

# Postgraduate Certificate Skeletal External Fixators and Circular Fixators





## Postgraduate Certificate Skeletal External Fixators and Circular Fixators

- » Modality: Online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/veterinary/postgraduate-certificate/skeletal-external-fixators-circular-fixators](http://www.techtute.com/us/veterinary/postgraduate-certificate/skeletal-external-fixators-circular-fixators)

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01

# Introduction

External fixation of fractures is the use of a rigid brace placed outside the body and connected to the bone by needles through the skin (transcutaneous). This is a complex technique that requires specialized and qualified veterinary professionals.





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*This program is the best option you can find to specialize in External Skeletal Fixators and Circular Fixators”*

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

The technique of external fixation placement with respect to other methods of internal osteosynthesis shows that external fixation improves the biological environment, preserves soft tissue and irrigation, accelerates healing, decreases the risk of infection and reduces surgical time.

The external fixator provides stable fixation of the bony ends without the need for implants in the fracture line or immobilization of neighboring joints, therefore, it is especially indicated for open, exposed or infected fractures. It enables the compression, neutralization or detraction of the bony strands depending on the need of the pathology. This type of fixation should not be confused with external coaptation (bandages, splints or casts).

The versatility of the system, the ease of placement and the relatively low cost compared to internal fixation methods have made it an attractive and valuable method for treating a large number of orthopedic and traumatologic pathologies. External skeletal fixation allows postoperative corrections, as well as visibility of the skin for associated treatments, such as dressing changes, skin grafts, etc.

The teachers in this programs are university professors with between 10 and 50 years of classroom and hospital experience. They are professors from schools from different continents, with different ways of performing surgery and with surgical techniques of worldwide recognition. This makes this course a unique specialization program, different from any other offered at this moment in the rest of the universities.

As it is an online program, the student is not constrained by fixed schedules or the need to move to another physical location, but rather, they can access the contents at any time of the day, allowing them to balance their professional or personal life with their academic life as they please.

This **Postgraduate Certificate in Skeletal External Fixators and Circular Fixators** contains the most complete and up-to-date educational program on the market.

The most important features of the program include:

- ♦ Practical cases presented by experts in Skeletal External Fixators and Circular Fixators
- ♦ The graphic, schematic, and 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
- ♦ Its special emphasis on innovative methodologies in Skeletal External Fixators and Circular Fixators
- ♦ 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 External Skeletal Fixators and Circular Fixators. It's the perfect opportunity to advance your career"*

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*This Postgraduate Certificate is the best investment you can make in selecting a refresher program to update your knowledge in External Skeletal Fixators and Circular Fixators”*

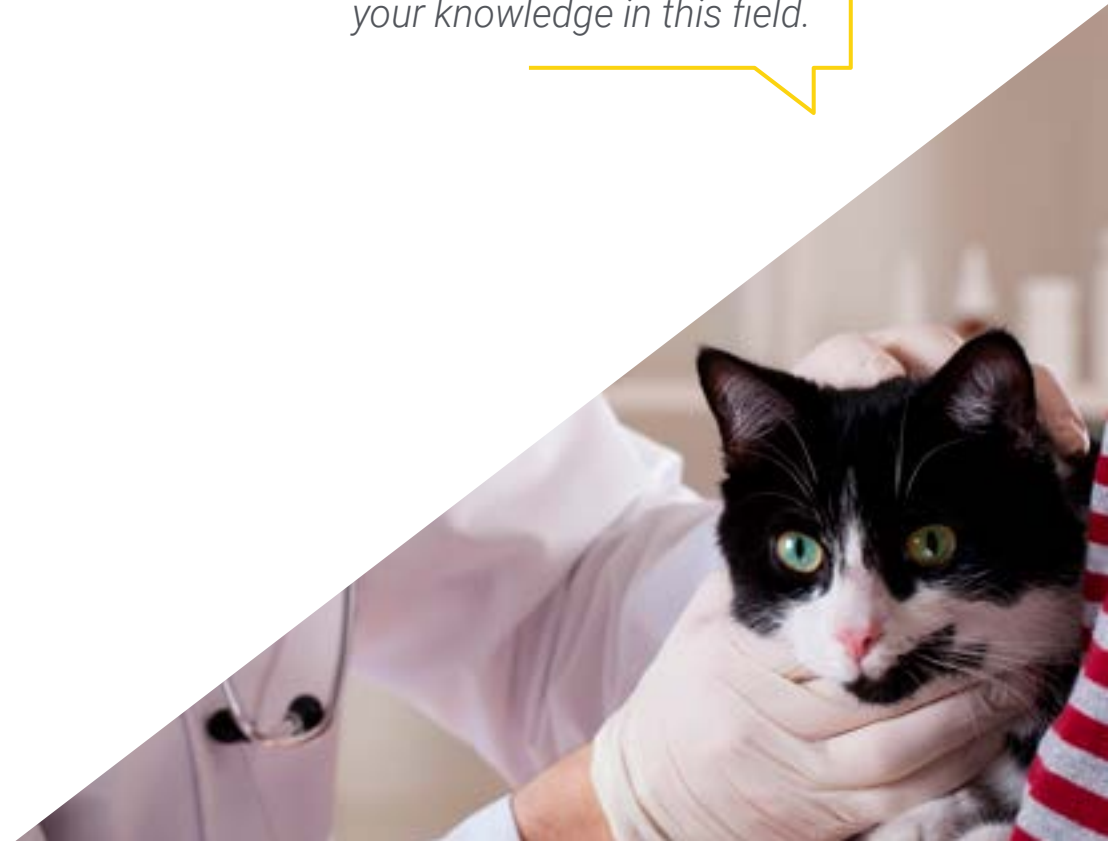
Its teaching staff includes professionals belonging to the veterinary field who contribute their work experience to this program, in addition to recognized specialists from prestigious reference societies and universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, i.e., a simulated environment that will provide an immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the specialist must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Skeletal External Fixators and Circular Fixators.

