

# Postgraduate Diploma Ruminant Surgery





## Postgraduate Diploma Ruminant Surgery

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-ruminant-surgery](http://www.techtute.com/us/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-ruminant-surgery)

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# 01

# Introduction

90% of veterinary interventions in ruminants are ambulatory. Therefore, it is essential to know the basic material necessary to be able to carry out all our interventions in a correct and efficient way, working optimally in complex conditions. This practical knowledge represents the purpose of this program. An intensive tour of the techniques and developments that will allow the student to intervene in a specialized way, with expert skill and efficiency.





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*The necessary and indispensable developments that the veterinarian working with ruminants must master in order to practice safely in surgery, with the peculiarities and specifications unique to this area"*

In the process of training in veterinary medicine and, in particular, in ruminant or collective medicine, it is essential, before getting into more specific subjects, to acquire a series of clinical skills to face the different pathologies that will be addressed in this Postgraduate Diploma. For this reason, it is essential to know the different diagnostic methods and, of course, the most appropriate alternatives for the treatment of the different pathologies.

Taking into account the size and behavior of bovines, the first chapter deals with the methods of immobilization of these, for their examination or even the approach of minor surgical processes or podiatry. It must be taken into account that 90% of the procedures are ambulatory, therefore it is essential to know the basic material necessary to be able to carry out all the interventions correctly and efficiently.

The surgery of animals for slaughter has progressed enormously with technological advances such as laparoscopy, teloscopy or ultrasound diagnosis even in field surgery.

It is essential to emphasize the importance of animal welfare, which is already taken for granted by veterinarians, farmers and the general public. The patient should know the basics of pain and its appropriate management through sedation and analgesia techniques, and the surgical procedures necessary to resolve the pre-existing pathology.

This Postgraduate Diploma reviews the principles of ruminant surgery and reviews diagnostic procedures, surgical indications, operative techniques and postoperative management in digestive, skin, ocular, umbilical, male and female genital, and urinary tract surgery.

The module in Surgery of the Musculoskeletal System deals with the processes that affect the limbs of ruminants and compromise their welfare and productivity. The study includes everything from the anatomy and biomechanics of the hoof, preventive management and diagnosis and treatment of podiatric conditions to tendon, joint and bone conditions, to emergency treatment of bone fractures, as well as prognosis and surgical options for long bone fractures.

This **Postgraduate Diploma in Ruminant Surgery** 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
- ◆ A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ◆ The development of practical case presented by 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-assessment and learning verification
- ◆ Support groups and educational synergies: questions to the expert, debate and knowledge forums.
- ◆ Communication with the teacher and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an internet connection
- ◆ Supplementary documentation databases are permanently available, even after the Postgraduate Diploma has finished



*Essential yet rare training for the specialist veterinary clinician that will set you apart as a specialist in this field of work"*

“ *The clinical, specialized and advanced fundamentals, based on veterinary evidence that will allow you to face the daily intervention in cattle and ruminants*”

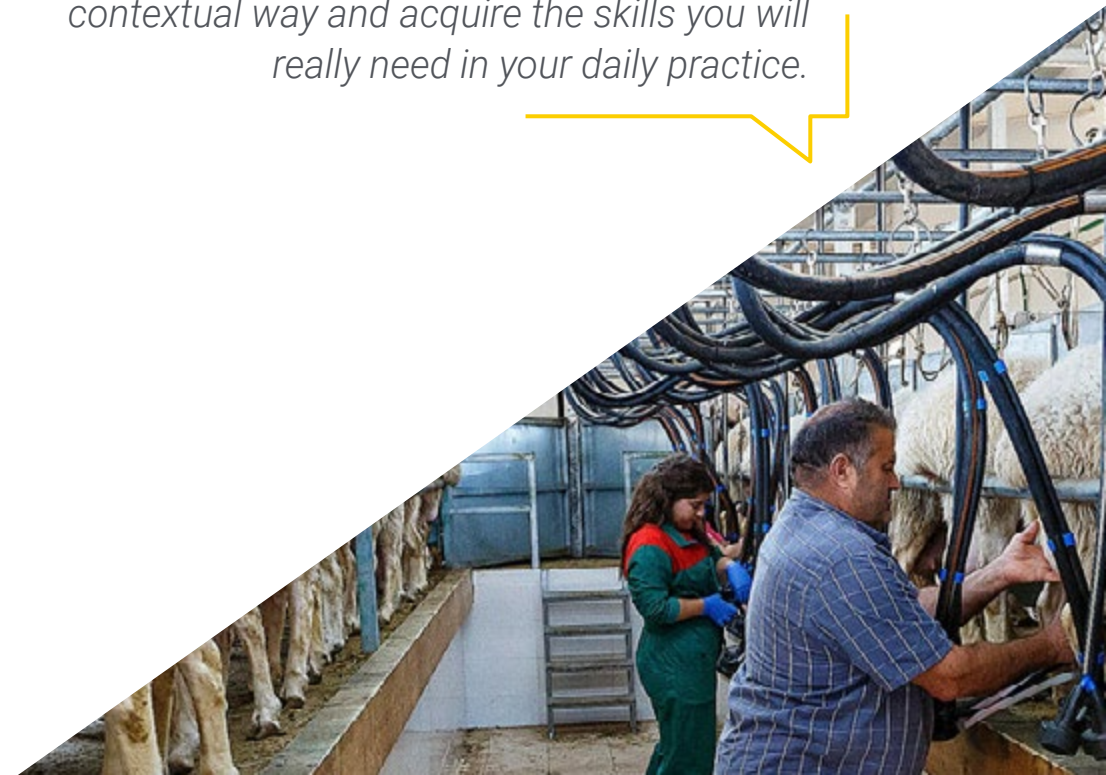
Our teaching staff is made up of professionals from different fields related to this specialty. In this way, TECH makes sure to offer professionals the up-to-date objective it intends. A multidisciplinary team of professionals trained and experienced in different environments who will develop theoretical knowledge efficiently, but, above all, will provide students with practical knowledge derived from their teaching experience: one of the differential qualities of this program.

This mastery of the subject 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. In this way, the student will be able to study with comfortable and versatile multimedia tools that will give them the operability they need in their 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 telepractice will be used: with the help of an innovative system of interactive videos and *learning from an expert* you will be able to acquire the knowledge as if you were facing the case you are learning at that moment. A concept that will make it possible to integrate and fix learning in a more realistic and permanent way.

*With a methodological design based on proven teaching techniques, this innovative program will take you through different teaching approaches to allow you to learn in a dynamic and effective way.*

*Supported by evidence, the approach of this program will allow you to learn in a contextual way and acquire the skills you will really need in your daily practice.*



# 02 Objectives

The completion of this Postgraduate Diploma provides the veterinary professional with specialized and advanced clinical fundamentals, based on evidence to face the daily clinical practice in cattle and ruminants.

In addition to this up-to-date approach to the problems encountered in daily clinical practice, the bibliography provided and the structuring of the topics will allow you to keep this knowledge up to date.







