

# Postgraduate Certificate

## Animal Nutrition and Physiology





## Postgraduate Certificate Animal Nutrition and Physiology

- » 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/animal-nutrition-physiology](http://www.techtute.com/us/veterinary-medicine/postgraduate-certificate/animal-nutrition-physiology)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*

# 01

# Introduction

This Postgraduate Certificate in Animal Nutrition and Physiology provides veterinary professionals with expertise on nutrition and feeding of zootechnical and wild animal species, with special attention paid to healthcare management according to the One Health movement. This program also covers anatomical and physiological concepts a way that makes the theory easy to apply to daily veterinary practice and examines the link between animal health and Public Health.

A high-quality program that will raise you to the highest levels of competence in the industry.



“

*A comprehensive update on Animal Nutrition and Physiology with the most complete and effective program on the online educational market”*



In order to offer excellence in the field, professionals depend on the sound theoretical knowledge of anatomy, pathophysiology and treatments, provided their higher academic training. But university programs sometimes lack professional development that is comprehensive and practical.

This Postgraduate Certificate covers the anatomy and physiology of each species focusing on the pathophysiological characteristics directly related to animal health.

After completing this program, the veterinary professional will have developed detailed, broad and integral expertise on the anatomy and physiology of the animal species under study and will have learned about the diseases that can affect them in a straightforward and overarching way.

Feeding in livestock and wildlife farms requires the optimal application of feeding procedures that allow the animal to obtain a balanced ration in terms of energy and nutrients. In order to provide this, it is essential to explore the principles governing the nutrition of different species, and the nutritional value and characteristics of different foods, as well as their preparation. This will allow administrators or managers to make decisions and propose feeding methods, as part of their role.

This Postgraduate Certificate aims to provide professionals with expertise on Animal Nutrition and Physiology. They will promote good sanitary and agricultural practices, ensuring the quality and safety of the food consumed by animals, without affecting animal health and profits derived from agricultural and hunting activities, with a focus on disease prevention and control.

While studying this module, the student will be able to effectively apply the theoretical knowledge they have acquired to specific practical cases.

This **Postgraduate Certificate in Animal Nutrition and Physiology** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The latest technology in the form of online teaching software
- ◆ A highly visual teaching system, supported by graphic and schematic contents that are 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 commitments
- ◆ Practical exercises for self-assessment 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 banks that are permanently available, even after the course



*Join the elite, with this highly effective Postgraduate Certificate and open up new paths to help you advance in your career”*

“

*A comprehensive program that will allow you to acquire the most advanced knowledge in order to provide specialist veterinary care in a range of areas”*

Our teaching staff is made up of professionals from different fields related to Animal Nutrition and Physiology. In this way, we ensure that we provide you with an update that is in line with objectives. A multidisciplinary team of professionals trained and experienced in different areas will cover the theoretical knowledge in an efficient way, but above all, they will bring their practical knowledge from their own experience to the course: one of the factors which makes this program unique.

This mastery of the subject matter is complemented by the effectiveness of the methodological design. Developed by a multidisciplinary team of e-learning experts, it integrates the latest advances in educational technology. This way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your training.

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

*Benefit from the experience of practising professionals and the analysis of actual success stories, in this high-impact program.*

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



# 02 Objectives

Our goal is to prepare highly qualified professionals for professional practice. An objective that is further complemented, in a holistic manner, by promoting human development that lays the foundations for a better society. This objective is materialized in helping professionals to reach a much higher level of competence and control. A goal that, you will be able to achieve in just a few months with this high-intensity and effective Postgraduate Certificate.







“

*If your objective is to broaden your skills set to open up new paths to success and development, this is the course for you: a Postgraduate Certificate that aspires to excellence”*



## General objectives

---

- ♦ Describe the anatomical characteristics of the species of interest from a pathophysiological standpoint
- ♦ Examine the physiological processes of the different apparatuses and organ systems of the different animal species
- ♦ Develop a specialist, general, and detailed view of the anatomy and physiology of the animal species of interest
- ♦ Analyze the relationships between the different organic systems and apparatuses
- ♦ Build technical and scientific knowledge on animal nutrition and animal food
- ♦ Implement strategies for optimal nutrition and feeding of the various species of farmed animals, domestic animals and wildlife
- ♦ Study the principles of good animal feeding practices



*A path to professional development and growth that will improve your standing in the labor market”*