*This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online Postgraduate Certificate will allow you to combine your studies with your professional work while expanding your knowledge in this field.*



# 02 Objectives

The Postgraduate Certificate in External Skeletal Fixators and Circular Fixators 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 External Skeletal Fixators and Circular Fixators”*



## General Objectives

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- Compile the different configurations of the Kirschner-Ehmer external tutor
- Analyze the advantages and disadvantages of using external fixators
- Establish post-surgical care for external tutors
- Develop a discussion regarding nailing technique

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*Take the opportunity and take the step to get up to date on the latest developments in Skeletal External Fixators and Circular Fixators”*





## Specific Objectives

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- ♦ Analyze the behavior of different configurations of linear, hybrid and circular stakes
- ♦ Compile the use of external tutors in cases of non-unions
- ♦ Propose the use of external fixation as the first option for tibia and radius fractures
- ♦ Concretize the use of tutors as a first option for open or infected fractures
- ♦ Demonstrate that external tutors can be used in felines
- ♦ Establish guidelines for the choice of use of each of the configurations
- ♦ Assess the importance of the quality of materials
- ♦ Examine the behavior of the use of acrylic for long bone fractures
- ♦ Justify the advantages of the use of circular arthrodesis tutors
- ♦ Generate curiosity about the use of external tutors

03

# Course Management

The program includes in its teaching staff reference experts in Veterinary Traumatology and Orthopedic Surgery who pour into 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 will help you  
achieve professional success”*

## Director



### Dr. Soutullo Esperón, Ángel

- Veterinarian Specialist in Animal Traumatology
- Responsible for the Orthopedic Surgery Service in the Hospitals Fuente el Saz, Prívet, Alcor, Velázquez, Valdemoro and Felino Gattos
- Owner of ITECA Veterinary Clinic
- Degree in Veterinary Medicine from the Complutense University of Madrid
- Master's Degree in Surgery and Traumatology from the Complutense University of Madrid
- Diploma of advanced studies in Veterinary Medicine from the Complutense University of Madrid
- Member of GEVO and AVEPA Scientific Committee
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## Professors

### Dr. Borja Vega, Alonso

- ♦ Head of the Surgery and Ophthalmology Department at Vet 2.0 Veterinary Clinic  
Founder of Vet 2.0 Veterinary Clinic
- ♦ Degree in Veterinary Medicine from the Alfonso X El Sabio University
- ♦ Master's Degree in Veterinary Ophthalmology, UAB
- ♦ Advanced General Practitioner Certificate (GPAdvCert) in Small Animal Orthopedic Surgery  
Practical initiation course in Osteosynthesis, SETOV

### Dr. García Montero, Javier

- ♦ Surgeon in the Traumatology and Orthopedics Service at the Cruz Verde Vetsum Veterinary Hospital  
Veterinary specialist at El Pinar Veterinary Clinic
- ♦ Degree in Veterinary Medicine from the University of Cordoba  
Postgraduate Degree in Traumatology and Orthopedics in Small Animals at the Complutense University of Madrid
- ♦ Postgraduate Degree in Surgery and Anesthesia at the Autonomous University of Barcelona  
Member of AO VET Foundation