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*The Postgraduate Diploma in Ruminant Surgery will allow you to learn the specific techniques in this field, taking into account the special economic and logistical situations in which they are usually performed”*



## General Objectives

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- ♦ Determine the methods of physical and chemical containment for the development of the clinical activity
- ♦ Examine the different methods of diagnostics and research within the herd
- ♦ Specify the existing treatments useful for the treatment of ruminant pathologies
- ♦ Analyze the importance of analgesia in ruminants, the basis of animal welfare and the management of diseases that usually cause pain in ruminants
- ♦ Establish the economic and health impact of pain in animals and its impact on production
- ♦ Generate specialized knowledge on identification and treatment procedures specific to ruminants, in order to reduce, treat or avoid pain in our veterinary management
- ♦ Develop the main analgesic techniques and procedures applied in ruminants
- ♦ Review surgical principles and adapt them to ruminant surgery
- ♦ Determine the main surgical conditions affecting soft tissues in ruminants
- ♦ Be able to make the decision to plan a surgical intervention
- ♦ Analyze the fundamental surgical techniques
- ♦ Address perioperative complications
- ♦ Generate specialized knowledge to take the necessary measures to prevent such complications
- ♦ Establish how to search for complementary information on soft tissue surgery in ruminants
- ♦ Determine the importance and impact of lameness in ruminants
- ♦ Examine how to diagnose lameness
- ♦ Develop the main conditions of the musculoskeletal system in ruminants
- ♦ Generate specialized knowledge to make the decision to indicate a surgical intervention
- ♦ Establish the fundamental surgical techniques in ruminant traumatology and orthopedics
- ♦ Analyze perioperative complications and take the necessary measures to prevent such complications
- ♦ Know how to search for complementary information on ruminant traumatology and orthopedics



*A very complete training that will boost your ability to work in prevention, management and cost reduction in animal production, giving you greater competitiveness in the labor market"*



## Specific Objectives

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### Module 1. Clinical Skills

- Compile the methods of containment in bovine animals
- Determine the basic material for a ruminant clinical veterinarian
- Identify problems at the collective level
- Establish the basis of diagnosis and know the special diagnostics in ruminant medicine
- Specify antimicrobial therapies by means of laboratory studies
- Analyze fluid therapy as a daily work tool
- Demonstrate the different analgesic therapies in ruminants
- Propose different analgesia and sedation protocols at systemic and local level
- Review particular analgesia and sedation protocols in ruminants
- Diagnose the main pathologies that cause pain, and the techniques or drugs necessary for their treatment
- Enable the student to establish the pharmacological therapeutic treatments or specific techniques in exploratory and/or surgical procedures necessary for each pathology

### Module 2. Soft Tissue Surgery

- Examine, substantiate and develop prognosis of surgical techniques related to common ruminant wounding, dehorning and eye surgery.
- Analyze prognosis of surgical techniques related to umbilicus, foreskin, penis and scrotum surgery
- Generate specialized knowledge on surgical techniques related to urinary tract surgery

### Module 3. Musculoskeletal System Surgery

- Establish the anatomy and biomechanics of the hoof, as well as its functional trimming
- Generate specialized knowledge to establish a differential diagnosis of hoof pathologies, their treatment and prognosis
- Diagnose septic processes of the distal limb and know their therapeutic options
- Determine the diagnosis of lameness in ruminants
- Describe, substantiate and define prognoses of surgical techniques related to cranial cruciate ligament rupture, superior patella fixation, coxofemoral dislocation and fracture of the femoral neck of the ruminant
- Examine joint pathologies and establish the therapeutic options and their prognosis
- Analyze tendon injuries and establish the therapeutic options and their prognosis
- Describe, substantiate and define prognosis of surgical techniques related to the resolution of specific fractures with external coaptation and/or open reduction and internal fixation of the ruminant

03

# Course Management

For our Postgraduate Diploma to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. 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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*An impressive teaching staff, made up of professionals of the highest level, will be the professors throughout the program, providing the most real, close and current learning experience"*

## Management



### **Dr. Ezquerra Calvo, Luis Javier**

- PhD in Veterinary Medicine from the University of Extremadura (1987).
- Degree in Veterinary Medicine from the University of Zaragoza 1982
- Specialist in Applied and Experimental Animal Surgery University of Zaragoza, 1982
- Specialist in Animal Reproduction and Artificial Insemination University of Zaragoza, 1985
- Diploma of the European College of Veterinary Surgeons (Large Animals). 1998
- Presents 6 five-year teacher evaluation periods

## Professors

### Dr. Bracamonte, José Luis

- ♦ Founding Fellow of the American College of Veterinary Surgeons
- ♦ Doctorate in Veterinary Science in equine laparoscopy
- ♦ Degree in Veterinary Medicine, Faculty of Veterinary Medicine, University of Extremadura, Spain
- ♦ Diploma of the American College of Veterinary Surgery in large animals
- ♦ Diploma of the American College of Veterinary Surgery in large animals
- ♦ Diplomate European College of Veterinary Surgeons (Equine)
- ♦ Certified by the European College of Equine Veterinary Surgery
- ♦ Minimally Invasive Surgery in Large Animal Laparoscopy
- ♦ Founder and specialist in minimally invasive laparoscopic surgery in large animals by the American College of Veterinary Surgery
- ♦ ACVS committee member for minimally invasive surgery specialist
- ♦ Teacher for ACVS Fellowship Programs
- ♦ Large animal surgery especially on horses in the disciplines of Western Pleasure, Barrel Racing, Reining, Cutting and Dressage horses
- ♦ Large animal surgeon in beef cattle/calf (Angus breed) and dairy cattle productions
- ♦ Training of 15 surgical residents, all of whom are ACVS Diplomates
- ♦ Presentations at international surgical congresses and more than 20 national presentations in Canada for equine veterinarians.

### Dr. Gil Molino, María

- ♦ Responsible for the Diagnostic Service and performing clinical diagnostic tasks in different areas, mainly in Infectious Pathology, Parasitology and Pathological Anatomy and in Medical Pathology and Toxicology.
- ♦ Degree in Veterinary Medicine from the University of Extremadura.
- ♦ Completion of the Degree Work
- ♦ Diploma of Advanced Doctoral Studies
- ♦ Samples Reception and Veterinary Diagnostic Area at the Clinical Veterinary Hospital

