

# Hybrid Master's Degree Avian Medicine and Surgery





## Hybrid Master's Degree Avian Medicine and Surgery

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

Website: [www.techtute.com/us/veterinary-medicine/hybrid-master-degree/hybrid-master-degree-avian-medicine-surgery](http://www.techtute.com/us/veterinary-medicine/hybrid-master-degree/hybrid-master-degree-avian-medicine-surgery)

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# 01

# Introduction

Birds are animals that have a complex anatomy, some are so small that specific skills and knowledge are required to treat them. For this reason, and in view of the social awareness of animal welfare and protection, it is important that the veterinarian has an in-depth knowledge of this species, as this will not only enable him/her to detect pathologies efficiently and quickly, but also to provide them with the highest quality treatments. That is why this program will allow you to achieve this objective, combining your professional career with the learning of a completely online Syllabus. It also offers the opportunity to carry out a practical internship in a prestigious center with the best specialists in the field.





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*The demand for competent professionals capable of caring for birds is growing every day. Specialize in this field thanks to this Hybrid Master's Degree"*

Birds, generally wild species, can suffer various disorders when trying to adapt to a domestic environment or suffer injuries in their natural habitat for survival reasons. Therefore, it is important to know and understand factors such as feeding, behavior, anatomy and physiology. In addition, the medical handling of these animals is often complicated, requiring specific knowledge to handle them correctly.

Under this premise, this program will provide the veterinarian with the opportunity to achieve two things. First, take a fully online Syllabus, in which you will acquire the most current empirical knowledge of the academic scene. And, secondly, to carry out a practical stay in one of the most relevant international animal care centers animal care centers at international level with the objective of applying everything learned in the theoretical modality.

In this sense, the professional will develop a specialized knowledge of different laboratory tests, such as biopsies, hematology or cytology. laboratory tests, in which biopsies, hematology or cytology stand out. As a novel element, he will study the interpretation of proteinograms, which represents a state-of-the-art diagnostic window at the present time. It is also important to consider that, although the cardiovascular system of birds is almost similar to that of mammals, the anatomical differences are enough to make it necessary to know how to read an electrocardiogram perfectly. In this way, the professional will be able to easily detect any cardiorespiratory disease.

After finishing the theoretical modality, the student will be able to attend a three-week on-site internship. This is an opportunity to attend real cases applying all the knowledge and innovations acquired previously. Thanks to the expertise of an attending professional who will accompany you at all times, you will be able to perform basic viral disease evaluation tests, provide the appropriate dose of anesthesia and, of course, perform surgical procedures relevant to each case. Likewise, you will be able to make use of all the center's instruments and will be supported by a team of experts who will help you at all times.

This **Hybrid Master's Degree in Avian Medicine and Surgery** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of more than 100 clinical cases presented by veterinary professionals focused on the treatment of birds
- ♦ 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
- ♦ Assessment and monitoring of wild and captive birds
- ♦ Presentation of practical workshops on diagnostic and therapeutic techniques in the veterinary patient
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ All this will be complemented by 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
- ♦ In addition, you will be able to carry out a clinical internship in one of the best hospital in the world

“*During the online modality of this program, you will have access to diverse contents and complementary material such as practical guides, interactive summaries and didactic videos with real procedures in birds*”

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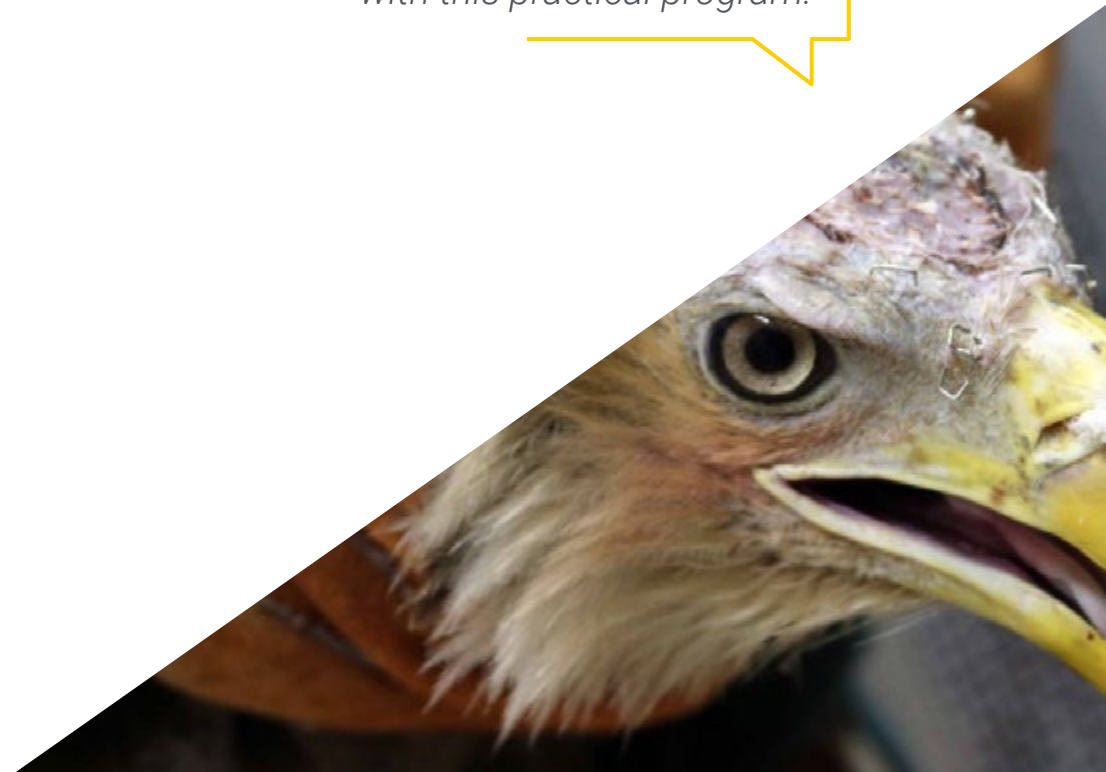
*In three weeks of intensive learning, you will be able to develop specialized knowledge regarding the most frequent ocular pathologies and the most up-to-date treatments"*

In this Master's Degree proposal, of a professionalizing nature and hybrid learning modality, the program is aimed at updating nursing professionals who develop their functions in high performance centers, clinical or hospital centers, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in an educational way to integrate theoretical knowledge into nursing practice, and the theoretical-practical elements will facilitate knowledge updates and decision-making in patient management.

Thanks to their multimedia content developed with the latest educational technology, they will allow the medical professional to learn in a contextual and situated learning environment, that is, a simulated environment that will provide immersive learning programmed to train in real situations. The design of this program is focused on Problem-Based Learning, through which the student will have to try to solve the different professional practice situations that will arise throughout the program. For this purpose students will be assisted by an innovative interactive video system developed by renowned experts.

*By exercising in a controlled environment, you will be able to acquire the experience you need for future quality practice.*

*Take your career to the next level by performing surgery on the digestive and respiratory systems of any bird with this practical program.*



02

# Why Study this Hybrid Master's Degree?

To achieve real development in the profession, the specialist needs to know not only the latest medical techniques and procedures but also how to implement them in different clinical settings. For this reason, TECH has designed this program, which combines the most recent update in areas such as anesthesiology, diagnostic imaging techniques or orthopedic surgery, with a practical stay in a prestigious clinical center. With all this, the objective is that the student obtains a complete vision of the most current panorama in Avian Medicine and Surgery.







