Advanced Master's Degree
Veterinary Anesthesiology

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university

Advanced Master's Degree
Veterinary Anesthesiology

- » Modality: **online**
- » Duration: **24 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/us/veterinary-medicine/advanced-master-degree/advanced-master-degree-veterinary-anesthesiology**

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01
Introduction

Veterinarians are one of the professionals most in need of constant updates to their knowledge, since veterinary medicine is a field in constant evolution, aided by technological and research advances. In this field, anesthesiology has become a fundamental tool in veterinary care, mainly for surgical interventions. On this occasion, TECH offers the most complete specialization in Veterinary Anesthesiology on the market, with which the student will be able to deepen the study of this area of veterinary medicine and increase their professional skills.

" *Become a successful professional in the application of anesthesia in the veterinary field and improve the way you treat your patients day by day"*

The introduction of new surgical techniques has created the need to develop new anesthetic protocols, and there is a growing concern about the impact of anesthesia and analgesia on animal welfare and the final outcome of surgical procedures. Therefore, it is imperative that veterinarians update their knowledge in order to be up to date with all procedures related to anesthesiology intervention.

Advanced skills in anesthesia management are essential for veterinary surgeons, since anesthetic techniques are closely linked to surgical procedures. But it is also necessary to have expertise in procedures prior to the application of anesthesia on the patient, such as knowledge of the equipment, previous handling of the patient or medication and study of drug-drug interactions. A very comprehensive and precise program of work to be carried out by the veterinarian in order to achieve a successful intervention.

Therefore, in this Advanced Master's Degree, the main contents related to general anesthetic techniques in veterinary medicine and those related to larger animals have been combined. In this way, you will encounter a very comprehensive program that covers study of the physiology most closely related to anesthesia, focusing on the involvement of the cardiocirculatory, respiratory, nervous and endocrine systems; to general or locoregional anesthesia and analgesia in ruminants, swine, camelids and equines.

It's necessary to take into account that this specialized course is aimed at professionals who generally have long working days, which prevents them from being able to continue with their specialization in face-to-face classes and who cannot find high quality online courses adapted to their needs. Baring in mind the need for a competent and high-quality online specialization, TECH presents the Advanced Master's Degree in Veterinary Anaesthesiology, which has revolutionized the world of veterinary specialization, both with its content as well as its teaching staff and innovative teaching methodology.

Furthermore, as it is a 100% online specialization, the student decides where and when to study. Without the restrictions of fixed timetables or having to move between classrooms, this course can be combined with work and family life.

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

- The latest technology in e-learning software
- Intensely visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- Practical case studies presented by practising experts
- State-of-the-art interactive video systems
- Teaching supported by telepractice
- Continuous updating and recycling systems
- Self organized learning which makes the course completely compatible with other commitments
- Practical exercises for self-assessment and learning verification
- Support groups and educational synergies: Questions to the expert, discussion forums and knowledge
- Communication with the teacher and individual reflection work
- Content that is accessible from any fixed or portable device with an internet connection
- Databases of supplementary materials are permanently available, even after the completing the program

A high-level scientific program, supported by advanced technological development and the teaching experience of the best professionals"

"

A specialisation created for professionals who aspire to excellence that will allow you to acquire new skills and strategies in a smooth and effective way"

Our teaching staff is made up of working professionals. In this way TECH ensures that it delivers the educational update objective it is aiming for. A multidisciplinary staff of trained and experienced professionals from a variety of environments, who will develop theoretical knowledge in an efficient manner, but above all, will bring their practical knowledge from their own experience to the course.

This mastery of the subject is complemented by the effectiveness of the methodological design of this Advanced Master's Degree. Developed by a multidisciplinary team of e-learning experts, it integrates the latest advances in educational technology. Hence, the professional will be able to study with a range of comfortable and versatile multimedia tools that will provide the functionality they need in their specialization.

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 telepractice will be used. With the help of an innovative interactive video system and *Learning from an Expert*, the professional will be able to acquire the knowledge as if they were facing the scenario they are learning at that moment. A concept that will make it possible to integrate and fix learning in a more realistic and permanent way.

A deep and comprehensive dive into strategies and approaches in application of Veterinary Anesthesiology.

TECH offers the best specialization of the moment for you to carry out an in-depth study of Veterinary Anesthesiology.

02
Objectives

The objective 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 focused on helping professionals reach a much higher level of expertise and control. A goal that you will be able to achieve thanks to a highly intensive and detailed course.

> " *If your goal is to improve in your profession, to acquire a qualification that will enable you to compete among the best, then look no further: welcome to TECH"*

General Objectives

- Know and understand the main mechanical parts of the anesthesia machine and the importance of the preparatory management of the patient in terms of drugs and feeding

- Know the most important physiological characteristics of the different organ systems and their relationship and modifications that occur during anesthesia

- Know the general characteristics of pharmacology and the specific characteristics of the main anesthetic drugs used

- Use tables for the preparation of combinations of anesthetic or anesthesia-related drugs

- Know the characteristics of each anesthetic phase and the control points to be taken into account to increase patient safety

- Know the specific needs in terms of fluid therapy and transfusion medicine related to the perioperative period

- Learn and understand the physiology of nociceptive and acute and chronic pain

- Acquire a logical understanding of the physiological implications of untreated pain

- In-depth knowledge of the different analgesics and their indications

- Know how to assess both acute and chronic pain

- Understand the basics of locoregional anesthesia and analgesia

- Understand the main differences and indications of different drugs

- Understand the different blocks to be performed and the areas affected by them

- Understand the monitoring of the anesthetized patient, from the most basic to the most complicated such as nociception and hypnosis

- Understand the limitations and the most appropriate monitoring in each patient and in each specific case

- Detect, prevent and treat the main complications during the perioperative period

- Anesthetic management of the patient in specific pathological situations, or with specific physiological alterations that will require a different anesthetic approach

- Put your learning into action in the management of specific situations, understanding the protocol used, monitoring, detection of complications and their resolution

- 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 procedure of 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 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

- Compile specialized 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

- Develop 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 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 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 locoregional techniques

- Detail how to perform the different locoregional techniques in large ruminants, small ruminants, swine and camelids