### Dr. Muñoz Morán, Juan Alberto

- ♦ Member of the Examination Committee of the European College of Veterinary Surgeons
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid
- ♦ PhD in Veterinary Science
- ♦ Graduate of the European College of Veterinary Surgeons
- ♦ Graduated in experimental animals, category C, University of Lyon (France)
- ♦ Master in Veterinary Medicine Sciences from the Alfonso X El Sabio University, Madrid
- ♦ Residency in large animal surgery at the Veterinary University of Lyon
- ♦ Internship in equine surgery at London Equine Hospital, Ontario
- ♦ Internship in equine medicine and surgery at Lyon Veterinary University
- ♦ Professor of large animal surgery at the Veterinary University of Pretoria, South Africa
- ♦ Head of the Equine Surgery residency program at the Veterinary University of Pretoria, South Africa
- ♦ Head of the large animal surgery service and professor at Alfonso X el Sabio University, Madrid
- ♦ Head of the Postgraduate Master's Degree in Sports Medicine and Equine Surgery at the Alfonso X el Sabio University
- ♦ Head of the Postgraduate Master's Degree in Equine Surgery at Alfonso X el Sabio University
- ♦ Editor of the journal of equine veterinary medicine and surgery "Equinus"
- ♦ Equine surgery clinician at the Montreal Veterinary University
- ♦ Equine surgery clinician at the Veterinary University of Lyon
- ♦ Co-author of CD-ROM on Thoracic Extremity Anatomy of the Horse
- ♦ Partner Surgeon at the Veterinary Clinic of "Grand Renaud", Saint Saturnin, France
- ♦ Surgeon at the Equine Hospital of Aznalcóllar, Seville

### **Degree in Veterinary Medicine from the Complutense University of Madrid**

- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid
- ♦ Clinical Veterinarian at Monge Veterinarios S.L.P
- ♦ Associate Professor in the Department of Animal Medicine and Surgery UCM Veterinary Faculty
- ♦ Collaboration in the teaching of Ruminant Production Medicine at the Faculty of Veterinary Medicine of the Complutense University of Madrid from 2008 to 2014
- ♦ Tutor in Final Degree Projects since 2015
- ♦ Clinical veterinarian in C.V. santa Teresa
- ♦ Collaboration in the work team of the research project, Parasite-host interaction in bovine Besnoitiosis: Study of the molecular mechanisms in target cells and organs that determine the progression of infection
- ♦ Ministry of Economy, Industry and Competitiveness, Ref. AGL 2016- 75202-R
- ♦ Theoretical-practical course called Updating and new applications of musculoskeletal, visceral and reproductive ultrasound in bovine species. U.C.M. Faculty of Veterinary Medicine
- ♦ Oral Communication ANEMBE Vigo, Clinical management of traumatic brain stem injuries in a calf.
- ♦ Organizing Committee in ANEMBE Cáceres Seminar for beef cattle
- ♦ ANEMBE Vigo International Congress. ANEMBE Sevilla International Congress

### **Ms. Sardoy, María Clara**

- ♦ Integral Equine Veterinary Services Pincén in Córdoba, Argentina
- ♦ Degree in Veterinary Medicine from the University of Buenos Aires, Argentina.
- ♦ Master's Degree in Clinical Sciences, Kansas State University, USA
- ♦ Internship in Equine Internal Medicine Kansas State University-Manhattan, KS, USA
- ♦ Residency in Equine Clinical Theriogenology at Equestrian Club Buenos Aires, Buenos Aires, Argentina
- ♦ Faculty member at Milton Equine Hospital in Campbellville, ON, Canada

### **Ms. Zurita, Sofía Gabriela**

- ♦ Degree in Veterinary Medicine from the Catholic University of Salta, Argentina
- ♦ Master's Degree in Companion Animal Medicine and Surgery (Small Animals and Equids); Specialty in Equids. Faculty of Veterinary Medicine, University of Extremadura
- ♦ Currently a PhD student at the University of Extremadura
- ♦ From 2018 to the present Veterinarian in the Reception and Diagnostic Service of biological samples of the Veterinary Clinical Hospital of the University of Extremadura
- ♦ Scientific activity, developed in Argentina and currently in Spain, participating in publications on meat quality and infectious diseases
- ♦ Courses and internships in Argentina at the Animal Health Laboratory - INTA EEA Cerrillos-Salta, Meat Quality Laboratories INTA Balcarcee Institute of Food Technology Castelar, as well as in Spain at the University of Extremadura
- ♦ Internal Large Animal Veterinary Medicine, Internship in Companion Animal Medicine and Surgery (Small Animals and Equids); Specialty in Equids. HCV – UEx
- ♦ Veterinary Clinics in Emergency Services for small and large animals in the city of Salta, Argentina
- ♦ Organizer of the 3rd NOA Student Veterinary Conference, Salta - Argentina

### **Dr. Blanco Murcia, Francisco Javier**

- ♦ Head of Service of the Clinical Service of Ruminants and Other Species of Abasto of the Clinical Veterinary Hospital (UCM)
- ♦ Director and owner of Large Animal Clinic Los Molinos
- ♦ PhD in Veterinary from the Complutense University of Madrid
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid
- ♦ Veterinary Diploma in Lidia Bull Studies



- ◆ Diploma of Clinical Anesthesiology in Companion Animals UCM
- ◆ Specialist intern in Bovine Medicine and Surgery at the UCM Clinical Hospital. Category: director
- ◆ Diploma in Bovine Podiatry at Conafe. Category: director
- ◆ Consultant veterinarian, Association of Sanitary Defense of the Sierra de Guadarrama and collaborating agent authorized as Certifying agent, recognized by the Community of Madrid in different years
- ◆ Founding member of ANEMBE, and First Treasurer of the association
- ◆ Two six-year research periods

#### **Dr. Galapero Arroyo, Javier**

- ◆ External advisor to national companies in the Agro-Livestock sector
- ◆ PhD and degree in Veterinary Medicine from the University of Extremadura
- ◆ Degree in Veterinary Medicine from the University of Extremadura
- ◆ Master's Degree in extensive livestock farming management
- ◆ Teacher in different graduate and postgraduate courses, university specialization programs and master's degrees.
- ◆ Development of doctoral theses and final projects in the Veterinary Degree and as external expert evaluator and member of the tribunal of different doctoral theses
- ◆ Reviewer of scientific articles in three journals indexed in the Journal Citation Report (JCR)

#### **Dr. Quinteros, Diego Daniel**

- ◆ Degree in Veterinary Medicine from the University of Buenos Aires, Argentina
- ◆ Diploma from the American College of Veterinary Surgeons
- ◆ Veterinary Surgeon at Integral Equine Veterinary Services - Pincen, Córdoba
- ◆ Diagnosis and treatment of claudication in sporting equines at Performance Equine Services, Ocala

- ◆ Professor (Head of Practical Works) and Surgeon at the Large Animal Hospital of the University of the Center of the Province of Buenos Aires
- ◆ Associate Veterinarian at the Equine Reproduction Center "Doña Pilar" - Lincoln, Province of Buenos Aires
- ◆ Member of the surgical team at the Veterinary Center of the Hippodrome of San Isidro-San Isidro, Buenos Aires, Argentina
- ◆ Private outpatient practice at the San Isidro Hippodrome-San Isidro, Buenos Aires
- ◆ Intensive care of colic patients
- ◆ San Isidro Hippodrome Veterinary Center-San Isidro, Buenos Aires