### Dr. Guerrero Campuzano, María Luisa

- ♦ Director of the Veterinary Clinic Petiberia  
Bird Veterinarian at Puy du Fou Spain  
Veterinarian at Oasis Wildlife Fuerteventura Zoo
- ♦ Animal Technician at the Spanish National Cancer Research Center (CNIO)  
Volunteer in the Feline Colony Spay/Neuter Campaign at ALBA Animal Protection Society  
Co-author of clinical trials and scientific knowledge pills
- ♦ Degree in Veterinary Medicine from the University Alfonso X El Sabio  
Master's Degree in Soft Tissue Surgery and Anesthesia in Small Animals from the Autonomous University of Barcelona

Master's Degree in Exotic and Wild Animal Medicine and Surgery from the Complutense University of Madrid  
Member of AVEPA and GMCAE

### Dr. Monje Salvador, Carlos Alberto

- ♦ Head of Endoscopy and Minimally Invasive Surgery Service at ECCOA Veterinary Diagnostics  
Veterinary Surgeon in Dopplervet  
Responsible for Surgery and Diagnostic Imaging at Gattos Feline Clinical Center
- ♦ Veterinarian at Openvet Veterinary Hospital  
Veterinary Surgeon at Unzeta Veterinary Clinic  
Degree in Veterinary Medicine from the University of Santiago de Compostela
- ♦ Master's Degree in Endoscopy and Minimally Invasive Surgery in Small Animals from the University of Extremadura  
Postgraduate Degree in Small Animal Surgery from the Autonomous University of Barcelona  
Member of the Association of Veterinarians Specialists in Small Animals (AVEPA), the Group of Specialists in Feline Medicine AVEPA (GEMFE) and the Group of Veterinary Specialists in Traumatology and Orthopedics (GEVO)