- Establish how to perform the different locoregional 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 to the equine patient
- Know the main characteristics of the most frequent 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
- Master the legislation related to 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. Introduction. Anesthetic Equipment
- Know the origins of the specialty in human medicine and its incorporation into the veterinary field
- Know the guidelines and importance of perioperative management of feeding of the surgical patient and fasting from solids and liquids
- Know and understand the operation of anesthetic machines and mechanical ventilators

Module 2. Physiology and Pharmacology Related to Anesthesia
- Know and understand the ventilatory, cardiovascular, digestive, renal, endocrine, nervous (both central and peripheral) physiology and the age-related modifications of these
- Know and understand the general pharmacological processes and those directly related to each of the pharmacological families related to anesthesia (sedatives, analgesics, inducers, neuromuscular relaxants)

Module 3. Anesthetic Timing
- Practical knowledge of the different phases of anesthesia from preoperative assessment to patient awakening and the main postoperative care
- Know the characteristics of premedication, induction, maintenance and education to minimize anesthetic risks as much as possible
- Understand, from a practical point of view, the differences during the maintenance phase in the case of inhalation and intravenous anesthesia
- Know the characteristics and indications of perioperative fluid therapy and the administration of blood products

Module 4. Analgesia
- Understand the different nociceptive pathways and the phenomena of central and peripheral sensitization
- Understand the action of each family of analgesics and their use in both acute and chronic pain
- Know the importance and different methods of acute and chronic pain assessment

Module 5. Locoregional Anesthesia/Analgesia
- Understand the basics of locoregional anesthesia and analgesia with the different technical methods used
- Know the main complications associated with locoregional techniques and their treatment
- Understand basic pharmacology of local anesthetics and their adjuvants
- Understand the different blocks to be performed on the head, torso and limbs
- Inclusion of locoregional techniques explained in specific clinical cases, within multimodal analgesia protocols

Module 6. Monitoring
- Understand in detail how to make the most of basic patient monitoring based on examination, observation and palpation
- Understand the most important parameters to monitor from a cardiovascular, ventilatory and neurological point of view
- Understand and assess the different methods of monitoring patient volemia

Module 7. Anesthetic Complications

- Assist in the detection, prevention and treatment of complications related to perioperative management (regurgitation, hypothermia)
- Assist in the detection, prevention and treatment of cardiovascular, neurological and ventilatory complications associated with anesthesia
- Assist in the detection and treatment of cardiorespiratory arrest and patient management after resuscitation

Module 8. Anesthetic Management in Specific Situations I

- Establish and understand the differences in the management of specific anesthetic situations
- Determine mechanisms to anticipate potential problems that may arise during patient management

Module 9. Anesthetic Management in Specific Situations II

- Establish and understand the differences in the management of specific anesthetic situations and determine the mechanisms to anticipate possible problems that may arise during the management of patients with respiratory or ophthalmologic pathologies, for minimally invasive procedures, with alterations in body condition, extreme body size, brachiocephalic, with thoracic pathology, oncologic or pregnant patients

Module 10. Anesthetic Management in Specific Situations III

- See from a practical point of view the use of different protocols, anesthetic and monitoring techniques applied to specific situations
- Assess the most appropriate protocol for each patient and understand that in the absence of predetermined protocols individualization is necessary for each procedure and each case

Module 11. 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
- Examine equine cardiac anatomy, the basis of electrophysiological behavior of the heart and the stress response produced by anesthesia in the equine patient
- List the special anatomical and physiological features of swine and Camelids relevant to the design of a safe anesthetic protocol in these species
- Determine the cardiac mechanical processes related to blood circulation
- 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 12. Evaluation, Preanesthetic Preparation and Sedation in 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
- Develop expertise in pharmacokinetics and pharmacodynamics of drugs for horses
- Know the pharmacological properties and clinical implications of sedative and tranquilizing drugs
- Establish the most common in-station procedures and protocols in the equine patient

Module 13. Induction of General Anesthesia in Large Animals

- Generate specialized 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
- Compile the clinical and anatomical knowledge necessary for the safe performance of endotracheal intubation in the equine patient
- 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

Module 14. 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
- Deepen knowledge about 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
- Detail the action mechanism of neuromuscular blocking agents as well as their pharmacology
- 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
- Broaden your knowledge of specific special anesthetic recovery considerations in large and small ruminants, swine and camelids

Module 15. 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
- Generate specialized knowledge on blood oxygenation monitoring and the monitoring of proper ventilation
- Analyze the importance and main technical features related 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 16. 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 adjuvant analgesic drugs
- Establish the main side effects of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine and other adjuvant analgesic drugs

- Determine the main contraindications to the administration of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine and other adjuvant analgesic drugs
- Examine the clinical uses of opioids, NSAIDs, alpha-2 agonist agents, ketamine, lidocaine, and other adjuvant analgesic drugs
- Establish the main special pharmacological considerations for analgesic agents in ruminants, swine and camelids in ruminants, swine and camelids

Module 17. 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 in relation 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 locoregional techniques in other large animal species

Module 18. 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
- Identify and know the main arrhythmias 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
- 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 19. 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
- Delve into the study of the use of colloids in ruminants, swine and camelids
- Apply clinical fluid therapy pertinent to the perioperative period, as well as to electrolyte and glucose imbalances in ruminants, swine and camelids

Module 20. Cases and Special Clinical Situations in 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
- To detail the main differences in foal anesthesia in comparison to adults
- Know the risk factors and complications in 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 characteristics of anesthesia in swine transplantation models, as well as for laparoscopy in experimental swine
- To 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
- Master the legislation applicable to the anesthesia of animals intended for human consumption
- Master abundance the veterinary prescription drug
- 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 for experimentation
- 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
- Determine analgesic techniques that can be applied in these non-domestic species
- Examine the main physical and chemical methods of euthanasia

"

Quality specialized programs for outstanding students. At TECH, we offer the perfect education for high level development in your field"

03
Skills

Once all the contents have been studied and the objectives of the Advanced Master's Degree in Veterinary Anesthesiology have been achieved, the professional will have superior competence and performance in this area. A very complete approach, in an Advanced Master's Degree, which makes the difference.