#### **Dr. Zalduendo Franco, Daniel**

- ◆ Technical and commercial management at ANKA
- ◆ Coordination of podiatry services with sales and marketing of podiatric health products and foals at ANKA
- ◆ Degree in Veterinary Medicine from the University of Zaragoza in 2007 with specializations in Clinical and Animal Production
- ◆ Postgraduate studies at the University of Liverpool (UK) to obtain the Certificate in Advanced Veterinary Practice (CertAVP)
- ◆ Coordination of HIPRA's Mastitis Unit, enabling it to offer vaccines and services to more than 50 countries

#### **Dr. Iglesias García, Manuel**

- ◆ Clinical veterinarian and surgeon at the Veterinary Hospital of the Extremadura Hospital at the University of Extremadura
- ◆ PhD from the Alfonso X el Sabio University
- ◆ Degree in Veterinary Medicine from the Alfonso X el Sabio University (UAX)

- ♦ Master's Degree in Equine Surgery and obtained the title of "General Practitioner in Equine Surgery" from the "European School of Veterinary Postgraduate Studies"
- ♦ Master's Degree in Equine Surgery at the Veterinary Hospital of Alfonso X el Sabio University.
- ♦ Spanish Certificate in Equine Clinic (CertEspCEq)
- ♦ He actively participates as director of final projects in the Veterinary Degree.
- ♦ Collaboration in the teaching of veterinary interns and undergraduate students during the Master's Degree in Equine Surgery
- ♦ Professor of the Master's Degree in Large Animal Boarding at Extremadura University for the last 3 years.

#### **Mr. González Sagues, Adrián**

- ♦ Founder and current manager of "ANKAPODOL S.L. Cuidados de Pezuñas"
- ♦ Internationally recognized trainer, collaborator of the English Laboratory program and director of the Spanish program of the Master's Degree of Podiatric Health at the University of Florida (USA), winner of the "Honor and Plow Awards" presented by Ann Veneman, Secretary of Agriculture of the United States
- ♦ Degree in Veterinary from the Faculty of Zaragoza
- ♦ Partner and Technical Advisor in 4 hoof care companies, three of them in Spain and one in Mexico, trimming the hooves of about 70,000 cows per year with 12 employees

#### **Dr. Re, Michela**

- ♦ Doctorate in Veterinary from the Complutense University of Madrid
- ♦ Degree in Veterinary Medicine from the State University of Milan
- ♦ Veterinarian of the Large Animal Clinic Los Molinos developing clinical activity in





equines and bovines

- ◆ Veterinarian of the Sierra de Guadarrama Sanitary Defense Association and collaborating agent authorized as Certifying agent, recognized by the Community of Madrid
- ◆ "Assistance activity at the Complutense Clinical Veterinary Hospital", developing the activity in the Large Animal Surgery Service of the Complutense Clinical Veterinary Hospital

#### **Dr. Correa, Felipe**

- ◆ PhD in Veterinary Sciences, Andrés Bello University, Santiago, Chile
- ◆ Degree in Veterinary Medicine from Mayor University, Santiago, Chile
- ◆ Internship in Equine Surgery at Milton Equine Hospital, Canada
- ◆ Internship in Surgery and Large Animal Medicine, University of Guelph, Canada
- ◆ Master's Degree in Veterinary Sciences, Austral University of Chile
- ◆ Diploma in University Teaching, Andrés Bello University, Santiago, Chile
- ◆ Master's Degree Candidate in Equine Surgery, University of Pretoria, South Africa

“ *The leading professionals in the field have come together to offer you the most comprehensive knowledge in this field, so that you can develop with total guarantees of success*”

# 04

## Structure and Content

The contents have been developed by the different experts of this Postgraduate Diploma, 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 comprehensive and well-structured program that will lead the professional to the highest standards of quality and success.





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

## Module 1. Clinical Skills

- 1.1. Handling and Restraint of Cattle
  - 1.1.1. Introduction
  - 1.1.2. Physical Immobilization Methods
    - 1.1.2.1. Head
    - 1.1.2.2. Limbs
    - 1.1.2.3. Immobilization Devices
  - 1.1.3. Animal Takedown
    - 1.1.3.1. Takedown Systems
    - 1.1.3.2. Handling in Decubitus Position
- 1.2. Veterinary Equipment in Field Clinics
  - 1.2.1. Introduction
  - 1.2.2. Examination Material
  - 1.2.3. Surgical Material
  - 1.2.4. Obstetrical Material
    - 1.2.4.1. Childbirth
    - 1.2.4.2. Insemination
    - 1.2.4.3. Breeder Assessment
  - 1.2.5. Sample Extraction Material
  - 1.2.6. Drug Administration Material
  - 1.2.7. Fluid Therapy Material
  - 1.2.8. Medication
    - 1.2.8.1. Antibiotic Therapy
    - 1.2.8.2. Anti-Inflammatories
    - 1.2.8.3. Hormonal
    - 1.2.8.4. Metabolic and Vitamin
    - 1.2.8.5. Antiparasitics II
- 1.3. Herd Health Research
  - 1.3.1. Introduction
  - 1.3.2. Definition of Health and Disease
  - 1.3.3. Animal Welfare: Indicators and Determinants
    - 1.3.3.1. Stress
    - 1.3.3.2. Management
    - 1.3.3.3. Hygiene
    - 1.3.3.4. Transport
  - 1.3.4. Health
    - 1.3.4.1. Disease Transmission
    - 1.3.4.2. Registration and Controls
    - 1.3.4.3. Individual and Herd Clinical Assessment
    - 1.3.4.4. Complementary Tests
    - 1.3.4.5. Reporting and Monitoring
- 1.4. Diagnosis and Clinical Reasoning
  - 1.4.1. Introduction
  - 1.4.2. Diagnostic Process
    - 1.4.2.1. Clinical Examination
    - 1.4.2.2. Hypothetical-Deductive Reasoning
    - 1.4.2.3. Archive
  - 1.4.3. Reasoning Patterns
    - 1.4.3.1. Pattern Recognition Methods
    - 1.4.3.2. Probability
    - 1.4.3.3. Pathophysiological Reasoning
  - 1.4.4. Clinical Signs and Diagnostic Tests
    - 1.4.4.1. Logical Exclusion of Disease
    - 1.4.4.2. Inductive-Deductive Reasoning
  - 1.4.5. Errors
  - 1.4.6. Clinical Reasoning Exercise
    - 1.4.6.1. Clinical Scenarios
    - 1.4.6.2. Clinical Examination
    - 1.4.6.3. Clinical reasoning



