

Postgraduate Certificate Osteogenesis





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Course Modality: Online

Duration: 6 weeks

Certificate: TECH - Technological University

6 ECTS Credits

Teaching Hours: 150 hours.

Website: www.techtute.com/us/veterinary/postgraduate-certificate/osteogenesis

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01

Introduction

Bone is a complex tissue and requires specialized knowledge to understand the fundamental activities it carries out, so it is important for veterinary professionals to update their knowledge with the latest developments in the field.





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This training is the best option you can find to specialize in Osteogenesis”.

The teaching team of this Postgraduate Certificate in Osteogenesis has made a careful selection of the different state-of-the-art techniques for experienced professionals working in the veterinary field.

This program addresses the most relevant and significant osteology topics for the specialist in order to achieve specialization in bone diseases due to malformations, aberrations in function and alterations due to fracture-causing forces.

To achieve this specialized knowledge of bone, we must emphasize the key points of osteogenesis, i.e. bone formation.

This program consists of two parts: one that highlights the importance of orthopedics and traumatology in the world and lays the foundations of surgery (focusing on the study of bone); and another that analyzes how hormones influence your system, the forces acting on bone and the process of bone recovery after trauma.

The objective of this program is for veterinary surgeons to specialize and develop their surgical skills and theoretical and practical knowledge useful in their professional practice.

The teachers in this training are university professors with between 10 and 50 years of classroom and hospital experience. They are professors from schools on different continents, with different ways of doing surgery and with world-renowned surgical techniques. This makes this a unique specialization program, different from any other that may be offered at this moment in the rest of the universities.

Being an online program, the student is not constrained by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life as they wish.

This **Postgraduate Certificate in Osteogenesis** contains the most complete and up to date educational program on the market. The most important features of the program include:

- ♦ The development of case studies presented by experts in Osteogenesis.
- ♦ The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ Practical exercises where self-assessment can be used to improve learning.
- ♦ Special emphasis on innovative methodologies in Osteogenesis
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



Don't miss the opportunity to take this Postgraduate Certificate in Osteogenesis with us. It's the perfect opportunity to advance your career".



This program is the best investment you can make in selecting a refresher program to update your knowledge in Osteogenesis."

Its teaching staff includes professionals from the veterinary field, who bring the experience of their work to this training, as well as recognised specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

The design of this program focuses on problem-based learning, by means of which the specialist must try to solve the different professional practice situations that arise throughout the academic program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Osteogenesis.

This training comes with the best didactic material, providing you with a contextual approach that will facilitate your learning.

This 100% online program's degree will allow you to combine your studies with your professional work while increasing your knowledge in this field.



02

Objectives

The **Postgraduate Certificate in Osteogenesis** is oriented to facilitate the performance of the professional dedicated to veterinary medicine with the latest advances and newest treatments in the sector.





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This is the best option to learn about the latest advances in Osteogenesis.”



General Objectives

- Fundamental knowledge of cytology and bone histology.
- Develop bone physiology and the influence of bone physiology in a patient with bone disease on the hormonal system governing bone.
- Determine how to perform bone repair, clinical radiographic evaluation and fracture repair
- Analyze the forces acting on the bony body causing stress and the absorption of that force depending on the magnitude and direction of the force absorbed by the body.
- Examine the different types of bone repair that exist in a bone depending on the method of fixation.





Specific Objectives

- ◆ Develop knowledge of bone cytology
- ◆ Determine the formation of structures and the difference between immature bone and true bone.
- ◆ Examine the hormonal influence on bone development.
- ◆ Detail the resistance of the bone to trauma, differentiate between a stable fracture and an unstable fracture by the appearance of the callus on an X-ray.

“

Seize the opportunity and take the step to get up to date the latest news in Osteogenesis”.

03

Course Management

The program includes in its teaching staff reference experts in Veterinary Traumatology and Orthopedic Surgery, who bring to this training the experience of their work. They are world-renowned doctors from different countries with proven theoretical and practical professional experience.



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Our teaching team, experts in Osteogenesis, will help you achieve success in your profession".