Achieving excellence in any profession requires effort and perseverance. But, above all, the support of professionals, who will give you the boost you need, with the necessary means and assistance. At TECH, we offer you everything you need"

General Skills

- Acquire the necessary knowledge to be able to carry out a well-prepared anesthetic approach
- Elaborate a specific anesthesia plan for each case
- Know and know how to use the necessary tools effectively
- Be familiar with and know how to implement existing protocols
- Know and know how to develop preoperative
- Know and know how to develop operative and postoperative management.
- Know and know how to develop postoperative management
- Master all aspects of anesthetic care for each patient individually
- Create finalised plans for a range of specific situations: diseases, intolerances, critical states, etc
- Correctly perform surgical procedures
- Deal with surgical and postoperative complications
- Perform appropriate diagnoses according to the type of disease that the animal has
- Use the correct specific surgical material in each case
- Treat the various wounds they could find when examining an animal
- Use the most appropriate instruments for each intervention

Specific Skills

- Understand the most appropriate surgical material for tissue damage and perform this type of surgery
- Treat surgical infections
- Understand the healing process of wounds and the best way to proceed with the treatment
- Perform laser therapy
- Perform skin graft procedures
- Correctly resolve surgical pathologies that affect the gastrointestinal tract
- Solve a multitude of cases of the gastrointestinal system in a comprehensive manner
- Deal with genitourinary pathologies
- Perform surgical processes that affect the urinary tract
- Solve complications in this area
- Diagnose and treat skin tumors
- Surgically manage soft tissue sarcomas, mastocytomas or cutaneous and subcutaneous tumors, among others
- Diagnose diseases which affect the liver, spleen, thyroid glands, adrenal gland, pancreas or endocrine system
- Choose the most appropriate treatments in each case
- Recognise the main diseases which affect the head and neck
- Diagnose and treat said diseases

- Use the most appropriate material in each of the interventions
- Use the most advanced techniques in interventions related to the thoracic cavity
- Solve the most common complications that occur in thoracic cavity surgery
- Use the most appropriate techniques and therapeutic plans for resolving the different umbilical, inguinal, scrotal and traumatic hernias
- Use the most appropriate laparoscopic techniques for small animals
- Understand interventional radiology, its main uses and how to apply it in practice
- Know the anesthetic procedure for the surgical process
- Identify the necessary amounts of anestheticfor different patients
- Identify the possible consequences of anesthetic delivery
- Recognize the relevant times for the duration of anesthesia
- Recognize the use of local and general anesthesia
- Identify surgeries requiring local anesthesia
- Identify surgeries requiring general anesthesia

Course Management

In keeping with this university's concept of total quality, TECH is proud to provide the professional with teaching staff of the highest level, chosen for their proven experience in the educational field. Professionals from different areas and fields of expertise that make up a comprehensive multidisciplinary team. A unique opportunity to learn from the best.

Our professors bring their vast experience and their teaching skills to offer you a stimulating and creative specialized training program"

Management

D. Cabezas Salamanca, Miguel Ángel

- Graduated in veterinary medicine from
  Complutense University Madrid Two-year internship at the Anesthesia Service of the Veterinary Clinic Hospital of the UCM
- Accredited by AVEPA in the Specialty of Anesthesia and Analgesia
- Head of the Anesthesia-Reanimation Service and Pain Unit at Hospital Veterinario Puchol
- Founding member of the Spanish Society of Veterinary Anesthesia and Analgesia (SEAAV). Member of the European Association of Veterinary Anesthesia (AVA), International Association for the Study of Pain (IASP) and the International Veterinary Academy of Pain Management (IVAPM)
- Speaker in several Anesthesia and Analgesia courses and national and international congresses
- Author of the books "Practical Pain Management in Small Animals" and "Role of NSAIDs in Chronic Pain"
- Co-author of the "Clinical Manual of Pharmacology and "Complications in Small Animal Anesthesia"; as well as author of specific chapters in other books

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 the 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

Ms. Soto Martín, María

- Degree in Veterinary Medicine from the Complutense University Madrid in 2009, with preferential dedication to anesthesia since 2010 and sole dedication since 2012
- Member of the Spanish Society of Veterinary Anesthesia and Analgesia, with frequent participation in its annual congresses, one of which earned her the award for best oral communication
- Member of the Anesthesia group of AVEPA, having also participated on several occasions with scientific content in its annual congress
- She provided specific small animal anesthesia training throughout his career in the form of lectures, webinars, hands-on workshops and clinic-based training
- She also collaborated in books and scientific articles, published nationally and internationally