- 1.5. Special Diagnostic Procedures
  - 1.5.1. Introduction
  - 1.5.2. Skin
  - 1.5.3. Cardiovascular
    - 1.5.3.1. Percussion
    - 1.5.3.2. Electrocardiography
    - 1.5.3.3. Ultrasound
    - 1.5.3.4. Radiography
    - 1.5.3.5. Pericardiocentesis
    - 1.5.3.6. Blood Culture
  - 1.5.4. Respiratory System
    - 1.5.4.1. Bronchoalveolar Lavage
    - 1.5.4.2. Parasitological Tests
    - 1.5.4.3. Nasal Swabs
    - 1.5.4.4. Radiography
    - 1.5.4.5. Ultrasound
    - 1.5.4.6. Thoracentesis
    - 1.5.4.7. Biopsy
    - 1.5.4.8. Bio Markers
  - 1.5.5. Abdomen
    - 1.5.5.1. Rectal Examination
    - 1.5.5.2. Rumen Fluid Analysis
    - 1.5.5.3. Abdominocentesis
    - 1.5.5.4. Radiography
    - 1.5.5.5. Hepatic Biopsy
    - 1.5.5.6. Liver Function Test
    - 1.5.5.7. Urinary
  - 1.5.6. Mammary Glands
    - 1.5.6.1. California Mastitis Test
    - 1.5.6.2. Conductivity
    - 1.5.6.3. Collection for Microbiological Analysis
  - 1.5.7. Musculoskeletal System
    - 1.5.7.1. Arthrocentesis
  - 1.5.8. Cerebrospinal Fluid Analysis

- 1.6. Antimicrobial Therapy in Cattle
  - 1.6.1. Introduction
  - 1.6.2. Characteristics of the Different Groups of Antimicrobials
    - 1.6.2.1. Sulfonamides
    - 1.6.2.2. Penicillins
    - 1.6.2.3. Tetracyclines
    - 1.6.2.4. Macrolides
    - 1.6.2.5. Aminoglycosides
    - 1.6.2.6. Cephalosporins
    - 1.6.2.7. Lincosamides
  - 1.6.3. Categorization of Antibiotics According to the Risk of their Use
  - 1.6.4. Selection of an Antimicrobial According to the Process
  - 1.6.5. Bacterial Resistance to Antimicrobials
- 1.7. Fluid Therapy.
  - 1.7.1. Introduction
  - 1.7.2. Fluid Therapy in Calves
    - 1.7.2.1. Lactic Acidosis in Calves
  - 1.7.3. Fluid Therapy in Adult Cattle
    - 1.7.3.1. Sodium Balance and Dysnatremias
    - 1.7.3.2. Hypokalemic Syndrome in Cattle
    - 1.7.3.3. Calcium and Magnesium Disorders
    - 1.7.3.4. Treatment of Phosphorus Balances
  - 1.7.4. Fluid Therapy in Small Ruminants
  - 1.7.5. Use of Blood and Blood Products in Ruminants
- 1.8. Analgesia
  - 1.8.1. Assessment of Pain in Cattle
  - 1.8.2. Negative Effects of Pain
    - 1.8.2.1. Chronic Pain
    - 1.8.2.2. Acute Pain
  - 1.8.3. Strategies for the Treatment of Pain
    - 1.8.3.1. Preventive Analgesia
    - 1.8.3.2. Multimodal or Balanced Analgesia. Analgesic Drugs
    - 1.8.3.3. Opioids
      - 1.8.3.3.1. Pure Agonists
      - 1.8.3.3.2. Partial Agonists
    - 1.8.3.4.  $\alpha$ 2-Agonists: Xylazine, Detomidine
    - 1.8.3.5. NSAIDs: Ketoprofen, Carprofen, Meloxicam
    - 1.8.3.6. Local Anesthetic. Lidocaine
    - 1.8.3.7. Dissociative Anesthetics. Ketamine
  - 1.8.4. Local anesthetics
    - 1.8.4.1. Transduction
    - 1.8.4.2. Peripheral of Conduction Blockages
    - 1.8.4.3. Intravenous Regional Anesthesia
    - 1.8.4.4. Nerve Blocks
    - 1.8.4.5. Epidural Administration of Drugs
    - 1.8.4.6.  $\alpha$ 2-Agonists:
      - 1.8.4.6.1.  $\alpha$ 2-Agonists Mechanism of Action, Adverse Effects, Antagonists
      - 1.8.4.6.2. Routes of Administration. Epidural, IV, IM, SC
  - 1.8.5. Combination with Other Drugs: Local Anesthetics, Opiates, Ketamine
    - 1.8.5.1. NSAIDs
    - 1.8.5.2. Mechanism of Action
    - 1.8.5.3. Types of NSAIDs
    - 1.8.5.4. Central Modulatory Inhibitory Effect
    - 1.8.5.5. Preoperative and Postoperative Application
    - 1.8.5.6. Anesthetics
- 1.9. Sedation and Anesthesia Effect
  - 1.9.1. Introduction
  - 1.9.2. Pharmacological Immobilization
    - 1.9.2.1. Means of Teleapplication
      - 1.9.2.1.1. Directly in a Crate or Sleeve Handle
      - 1.9.2.1.2. By Syringe
      - 1.9.2.1.3. At a Distance, Applying Darts with the Drug



- 1.9.3. Animal in Decubitus or Standing Animal
  - 1.9.3.1. Tranquilization Methods
  - 1.9.3.2. Animal Standing Combining Sedative and Local Anesthesia Techniques
- 1.9.4. Pharmacological Immobilization plus Locoregional Anesthesia
  - 1.9.4.1. The  $\alpha$ 2-Receptor Agonist Tranquilizers: Xylazine, Detomidine, Romifidine, Medetomidine
  - 1.9.4.2. Advantages of  $\alpha$ 2-Receptor Agonists
    - 1.9.4.2.1. Volume
    - 1.9.4.2.2. Sedative Effect
    - 1.9.4.2.3. Analgesic
    - 1.9.4.2.4. Mixed
    - 1.9.4.2.5. Antagonizable
  - 1.9.4.3. Disadvantages of  $\alpha$ 2-Receptor Agonists
  - 1.9.4.4. Intraoperative and Postoperative Analgesia
    - 1.9.4.4.1.  $\alpha$ 2, Opiates, Ketamine and Tiletamine.
    - 1.9.4.4.2. Local and Regional Anesthesia
    - 1.9.4.4.3. NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)
- 1.10. Local and Regional Analgesia
  - 1.10.1. Incision Line Infiltration Blockage
  - 1.10.2. Inverted Block
    - 1.10.2.1. Inverted L-Block
    - 1.10.2.2. Paravertebral Block
      - 1.10.2.2.1. Proximal and Distal Paravertebral Anesthesia
      - 1.10.2.2.2. Dorsal and Ventral Branch Blockage
  - 1.10.3. Epidural Anesthesia
    - 1.10.3.1. Administration
    - 1.10.3.2. Localisation
    - 1.10.3.3. Indications
    - 1.10.3.4. The Doses
    - 1.10.3.5. Duration of Effect
    - 1.10.3.6. Applied Pharmacological Combinations
  - 1.10.4. Anesthetics
    - 1.10.4.1. Ketamine
    - 1.10.4.2. Tiletamine
    - 1.10.4.3. Etorphine. Prohibited for Use, Possession and Commercialization
      - 1.10.4.3.1. Withdrawn from the Market in 2005
  - 1.10.5. Update on Anesthesia in Cattle and Other Ruminants
    - 1.10.5.1. New Anesthetic Protocol
    - 1.10.5.2. Anesthetic Model
    - 1.10.5.3. Anesthetic Combination. Phencyclidines-Detomidine
      - 1.10.5.3.1. Zolazepam-Tiletamine
      - 1.10.5.3.2. Ketamine
      - 1.10.5.3.3. Detomidine
  - 1.10.6. Maintaining the Anesthesia
    - 1.10.6.1. Dosage
    - 1.10.6.2. Antagonization
      - 1.10.6.2.1. Precautions
      - 1.10.6.2.2. Basic Anesthetic Monitoring
  - 1.10.7. Anesthetic Depth
    - 1.10.7.1. Cardiovascular System
    - 1.10.7.2. Heart Rate
    - 1.10.7.3. Peripheral Pulse Palpation
    - 1.10.7.4. Capillary Refill Time
    - 1.10.7.5. Respiratory System
    - 1.10.7.6. Respiratory Rate and Pattern
    - 1.10.7.7. Mucosal Color
    - 1.10.7.8. Electronic Monitors: Portable Pulse Oximeter

