intraoperative and Perioperative Anesthetic Management in Field Anesthesia in Swine
 - 10.7.2. Castration in Piglets Analgesic and Anesthetic Considerations
 - 10.7.3. The Vietnamese Pig Intraoperative and Perioperative Anesthetic Management and Most Frequent Complications
 - 10.7.4. Anesthetic Considerations and Perioperative Management of the Pig as a Model for Transplantation and Cardiovascular Models
 - 10.7.5. Anesthetic Considerations and Perioperative Management of the Pig as a Model for Laparoscopy
 - 10.7.6. Intraoperative and Perioperative Anesthetic Management in Field Anesthesia for Camelids
 - 10.7.7. Castration for the Alpaca Analgesic and Anesthetic Considerations
- 10.8. Anesthesia Therapy in Wild Ruminants, Swine and Camelids
 - 10.8.1. Considerations for Chemical Immobilization and Anesthesia for the Bovidae and Antilocapridae Family
 - 10.8.2. Considerations for Chemical Immobilization and Anesthesia in the Capridae Subfamily
 - 10.8.3. Considerations for Chemical Immobilization and Anesthesia in the Cervidae, Tragulidae and Mochidae Families
 - 10.8.4. Considerations for Chemical Immobilization and Anesthesia in the Suidae and Tayassuidae Family
 - 10.8.5. Considerations for Chemical Immobilization and Anesthesia in the Family Camelidae



- 10.9. Special Considerations: Food Animals/Experimental Animals (Ruminants and Swine)
 - 10.9.1. Legislation Applicable to the Anesthesia of Animals Intended for Human Consumption
 - 10.9.2. Anesthetic and Analgesic Considerations for Animals Intended for Human Consumption
 - 10.9.3. Legislation Applicable to the Anesthesia of Animals for Experimentation
 - 10.9.4. Anesthetic and Analgesic Considerations in Ruminants and Swine
- 10.10. Euthanasia
 - 10.10.1. General Considerations
 - 10.10.1.1. Geriatric Horse
 - 10.10.2. Mechanisms of action for Hypothermia.
 - 10.10.3. Chemical Euthanasia Methods
 - 10.10.4. Physical Euthanasia Methods
 - 10.10.5. Euthanasia Protocol
 - 10.10.6. Confirmation of Death

“

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

06 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.





“

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.

“

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

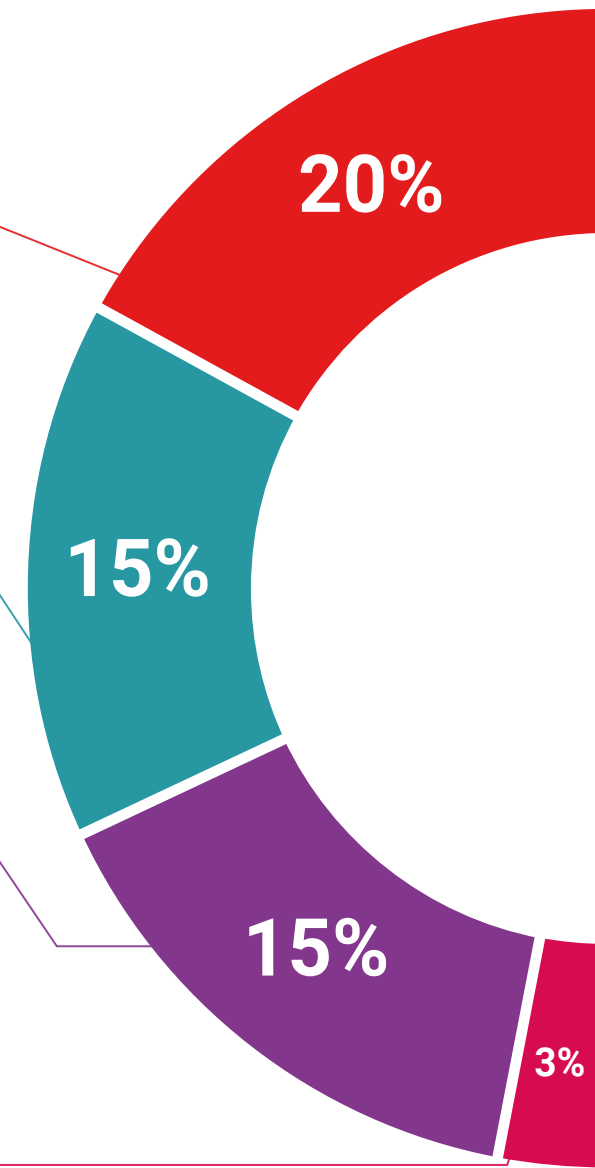
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

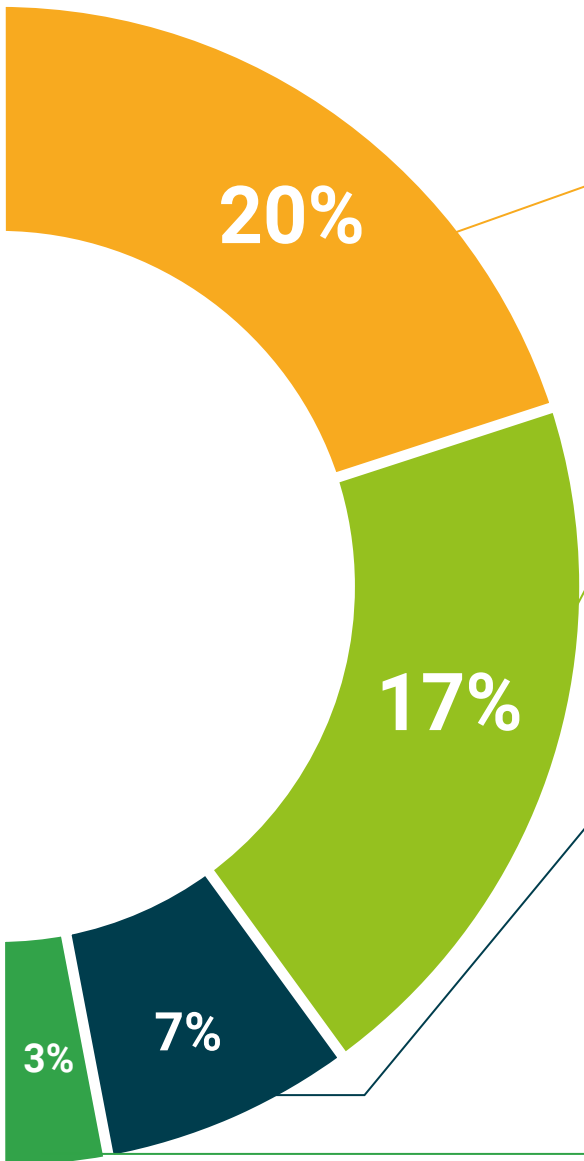
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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.



07

Certificate

The Professional Master's Degree in Veterinary Anesthesiology in Large Animals guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by TECH Global University.



“

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

This program will allow you to obtain your **Professional Master's Degree diploma in Veterinary Anesthesiology in Large Animals** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Professional Master's Degree in Veterinary Anesthesiology in Large Animals**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



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



Professional Master's Degree

Veterinary Anesthesiology in Large Animals

- › Modality: online
- › Duration: 12 months
- › Certificate: TECH Global University
- › Credits: 60 ECTS
- › Schedule: at your own pace
- › Exams: online

Professional Master's Degree Veterinary Anesthesiology in Large Animals