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, 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 the 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 anesthesia and veterinary analgesia in several Universities and Refernce Centers in several countries such as the United States, Spain and the United Kingdom
- In 2019, she became a RECOVER Certified Instructor in Basic and Advanced Life Support 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 the 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 in 2020
- Associate Professor in the Clinical Rotation of the subject "Anesthesiology" in the Veterinary Degree of the Faculty of Veterinary Medicine at the Complutense University 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 Hospital Clínico Veterinario Complutense, 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 the 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 Equine Clinical Master's Degrees 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 Anethesia, Virgen de las Nieve 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 Vetinary 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 Vetinary 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 in-station 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 specialization have been developed by different professors with a clear purpose: to ensure that students acquire each and every one of the skills necessary to become true experts in this field. The content of this program enables you to learn all aspects of the different disciplines involved in this field. A comprehensive and well-structured program that will lead to the highest standards of quality and success.
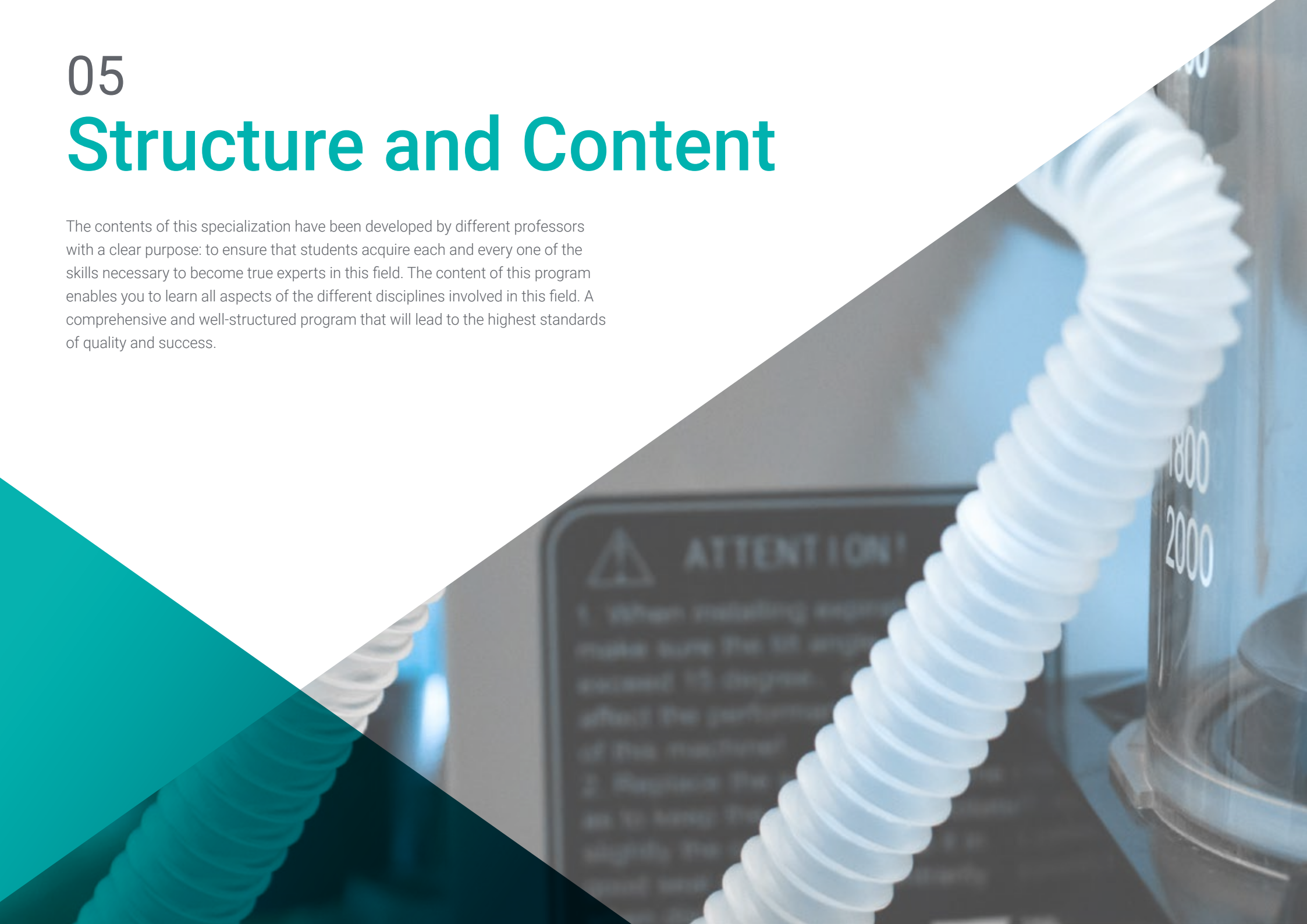
" Through a very well compartmentalized progress, you will be able to gain access to the most advanced knowledge of the moment in Veterinary Anesthesiology "

Module 1. Introduction. Anesthetic Equipment

1.1.   Brief History of Anesthesia
    1.1.1.   Important Facts About Human Anesthesiology
    1.1.2.   Relevant Historical Events in Veterinary Anesthesiology

1.2.   Optimization of the Surgical Patient. Pre-operative Fasting
    1.2.1.   Importance of Liquid Fasting
    1.2.2.   Solid Fasting, Why and How Much?

1.3.   Peri-operative Drugs
    1.3.1.   Precautions in the Polymedicated Patient. General Aspects
    1.3.2.   Medication Guidelines for Patients with Cardiac Medication
    1.3.3.   Medication Guidelines in Diabetic Patients
    1.3.4.   Medication Guidelines for Patient with Epilepsy
    1.3.5.   Other Chronic Medications

1.4.   Anesthetic Machines and Systems
    1.4.1.   General Aspects
    1.4.2.   Technical Description and Equipment Care
    1.4.3.   Anesthetic Circuits
        1.4.3.1. Without Reinhalation
        1.4.3.2. With Reinhalation

1.5.   Mechanical Ventilators
    1.5.1.   Introduction
    1.5.2.   Types of Ventilators

1.6.   Systems of Administrating Drugs
    1.6.1.   Systems of Administrating Inhalants
    1.6.2.   Basic Systems
    1.6.3.   Volumetric Infusion Pumps
    1.6.4.   Perfusers

1.7.   Patient Classification Systems
    1.7.1.   Introduction
    1.7.2.   Conduction Heating Systems
    1.7.3.   Heating Systems with Hot Air

1.8.   Miscellaneous (Endotracheal Tubes and Other Intubation Systems, Laryngoscope)
    1.8.1.   Endotracheal Tubes
    1.8.2.   Supraglottic Devices
    1.8.3.   Laryngoscopy

1.9.   Clinical Safety

1.10.   Contributions of Current Anesthesiology to Veterinary Medicine and Client Expectations

Module 2. Physiology and Pharmacology Related to Anesthesia

2.1.   Ventilatory Physiology
    2.1.1.   Introduction
    2.1.2.   Ventilation of the Awake Patient
    2.1.3.   Ventilation in Anesthesia

2.2.   Cardiovascular Physiology
    2.2.1.   Introduction
    2.2.2.   Anesthesia-Related Characteristics of the Cardiovascular System

2.3.   Neurological Physiology. Central and Autonomic Nervous System
    2.3.1.   Introduction
    2.3.2.   Anesthesia-Related Characteristics of the SNA

2.4.   Renal Physiology Acid/Base Balance
    2.4.1.   Introduction
    2.4.2.   Anesthesia-Related Characteristics of the Renal System
    2.4.3.   Mechanism of Regulating the Acid/ Base Balance

2.5.   Gastrointestinal and Endocrine Physiology
    2.5.1.   Introduction
    2.5.2.   Characteristics of the Digestive System in Anesthesia
    2.5.3.   Characteristics of the Endocrine System in Anesthesia