## Module 2. Soft Tissue Surgery

- 2.1. The Surgery. Pre-Operative, Field Preparation, Surgeon Preparation
  - 2.1.1. Pre-surgery Planning
  - 2.1.2. Surgical Attire, Preparation of Surgical Equipment: Gloves, Gowns etc.
  - 2.1.3. Preparation of the Patient and Surgical Area
- 2.2. Surgery of the Pre-Stomachs. Peritonitis
  - 2.2.1. Surgical Physiology and Anatomy
  - 2.2.2. Pathology and Clinical Signs
  - 2.2.3. Surgical Techniques
    - 2.2.3.1. Left Flank Laparotomy
    - 2.2.3.2. Ruminotomy
  - 2.2.4. Perioperative Management
  - 2.2.5. Peritonitis
- 2.3. Abomasal Surgery. Laparoscopy
  - 2.3.1. Pathogenesis of Abomasal Displacements
  - 2.3.2. Types of Abomasal Displacements
    - 2.3.2.1. Left Displacement of the Abomasum
    - 2.3.2.2. Dilatation/Displacement of the Right Abomasum
      - 2.3.2.2.1. Volvulus of the Right Side of the Abomasum
  - 2.3.3. Clinical Introduction and Diagnosis
  - 2.3.4. Management of Abomasal Displacements
    - 2.3.4.1. Physical Methods
    - 2.3.4.2. Medical Therapy
    - 2.3.4.3. Surgical Techniques
      - 2.3.4.4. Right Flank Omentopexy
      - 2.3.4.5. Right Flank Pyloropexy
      - 2.3.4.6. Left Flank Abomasopexy
      - 2.3.4.7. Right Median Abomasopexy



### Module 3. Musculoskeletal System Surgery

- 3.1. Anatomy and Biomechanics of the Hoof. Functional Trimming
  - 3.1.1. Anatomy and Biomechanics of the Hoof
    - 3.1.1.1. Anatomical Structure. Key Structures
    - 3.1.1.2. Hoof
      - 3.1.1.2.1. Corion
      - 3.1.1.2.2. Other Structures
    - 3.1.1.3. Biomechanics
      - 3.1.1.3.1. Concept
      - 3.1.1.3.2. Hind Limbs Biomechanics
      - 3.1.1.3.3. Fore Limbs Biomechanics
    - 3.1.1.4. Factors that Affect Biomechanics
  - 3.1.2. Functional Trimming
    - 3.1.2.1. Concept and Importance of Functional Trimming
    - 3.1.2.2. Trimming Technique. Dutch Model
    - 3.1.2.3. Other Trimming Techniques
    - 3.1.2.4. Containment and Instrumentation
- 3.2. Diseases of the Hoof I. Infectious Origin: Digital Dermatitis. Interdigital Dermatitis. Interdigital Phlegmon
  - 3.2.1. Digital Dermatitis.
    - 3.2.1.1. Etiology
    - 3.2.1.2. Clinical Signs
    - 3.2.1.3. Control
    - 3.2.1.4. Treatment
  - 3.2.2. Interdigital Dermatitis.
    - 3.2.2.1. Etiology
    - 3.2.2.2. Clinical Signs
    - 3.2.2.3. Control
    - 3.2.2.4. Treatment
  - 3.2.3. Interdigital Phlegmon
    - 3.2.3.1. Etiology
    - 3.2.3.2. Clinical Signs
    - 3.2.3.3. Control
    - 3.2.3.4. Treatment
  - 3.2.4. Use of Footbath for the Control of Environmental Diseases
    - 3.2.4.1. Design
    - 3.2.4.2. Products
- 3.3. Diseases of the Hoof II. Non-Infectious Origin: Sole Ulcer. White Line Disease. Point Ulcers and Others
  - 3.3.1. Sole Ulcers
    - 3.3.1.1. Etiopathogenesis
    - 3.3.1.2. Control
    - 3.3.1.3. Treatment
  - 3.3.2. White Line Disease
    - 3.3.2.1. Etiopathogenesis
    - 3.3.2.2. Control
    - 3.3.2.3. Treatment
  - 3.3.3. Other Diseases of Non-Infectious Origin
    - 3.3.3.1. Hyperconsumption or Thin Sole
    - 3.3.3.2. Point Ulcers
    - 3.3.3.3. Ring-Shaped Hooves
- 3.4. Surgical Treatment of Septic Processes of the Distal Limb ( Finger Amputation, Distal and Proximal Interphalangeal Joint Ankylosis)
  - 3.4.1. Aetiology of Septic Processes of the Distal Limb
  - 3.4.2. Diagnosis
    - 3.4.2.1. Clinical Presentation
    - 3.4.2.2. Diagnostic Imaging
    - 3.4.2.3. Clinical Pathology
  - 3.4.3. Indications for Distal Limb Surgery

