

# Postgraduate Certificate Pre-Anesthetic Preparation for Large Animals





## Postgraduate Certificate Pre-Anesthetic Preparation for Large Animals

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/veterinary-medicine/postgraduate-certificate/pre-anesthetic-preparation-large-animals](http://www.techtute.com/us/veterinary-medicine/postgraduate-certificate/pre-anesthetic-preparation-large-animals)

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# 01

# Introduction

Anesthetic procedures carry an associated risk due to the cardiorespiratory and metabolic impact of the drugs used. This risk is determined by factors intrinsic to the patient, both physiological and pathological, and factors related to the anesthetic technique. Risks can be significantly reduced through good planning of anesthetic procedures, modifying protocols and adapting them individually to each patient.

Preanesthetic assessment is essential for the proper design and development of anesthetic protocol. By means of a complete physical examination and a blood test we can detect pre-existing pathologies, as well as assessing the initial metabolic status of our patient.



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*Become a professional in one of today's most in demand fields: specialize in Pre-Anesthetic Preparation for Large Animals with this comprehensive online program”*

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 Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals is designed in response to the need for clinical veterinarians with greater expertise of the protocols and techniques relevant to this area.

The teaching team of this Postgraduate Certificate is made up of professionals specialized in Large Animal Anesthesia, with a wide experience in teaching, both in undergraduate and graduate programs, most of them being university professors and graduates. These professors are active anesthesiologists in leading veterinary centers and directors or participants in various research projects, hence in addition to teaching and clinical work they also carry out research activities.

The topics covered in the Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals have been selected with the aim of offering a complete course in anesthesia, so that the student develops specialized knowledge to safely address any situation requiring general or locoregional anesthesia and analgesia in ruminants, swine, camelids and equids.

At present, one of the main problems affecting continuing postgraduate specialization is its compatibility with work and personal life. Current professional demands make it difficult to attend a quality, specialized course in person, so the online format will allow our students to reconcile their studies with their daily professional practice, without losing the link with development and specialization.

This **Postgraduate Certificate in Pre-Anesthetic Preparation for 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



*Achieve comprehensive and relevant qualification in Pre-Anesthetic Preparation for Large Animals with this highly effective Postgraduate Certificate and open up new pathways for your professional progress”*

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*A Postgraduate Certificate that will enable you to work in all fields of Veterinary Anesthesiology with the competence of a high level professional”*

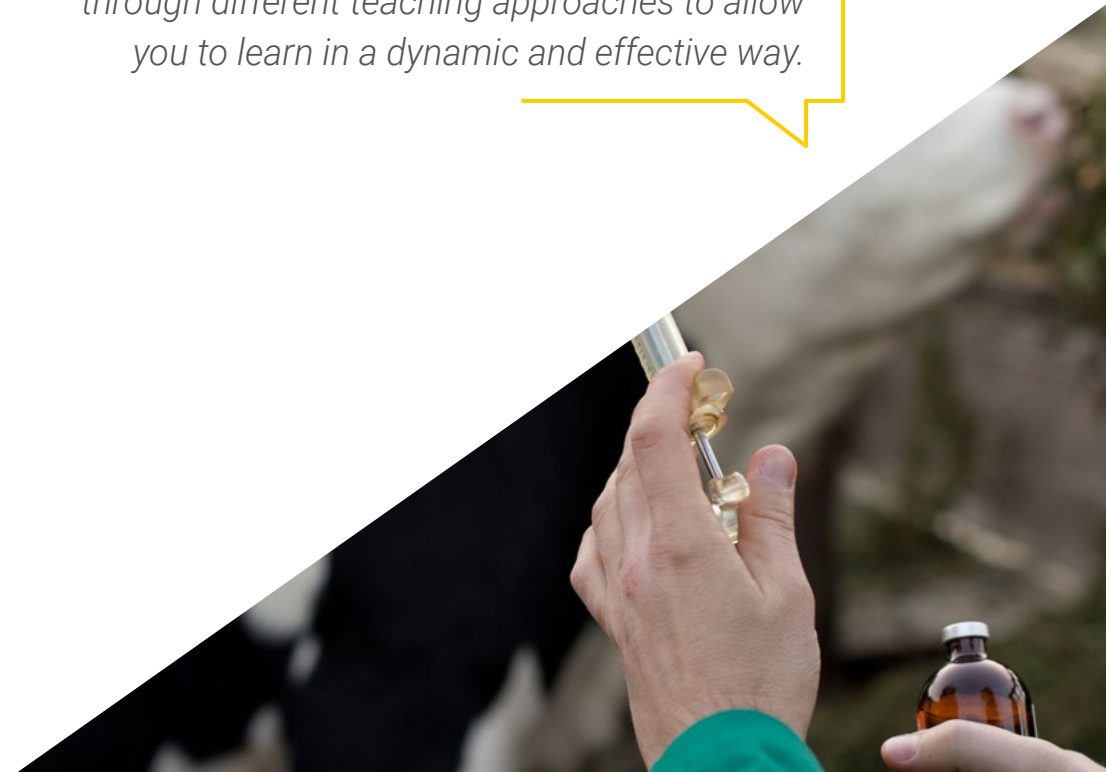
The teaching team is made up of professionals from different fields within this specialism. In this way, TECH ensures that it delivers educational results in line with its objectives. A multidisciplinary team of professionals, trained and experienced in different environments, who will develop the theoretical 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 matter is complemented by the effectiveness of the methodological design of this Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals. Developed by a multidisciplinary team of e-learning experts, it integrates the latest advances in educational technology. In this way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your education.

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 program will take you through different teaching approaches to allow you to learn in a dynamic and effective way.*



02

# Objectives

The objective of this Postgraduate Certificate is to train highly qualified professionals. An objective that is complemented, moreover, in a holistic manner, by promoting human development that lays the foundations for a better society. The aim is focused on helping professionals reach a much greater level of expertise and control. A goal that can be achieved in just a few months with a high intensity and precise program.







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*If your objective is to broaden your skills set to include new paths of success and development: this is the program for you: a training that aspires to excellence"*



## General Objectives

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- ♦ 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





## Specific Objectives

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- ♦ 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
- ♦ 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



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

# 03

# Course Management

In line with the program's concept of total quality, a highly qualified teaching staff, chosen for their proven experience, is the student's disposal. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.





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*We have the best teaching team, with years of experience, who are determined to transmit all their knowledge about this sector"*

## 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. 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. Martín Cuervo, María

- ♦ Head of the Internal Medicine Department of the Clínic 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. 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

# 04

# Structure and Content

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

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







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*We have the most complete and up to date academic program on the market. We strive for excellence and for you to achieve it too"*

## 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 Standing 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



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

05

# Methodology

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

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





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

## At TECH we use the Case Method

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

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



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

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

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

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



## Relearning Methodology

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

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



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



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

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

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

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

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



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



#### Study Material

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

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



#### Latest Techniques and Procedures on Video

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



#### Interactive Summaries

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

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



#### Additional Reading

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





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

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



#### Testing & Retesting

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



#### Classes

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

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



#### Quick Action Guides

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



06

# Certificate

The Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals guarantees students, in addition to the most rigorous and up to date education, access to a Postgraduate Certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals** 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 **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

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

**Title: Postgraduate Certificate in Pre-Anesthetic Preparation for Large Animals**  
Official N° of hours: 300 h.



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

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
classroom



**Postgraduate Certificate**  
Pre-Anesthetic Preparation  
for Large Animals

- » Modality: online
- » Duration: 12 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

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