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*Combine theory with practice and get into real clinical environments of maximum demand to learn and deepen in the latest techniques in Avian Medicine and Surgery”*

### 1. Updating from the latest technology available

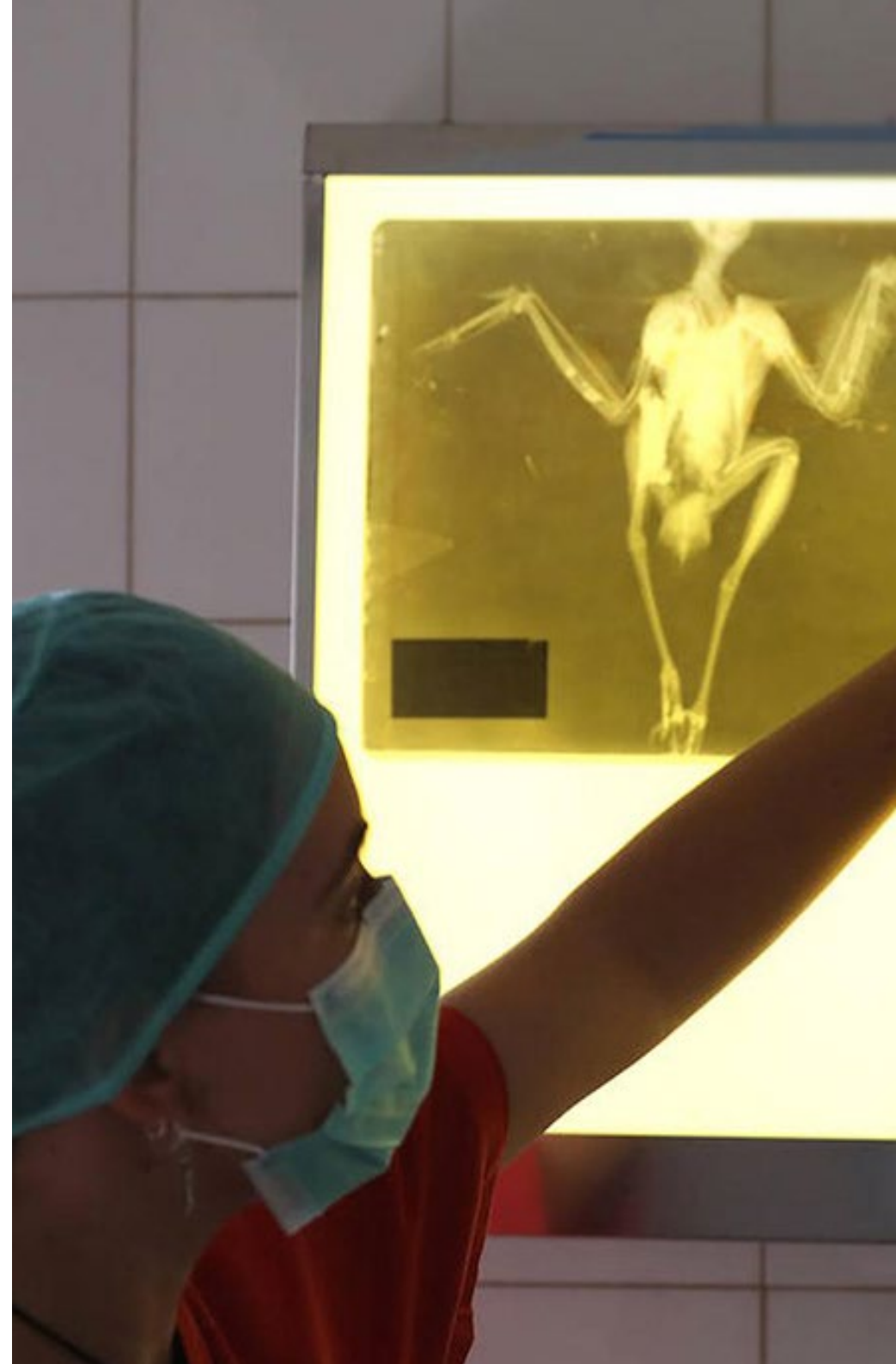
Avian Medicine and Surgery is a specialization that has grown remarkably in recent years, standing out for its complexity in technical procedures due, many times, to the size of the species. For this reason, in order for the specialist masters the necessary tools to offer an optimal and quality service to the patient, TECH has designed this Hybrid Master's Degree. Therefore, they will enter a state-of-the-art clinical environment, accessing cutting-edge technology in the field of avian health care.

### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

Throughout the entire practical period, a team of professionals will accompany the specialist, guaranteeing a quality update of knowledge. In addition, with a specifically designated tutor, the student will assist real patients, which will allow them to acquire effective procedures and approaches that they will be able to incorporate into their daily practice.

### 3. Entering First-Class Clinical Environments

The centers available for the internships of this Hybrid Master's Degree have been carefully selected in order to guarantee the professional a safe access to a highly prestigious clinical environment in the field of Avian Medicine and Surgery. This way, veterinary specialists will experience the day-to-day work in a demanding and delicate area, which will prepare them to face any challenge they may face in the future.





#### 4. Combining the Best Theory with State-of-the-Art Practice

This Hybrid Master's Degree is a new learning model that breaks with the existing pedagogical programs in the academic market, which are poorly adapted to the students' personal lives. Through this Certificate, the veterinarian will enjoy a 100% practical Syllabus that will allow him/her not only to acquire the latest theoretical contents, but also to put them into professional practice during 3 intensive weeks.

#### 5. Expanding the Boundaries of Knowledge

TECH offers the possibility of carrying out this Internship Program in centers throughout the national and international panorama. This is an opportunity for specialists to expand their frontiers and learn from the most renowned experts practicing in first class clinics.

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*You will have full practical immersion at the center of your choice”*

# 03 Objectives

The hybrid design of this program will allow students to acquire the skills they need to stay at the forefront of their profession, delving into the various methods of diagnosis and treatment for domestic, wild or captive birds. This knowledge will allow you to obtain a global vision that will help you achieve your goals. For this reason, TECH establishes a series of general and specific objectives for the greater satisfaction of the future graduates, being the following:





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*TECH helps you to achieve your goals,  
presenting you with a fully online program  
and with teaching materials at the forefront  
of the academic scene"*



### General Objective

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- The main objective of this Hybrid Master's Degree in Avian Medicine and Surgery is to offer the veterinarian an in-depth update of diagnostic and therapeutic procedures in the approach to the poultry patient. To this end, specialists will have access to a rigorously designed clinical hospital stay under the supervision of renowned professionals in a veterinary center of the highest quality and technological innovation



*Improve your surgical technique thanks to this practical TECH program and perform, together with the best in the industry, complex surgeries on birds"*





## Specific Objectives

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### Module 1. Bird Taxonomy, Anatomy and Physiology

- ◆ To substantiate the taxonomic classification according to each order
- ◆ To examine the skeletal system, anatomical memory of each location
- ◆ To identify the common breeds of chickens and hens kept as pets
- ◆ To evaluate blood composition and the circulatory system
- ◆ To develop the basis of respiratory functioning to advance the knowledge of anesthesia and emergency in the knowledge of anesthesia and emergency treatment
- ◆ To compile all current information on the anatomy and physiology of the digestive system
- ◆ To detail the forgotten areas of the sense organs and their fundamental implication in patient recovery
- ◆ To collect all the information on the lymphoid organs, especially the characteristic bursa of Fabricius and other glands of interest

### Module 2. Clinical Criteria for Avian Patients

- ◆ To propose the challenges of keeping poultry and other avian species
- ◆ To examine the difficulty of bird scouting
- ◆ To determine the requirements for keeping birds in captivity
- ◆ To analyze the most relevant clinical characteristics and their importance in physical examination to reach appropriate diagnoses and treatments
- ◆ To develop specialized knowledge on capture and adequate containment of avian patients
- ◆ To establish the main routes of drug administration
- ◆ To exhaustively analyze the nutritional requirements, types of nutrition and elaborate diets for each species kept in captivity

### **Module 3. Laboratory Tests**

- ♦ To analyze diagnostic evidence, information gathering methods, sample preparation for referral and transport purposes to anatomic pathology laboratories
- ♦ To examine hematology in birds with the different morphological changes they present
- ♦ To identify the results of biochemical analyses in birds
- ♦ To develop the latest cytological techniques
- ♦ To demonstrate the correct technique for sending samples to anatomic pathology services
- ♦ To examine the external and internal lesions that birds may present in the postmortem technique and their diagnostic interpretation
- ♦ To obtain the necessary samples from the postmortem examination for study by histopathology, microbiology and polymerase chain reaction (PCR)

### **Module 4. Diagnostic Imaging Techniques**

- ♦ To specify the sedation and anesthesia techniques necessary to perform diagnostic imaging techniques
- ♦ To study existing radiology equipment and diagnostic options in birds
- ♦ To develop management techniques for proper patient positioning, including the most commonly used projections in daily clinical practice
- ♦ To analyze the anatomical references in radiography, ultrasound and endoscopy to reach reliable diagnoses
- ♦ To justify why a specific type of ultrasound probe is used in avian patients
- ♦ To analyze the endoscopy techniques and applications in birds
- ♦ To achieve the maximum knowledge in other really important diagnostic techniques such as routine coprological analysis

### **Module 5. Pathologies Related to Handling**

- ♦ To identify symptoms to be able to detect them in time and act as soon as possible