- 3.4.4. Surgical preparation
- 3.4.5. Treatment in Acute Septic Processes
  - 3.4.5.1. Joint Lavage
  - 3.4.5.2. Systemic Antibiotics
- 3.4.6. Surgical Treatment in Chronic Septic Processes
  - 3.4.6.1. Amputation of the Digit
  - 3.4.6.2. Arthrodesis/Facilitated Ankylosis
    - 3.4.6.2.1. Solar Approach
    - 3.4.6.2.2. Bulbar Approach
    - 3.4.6.2.3. Dorsal Approach
      - 3.4.6.2.3.1. Abaxial Approach
      - 3.4.6.2.3.2. Prognosis
- 3.5. Examination of Lameness. Diagnosis and Prognosis of Proximal Limb Injuries
  - 3.5.1. Examination of Lameness
  - 3.5.2. Diagnostic Tests
    - 3.5.2.1. Synovial Fluid
    - 3.5.2.2. Radiographic Diagnosis
    - 3.5.2.3. Ultrasound Diagnosis
  - 3.5.3. Diagnosis and Prognosis of Proximal Limb Injuries
- 3.6. Cranial Cruciate Ligament Rupture. Upward Patella Fixation. Coxofemoral Dislocation. Femoral Neck Fracture
  - 3.6.1. Cranial Cruciate Ligament Damage
    - 3.6.1.1. Imbrication of Patella
    - 3.6.1.2. Cranial Cruciate Ligament Replacement
      - 3.6.1.2.1. Gluteobiceps Replacement
      - 3.6.1.2.2. Synthetic Ligament
    - 3.6.1.3. Postoperative Care and Prognosis
  - 3.6.2. Coxofemoral Dislocation
  - 3.6.3. Dorsal Dislocation of Patella
  - 3.6.4. Fracture of the Femoral Neck and Head
    - 3.6.4.1. Clinical Signs
    - 3.6.4.2. Surgical Approach
    - 3.6.4.3. Surgical Techniques
    - 3.6.4.4. Femoral Head Ostectomy
    - 3.6.4.5. Post-Operative Management and Complications
- 3.7. Management of Septic Arthritis. Septic Tenosynovitis. Arthroscopy. Osteochondrosis. Osteoarthritis
  - 3.7.1. Etiology
  - 3.7.2. Diagnosis
  - 3.7.3. Medical and Surgical Treatment
  - 3.7.4. Prognosis
  - 3.7.5. Complications, Osteomyelitis
  - 3.7.6. Other Joint Pathologies
    - 3.7.6.1. Osteochondrosis in Fattening Calves
    - 3.7.6.2. Poly and Oligoarthrosis
- 3.8. Tendon Surgery: Hyperextension, Flexural Deformities, Arthrogryposis, Lacerations. Spastic Paresis
  - 3.8.1. Tendon Lacerations Management and Repair
    - 3.8.1.1. Diagnosis
    - 3.8.1.2. Tendon Avulsion and Rupture
    - 3.8.1.3. Treatment
  - 3.8.2. Hyperextension
    - 3.8.2.1. Diagnosis
    - 3.8.2.2. Treatment
  - 3.8.3. Flexural Deformities
    - 3.8.3.1. Types
    - 3.8.3.2. Diagnosis
    - 3.8.3.3. Treatment

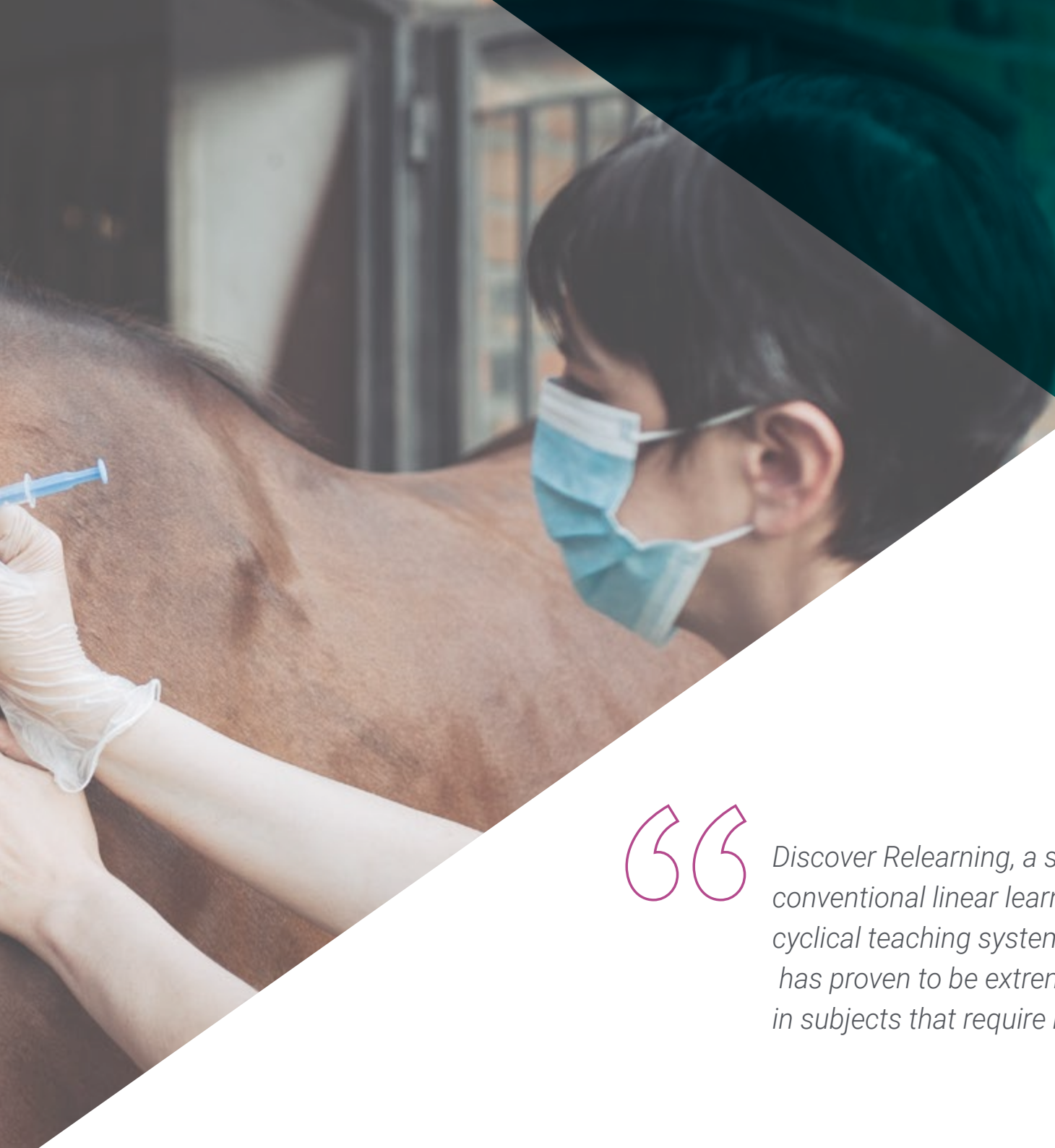
- 3.8.4. Arthrogyrosis
  - 3.8.4.1. Diagnosis
  - 3.8.4.2. Treatment
- 3.8.5. Spastic Paresis
  - 3.8.5.1. Diagnosis
  - 3.8.5.2. Treatment
- 3.9 Emergency Treatment of Fractures. Principles of Fracture Repair
  - 3.9.1. Introduction to Fracture Management in Cattle
  - 3.9.2. Emergency Treatment
  - 3.9.3. Diagnostic Imaging
  - 3.9.4. Principles of Fracture Management
    - 3.9.4.1. Hoof Blocks
    - 3.9.4.2. Plaster
    - 3.9.4.3. Thomas Splint (Thomas Schroder Splint)
    - 3.9.4.4. External Fixators
  - 3.9.5. Thomas Splint
    - 3.9.5.1. Application
    - 3.9.5.2. Practical Advice
    - 3.9.5.3. Complications
  - 3.9.6. Guidelines for Use of External Fixation in Long Bone Fractures
    - 3.9.6.1. Advantages
    - 3.9.6.2. Disadvantages
    - 3.9.6.3. Types of External Fixators
  - 3.9.7. Transfixion Plasters
    - 3.9.7.1. Application
    - 3.9.7.2. Practical Considerations in Bovines
  - 3.9.8. Complications Associated with External Fixators
- 3.10. Resolution of Specific Fractures: Decision Making and Guidance for External Skeletal Fixation. Plasters and Plasters with Transfixing Pins. Plates, Intramedullary Nails and Locking Nails
  - 3.10.1. Resolution of Specific Fractures
    - 3.10.1.1. External Coaptation
    - 3.10.1.2. Placement of Acrylic Casts
    - 3.10.1.3. Complications of Acrylic Casts
    - 3.10.1.4. Removal of Acrylic Casts
    - 3.10.1.5. External Fixators
      - 3.10.1.6. Indications
      - 3.10.1.7. Biomechanics of External Fixators
      - 3.10.1.8. External Fixators
      - 3.10.1.9. Application
      - 3.10.1.10. Post-Positioning Care
      - 3.10.1.11. Complications
      - 3.10.1.12. Removal of External Fixator
      - 3.10.1.13. Acrylic Frame Fixatros
      - 3.10.1.14. Transfixion Casts
      - 3.10.1.15. Implants
      - 3.10.1.16. Plates
      - 3.10.1.17. Screws
      - 3.10.1.18. Intramedullary Nails
      - 3.10.1.19. Locked Nails.
      - 3.10.1.20. Complications of Internal Fixations
        - 3.10.1.20.1. Infections
  - 3.10.2. Failure or Migration
  - 3.10.3. Prognosis