## Specific Objectives

---

- ◆ Develop specialist knowledge of the anatomy and physiology of the animal species of interest
- ◆ Examine the anatomical structures of the different apparatus and systems
- ◆ Analyze the comparative anatomy of the different species
- ◆ Directly relate the anatomical structures with their functions and physiological processes
- ◆ Study anatomical-physiological foundations to understand the pathological processes directly or indirectly involved in Animal Health
- ◆ Deepen understanding of the physiological processes most frequently related to pathological processes
- ◆ Apply the acquired knowledge to specific cases
- ◆ Consider Animal Health a fundamental pillar of Public Health
- ◆ Analyze the different types of food and their importance in zootechnics
- ◆ Know the principles of analysis and characteristics of nutritional components in animal food
- ◆ Examine the physicochemical processes by which animals obtain nutrients through food intake in the different stages of development
- ◆ Implement the principles of feeding mechanisms of domestic species (monogastrics and ruminants) in each productive stage
- ◆ Specify the most appropriate tools for the implementation of good practices in animal feeding
- ◆ Analyze the tools used for the control and assurance of quality and safety of food for animal consumption

03

# Course Management

In line with a commitment to excellence, we are proud to offer students a faculty of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.







“

*Leading professionals in the field have come together to teach you the latest advances in Animal Nutrition and Physiology”*

## Management



### Dr. Ruiz Fons, José Francisco

- Member of the Spanish Society for the Conservation and Study of Mammals (SECEM) and the Wildlife Disease Association (WDA)
- CSIC Senior Scientist at the Institute for Research in Hunting Resources IREC
- Researcher in the Health Research Fund at The Macaulay Land Use/James Hutton Research Institute and the Carlos III Health Institute
- Degree in Veterinary Medicine from the University of Murcia
- PhD in Biology and Technology of Hunting Resources from the University of Castilla La Mancha

## Professors

### Ms. Ranilla García, Jara

- Degree in Veterinary Medicine from the University of Leon
- Degree in Veterinary Medicine by means of the Bachelor's Thesis modality. University of Leon
- Certificate of Pedagogical Aptitude. University of Leon
- Professional Master's Degree in Veterinary Research and Food Science and Technology University of Leon
- Postgraduate Diploma in Small Animal Surgery and Anesthesia. Autonomous University of Barcelona

### Dr. Giesen, Christine

- Doctor Specialist in Preventive Medicine and Public Health, Infanta Sofía University Hospital. San Sebastián de los Reyes (Madrid)
- Degree in Medicine from the Complutense University of Madrid
- Master's Degree in Business Administration, Pharmaceutical Industry and Biotechnology, UDIMA
- Master's Degree in Tropical Medicine and International Health, Autonomous University of Madrid
- Master's Degree in Public Health, National School of Health, Carlos III Institute, Madrid
- Master's Degree in Development Cooperation, National Distance Education University



“

*An impressive faculty, made up of professionals from different areas of expertise, will be your teachers during the program: a unique opportunity not to be missed”*



04

# Structure and Content

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

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







“

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

## Module 1. Animal Anatomy and Physiology

- 1.1. Anatomy of Ruminants
  - 1.1.1. Locomotor System
  - 1.1.2. Digestive System
  - 1.1.3. Cardiovascular System
  - 1.1.4. Respiratory System
  - 1.1.5. Urinary System
  - 1.1.6. Reproductive System
  - 1.1.7. Nervous System and Sense Organs
- 1.2. Equine Anatomy
  - 1.2.1. Locomotor System
  - 1.2.2. Digestive System
  - 1.2.3. Cardiovascular System
  - 1.2.4. Respiratory System
  - 1.2.5. Urinary System
  - 1.2.6. Reproductive System
  - 1.2.7. Nervous System and Sense Organs
- 1.3. Swine Anatomy
  - 1.3.1. Locomotor System
  - 1.3.2. Digestive system
  - 1.3.3. Cardiovascular System
  - 1.3.4. Respiratory System
  - 1.3.5. Urinary System
  - 1.3.6. Reproductive System
  - 1.3.7. Nervous System and Sense Organs
- 1.4. Anatomy of Dogs and Cats
  - 1.4.1. Locomotor System
  - 1.4.2. Digestive System
  - 1.4.3. Cardiovascular System
  - 1.4.4. Respiratory System
  - 1.4.5. Urinary System
  - 1.4.6. Reproductive System
  - 1.4.7. Nervous System and Sensory Organs