- ♦ To examine the main pathologies derived caused by incorrect handling to avoid them and even prevent death
- ♦ To analyze the most frequent emergencies derived from incorrect handling, such as lead poisoning and capture myopathy
- ♦ To specify oral cavity disorders and their most appropriate treatments
- ♦ To completely and successfully deal with all the pathologies affecting the crop, the proventriculus and the ventriculus
- ♦ To delve deeper into all the most common pathologies affecting the distal part of the intestine
- ♦ To analyze liver disorders due to external causes, as well as the typical pathologies they present
- ♦ to develop specialized knowledge of the great avian unknown: The endocrine system, analyzing each of the endocrine glands in birds and their physiopathogenesis

### **Module 6. Avian Patient Diseases**

- ♦ To identify the cause of the disease through causal agents
- ♦ To develop specialized knowledge of the most common diseases in wild birds
- ♦ To make the best use of a list of problems, together with their differential diagnoses to properly design work plans
- ♦ to develop the most important viral diseases in wild bird pathologies, understanding that they are the most serious
- ♦ To diagnose diseases caused by bacteria, since they are mostly linked to respiratory infections, blood infections, intestinal infections or a combination of any of them
- ♦ To analyze parasitic diseases, their symptoms and treatments and treatments

### **Module 7. Anesthesia and Analgesia in Birds**

- ♦ To determine the anatomical and physiological characteristics of birds to adequately perform anesthetic procedures
- ♦ To perform the anesthetic technique of choice: inhalation anesthesia



- ♦ to generate specialized knowledge on cardiorespiratory monitoring and temperature control during and after anesthetic procedures
- ♦ To examine injectable anesthesia in birds
- ♦ To perform the most up-to-date methods for local anesthesia and analgesia
- ♦ To implement the most frequent emergency anesthetics to deal with them successfully
- ♦ To determine the anesthetic particularities of each type of bird

### **Module 8. Anesthesia and Soft Tissue Surgery**

- ♦ To develop specialized knowledge in soft tissue surgery, starting from supplies in the operating room prior to any surgery
- ♦ To determine the special surgical supplies for avian patients
- ♦ To establish the main surgical problems of the skin and its appendages
- ♦ To perform all surgical techniques on male and female reproductive systems
- ♦ To evaluate all surgeries of the digestive and respiratory systems, following comprehensive and updated protocols
- ♦ To demonstrate the need for biopsies to reach a definitive diagnosis
- ♦ to emphasize the necessary guidelines for patient recovery

### **Module 9. Pathologies and Medical Treatments**

- ♦ To compile the most important nutritional treatments, understanding dehydration as one of the key factors for each treatment recovery
- ♦ To examine all the external treatments that birds need, recognizing that these are the fundamental aspects that we must understand to proceed with the rest of pathologies and treatments
- ♦ To attain the maximum knowledge of traumatic injury treatments
- ♦ To present the routes of administration of drugs and their advantages and disadvantages

- ♦ To develop the list of antibiotics, antifungals and antiparasitics most commonly used, including dosage and clarifications
- ♦ To propose the success in nebulization treatments
- ♦ To reach peak knowledge of eye drops and ophthalmologic treatments

### **Module 10. Orthopedic and ophthalmologic surgery in birds**

- ♦ To develop specialized knowledge regarding the most frequent ocular pathologies and the most updated treatments
- ♦ To analyze the most frequent pathologies in obese birds in captivity: nails
- ♦ To address bone fracture emergencies situations and treatments
- ♦ To establish bone fixation methods in wings and shoulder girdles
- ♦ To analyze the osseous injuries in bird carpus and tarsus
- ♦ To determine how to conduct bone repairs of the femur and their surgical treatments
- ♦ To gain in-depth knowledge of postoperative care in repaired fractures

# 04 Skills

After passing the evaluations of the Hybrid Master's Degree in Avian Medicine and Surgery, veterinarians will have acquired a set of professional competencies essential to perform any procedure in this species. This way, you will be prepared to provide quality care under the umbrella of the most current postulates of the scientific community.





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*This program will help you become the best veterinarian in the country, attending to any bird that requires medical or surgical care after suffering a trauma"*



## General Skills

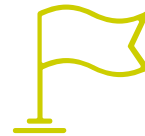
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- To acquire new and updated knowledge in ophthalmology, diagnostic imaging, pathology, anesthesia and monitoring, pediatric medicine, new laboratory techniques, soft tissue surgery and traumatology
- To know how to apply the acquired knowledge and problem-solving skills in a complex pathology in a bird
- To provide appropriate assistance to birds that are kept in captivity

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*Through this Certificate, you will be prepared to provide quality poultry patient care, with the most updated knowledge of the moment"*





## Specific Skills

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- ♦ To achieve advanced theoretical and practical knowledge applicable to daily clinical practice
- ♦ to discern the particularities of birds versus the treatment of other animals
- ♦ To determine variations between species based on avian anatomy and physiology
- ♦ To treat and handle sick birds
- ♦ To evaluate anatomical changes in birds to diagnose possible ailments
- ♦ To perform clinical management of a single patient or flock
- ♦ To perform clinical diagnosis, laboratory tests and applied treatments
- ♦ To perform radiology, anesthesiology and ophthalmology, soft tissue surgery and traumatology diagnoses and treatments in birds
- ♦ To employ complementary diagnostic techniques, many based on diagnostic imaging such as radiology, endoscopy and ultrasound



05

# Course Management

In order to offer the highest possible quality to its students, TECH has carefully selected the teachers of this Hybrid Master's Degree. It is a group of professionals who stand out for their professional career in the sector, working in high prestige clinical centers. They will be in charge of transmitting their knowledge to the student with the objective of guiding them in the medical and surgical practice in birds.





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*A highly prestigious teaching team will be in charge of providing you with the latest technological advances in the field of Avian Medicine and Surgery"*

## Management



### Dr. Trigo García, María Soledad

- ♦ Exotic Animal and Emergency Care Expert
- ♦ Veterinarian in charge of the Internal Medicine and Exotic Animal Surgery Service at the Clinical Veterinary Hospital of the Alfonso X El Sabio University in Madrid
- ♦ Director of the Exotic Animal Service at the Prado BOADILLA veterinary center
- ♦ Degree in Veterinary Medicine from Alfonso X El Sabio University
- ♦ Postgraduate degree in General Practitioner Certificate Programme in Exotic Animals, Improve International
- ♦ Postgraduate degree in Food Safety from the Complutense University of Madrid
- ♦ Coordinator and Professor of the subject of Exotic Animal Symptoms and Therapeutics at the Faculty of Veterinary Medicine, Alfonso X El Sabio University, Madrid

## Professors

### Dr. Beltrán, Javier

- ♦ Responsible for Internal Medicine for Exotic Animals at Privet Veterinary Hospital
- ♦ Degree in Veterinary Medicine from the ULE
- ♦ Master's Degree in Exotic Animal Medicine and Surgery Forvetex
- ♦ Advanced Master's Degree in Exotic Animal in Medicine and Surgery Forvetex
- ♦ Diploma in in Herpetology, UCM
- ♦ Member of AVEPA and GMCAE

### Dr. Arenal Ferreira, Alfonso

- ♦ Veterinarian specialized in exotic animals
- ♦ Veterinary Specialist in Exotic Animals in the Veterinary Hospital Privet Aluche. Madrid
- ♦ General veterinarian and head of the GMC Vet Group Clinic
- ♦ General Veterinarian in the Emergency and Hospitalization Service, Miramadrid Veterinary Hospital, Madrid
- ♦ Graduate in Veterinary Medicine from Alfonso X el Sabio University



**Mr. Sánchez Góngora, Juan**

- ♦ Small Animal and Exotic Animal Veterinarian
- ♦ Small Animal and Exotic Animal Veterinarian at Centro Veterinario Agudulce
- ♦ Exotic Animal Veterinarian at Los Sauces Veterinary Center
- ♦ Exotic Animal Veterinarian at the Veterinary Center Campos de Níjar
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Master's Degree in Exotic Animal Medicine and Surgery, Forvetex
- ♦ Master's Degree in Avian Medicine and Surgery by TECH School of Veterinary Medicine
- ♦ Speaker at the XVII Congress of Veterinary and Biomedical Sciences in relation to Bacterial Stomatitis in Chameleons *Calumma parsonii* in Captivity
- ♦ External stays at the Aquarium of the Madrid Zoo Aquarium