# 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.



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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

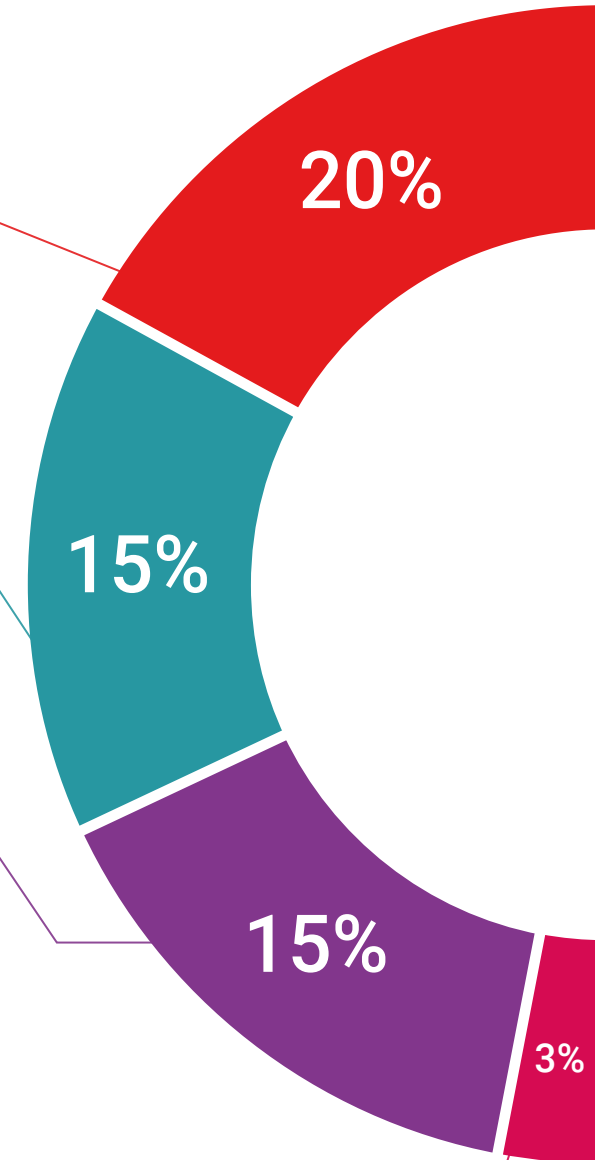
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

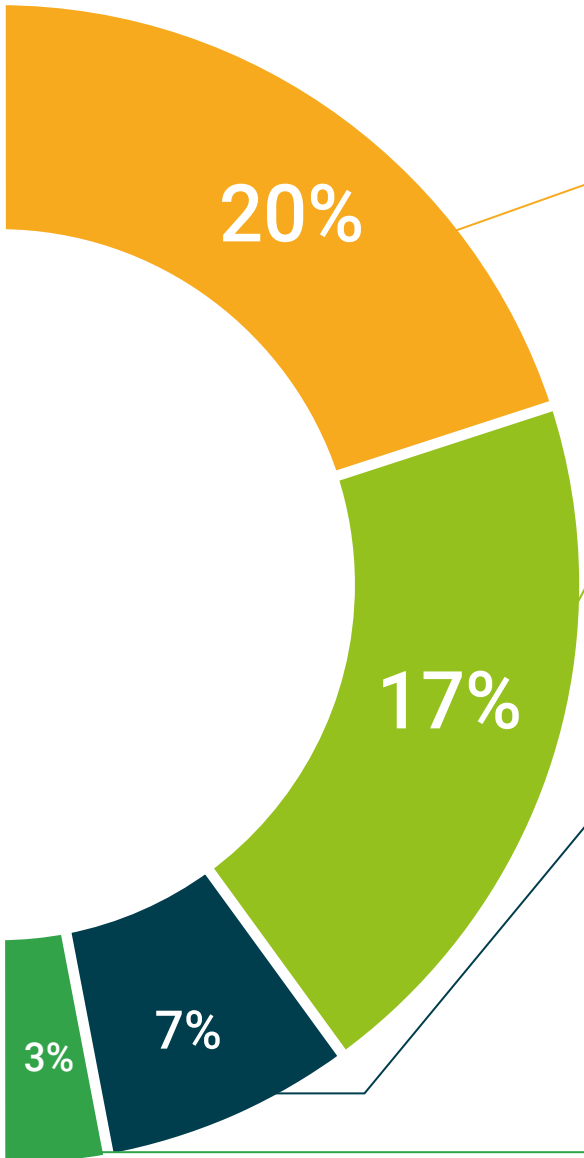
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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 Diploma in Ruminant Surgery guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



“

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

This **Postgraduate Diploma in Ruminant Surgery** 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 Diploma** issued by **TECH Technological University** via tracked delivery\*.

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

Title: **Postgraduate Diploma in Ruminant Surgery**

Official N° of Hours: **450 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 quality

online training

development language

virtual classroom

**tech** technological  
university

## Postgraduate Diploma Ruminant Surgery

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma Ruminant Surgery