2.6.   Age Related Physiological Changes
    2.6.1.   Ventilatory Changes
    2.6.2.   Cardiovascular Changes
    2.6.3.   Nervous System Changes
    2.6.4.   Endocrine Changes
    2.6.5.   Other Changes Related to Anestesia

Module 3. Anesthetic Timing

Module 4. Analgesia

4.6.   Other Analgesics I: Ketamine, Lidocaine
    4.6.1.   Ketamine General Characteristics
    4.6.2.   Lidocaine General Characteristics
        4.6.2.1. Precautions with Felines
4.7.   Other Analgesics II
    4.7.1.   Paracetamol
    4.7.2.   Dipyrone
    4.7.3.   Gabapentinoids (Gabapentin and Pregabalin)
    4.7.4.   Amantadine
    4.7.5.   Grapiprant
4.8.   Assessment of Post-Surgical Pain
    4.8.1.   Implications of Post-Surgical Pain
    4.8.2.   Perioperative Pain Assessment Scales
        4.8.2.1. Canines
        4.8.2.2. Felines
4.9.   Assessment of Chronic Pain
    4.9.1.   Implications of Chronic Pain
    4.9.2.   Chronic Pain Assessment Scales
        4.9.2.1. Canines
        4.9.2.2. Felines
4.10.   Analgesia in the Emergency Department and in the Hospitalized Patient
    4.10.1.   Peculiarities in Emergency and Hospitalized Patients
    4.10.2.   Analgesic Protocols for Hospitalized Patients

Module 5. Locoregional Anesthesia/Analgesia

5.1.   Pharmacology of Local Anesthetics
    5.1.1.   General Aspects of Local Aesthetics
    5.1.2.   Adjuvants in Locoregional Anesthesia
5.2.   Basics of Locoregional Anesthesia: Anatomical Localization, Neurolocalizer, Ultrasound
    5.2.1.   Basic Aspects of Locoregional Anesthesia
    5.2.2.   Basic Locoregional Anesthesia: Anatomical Localization
    5.2.3.   Locoregional Anesthesia With Neurolocalizer
    5.2.4.   Ultrasound-Guided Locoregional Anesthesia
5.3.   Complications Associated with Locoregional Anesthesia
    5.3.1.   Toxicity of Local Anesthetics
    5.3.2.   Puncture Injury
5.4.   Head Blockages I
    5.4.1.   Anatomic Introduction
    5.4.2.   Jaw Nerve Blockade
    5.4.3.   Mandibular Nerve Block
5.5.   Head Blockages II
    5.5.1.   Ophthalmic Blockages
    5.5.2.   Blockages Related to the Pinna
5.6.   Forelimb Blockages
    5.6.1.   Anatomic Introduction
    5.6.2.   Paravertebral Brachial Plexus Blockage
    5.6.3.   Subscapularis Brachial Plexus Blockade
    5.6.4.   Axillary Brachial Plexus Blockade
    5.6.5.   RUMM Blocking
5.7.   Trunk Blocks I
    5.7.1.   Intercostal Blockages
    5.7.2.   Serratus Blockage
    5.7.3.   Pleural Instillation

5.8.   Trunk Blockages II

    5.8.1.   Lumbar Square Blockage

    5.8.2.   Transverse Abdominal Blockage

    5.8.3.   Peritoneal Instillation

5.9.   Rear Limb Blockages

    5.9.1.   Anatomic Introduction

    5.9.2.   Sciatic Nerve Block

    5.9.3.   Femoral Nerve Block

5.10.   Epidural

    5.10.1.   Anatomic Introduction

    5.10.2.   Location of the Epidural Space

    5.10.3.   Epidural Drug Administration

    5.10.4.   Epidural vs. Spinal

    5.10.5.   Contraindications and Complications

Module 6. Monitoring

6.1.   Basic Monitoring

    6.1.1.   Palpitation

    6.1.2.   Observation

    6.1.3.   Auscultation

    6.1.4.   Temperature Monitoring

6.2.   Electrocardiography

    6.2.1.   Introduction to Electrocardiography

    6.2.2.   ECG Interpretation in Anesthesia

6.3.   Arterial Pressure

    6.3.1.   Introduction to Arterial Pressure Physiology

    6.3.2.   Medication Methods of Arterial Pressure

    6.3.3.   Non-Invasive Arterial Pressure

    6.3.4.   Invasive Arterial Pressure

6.4.   Cardiac Output Monitoring

    6.4.1.   Introduction to Cardiac Output Physiology

    6.4.2.   Different Methods of Monitoring Cardiac Output

6.5.   Ventilatory Monitoring I. Pulse Oximetry

    6.5.1.   Physiological Introduction

    6.5.2.   Plethysmogram Interpretation

6.6.   Ventilatory Monitoring II Capnography

    6.6.1.   Physiological Introduction

    6.6.2.   Capnogram Interpretation

6.7.   Ventilatory Monitoring III

    6.7.1.   Spirometry

    6.7.2.   Anesthetic Gases

    6.7.3.   Arterial Blood Gases

6.8.   Hypnosis Monitoring

    6.8.1.   Introduction to Hypnosis During Anesthesia

    6.8.2.   Subjective Monitoring of the Hypnosis Plane

    6.8.3.   BIS Monitoring

6.9.   Nociception Monitoring

    6.9.1.   Physiology Introduction of Intraoperative Nociception

    6.9.2.   Monitoring of Nociception by ANI

    6.9.3.   Other Methods of Intraoperative Nociception Monitoring

6.10.   Volemia Monitoring Acid/ Base Balance

    6.10.1.   Introduction to the Physiology of Volemia During Anesthesia

    6.10.2.   Monitoring Methods

Module 7. Anesthetic Complications

7.1. Regurgitation/Aspiration
    7.1.1. Definition
    7.1.2. Treatment
7.2. Hypotension/Hypertension
    7.2.1. Definition
    7.2.2. Treatment
7.3. Hypocapnia/Hypercapnia
    7.3.1. Definition
    7.3.2. Treatment
7.4. Bradycardia/Tachycardia
    7.4.1. Definition
    7.4.2. Treatment
7.5. Other Alterations in an Electrocardiagram
    7.5.1. Definition
    7.5.2. Treatment
7.6. Hypothermia/Hyperthermia
    7.6.1. Definition
    7.6.2. Treatment
7.7. Nociception/Intraoperative Awakening
    7.7.1. Definition
    7.7.2. Treatment
7.8. Airway Complications/Hypoxia
    7.8.1. Definition
    7.8.2. Treatment
7.9. Cardiorespiratory Arrest
    7.9.1. Definition
    7.9.2. Treatment
7.10. Various Complications
    7.10.1. Post-anesthetic Blindness
    7.10.2. Post-anesthetic Tracheitis
    7.10.3. Post-anesthesia Cognitive Dysfunction