Director



Dr. Soutullo Esperón, Ángel

- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid, 1994.
- ♦ Diploma of Advanced Studies in Veterinary Medicine from the Complutense University of Madrid 2010.
- ♦ Member of the Scientific Committee of GEVO and AVEPA 2014.
- ♦ Master's Degree in Surgery and Traumatology Complutense University of Madrid 1996.
- ♦ Lecturer at the Alfonso X el Sabio University 2005-2010 in the subjects of Radiology, Surgical Pathology and Surgery.
- ♦ Responsible for the surgical section in the 2011 AEVA Master's Degree in small animal emergencies.
- ♦ Owner of the veterinary clinic ITECA 1996-2011.
- ♦ Head of the surgery service at the University Hospital of the Alfonso X el Sabio University 2005-2010.
- ♦ Study of the clinical repercussions of corrective osteotomies in tplo (TFG Meskal Ugatz 2018).
- ♦ Study of the clinical repercussions of corrective osteotomies in tplo (TFG Ana Gandia 2020).
- ♦ Studies of biomaterials and xenografts for orthopaedic surgery 2010-2018.

Professors

Dr. Monje Salvador, Carlos

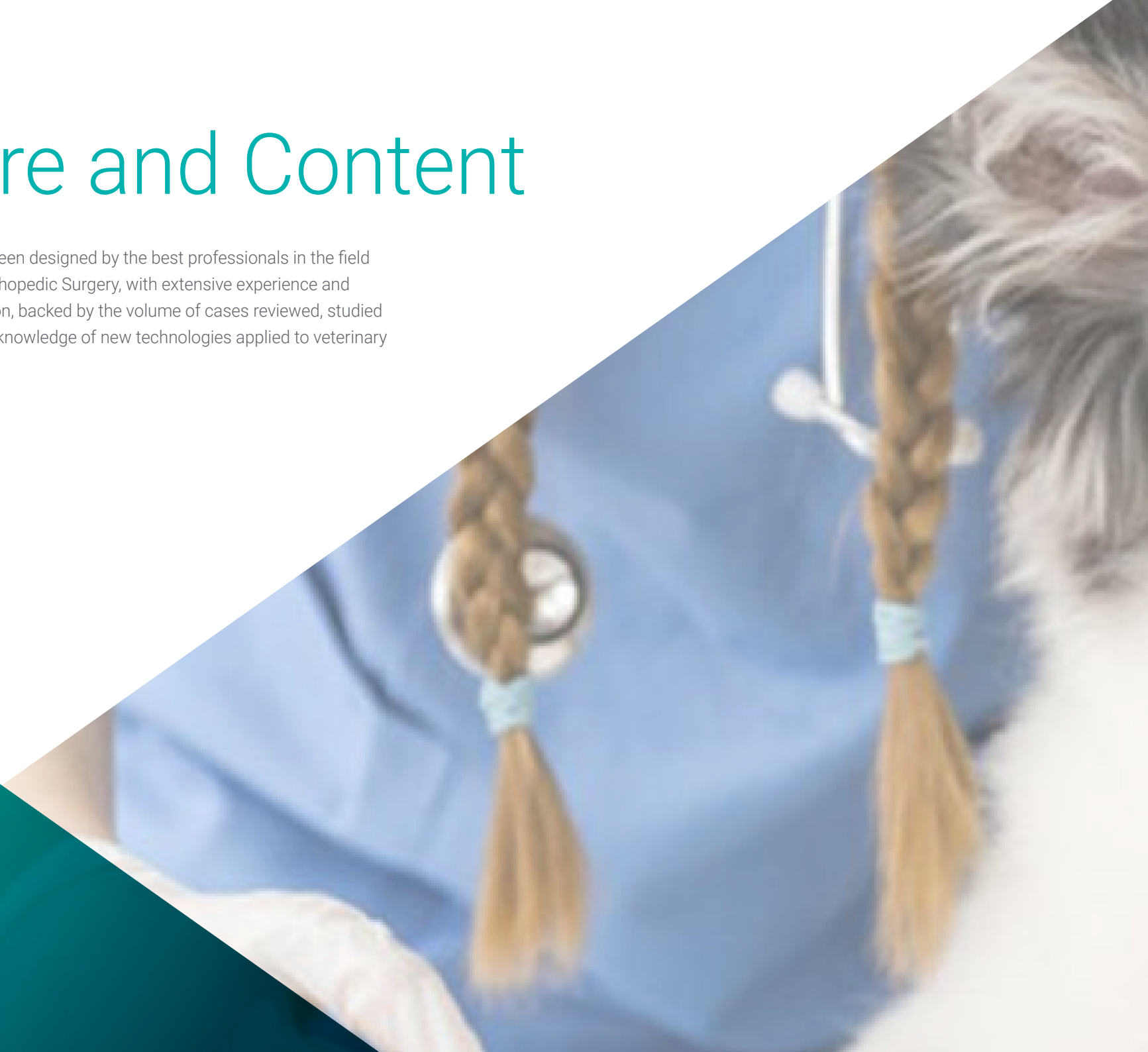
- ♦ Head of the Outpatient Surgery and Endoscopy Service.
- ♦ Head of Surgery and Minimally Invasive Surgery Department. (Endoscopy, laparoscopy, bronchoscopy, rhinoscopy, etc...).
- ♦ Head of the Diagnostic Imaging Service. (Advanced Abdominal Ultrasound and Radiology).