**Dr. Bonvehí Nadeu, Cristina**

- ♦ Veterinary Specialized in Exotic Animals
- ♦ Exotic Animal Veterinarian at Los Sauces Veterinary Center
- ♦ Veterinarian of the Exotic Animal Service at the Hospital Clínico Veterinario Bellaterra, Spain
- ♦ Author of several specialized scientific publications
- ♦ Lecturer in national and international conferences Veterinary Medicine
- ♦ Degree in Veterinary Medicine, Autonomous University of Barcelona
- ♦ Master's Degree in Exotic Animal Medicine and Surgery, Forvetex
- ♦ Member of the Working Group on Exotic Animal Medicine and Surgery (GMCAE) of the Association of Small Animal Veterinarians (AVEPA)

**Dr. Melián Melián, Ayose**

- ♦ Veterinarian in Territorial and Environmental Management and Planning (GESPLAN) SA
- ♦ Freelance Veterinarian in Exotic Companion, Zoo and Wildlife Animals
- ♦ Actions for the development of the Canary Islands wildlife health surveillance network
- ♦ Technical support in the preparation of reports for the implementation of actions aimed at minimizing unnatural mortality of wildlife in the Canary Islands
- ♦ Veterinarian and curator at Palmitos Park
- ♦ Degree in Medicine from the Autonomous University of Gran Canaria (Spain)
- ♦ Postgraduate Certificate of Advanced Studies with distinction in the Doctoral Program in Animal Health and Pathology of the University of the University of Las Palmas de Gran Canaria (ULPGC)
- ♦ Postgraduate Degree in Exotic Animal Clinics, GPcert (ExAP), European School of Veterinary Postgraduate Studies

**Dr. Manzanares Ferrer, Estefanía**

- ♦ Veterinarian at Los Sauces Veterinary Center
- ♦ Graduate in Veterinary Medicine from the University of Santiago de Compostela
- ♦ Master's Degree in Exotic Animal Medicine and Surgery, Servet Oriental Training
- ♦ Higher technician in the management and organization of agricultural enterprises, School of Agricultural Training
- ♦ Course in Veterinary Medicine and Wildlife Conservation
- ♦ Technician in Intensive Agricultural Operations by the School of Agricultural Foremen. Valencia, Spain

**Dr. García Hernando, Javier**

- ♦ Veterinarian specialized in exotic animals
- ♦ Veterinary Specialist in Exotic Animals at the Wild Animal Recovery Center (CRAS)
- ♦ Veterinary Specialist in Exotic Animals at El Bosque Hospital
- ♦ Veterinarian in Internal Medicine, Hospitalization and Surgery of Exotic Animals at Clínica Mediterránea
- ♦ Head of Veterinary Nursing at the Group for the Rehabilitation of Native Fauna and their Habitat (GREFA)
- ♦ Veterinarian in the Department of Necropsies at the Group for the Rehabilitation of Native Fauna and their Habitat (GREFA)
- ♦ Degree in Veterinary Medicine from Alfonso X El Sabio University
- ♦ Diploma in Physiotherapy from the Complutense University of Madrid
- ♦ Training in Ultrasonography and Echocardiography in Exotic Animals by Scil Veterinary Education

**Ms. Jaime Aquino, Sara**

- ♦ Veterinary Assistance at Prado de Boadilla
- ♦ Collaborator in the Service of Medicine and Surgery of Exotic Animals at the Alfonso X el Sabio Veterinary University in Nova Clinica Veterinaria. Boadilla del Monte, Spain
- ♦ Veterinary Degree from Alfonso X El Sabio University

**Dr. García Rodríguez, Jennifer**

- ♦ Intern Veterinarian at the Hospital Clínico Veterinario Complutense in the Cardiology, Anesthesiology and Ruminant Medicine Departments
- ♦ Internships in the ONCE Guide Dog Foundation, and in zoos such as Selwo Aventura and Selwo Marina
- ♦ Postgraduate Certificate in Clinical Cardiology in Small Animals Complutense University of Madrid
- ♦ Degree in Veterinary Medicine from the Complutense University Madrid

**Dr. Esteve, David**

- ♦ Clinical Veterinarian at Exotic Veterinary Clinic
- ♦ Degree in Veterinary Medicine from the Complutense University of Madrid
- ♦ Postgraduate Certificate in Endoscopy by the Minimally Invasive Surgery Center Jesus Usón (CCMIJU)
- ♦ Member of the Madrid Association of Veterinarians of Companion Animals (AMVAC)

**Dr. Corrales Mantecón, Diana**

- ♦ Veterinarian at Exotic Veterinary Clinic
- ♦ Degree in Veterinary Medicine, Complutense University Madrid
- ♦ Postgraduate Certificate in Abdominal Ultrasound in Small Animals

**Mr. Gallego Agúndez, Miguel**

- ◆ Exotic animal veterinarian at the Madrid Exoticos Veterinary Center
- ◆ Caretaker at the Madrid Zoo. Mysterious Nature
- ◆ Member of the AEMV (Association of Exotic Mammal Veterinarians)
- ◆ Member of the ARAV (Association of Reptile and Amphibian Veterinarians)
- ◆ Member of GMCAE (Group of Medicine and Surgery of Exotic Animals) and AVEPA (Association of Spanish Veterinarians Specialists in Small Animals)
- ◆ Degree in Veterinary Medicine from the Complutense University of Madrid

**Dr. Fernández Gallardo, Nuhacet**

- ◆ Director of the Veterinary Services and Laboratory of Loro Parque and Loro Parque Fundación
- ◆ Author of numerous publications specializing in exotic animals
- ◆ Member of the Working Group on Exotic Animal Medicine and Surgery (GMCAE) of the Association of Small Animal Veterinarians (AVEPA)

**Dr. Moraleda Berral, Pablo**

- ◆ Veterinarian at Clínica Exóticos Fuenlabrada
- ◆ Exotic Animal Veterinarian 24 hours
- ◆ Graduate in Veterinary Medicine from the University of Santiago de Compostela
- ◆ Phd. in Veterinary from the Complutense University of Madrid
- ◆ Certificate in Breeding and Clinical Management of Exotic Wild Animals from the Complutense University of Madrid
- ◆ Degree in Nursing from Rey Juan Carlos University
- ◆ Degree Training in Exotic and Wild Animal Clinics, attending congresses, stays in specialized centers such as GREFA, CRAS, Bioparc Fuengirola, Faunia, etc

**Dr. Fernández Boto, Rubén**

- ◆ Clinical Veterinarian at Exotic Veterinary Clinic
- ◆ Degree in Veterinary Medicine from the Complutense University of Madrid (UCM)
- ◆ Postgraduate Certificate in Abdominal Ultrasound in Small Animals
- ◆ Updating Course in Medicine and Surgery of Exotic Animals
- ◆ Member of the Association of Spanish Veterinary Specialists in Small Animals (AVEPA)

**Dr. González Fernández-Cid, José Vicente**

- ◆ Owner of the Exotic Veterinary Clinic in Fuenlabrada
- ◆ Degree in Veterinary Medicine from the Complutense University of Madrid
- ◆ Speaker at the I AVEXYS Conference on exotic and wild animal medicine at Faunia
- ◆ Speaker at the I and II Conference on Wildlife and Exotic Animal Medicine, Faculty of Veterinary Medicine of Madrid
- ◆ Lecturer on the Master's Degree in Exotic Animals organized by AEVA
- ◆ Professor on the Advanced Master's Degree in Exotic Animals organized by Forvetex



*You will combine theory and professional practice through a demanding and rewarding educational approach"*

# 06

## Educational Plan

The content of this program is designed to meet the needs of veterinarians who wish to broaden their careers by specializing in avian medicine. In this sense, TECH provides the specialist with a Syllabus that covers issues such as the step-by-step procedure to perform a complete medical examination of a bird, prepare it for a surgical procedure or perform a cardiac study to identify coronary diseases. From module 1, the student will expand his knowledge, which is supported by an expert and high-level teaching team.