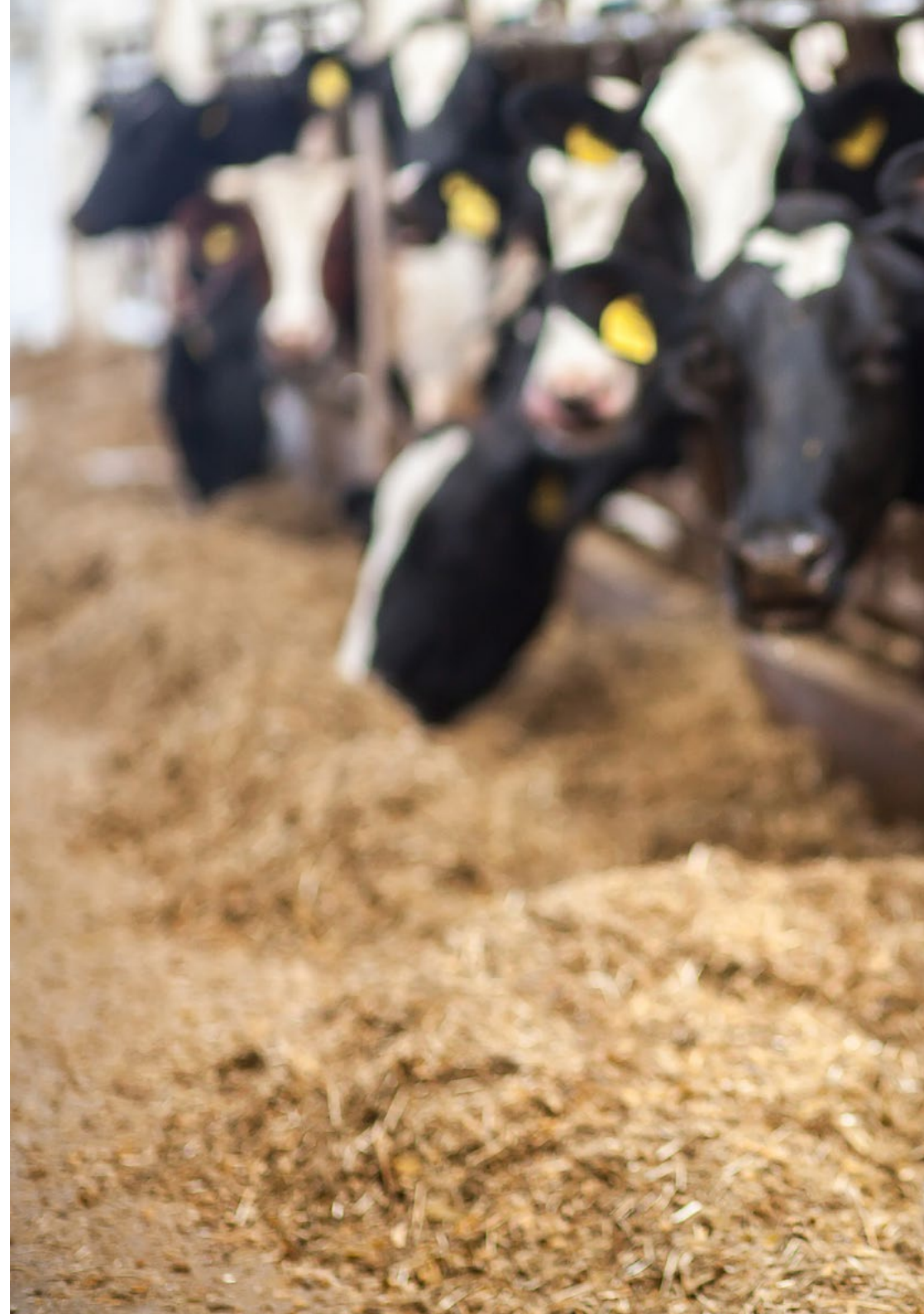
- 1.5. Anatomy of Birds
  - 1.5.1. Locomotor System
  - 1.5.2. Digestive system
  - 1.5.3. Cardiovascular System
  - 1.5.4. Respiratory System
  - 1.5.5. Urinary System
  - 1.5.6. Reproductive System
  - 1.5.7. Nervous System and Sense Organs
- 1.6. Neurophysiology
  - 1.6.1. Introduction
  - 1.6.2. The Neuron and The Synapse
  - 1.6.3. Lower Motor Neuron, Upper Motor Neuron, and its Alterations
  - 1.6.4. Autonomic Nervous System
  - 1.6.5. Cerebrospinal Fluid and Blood-Brain Barrier
- 1.7. Cardiovascular and Respiratory Physiology
  - 1.7.1. Introduction
  - 1.7.2. Electrical Activity of the Heart: Electrocardiogram
  - 1.7.3. Pulmonary and Systemic Circulation
  - 1.7.4. Neuronal and Hormonal Control of Blood Volume and Blood Pressure
  - 1.7.5. Respiratory Function: Pulmonary Ventilation
  - 1.7.6. Gas Exchange
- 1.8. Physiology of the Gastrointestinal Tract and Endocrinology
  - 1.8.1. Regulation of Gastrointestinal Functions
  - 1.8.2. Secretions of the Digestive Tract
  - 1.8.3. Non-Fermentative Processes
  - 1.8.4. Fermentative Processes
  - 1.8.5. Endocrine System
- 1.9. Renal Physiology
  - 1.9.1. Glomerular Filtration
  - 1.9.2. Water Balance
  - 1.9.3. Acid-base Balance