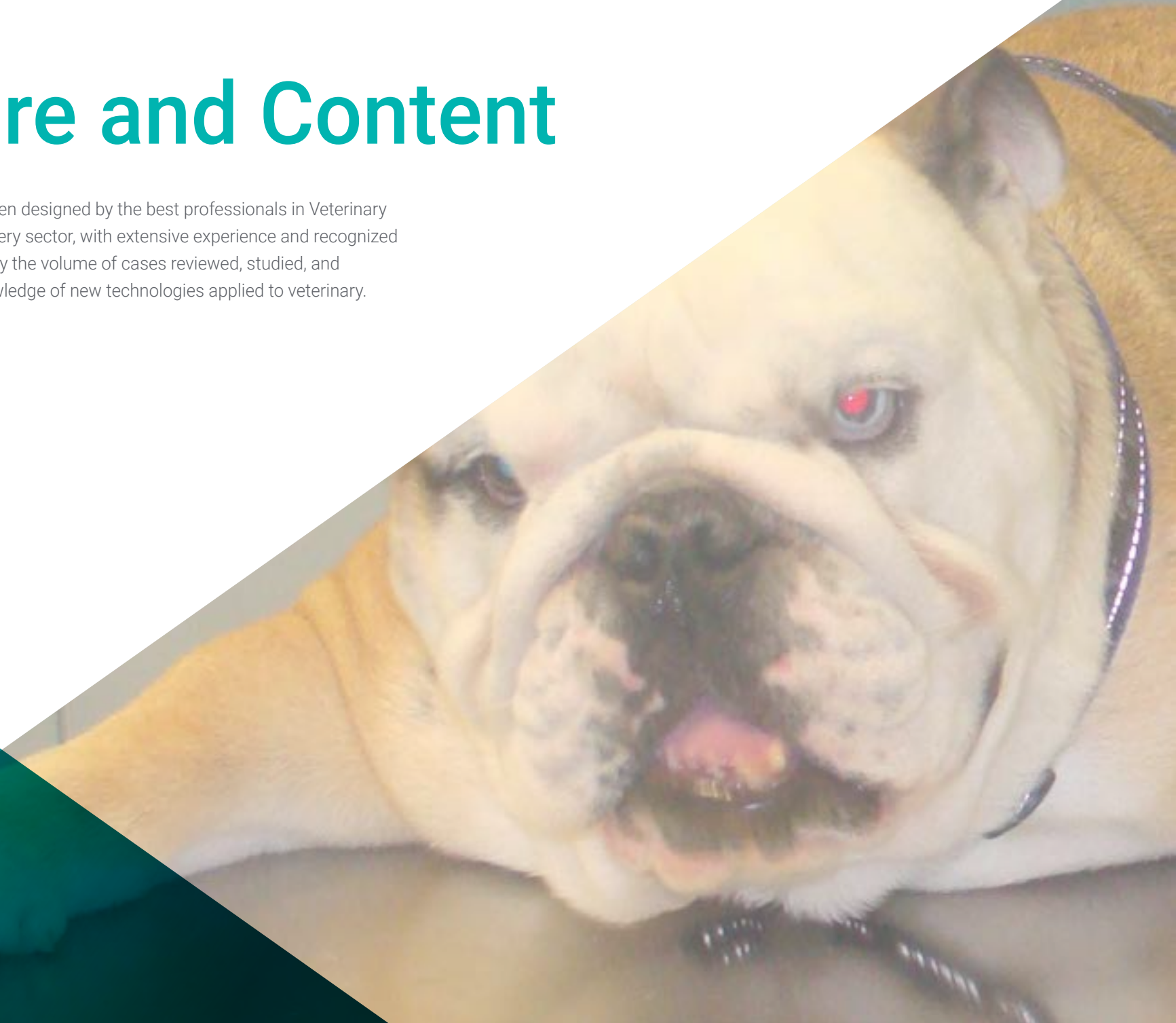
### Dr. Flores Galán, José Antonio

- ♦ Head of the Traumatology, Orthopedics and Neurosurgery Service at the Privet Veterinary Hospitals
- ♦ Doctor by the Complutense University of Madrid
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid
- ♦ Specialist in Traumatology and Orthopedic Surgery in Companion Animals by the Complutense University of Madrid

# 04

# Structure and Content

The structure of the content has been designed by the best professionals in Veterinary Traumatology and Orthopedic Surgery sector, 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.







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

## Module 1. Skeletal External Fixators and Circular Fixators

- 1.1. External Fixators
  - 1.1.1. History of the External Skeletal Fixator
  - 1.1.2. Description of the External Fixator
- 1.2. Parts Constituting the Kirschner-Ehmer Apparatus
  - 1.2.1. Nails
    - 1.2.1.1. Fixators
  - 1.2.2. Connecting Bar
- 1.3. Settings of the External Skeletal Fixator
  - 1.3.1. Half Skeletal Fixation Device
  - 1.3.2. Standard Kirschner-Ehmer Apparatus
  - 1.3.3. Modified Kirschner-Ehmer Apparatus
  - 1.3.4. Bilateral External Fixator Model
- 1.4. Mixed Skeletal Fixator Apparatus
- 1.5. Methods of Application of the Kirschner-Ehmer Apparatus
  - 1.5.1. Standard Method
  - 1.5.2. Modified Method
- 1.6. External Fixators with Acrylic
  - 1.6.1. The Use of Epoxy Resin
  - 1.6.2. The Use of Dental Acrylics
    - 1.6.2.1. Preparation of Acrylics
    - 1.6.2.2. Application and Setting Time
    - 1.6.2.3. Post-Surgery Care
    - 1.6.2.4. Implant Removal
  - 1.6.3. Acquisition of Acrylic Material
  - 1.6.4. Care in the Application of Acrylics
  - 1.6.5. Toxicity of Acrylic
  - 1.6.6. Bone Cement for Use in Fractures
- 1.7. Indications and Uses of External Fixators
  - 1.7.1. Anterior Limb
  - 1.7.2. Posterior Limb
  - 1.7.3. Other Areas
- 1.8. Advantages and Disadvantages of Using External Fixators
- 1.9. Post-Surgical Care and Complications
  - 1.9.1. Cleaning the Fixator
  - 1.9.2. Post-Operative Radiographic Studies
  - 1.9.3. Implant Removal
  - 1.9.4. Repositioning a Fixator
- 1.10. Fixators in Exotic Species
  - 1.10.1. Birds
  - 1.10.2. Reptiles
  - 1.10.3. Small Mammals



*This program will allow you to advance in your career comfortably"*



# 05 Methodology

This 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 assess 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. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the program.



## Relearning Methodology

At TECH, we enhance the Harvard 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 prepared 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 education, 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 adapted in 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