Module 8. Anesthetic Management in Specific Situations I

8.1. Anesthesia in Elderly Patients
    8.1.1. Characteristics to Take into Account
    8.1.2. Postoperative Management
    8.1.3. Anesthetic Management
    8.1.4. Post-Operative Care
8.2. Anesthesia in Pediatric Patients
    8.2.1. Characteristics to Take into Account
    8.2.2. Postoperative Management
    8.2.3. Anesthetic Management
    8.2.4. Post-Operative Care
8.3. Anesthesia in Patients with Cardiac Pathology I (Congenital Heart Disease)
    8.3.1. Characteristics to Take into Account
    8.3.2. Postoperative Management
    8.3.3. Anesthetic Management
    8.3.4. Post-Operative Care
8.4. Anesthesia in Patients with Cardiac Pathology II (Acquired Heart Disease)
    8.4.1. Characteristics to Take into Account
    8.4.2. Postoperative Management
    8.4.3. Anesthetic Management
    8.4.4. Post-Operative Care
8.5. Anesthesia for Patients With Thyroid Pathologies
    8.5.1. Hypothyroid Patient
        8.5.1.1. Characteristics to Take into Account
        8.5.1.2. Postoperative Management
        8.5.1.3. Anesthetic Management
        8.5.1.4. Post-Operative Care

Module 9. Anesthetic Management in Specific Situations II

Module 10. Anesthetic Management in Specific Situations III

Module 11. Physiology Applied to Anesthesia in Large Animals

Module 12. Evaluation, Preanesthetic Preparation and Sedation in Large Animals

Module 13. Induction of General Anesthesia in Large Animals

13.1. Dissociative Anesthetics (Ketamine)
    13.1.1. Pharmacology
    13.1.2. Side Effects
    13.1.3. Contraindications
    13.1.4. Dosage and Protocol
13.2. Barbiturates (Thiopental)
    13.2.1. Pharmacology
    13.2.2. Side Effects
    13.2.3. Contraindications
    13.2.4. Dosage and Protocol
13.3. Propofol, Alfaxalone, Etomidate
    13.3.1. Pharmacology
    13.3.2. Side Effects
    13.3.3. Contraindications
    13.3.4. Dosage and Protocol
13.4. Benzodiazepines and Guaifenesin
    13.4.1. Pharmacology
    13.4.2. Side Effects
    13.4.3. Contraindications
    13.4.4. Dosage and Protocol
13.5. Main Takedown Techniques in the Equine Patient
13.6. Endotracheal Intubation, Nasotracheal Intubation and Tracheostomy in the Equine Patient
13.7. Physiological Consequences of Different Decubitus, Padding and Limb Positioning in the Equine Patient
13.8. Special Considerations in the Induction Period for Large and Small Ruminants
    13.8.1. Pharmacology, Inducing Agents
    13.8.2. Takedown Techniques
    13.8.3. Intubation Techniques
13.9. Special Considerations in the Induction Period for Swine and Camelids
    13.9.1. Pharmacology, Inducing Agents
    13.9.2. Takedown Techniques
    13.9.3. Intubation Techniques
13.10. Positioning of the Ruminant, Swine and Camelid Patient after Induction

Module 14. General Anesthesia and Equipment in Large Animals

14.1. Anesthetic Equipment (I)
    14.1.1. Anesthetic Machine
    14.1.2. Circular Circuit
14.2. Anesthetic Equipment (II)
    14.2.1. Mechanical Ventilators
    14.2.2. Demand Valve
14.3. General Information on Inhalation Anesthesia
    14.3.1. Pharmacokinetics of Inhalation Agents (Absorption, Distribution, Metabolism, Elimination, Physical and Chemical Characteristics)
    14.3.2. Pharmacodynamics of Inhalation Agents (CNS Effects, Cardiovascular and Respiratory Effects, Other Effects)
    14.3.3. Inhalation Agents
        14.3.3.1. Isoflurane
        14.3.3.2. Sevoflurane
14.4. Partial and Total Intravenous Anesthesia (PIVA and TIVA)
    14.4.1. Injectable Agents Used and Techniques
14.5. Neuromuscular Blockers
    14.5.1. Action Mechanism
    14.5.2. Pharmacokinetics and Pharmacodynamics
    14.5.3. Monitoring
    14.5.4. Pharmacology of Reversing Agents
14.6. General Anesthesia in Other Species (Small and Large Ruminants, Swine and Camelids)
14.7. Mechanical Ventilation
    14.7.1. Respiratory Mechanism
    14.7.2. Consequences of VM
    14.7.3. Ventilatory Parameters
14.8. Mechanical Ventilation in Other Species (Small and Large Ruminants, Swine and Camelids)
14.9. Anesthetic Recovery
    14.9.1. Recovery Techniques
    14.9.2. Patient Preparation
    14.9.3. Box Preparation
14.10. Anesthetic Recovery (Small and Large Ruminants, Swine and Camelids)

Module 15. Monitoring in Large Animals

Module 16. Analgesia in Large Animals

Module 17. Locoregional Anesthesia in Large Animals

17.1. Pharmacology of Local Anesthetics
    17.1.1. Action Mechanism
    17.1.2. Clinical Differences
    17.1.3. Complications
    17.1.4. Adjuvants
17.2. Instruments and Equipment
    17.2.1. Needles
    17.2.2. Neurostimulation
    17.2.3. Ultrasound
17.3. Locoregional Head Blocks (i)
    17.3.1. Maxillary Nerve Block
    17.3.2. Infraorbital Nerve Block
    17.3.3. Mandibular Nerve Block
    17.3.4. Mentonian Nerve Block
17.4. Head Blocks (II)
    17.4.1. Retrobulbar/Peribulbar Block
    17.4.2. Eyelid Block
    17.4.3. Auriculopalpebral Block
    17.4.4. Ear Block
    17.4.5. Cervical Block
17.5. Locoregional Forelimb Blocks
    17.5.1. Surgical Blocks
17.6. Locoregional Hind Limb Blocks
    17.6.1. Surgical Blocks
17.7. Locoregional Laparotomy Blocks
    17.7.1. Paravertebral Lumbar Block
    17.7.2. Inverted "L" Block and Infiltration
    17.7.3. Flat Transverse Abdominal Block