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*You will have all the content from any device with an Internet connection. A unique opportunity to study at your own pace”*

## Module 1. Bird Taxonomy, Anatomy and Physiology

- 1.1. Taxonomic Classification of Psittaciformes
  - 1.1.1. Taxonomic Classification
  - 1.1.2. Worldwide Distribution
  - 1.1.3. Anatomic Differences
- 1.2. Taxonomic classification of passerines: wild birds
  - 1.2.1. Taxonomic Classification
  - 1.2.2. Worldwide Distribution
  - 1.2.3. Anatomic Differences
- 1.3. Taxonomic Classification of Falconiformes and Other Orders
  - 1.3.1. Taxonomic Classification
  - 1.3.2. Worldwide Distribution
  - 1.3.3. Anatomic Differences
- 1.4. The Skeletal System
  - 1.4.1. Bone Ossification
  - 1.4.2. The Skull
    - 1.4.2.1. The Premaxillary Area
    - 1.4.2.2. The Jaw
  - 1.4.3. The Axillary Skeleton: The Epiaxial Hypoaxial Muscles
    - 1.4.3.1. Cervical Vertebrae
    - 1.4.3.2. Thoracic Vertebrae
    - 1.4.3.3. The Symsacrum: Special Anatomy
    - 1.4.3.4. Caudal Vertebrae
    - 1.4.3.5. Sternum
    - 1.4.3.6. Wings: Complete Anatomy and Flight Muscles
  - 1.4.4. Pelvic Limbs
    - 1.4.4.1. Femur and Tibiotarsus
    - 1.4.4.2. Phalanges: Finger Placement in Different Species
- 1.5. The Circulatory System
  - 1.5.1. Arterial Anatomy
  - 1.5.2. Venous Return
  - 1.5.3. The Renal Carrier System
  - 1.5.4. Blood Composition: Nucleated Red Blood Cells
- 1.6. The Respiratory System
  - 1.6.1. The Nasal Cavity
  - 1.6.2. Larynx and Trachea
  - 1.6.3. The Syrinx: The Phonatory Organ in Birds
  - 1.6.4. The Lungs
    - 1.6.4.1. Gas Exchange
  - 1.6.5. Air Sacs
- 1.7. The Digestive System
  - 1.7.1. Beaks: Substitute for Lips and Teeth in Mammals
    - 1.7.1.1. Wax Localization
    - 1.7.1.2. Beak Functions
  - 1.7.2. The Oropharynx
    - 1.7.2.1. Solid Food Intake
    - 1.7.2.2. Liquid Foods
  - 1.7.3. The Esophagus
  - 1.7.4. The Stomach
    - 1.7.4.1. Proventricles
    - 1.7.4.2. Ventricles
  - 1.7.5. The Liver
  - 1.7.6. The Pancreas
  - 1.7.7. The Intestinal Package
- 1.8. The Urinary and Reproductive Systems
  - 1.8.1. The Kidneys
  - 1.8.2. The Ureters
  - 1.8.3. Particularities in the Urinary System: The Salt Gland
  - 1.8.4. Bird Sexing
  - 1.8.5. Male Reproductive System
  - 1.8.6. Female Reproductive System
- 1.9. The Nervous System
  - 1.9.1. Sense Organs
  - 1.9.2. Sight: Avian Eye Anatomy
  - 1.9.3. Hearing
  - 1.9.4. Smell and Taste
  - 1.9.5. Touch: The Tegument

- 1.10. Anatomical and Physiological Particularities in Birds
  - 1.10.1. The Thymus Gland
  - 1.10.2. The Fabricious Bursa
  - 1.10.3. The Spleen
  - 1.10.4. The Pituitary Gland Pituitary Gland
  - 1.10.5. Thyroid and Parathyroid Gland
  - 1.10.6. Other Particularities

## Module 2. Clinical Criteria for Avian Patients

- 2.1. Bird Maintenance
    - 2.1.1. Special Furniture: Types of Cages
    - 2.1.2. Stress
    - 2.1.3. Physical exercise
    - 2.1.4. Bird Maintenance in Captivity
    - 2.1.5. Ultraviolet Light
    - 2.1.6. Feathers Coloring
    - 2.1.7. Water Availability
    - 2.1.8. Medication Added to the Water
    - 2.1.9. Water Baths and Sprays
  - 2.2. Capture: Proper Physical Examination
    - 2.2.1. Physical Capture
      - 2.2.1.1. Capture Techniques
      - 2.2.1.2. Related Injuries
    - 2.2.2. Chemical Capture
      - 2.2.2.1. Capture Techniques
      - 2.2.2.2. Drugs Used
    - 2.2.3. Bird Containment
  - 2.3. Clinical Management and Preventive Medicine
    - 2.3.1. Complete and Orderly Physical Examination
    - 2.3.2. Vaccination
    - 2.3.3. Deworming
    - 2.3.4. Sterilization
  - 2.4. Sampling and Drug Administration
    - 2.4.1. Intravenous Route
    - 2.4.2. Intraosseous Route
    - 2.4.3. Oral Posology
    - 2.4.4. Intramuscular Route
    - 2.4.5. Subcutaneous Route
    - 2.4.6. Topical Route
    - 2.4.7. Other Entry Routes in Avian Patients
  - 2.5. Poultry as Patients
    - 2.5.1. The Challenges of Keeping Hens as Pets
    - 2.5.2. Hens as Patients
    - 2.5.3. The Most Common Chicken and Hen Races
  - 2.6. Nutritional Requirements Feeding
    - 2.6.1. Feeding Guidelines
    - 2.6.2. Nutritional Composition Feed
      - 2.6.2.1. Carbohydrates
      - 2.6.2.2. Proteins
      - 2.6.2.3. Fats
      - 2.6.2.4. Vitamins
        - 2.6.2.4.1. Liposoluble Vitamins
        - 2.6.2.4.2. Hydrosoluble Vitamins
        - 2.6.2.4.3. Antivitamins
      - 2.6.2.5. Minerals
- 2.7. Type of Nutrition in Psittacine Birds
  - 2.7.1. Seed Mixture
  - 2.7.2. Feed:
    - 2.7.2.1. Differences Between Granulated and Extruded
  - 2.7.3. Fruits and Vegetables
  - 2.7.4. Germinated Seeds
  - 2.7.5. Cooked Legumes
  - 2.7.6. Breeding Paste
    - 2.7.6.1. Desired Undesired Effects

- 2.7.7. Other Products
- 2.7.8. Calculating Energy Needs
  - 2.7.8.1. Basal Metabolic Rate (BMR)
  - 2.7.8.2. Maintenance Energy Requirements (MER)
- 2.8. Generalized Diet for the Most Common Psittacines in Clinics
  - 2.8.1. Australian Parakeet (*Melopsittacus Undulattus*)
  - 2.8.2. Nymph, Cocotilla or Carolina (*Nymphicus Hollandicus*)
  - 2.8.3. Lovebirds (*Agapornis Spp*)
  - 2.8.4. African Grey Parrot, Yaco (*Psithacus Erithacus*)
- 2.9. Generalized Diet for the Least Common Psittacines in Clinics
  - 2.9.1. Amazon Parrot (*Amazona Sp*)
  - 2.9.2. Macaw (*Ara Sp*)
  - 2.9.3. Cockatoo (*Cacatua Sp*)
  - 2.9.4. Eclectus Parrot (*Eclectus Roratus*)
  - 2.9.5. Loris
  - 2.9.6. Psittacine Diet Conversion
- 2.10. Other Dietary Aspects
  - 2.10.1. Feeding in Passerine Birds
  - 2.10.2. Diet in Other Birds
  - 2.10.3. Diet in Hospitalized Patients

### Module 3. Laboratory Tests

- 3.1. Clinical and Diagnostic Techniques: General Principles Diagnostic Evidence
  - 3.1.1. Accurate Diagnoses
  - 3.1.2. Considerations for Sample Preparation
  - 3.1.3. Sample Transport and Processing
- 3.2. Hematology: An Essential Tool
  - 3.2.1. Cell Morphology
    - 3.2.1.1. The Red Series in Blood
    - 3.2.1.2. The White Series in Blood
  - 3.2.2. Morphological Changes in Blood Cells
    - 3.2.2.1. Degranulation
    - 3.2.2.2. Immaturity
    - 3.2.2.3. Toxicity
    - 3.2.2.4. Reactivity
  - 3.2.3. Factors to Consider in Hematology
  - 3.2.4. Hematology Protocols in Birds
    - 3.2.4.1. Erythrocyte Count
    - 3.2.4.2. Hemoglobin Estimation
    - 3.2.4.3. Hematocrit Estimation
    - 3.2.4.4. Leukocyte Count
    - 3.2.4.5. Thrombocyte Count
    - 3.2.4.6. Fibrinogen Estimation
- 3.3. Biochemical Analysis in Birds
  - 3.3.1. Biochemical Reference Ranges
  - 3.3.2. Most Used Profiles
    - 3.3.2.1. Total protein: increase and decrease
    - 3.3.2.2. Glucose: Increase and Decrease
    - 3.3.2.3. Uric Acid, Urea and Creatinine
    - 3.3.2.4. Lactate Dehydrogenase (LDH)
    - 3.3.2.5. Serum Glutamic-Oxaloacetic Transaminase (SGOT)
    - 3.3.2.6. Bile Acids
    - 3.3.2.7. Creatine-Phosphokinase (CPK): Muscle or Heart Failure
    - 3.3.2.8. Calcium: hypercalcemia and hypocalcemia
    - 3.3.2.9. Phosphorus
    - 3.3.2.10. Cholesterol
  - 3.3.3. Age-Related Biochemical Changes
    - 3.3.3.1. Proteinogram as a Diagnostic Tool
    - 3.3.3.2. The Albumin
    - 3.3.3.3. Alpha-1: Acute Disease Phase Indicator
    - 3.3.3.4. Alpha-2: Acute Disease Phase Proteins
    - 3.3.3.5. The Beta Fraction
    - 3.3.3.6. The Gamma Fraction