04

Structure and Content

The structure of the contents has been designed by the best professionals in the field of Veterinary Traumatology and Orthopedic Surgery, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied and diagnosed, and with extensive knowledge of new technologies applied to veterinary medicine.





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We have the most complete and up-to-date academic program in the market. We want to achieve excellence and we want you to achieve it too.”

Module 1. Osteogenesis

- 1.1 .History of Orthopedic Surgery
 - 1.1.1. The 5 Steps to Learning Surgery
 - 1.1.2. State of Orthopedic Surgery in the World
 - 1.1.3. Why should I Study Orthopedics
- 1.2 Osteogenic Cells
 - 1.2.1. Osteoblasts
 - 1.2.2. Osteocytes
 - 1.2.3. Osteoclasts
- 1.3. The Bone Matrix
- 1.4. The Growth Plate
 - 1.4.1. Organization of the Growth Plate
 - 1.4.2. Blood Irrigation of the Growth Plate
 - 1.4.3. Structure and Function of the Growth Plate
 - 1.4.4. Cartilaginous Components
 - 1.4.4.1. Reserve Zone
 - 1.4.4.2. Proliferative Zone
 - 1.4.4.3. Hypertrophic Zone
 - 1.4.5. Bone Components (Metaphysis)
 - 1.4.6. Fibrous and Fibrocartilaginous Components
- 1.5. Diaphyseal Bone Formation
- 1.6. Cortical Remodeling
- 1.7. Bone Irrigation
 - 1.7.1. Normal Irrigation of Young Bone
 - 1.7.2. Normal Irrigation of Mature Bone
 - 1.7.2.1. Afferent Vascular System
 - 1.7.2.1.1 Physiology of the Afferent Vascular System
 - 1.7.2.2 Efferent Vascular System
 - 1.7.2.2.1 Physiology of the Efferent Vascular System
 - 1.7.2.3. Intermediate Vascular System of Compact Bone
 - 1.7.2.3.1. Physiology of the Intermediate Vascular System of Compact Bone
 - 1.7.2.3.2. Bone Cell Activity
- 1.8. Calcium-regulating Hormones
 - 1.8.1. Parathyroid Hormone
 - 1.8.1.1. Anatomy of the Parathyroid Glands
 - 1.8.1.2. Parathyroid Hormone Biosynthesis
 - 1.8.1.3. Control of Parathyroid Hormone Secretion
 - 1.8.1.4. Parathyroid Hormone Biological Action
 - 1.8.2. Calcitonin.
 - 1.8.2.1. Thyroid C (Parafollicular) Cells
 - 1.8.2.2. Regulation of Calcitonin Secretion
 - 1.8.2.3. Biological Action and Physiological Significance of Calcitonin
 - 1.8.2.4. Primary and Secondary Hypercalcitoninemia
 - 1.8.3. Cholecalciferol (vitamin D)
 - 1.8.3.1. Metabolic Activation of Vitamin D
 - 1.8.3.2. Subcellular Mechanisms of Action of Active Vitamin Metabolites.
 - 1.8.3.3. Effects of Hormonal Alterations on the Skeleton under Pathologic Conditions
 - 1.8.3.4. Vitamin D Deficiency
 - 1.8.3.5. Excess Vitamin D
 - 1.8.3.6. Primary and Secondary Hyperparathyroidism
- 1.9. Biomechanics of Fractures
 - 1.9.1. Bone as a Material
 - 1.9.2. The Role of Bone in Bone Fracture. Basic Mechanical Concepts
- 1.10. Clinical-imaging Evaluation of Fracture Repairs
 - 1.10.1. Basic Fracture Repair
 - 1.10.1.1. Bone Callus Formation
 - 1.10.1.1.1. Misty Callus
 - 1.10.1.1.2. Stratified Callus
 - 1.10.1.1.3. Fracture Healing
 - 1.10.2. The Bone's Response to Trauma
 - 1.10.2.1. Inflammatory Phase.
 - 1.10.2.2. Repair Phase.
 - 1.10.2.3. Remodelling Phase.
 - 1.10.3. Repair by First Intention.
 - 1.10.4. Second Intention Repair.