17.8. Epidural Anesthesia
    17.8.1. Realization of a Single Technique
    17.8.2. Epidural Catheter Placement
    17.8.3. Drugs Used
17.9. Locoregional Anesthesia for Large Ruminants
    17.9.1. Most Common Techniques
17.10. Locoregional Anesthesia for Small Ruminants, Swine and Camelids
    17.10.1. Most Common Techniques

Module 18. Anesthetic Complications and Cardiopulmonary Resuscitation

18.1. Morbidity and Mortality
    18.1.1. Mortality
        18.1.1.1. General Considerations
        18.1.1.2. Mortality Studies
            18.1.1.2.1. Mortality Compared
        18.1.1.3. Risk Factors
            18.1.1.3.1. Related to the Horse
            18.1.1.3.2. Related to Surgical Procedure
            18.1.1.3.3. Related to Anesthesia
        18.1.1.4. Causes of Death Related to Anesthesia
            18.1.1.4.1. Cardiovascular
            18.1.1.4.2. Respiratory
            18.1.1.4.3. Others
    18.1.2. Morbidity
18.2. Complications in Premedication and Induction I
    18.2.1. Intra-arterial and Perivascular Injection
    18.2.2. Anaphylactic Reactions
    18.2.3. Drug-induced Priapism
    18.2.4. Incomplete or Inadequate Sedation/Induction
18.3. Complications in Premedication and Induction II
    18.3.1. Hypoventilation
    18.3.2. Inability to Intubate/Laryngeal Trauma
    18.3.3. Hypotension

Module 19. Fluid Therapy in Large Animals

19.1. Physiology: Bodily Water and Electrolytes

19.1.1. Physiological Body Spaces

19.1.2. Fluid Balance

19.1.3. Sodium Physiology and Alterations

19.1.4. Potassium Physiology and Alterations

19.1.5. Calcium Physiology and Alterations

19.1.6. Chlorine Physiology and Alterations

19.1.7. Magnesium Physiology and Alterations

19.2. Acid-Base Balance I

19.2.1. Regulation of Acid-Base Homeostasis

19.2.2. Consequences of Acid-Base Alterations

19.2.3. Interpretation of Acid-Base Status

19.2.3.1. Traditional Method

19.2.3.2. New Approaches

19.3. Acid-Base Balance II

19.3.1. Metabolic Acidosis

19.3.2. Respiratory Acidosis

19.3.3. Metabolic Alkalosis

19.3.4. Respiratory Alkalosis

19.3.5. Mixed Alterations

19.4. Catheterization in the Equine Patient

19.4.1. Catheter Selection

19.4.2. Catheterization Points

19.4.3. Catheter Placement and Maintenance

19.5. Catheterization Complications

19.5.1. Thrombophlebitis

19.5.2. Catheter Breakage

19.5.3. Perivascular Injection

19.5.4. Venous Air Embolism

19.5.5. Exsanguination

19.6. Clinical Examination of Water Status in the Equine Patient

19.6.1. Physical Examination

19.6.2. Laboratorial Parameters

19.6.3. Hemodynamic Parameters

19.7. Types of Fluid I

19.7.1. Replacement Fluids

19.7.2. Maintenance Fluids

19.8. Types of Fluid II

19.8.1. Colloids

19.9. Transfusion of Blood Derivatives

19.9.1. Plasma

19.9.2. Erythrocyte Concentrate

19.9.3. Whole Blood

19.9.4. Complications

19.10. Fluid Therapy in Ruminants, Swine and Camelids

19.10.1. Physiology Applied to Fluid Therapy in these Species

19.10.2. Isotonic, Hypertonic and Hypotonic Solutions Available for These Species

19.10.3. Colloid Solutions Available for These Species

19.10.4. Fluid Therapy for the Perioperative Period in These Species

19.10.5. Imbalances of Glycemia and Ions and Their Correction through Fluid Therapy in these Species

Module 20. Cases and Special Clinical Situations in Large Animals

20.1. Special In-Station Cases for Equines
- 20.1.1. Diagnostic Procedures (TC, IRM)
- 20.1.2. Laryngeal Surgery
- 20.1.3. Laparoscopy
- 20.1.4. Dental Procedures
- 20.1.5. Ophthalmologic Procedures
- 20.1.6. Perineal Surgeries
- 20.1.7. Obstetric Maneuvers

20.2. Anesthesia Special Cases in Equine (I)
- 20.2.1. Geriatric Patient
- 20.2.2. Approach Acute Abdominal Syndrome
- 20.2.3. Cesarean Section

20.3. Anesthesia Special Cases in Equines (II)
- 20.3.1. Elective Anesthetic Management in Foals
- 20.3.2. Urgent Anesthetic Management in Foals

20.4. Anesthesia Special Cases in Equines (III)
- 20.4.1. Anesthetic Management of Respiratory Surgery
- 20.4.2. Anesthetic Management of Diagnostic and Therapeutic Procedures for Pathologies of the Nervous System

20.5. Anesthesia in Special Cases in Ruminants
- 20.5.1. Anesthetic Considerations and Perioperative Management in Orthopedic Procedures in Ruminants
- 20.5.2. Anesthetic Considerations and Perioperative Management in for Wounds and abscesses Procedures in Ruminants
- 20.5.3. Anesthetic Considerations and Perioperative Management Laparotomy in Ruminants