- 3.4. Urinalysis: Suspected Nephropathy
  - 3.4.1. Anatomic-physiological Recap of the Urinary System
  - 3.4.2. Urine Collection Techniques in Birds
  - 3.4.3. Urinalysis
  - 3.4.4. Urinalysis Parameters
- 3.5. Fundamental Cytological Techniques: Cell Study
  - 3.5.1. Skin and Plumage Scrapings
    - 3.5.1.1. How to Perform Superficial Scrapings
    - 3.5.1.2. How to Perform Deep Scrapings
  - 3.5.2. Biopsy Collection
    - 3.5.2.1. Different Application Techniques
    - 3.5.2.2. Skin Biopsies
    - 3.5.2.3. Skeletal Injury Biopsies
    - 3.5.2.4. Small Biopsies Organs and Masses
    - 3.5.2.5. Chronic Injury Biopsies
    - 3.5.2.6. Biopsies of Small Lesions and Masses
  - 3.5.3. Cytology: Functions
    - 3.5.3.1. Sample Collection and Processing
    - 3.5.3.2. Key Points Cytologic Interpretations
- 3.6. Advanced Cytologic Techniques
  - 3.6.1. Aspiration
    - 3.6.1.1. Complementary Tests
    - 3.6.1.2. Aspiration Methods
  - 3.6.2. Microbiological Swabs Collection
    - 3.6.2.1. Upper Respiratory Routes
    - 3.6.2.2. Lower Gastrointestinal Tract
  - 3.6.3. Washing Technique
    - 3.6.3.1. Crop Washing
    - 3.6.3.2. Air Sac Washing
- 3.7. Preparing for a Necropsy
  - 3.7.1. Fundamental Aspects
    - 3.7.1.1. Necropsy
    - 3.7.1.2. The Importance of Anamneses and Patient Medical Histories
  - 3.7.2. Necessary Equipment: Instruments
  - 3.7.3. Selecting Tissues in Necropsy Cases
  - 3.7.4. Samples Preservation for Diagnostic Studies
  - 3.7.5. Records: Injuries and Findings
- 3.8. External Patient Evaluation in *Postmortem* Examinations
  - 3.8.1. Skin and Appendages: Evidence of Trauma
  - 3.8.2. The Bone System
  - 3.8.3. The Sensory System
  - 3.8.4. The Muscular System. Initial Examination
- 3.9. Internal Patient Evaluation in *Postmortem* Examinations
  - 3.9.1. The Cardiorespiratory and Cardiovascular Systems
  - 3.9.2. The Lymphoreticular System
  - 3.9.3. The Liver
  - 3.9.4. The Digestive system
  - 3.9.5. Urinary System Assessment
  - 3.9.6. Reproductive System Analysis
    - 3.9.6.1. Necropsy in Females
    - 3.9.6.2. Necropsy in Males
  - 3.9.7. Necropsy Evaluation of the Nervous System
  - 3.9.8. Examination Conclusion
- 3.10. Diagnostic Procedures for the Necropsy Technique
  - 3.10.1. Histopathological Examination of Collected Samples
    - 3.10.1.1. Sample Collection
  - 3.10.2. Microbiological Analysis
    - 3.10.2.1. Swabbing Technique
  - 3.10.3. Polymerase Chain Reaction (PCR)
    - 3.10.3.1. Infectious Laryngotracheitis
    - 3.10.3.2. Infectious Bronchitis
    - 3.10.3.3. Poxvirus
    - 3.10.3.4. *Mycoplasma Gallisepticum*, *Mycoplasma Synoviae*
    - 3.10.3.5. Other diseases

## Module 4. Diagnostic Imaging Techniques

- 4.1. When to Anesthetize Birds for Diagnostic Techniques?
  - 4.1.1. Volatile Anesthesia
  - 4.1.2. Injectable Anesthesia
  - 4.1.3. Anesthesia in Special Conditions
- 4.2. Necessary Radiology Equipment
  - 4.2.1. General Considerations
  - 4.2.2. The X-Ray Unit
  - 4.2.3. Screens, Chassis and Foils
- 4.3. The Patient: Restraining and Positioning
  - 4.3.1. Laterolateral Projection
  - 4.3.2. Ventrodorsal Projection
  - 4.3.3. Craniocaudal Projection
  - 4.3.4. Wing Projection
  - 4.3.5. Caudoplantar Projection
- 4.4. Types of X-Rays: Contrast Radiography Studies
  - 4.4.1. Conventional Radiography
  - 4.4.2. Gastrointestinal Contrast Studies
  - 4.4.3. Respiratory Contrast Studies
  - 4.4.4. Urography
  - 4.4.5. Myelography
- 4.5. Radiologic Interpretations
  - 4.5.1. Anatomy Applied to Radiography
  - 4.5.2. Abnormal Radiographic Findings the Respiratory System
  - 4.5.3. Abnormal Radiographic Findings the Digestive System
  - 4.5.4. Abnormal Radiographic Findings the Skeletal System
- 4.6. Fundamental Aspects of Avian Ultrasound
  - 4.6.1. The Complete Ultrasound Diagnosis
    - 4.6.1.1. Lineal Convex, Microconvex and Phased Array Probes
    - 4.6.1.2. Ultrasound
  - 4.6.2. Specific Diagnostic Objectives in Birds and Limitations
  - 4.6.3. Necessary Technical Equipment for Ultrasound





- 4.7. Advanced Criteria for Avian Ultrasound
  - 4.7.1. Patient Preparation for Ultrasound
  - 4.7.2. Applied Anatomical Recap and Proper Patient Positioning
  - 4.7.3. Ultrasound Interpretations
- 4.8. Endoscopy
  - 4.8.1. Endoscopy
    - 4.8.1.1. Necessary Equipment for Endoscopy
    - 4.8.1.2. Rigid Endoscope
  - 4.8.2. Patient Preparation and Positioning for Endoscopy
  - 4.8.3. Clinical and Surgical Application of Avian Ultrasound
- 4.9. Avian Cardiology: Basic Fundamentals
  - 4.9.1. Cardiac System Anatomy in Birds
  - 4.9.2. Clinical Examination in Birds
  - 4.9.3. Avian Electrocardiography
- 4.10. Veterinary Clinical Analysis in Birds
  - 4.10.1. Serotyping Major Diseases
    - 4.10.1.1. Salmonella Spp
  - 4.10.2. Coprological Analysis
    - 4.10.2.1. Parasitology
    - 4.10.2.2. Bacteriology
  - 4.10.3. Serology of the Most Prominent Diseases in Avian Medicine
    - 4.10.3.1. Infectious Laryngotracheitis
    - 4.10.3.2. Infectious Bronchitis
    - 4.10.3.3. Newcastle Disease
    - 4.10.3.4. *Mycoplasma Spp*
    - 4.10.3.5. Influenza Aviar