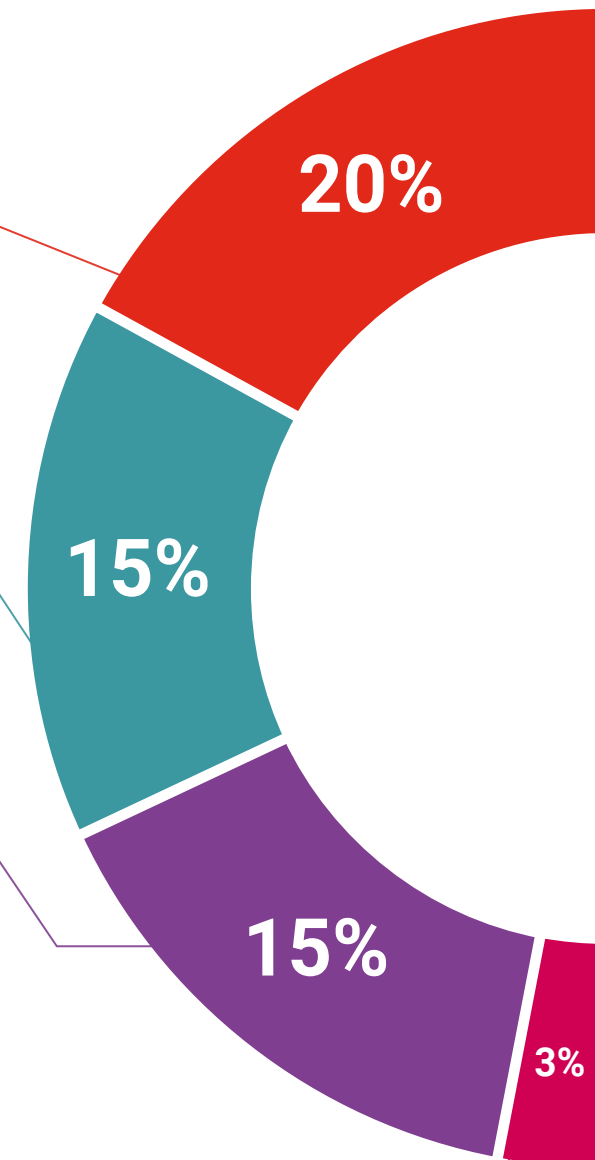
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

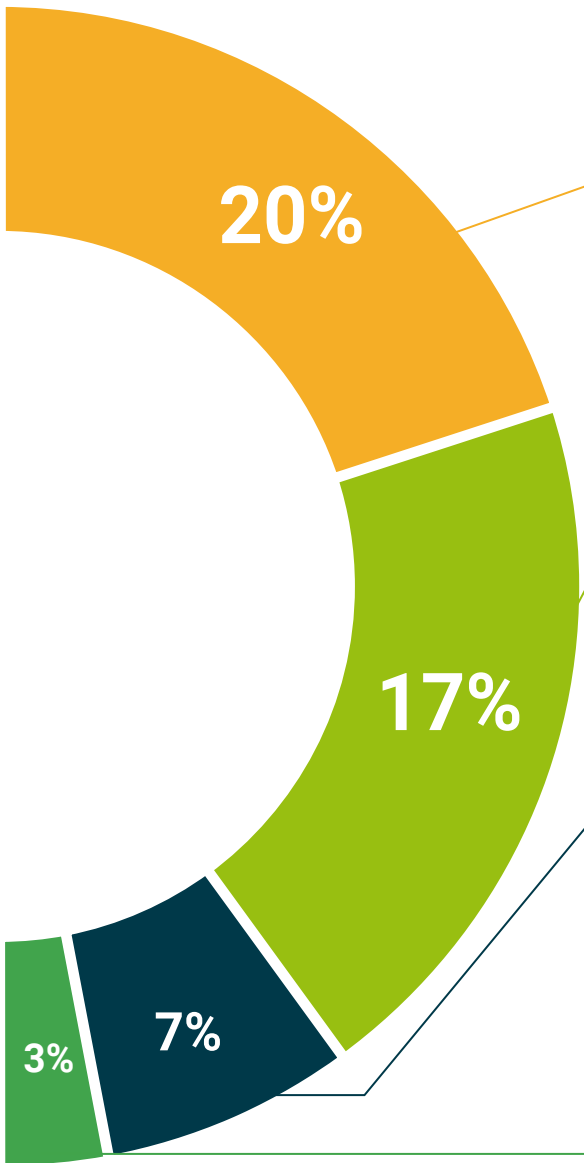
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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



#### Masterclasses

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 Skeletal External Fixators and Circular Fixators guarantees, in addition to the most accurate and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Certificate in Skeletal External Fixators and Circular Fixators** endorsed by **TECH Global University**, the world's largest online university.

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

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

Title: **Postgraduate Certificate in Skeletal External Fixators and Circular Fixators**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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



**Postgraduate  
Certificate**  
Skeletal External Fixators  
and Circular Fixators

- › Modality: Online
- › Duration: 6 weeks
- › Certificate: TECH Global University
- › Accreditation: 6 ECTS
- › Schedule: at your own pace
- › Exams: online

# Postgraduate Certificate

## Skeletal External Fixators and Circular Fixators