- 1.10.5. Clinical Union.
 - 1.10.5.1. Clinical Attachment Ranges.
 - 1.10.5.2. Repair by Third Intention (delayed joining):
 - 1.10.5.3. Lack of Unity.
- 1.10.6. Bone Behaviour with Different Fixation Methods.
 - 1.10.6.1. Bone Behaviour with the Use of External Fixation (splints and bandages)
 - 1.10.6.2. Bone Behaviour with the use of External Fixators.
 - 1.10.6.3. Bone Behaviour with the Use of Steinmann Intramedullary Nailing.
 - 1.10.6.4. Bone Behaviour with the Use of Plates and Screws.
 - 1.10.6.5. Bone Behaviour with the Use of Prosthesis.
 - 1.10.6.5.1. Cemented.
 - 1.10.6.5.2. Biological.
 - 1.10.6.5.3. Blocked.

“ *This training will allow you to advance in your career in a comfortable way”.*

05 Methodology

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

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





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Successfully complete this training program and receive your university certificate without travel or laborious paperwork"

At TECH we use the Case Method

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

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



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching potential or because of its uniqueness or rarity. It is essential that the case be based on current professional life, trying to recreate the real conditions in the Veterinarian's Professional Practice.

“

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

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

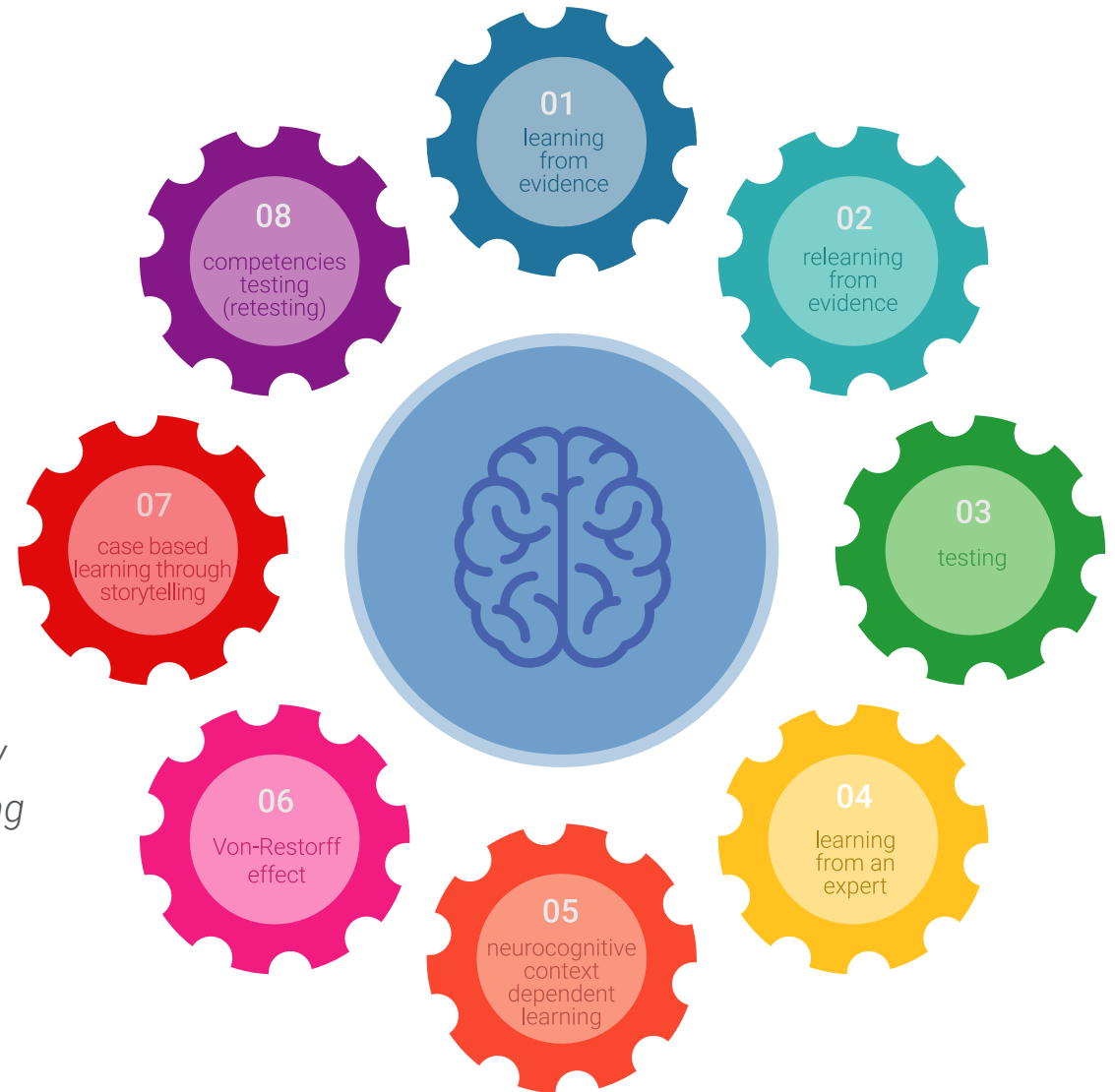
1. Veterinarians who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity through exercises to evaluate real situations and the application of knowledge.
2. The learning process has a clear focus on practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. The feeling of efficiency of the effort invested becomes a very important stimulus for the veterinarian, which translates into a greater interest in learning and an increase in the time dedicated to working on the program.



Re-learning Methodology

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

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



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

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

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

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

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

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



In this program you will have access to the best educational material, prepared with you in mind:



Study Material

All didactic contents are created by the specialists who will be teaching the program, specifically for it, so that the didactic development is really specific and concrete.

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



Latest Techniques and Procedures on Video

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



Interactive Summaries

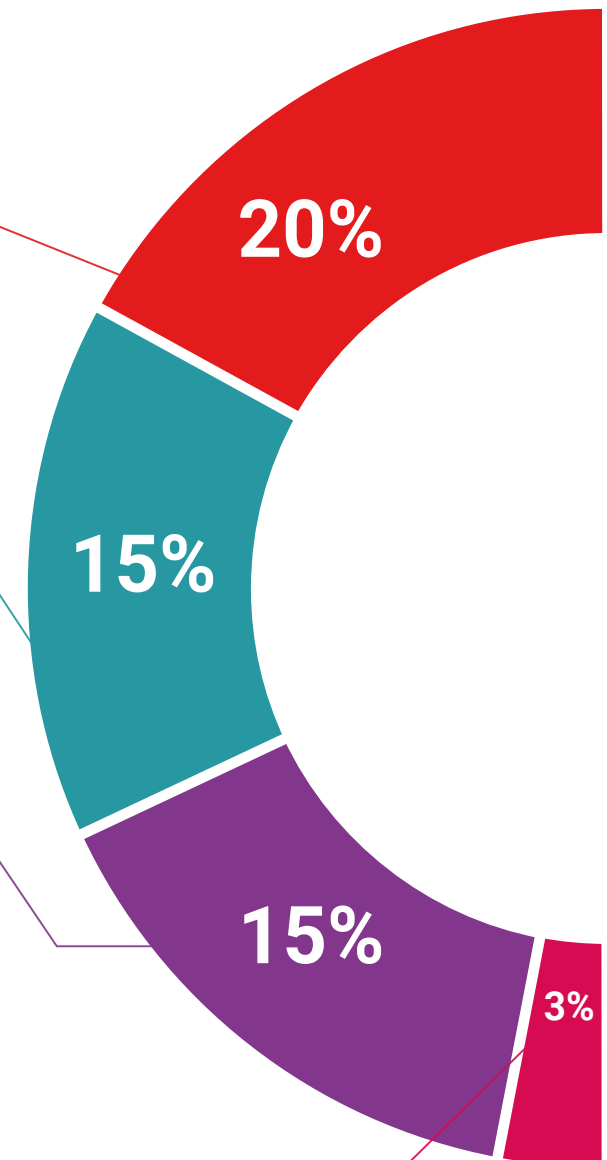
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