## Module 5. Pathologies Related to Handling

- 5.1. Most Common Pathologies
  - 5.1.1. Paresis by Capture: Cause of Mortality in Birds
    - 5.1.1.1. Affected Species and Characteristic Symptomatology
    - 5.1.1.2. Physiopathogenesis
    - 5.1.1.3. Differential Diagnosis
    - 5.1.1.4. Treatment and Prevention
  - 5.1.2. Lead Poisoning
    - 5.1.2.1. Diagnosis
    - 5.1.2.2. Treatment: Primary, Chelating and Supportive
- 5.2. Other Intoxications
  - 5.2.1. Zinc Poisoning
  - 5.2.2. Diagnosis
    - 5.2.2.1. Treatment
    - 5.2.2.2. Primary Treatment
    - 5.2.2.3. Chelating Treatment
    - 5.2.2.4. Supportive Treatment
  - 5.2.3. Ammonium Chloride Poisoning in Falconiformes
    - 5.2.3.1. Clinical Signs
    - 5.2.3.2. Pathological Changes
    - 5.2.3.3. Physiological and Pathological Considerations
  - 5.2.4. Copper Poisoning
    - 5.2.4.1. Diagnosis
    - 5.2.4.2. Treatment
      - 5.2.4.2.1. Chelating Treatment
      - 5.2.4.2.2. Supportive Treatment
- 5.3. Pathologies Derived from Poor Nutrition
  - 5.3.1. Metabolic Osteopathies: Bone Lesions
  - 5.3.2. Most Common Injuries Causes and Types
  - 5.3.3. Symptomatology and Susceptible Species
  - 5.3.4. Diagnoses and Treatments
  - 5.3.5. Long Bone Deformities: Twisting and Flexing
    - 5.3.5.1. Describing Pathology Type
    - 5.3.5.2. Clinical Signs in Birds
    - 5.3.5.3. Treatment and Prevention
  - 5.3.6. Bone Alterations in More Distal Bones: Deformation
    - 5.3.6.1. Slipped Tendon
    - 5.3.6.2. Angel Wing
    - 5.3.6.3. Curled Fingers
  - 5.3.7. Starvation-Induced Cachexia
    - 5.3.7.1. Definition and Etiology. Symptoms
    - 5.3.7.2. Necropsy Findings
    - 5.3.7.3. Treatment and Prevention
  - 5.3.8. Behavioral Osteodystrophy
- 5.4. Oral Cavity Disorders
  - 5.4.1. Beak Pathologies
  - 5.4.2. The Oral Cavity and Oropharynx: The Tongue and Salivary Glands
    - 5.4.2.1. Hypovitaminosis A
    - 5.4.2.2. Trauma
    - 5.4.2.3. Bleeding
    - 5.4.2.4. Neoplasty
    - 5.4.2.5. Halitosis
  - 5.4.3. Infectious Diseases in Birds
    - 5.4.3.1. Mucosal Necrosis
    - 5.4.3.2. Fowl Pox
    - 5.4.3.3. Anatidae Herpesvirus (Duck Viral Enteritis or Duck Plague)
    - 5.4.3.4. Candidiasis (*Candida Albicans* Infection)
- 5.5. Esophagus and Gullet Pathologies
  - 5.5.1. Esophagitis, Ingluvitis: Esophageal and/or Ingluvial Impaction
  - 5.5.2. Esophagus and/or Crop Infestation by *Capillaria Contorta* and Other *Capillaria* spp
  - 5.5.3. Candidiasis and Trichomoniasis
    - 5.5.3.1. Esophageal Ingluvial
  - 5.5.4. Ingluvial Pathologies

- 5.5.4.1. Calculations and Stasis
- 5.5.5. Crop Pathologies
  - 5.5.5.1. "Sour Crop Syndrome"
  - 5.5.5.2. Hanging Crop
  - 5.5.5.3. Content Regurgitation
- 5.5.6. Common Neoplasms
- 5.6. Proventriculus Pathologies
  - 5.6.1. Proventricular Dilatation Disease in Psittaciformes
  - 5.6.2. Proventricular and Gizzard Impaction
  - 5.6.3. Candidiasis (*Candida Albicans* Infection)
  - 5.6.4. Other Pathologies
    - 5.6.4.1. Atony
    - 5.6.4.2. Hypertrophy of Unknown Etiology
    - 5.6.4.3. Proventriculitis
    - 5.6.4.4. Presence of Foreign Bodies
- 5.7. Gizzard or Ventricle Pathologies: Glandular Stomach
  - 5.7.1. Proventricular Dilatation Disease
  - 5.7.2. Gizzard Ulcerations
  - 5.7.3. Stomach Nematode Infestation
  - 5.7.4. Neoplasms
  - 5.7.5. Other Pathologies
    - 5.7.5.1. Muscular Atrophy and Traumatic Ventriculitis
- 5.8. Intestinal Pathologies
  - 5.8.1. Malabsorption Syndrome
  - 5.8.2. Non-Specific Enteropathies
    - 5.8.2.1. Diarrhea in Birds
  - 5.8.3. Lower Intestinal Tract Alterations
    - 5.8.3.1. Colorectal Impactation
    - 5.8.3.2. Rectal Prolapse
      - 5.8.3.2.1. Intestinal Overexertion
  - 5.8.4. Most Common Neoplasms
  - 5.8.5. The Cloaca
    - 5.8.5.1. Chloacitis: "Gonorrheal Discharge"
    - 5.8.5.2. Prolapses.

- 5.8.5.3. Most Common Neoplasms
- 5.9. Pathologies of the Liver
  - 5.9.1. Lipidosis
    - 5.9.1.1. Fatty Infiltration or Fatty Degeneration
  - 5.9.2. Hemochromatosis
    - 5.9.2.1. Iron Storage in Avian Organisms
  - 5.9.3. Visceral Gout
  - 5.9.4. Amilodosis
  - 5.9.5. Most Common Neoplasms
  - 5.9.6. Other Pathologies
    - 5.9.6.1. Toxic Hepatitis and Diabetes *Mellitus*
- 5.10. Endocrine Disorders
  - 5.10.1. Thyroid Glands
  - 5.10.2. Parathyroid Glands
  - 5.10.3. Adrenal Glands
  - 5.10.4. Ultimobranchial glands
    - 5.10.4.1. Thoracic Localization
  - 5.10.5. Pituitary. Avian Brains
  - 5.10.6. Pancreas. Endocrine and Exocrine Function
    - 5.10.6.1. Pancreatitis
    - 5.10.6.2. Acute Pancreatic Necrosis
    - 5.10.6.3. Most Common Neoplasms

## Module 6. Avian Patient Diseases

- 6.1. Viral Diseases
  - 6.1.1. Viral Diseases
  - 6.1.2. Newcastle Disease (*Paramyxoviridae* Family)
    - 6.1.2.1. Etiology
    - 6.1.2.2. Serotype Classification
    - 6.1.2.3. Clinical and Physiopathogenesis Characteristics
    - 6.1.2.4. Diagnostic and Treatment Techniques
  - 6.1.3. Fowl Pox (*Poxviridae* Family Virus)
    - 6.1.3.1. Serotypes Detected in Birds
    - 6.1.3.2. Clinical Signs in Patients

- 6.1.3.3. Diagnosis and Treatment
- 6.2. Other Viral Infections of Clinical Interest
  - 6.2.1. Influenza Virus in Birds (Orthomyxoviridae Family)
    - 6.2.1.1. Disease Epizootiology
    - 6.2.1.2. Clinical Signs in Birds
    - 6.2.1.3. Diagnosis
    - 6.2.1.4. Prevention and Control
  - 6.2.2. Herpesvirus Infections
    - 6.2.2.1. Etiology
    - 6.2.2.2. Marek's Disease
      - 6.2.2.2.1. Polyneuritis Paralysis
    - 6.2.2.3. Duck Plague
      - 6.2.2.3.1. Duck Viral Enteritis
    - 6.2.2.4. Avian Infectious Laryngotracheitis
    - 6.2.2.5. Herpes
  - 6.2.3. Other Viral Diseases
- 6.3. Most Common Bacterial Diseases in Clinics
  - 6.3.1. Pasteurellosis: Cholera
    - 6.3.1.1. History: Etiological Agent and Disease Transmission
    - 6.3.1.2. Susceptible Species and Symptoms
    - 6.3.1.3. Diagnosis
    - 6.3.1.4. Treatment Immunity
  - 6.3.2. Chlamydiosis: ornithosis-psittacosis
    - 6.3.2.1. Causes and Most Susceptible Species
    - 6.3.2.2. Effective Diagnosis
    - 6.3.2.3. Treatment and Prevention
  - 6.3.3. Salmonellosis
    - 6.3.3.1. Definition
    - 6.3.3.2. Etiological Agent
    - 6.3.3.3. Distribution
    - 6.3.3.4. Susceptible Species
    - 6.3.3.5. Transmission
    - 6.3.3.6. Diagnosis
- 6.3.3.7. Treatment and Prevention
- 6.4. Less Common Bacterial Diseases in Clinics
  - 6.4.1. Avian Tuberculosis: *Mycobacterium Spp*
    - 6.4.1.1. Causes and Most Susceptible Species
    - 6.4.1.2. Effective Diagnosis
    - 6.4.1.3. Treatment and Prevention
  - 6.4.2. Pseudotuberculosis (Yersiniosis)
    - 6.4.2.1. Causes and Most Susceptible Species
    - 6.4.2.2. Effective Diagnosis
    - 6.4.2.3. Treatment and Prevention
  - 6.4.3. *Escherichia Coli* Infections
    - 6.4.3.1. Definition
    - 6.4.3.2. Etiological Agent
    - 6.4.3.3. Distribution
    - 6.4.3.4. Susceptible Species
    - 6.4.3.5. Transmission
    - 6.4.3.6. Diagnosis
    - 6.4.3.7. Treatment and Prevention
- 6.5. Other Bacterial Diseases in Avian Patients
  - 6.5.1. Botulism
    - 6.5.1.1. History and Spread
    - 6.5.1.2. Transmission
      - 6.5.1.2.1. *Clostridium Botulinum* Bacilli
    - 6.5.1.3. Clinical Symptoms and Lesions
    - 6.5.1.4. Diagnosis and Treatment
  - 6.5.2. The Red Disease: *Erysipelothrix Rhusiopathiae*
    - 6.5.2.1. Etiology and Causative Agent Transmission: Wild Birds
    - 6.5.2.2. Effective Detection
      - 6.5.2.2.1. Symptoms and Lesions