- 1.10. Reproduction Physiology
  - 1.10.1. Reproductive Cycles
  - 1.10.2. Gestation and Labor
  - 1.10.3. Male Reproductive Physiology

## Module 2. Animal Nutrition and Feeding

- 2.1. Introduction to Animal Nutrition and Feeding: Types of Food
  - 2.1.1. Grazing
  - 2.1.2. Silage
  - 2.1.3. Feedstuffs
  - 2.1.4. Agro-Industrial By-products
  - 2.1.5. Supplements
  - 2.1.6. Biotechnological Products
- 2.2. Food Analysis and Composition
  - 2.2.1. Water and Dry Matter
  - 2.2.2. Proximate Determination of Foods
  - 2.2.3. Protein and Non-protein Nitrogen Analysis
  - 2.2.4. Fiber Determination
  - 2.2.5. Mineral Analysis
- 2.3. Nutritional Value of Animal Feeds
  - 2.3.1. Digestibility
  - 2.3.2. Crude and Digestible Protein
  - 2.3.3. Energy Content
- 2.4. Nutrition and Digestion in Monogastric Animals
  - 2.4.1. Digestive Processes in Swine
  - 2.4.2. Digestive Processes in Poultry
  - 2.4.3. Digestive Processes in Dogs and Cats
  - 2.4.4. Prececal Digestion in Horses
  - 2.4.6. Absorption and Detoxification
- 2.5. Nutrition and Digestion in Ruminants and other Herbivores
  - 2.5.1. Dynamics of Digestion in Ruminants
  - 2.5.2. Control and Modification of Rumen Fermentation
  - 2.5.3. Alternative Digestion Sites
  - 2.5.4. Digestion and Environment

- 2.6. Absorption and Metabolism
  - 2.6.1. Metabolism of the Main Components of Food
  - 2.6.2. Metabolism Control
- 2.7. Animal Feeding
  - 2.7.1. Nutritional Requirements of Maintenance
  - 2.7.2. Nutritional Requirements during Growth
  - 2.7.3. Nutritional Requirements during Reproduction
  - 2.7.4. Lactation
  - 2.7.5. Voluntary Feed Intake
- 2.8. Good Animal Feeding Practices
  - 2.8.1. Water
  - 2.8.2. Good Grazing Practices
  - 2.8.3. Stall Feeding
  - 2.8.4. Fattening and Intensive Feeding
- 2.9. Animal Feed Quality Control and Assurance
  - 2.9.1. Transport, Reception, and Storage Control
  - 2.9.2. Food Preparation and Administration Control
  - 2.9.3. Sanitation and Pest Control
  - 2.9.4. Traceability and Lot Recovery
  - 2.9.5. Food Analysis
  - 2.9.6. Personnel Training
  - 2.9.7. Record Keeping and Documentation System
- 2.10. Food Safety
  - 2.10.1. The concept of Food Hazards
  - 2.10.2. Types of Food Hazards
  - 2.10.3. Hazard Control Measures in Animal Feed
  - 2.10.4. The concept of Risk in Food
  - 2.10.5. Risk Assessment Applied to Food Safety
  - 2.10.6. Good Agricultural Practices and Animal Food Safety
  - 2.10.7. Food Safety Assurance Management







“

*A comprehensive 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.







“

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

## At TECH we use the Case Method

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

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



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



“

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

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

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



## Relearning Methodology

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

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



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



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

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

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

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

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





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



#### Study Material

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

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



#### Latest Techniques and Procedures on Video

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



#### Interactive Summaries

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

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



#### Additional Reading

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





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

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



#### Testing & Retesting

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



#### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.  
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

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



06

# Certificate

The Postgraduate Certificate in Animal Nutrition and Physiology guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by TECH Technological University.





“

*Successfully complete this program  
and receive your university degree  
without travel or laborious paperwork”*

This **Postgraduate Certificate in Animal Nutrition and Physiology** contains the most complete and up-to-date 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 Animal Nutrition and Physiology**

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  
virtual classroom



**Postgraduate Certificate**  
Animal Nutrition  
and Physiology

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



# Postgraduate Certificate

## Animal Nutrition and Physiology