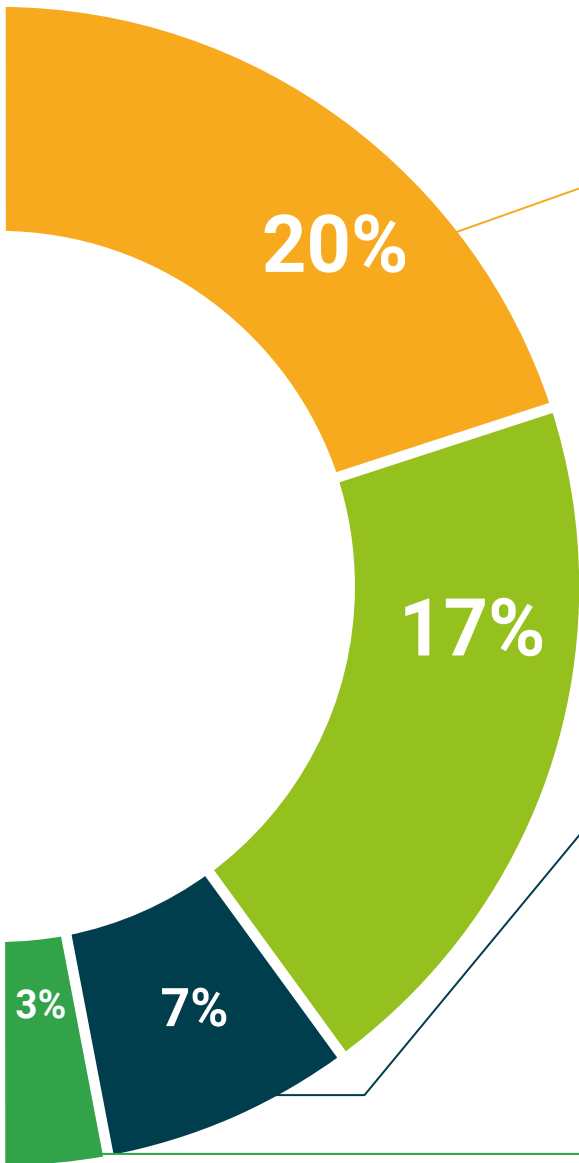
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



Additional Reading

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





Expert-led case studies and case analysis

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



Testing & Retesting

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



Classes

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



Quick Action Guides

We provide you with the most important contents of the program in the form of fact sheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



06 Certificate

The Postgraduate Certificate in Osteogenesis guarantees, in addition to the most rigorous and up to date training, access to a Postgraduate Certificate issued by TECH - Technological University.



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Successfully complete this training program and receive your university certificate without travel or laborious paperwork"

This **Postgraduate Certificate in Osteogenesis** contains the most complete and up to date program on the market.

After passing the evaluations, the student will receive the corresponding **Postgraduate Certificate** issued by **TECH - Technological University**

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

Title: **Postgraduate Certificate in Osteogenesis**

ECTS: **6**

Official Number of Hours: **150 hours.**



*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 quality
online training
development languages
classroom

tech technological
university

Postgraduate Certificate
Osteogenesis

Course Modality: Online

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Postgraduate Certificate Osteogenesis