20.5.4. Anesthetic Considerations and Perioperative Management in Obstetric and Procedures in Ruminants
20.5.5. Anesthetic Considerations and Perioperative Management of Procedures for Distal Extremities, Hooves and Horns in Ruminants
20.5.6. Anesthetic Considerations and Perioperative Management of Specific Procedures for Udders and Teats in Ruminants
20.5.7. Anesthetic Considerations and Perioperative Management of Procedures for Eyes and Adjacent Areas in Ruminants
20.5.8. Anesthetic Considerations and Perioperative Management of Surgical Procedures for Umbilical Hernia Resolution in Ruminants
20.5.9. Anesthetic Considerations and Perioperative Management of Procedures for Perianal and Tail Areas in Ruminants

20.6. Anesthesia and Analgesia in Donkeys and Mules
- 20.6.1. Anatomical, Physiological and Behavioral Variations
- 20.6.2. Reference Values Required for Anesthesia
- 20.6.3. Variations in Responses to Common Drugs Used in Anesthesia
- 20.6.4. Premedication and Sedation for Foot Procedures in Donkeys and Mules
- 20.6.5. Induction and Maintenance of Anesthesia: Injectable and Inhalation Techniques
- 20.6.6. Anesthetic Monitoring
- 20.6.7. Recovery from Anesthesia
- 20.6.8. Preoperative, Intraoperative and Postoperative Analgesia
- 20.6.9. Local Anesthetic Techniques in Donkeys and Mules

20.7. Anesthesia in Special Cases for Swine and Camelids
- 20.7.1. Intraoperative and Perioperative Anesthetic Management in Field Anesthesia in Swine
- 20.7.2. Castration in Piglets Analgesic and Anesthetic Considerations
- 20.7.3. The Vietnamese Pig Intraoperative and Perioperative Anesthetic Management and Most Frequent Complications

A comprehensive specialized program that will take you through the neceassary knowledge to compete with the best in your profession"

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

20%

15%

15%

3%

20%

17%

7%

3%

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.

Certificate

This Advanced Master's Degree in Veterinary Anesthesiology guarantees students, in addition to the most rigorous and up-to-date education, access to an Advanced Master's Degree issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"
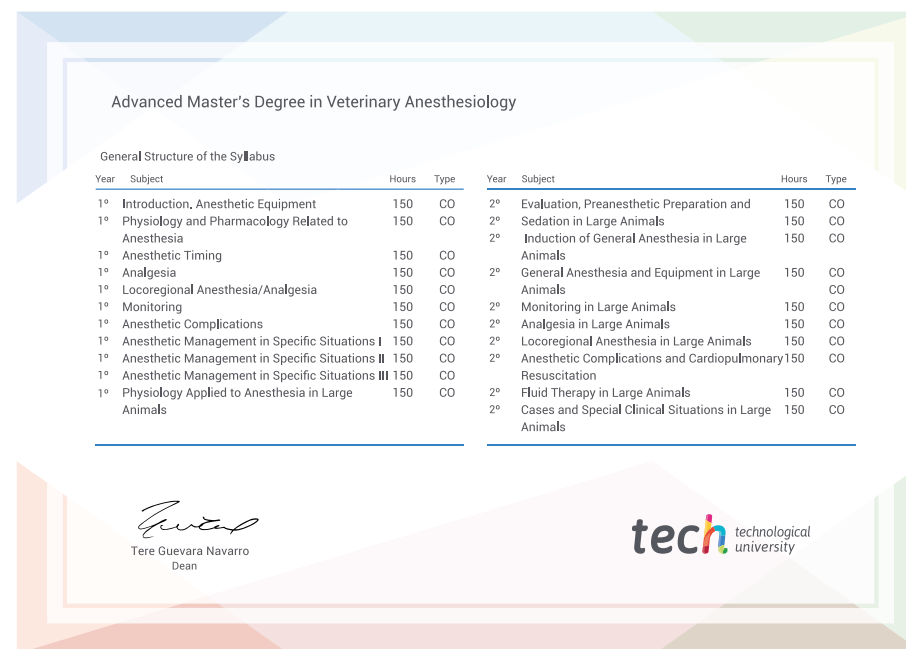
This **Advanced Master's Degree in Veterinary Anesthesiology** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Advanced Master's Degree** diploma issued by T**ECH Technological University** via tracked delivery*.

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

Title: **Advanced Master's Degree in Veterinary Anesthesiology**

Official Nº of Hours: **3,000 h.**

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tech technological university

Awards the following
DIPLOMA
to
Mr./Ms. _____ with identification number _____.
For having successfully passed and accredited the following program

ADVANCED MASTER'S DEGREE
in
Veterinary Anesthesiology

This is a qualification awarded by this University, equivalent to 3,000 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

Advanced Master's Degree in Veterinary Anesthesiology

General Structure of the Syllabus

Year	Subject	Hours	Type	Year	Subject	Hours	Type
1º	Introduction. Anesthetic Equipment	150	CO	2º	Evaluation, Preanesthetic Preparation and	150	CO
1º	Physiology and Pharmacology Related to Anesthesia	150	CO	2º	Sedation in Large Animals	150	CO
1º	Anesthetic Timing	150	CO	2º	Induction of General Anesthesia in Large Animals	150	CO
1º	Analgesia	150	CO	2º	General Anesthesia and Equipment in Large Animals	150	CO
1º	Locoregional Anesthesia/Analgesia	150	CO				CO
1º	Monitoring	150	CO	2º	Monitoring in Large Animals	150	CO
1º	Anesthetic Complications	150	CO	2º	Analgesia in Large Animals	150	CO
1º	Anesthetic Management in Specific Situations I	150	CO	2º	Locoregional Anesthesia in Large Animals	150	CO
1º	Anesthetic Management in Specific Situations II	150	CO	2º	Anesthetic Complications and Cardiopulmonary Resuscitation	150	CO
1º	Anesthetic Management in Specific Situations III	150	CO				
1º	Physiology Applied to Anesthesia in Large Animals	150	CO	2º	Fluid Therapy in Large Animals	150	CO
				2º	Cases and Special Clinical Situations in Large Animals	150	CO

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*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.

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Advanced Master's Degree
Veterinary Anesthesiology

» Modality: **online**
» Duration: **24 months**
» Certificate: **TECH Technological University**
» Dedication: **16h/week**
» Schedule: **at your own pace**
» Exams: **online**

Advanced Master's Degree
Veterinary Anesthesiology