- 6.5.2.3. Diagnosis and Treatment
- 6.5.3. Listeriosis: *listeria monocytogenes*
  - 6.5.3.1. History: Etiological Agent and Disease Transmission
  - 6.5.3.2. Symptoms Detected in Birds
  - 6.5.3.3. Effective Diagnosis and Treatment
- 6.6. Fungal Diseases
  - 6.6.1. Aspergillosis
    - 6.6.1.1. Relevant Disease Characteristics
    - 6.6.1.2. Detected Clinical Signs in Patients
    - 6.6.1.3. Effective Diagnostic Techniques
    - 6.6.1.4. Treatment, Prevention and Prophylaxis
  - 6.6.2. Candidiasis
    - 6.6.2.1. *Candida Albicans* Clinical Signs in Avian patients
    - 6.6.2.2. Laboratory Diagnostic Techniques
    - 6.6.2.3. Treatment and Pathology Control
  - 6.6.3. Dermatophytosis: Tinea
    - 6.6.3.1. Predisposing Factors and Types of Birds Affected
    - 6.6.3.2. Most Common Clinical Signs
    - 6.6.3.3. Diagnosis and Control
- 6.7. Ectoparasites
  - 6.7.1. Diptera
    - 6.7.1.1. Flies and Mosquitos
  - 6.7.2. Fleas (*Siphonaptera*)
  - 6.7.3. Lice (*Phthiraptera-Mallophaga*)
  - 6.7.4. Bedbugs (*Hemiptera-Cimicidae*)
    - 6.7.4.1. Hematophagous Ectoparasites
  - 6.7.5. Mites (*Acari*)
    - 6.7.5.1. Most Common Ectoparasites
  - 6.7.6. Ticks (Ixodidae)
    - 6.7.6.1. Macroscopic Parasites
  - 6.7.7. Beetles (Coleoptera)
    - 6.7.7.1. Disease Vectors
- 6.8. Performing Coprological Analysis in Birds
  - 6.8.1. Most Prominent Coprological Techniques
  - 6.8.2. Trematodes

- 6.8.2.1. Staves
- 6.8.3. Cestodes
  - 6.8.3.1. Tapeworms
- 6.8.4. Nematodes
  - 6.8.4.1. Special Nematodes Locations and Pathologies
- 6.9. Protozoa: Single-Cell Microorganisms
  - 6.9.1. Coccidiosis in Anseriformes, Galliformes and Passeriformes
    - 6.9.1.1. *Eimeria* and *Isospora* Species
    - 6.9.1.2. *Caryospora* Species
    - 6.9.1.3. Other Coccidial Species in Birds
  - 6.9.2. Trichomoniasis: *Trichomonas Spp*
  - 6.9.3. Other Protozoa
    - 6.9.3.1. Giardia, Hexamita and Histomonas
- 6.10. Hemoparasites
  - 6.10.1. Microfilariae
  - 6.10.2. *Plasmodium* Species
  - 6.10.3. *Haemoproteus* Species
  - 6.10.4. *Leucocytozoon* Species
  - 6.10.5. Trypanosomiasis
  - 6.10.6. *Hepatozoon* Species
  - 6.10.7. *Babesia* Species
    - 6.10.7.1. Avian Piroplasmas
  - 6.10.8. Other Species

## Module 7. Anesthesia and Analgesia in Birds

- 7.1. Anatomical and Physiological Characteristics in Avian Anesthesia
  - 7.1.1. Anatomical Characteristics: Air Sacs
  - 7.1.2. Physiological Considerations
    - 7.1.2.1. Inspiration and Expiration
    - 7.1.2.2. Ventilation Triggers
    - 7.1.2.3. Hypoglycemia
  - 7.1.3. Pharmacokinetic and Pharmacodynamic Characteristics Avian Patients
- 7.2. Administering Distant Anesthesia
  - 7.2.1. Handler Safety
  - 7.2.2. Cooperating Birds: Adequate Management

- 7.2.2.1. Administering Anesthesia Routes and Techniques
- 7.2.3. Uncooperative Birds: Wild Birds
  - 7.2.3.1. Administering Anesthesia Techniques
  - 7.2.3.2. Darts
  - 7.2.3.3. Other Mechanisms
- 7.2.4. Stress Prior to Administering Anesthesia
  - 7.2.4.1. Activating the Sympathetic Nervous System
  - 7.2.4.2. Other Hormonal Changes
  - 7.2.4.3. How to Measure Stress
  - 7.2.4.4. Physiological Effects Caused by Capture
- 7.3. Anesthesia Inhalation in Birds: The Anesthesia of Choice
  - 7.3.1. Anesthesia Equipment Technical Considerations
    - 7.3.1.1. Gases and Vapors
      - 7.3.1.1.1. Isoflorane, Sevoflorane and Other Anesthetic Gases
  - 7.3.2. Endotracheal Intubation
  - 7.3.3. Air Sac Intubation
    - 7.3.3.1. Exceptional Intubation
- 7.4. Monitoring during Anesthesia
  - 7.4.1. Reflexes
  - 7.4.2. Circulatory Volume
  - 7.4.3. Pain
  - 7.4.4. Cardiovascular Monitoring
    - 7.4.4.1. Cardiac Auscultation
    - 7.4.4.2. Capillary Refill Time
    - 7.4.4.3. Electrocardiogram
    - 7.4.4.4. Cardiac monitoring by Doppler or echocardiography
    - 7.4.4.5. Other Monitoring Techniques
    - 7.4.4.6. Intravenous Fluid Therapy
      - 7.4.4.6.1. Crystalloids and Colloids
  - 7.4.5. Respiratory Monitoring
    - 7.4.5.1. Respiratory Auscultation
    - 7.4.5.2. Pulse Oximetry





- 7.4.5.3. Capnography
- 7.4.6. Temperature Monitoring: Hypothermia and Hyperthermia
  - 7.4.6.1. Body Temperature Loss during Surgery: Monitoring and Prevention
  - 7.4.6.2. The Consequences of Hypothermia
  - 7.4.6.3. Hyperthermia
    - 7.4.6.3.1. Prevention and Treatment
- 7.5. Injectable Anesthesia
  - 7.5.1. Anesthetic Perfection
  - 7.5.2. Dissociative Anesthetics
  - 7.5.3. Opioids
  - 7.5.4. Anesthesia in Field Conditions
  - 7.5.5. hypothermia
    - 7.5.5.1. Important Aspects in Preventing and Reducing Heat Loss during Anesthesia
- 7.6. Local Anesthesia and Analgesia
  - 7.6.1. Local Anesthesia
    - 7.6.1.1. Cardiovascular Monitoring
    - 7.6.1.2. Drugs Used
    - 7.6.1.3. Therapy Options
  - 7.6.2. Analgesia
    - 7.6.2.1. Types of Pain: Analgesia
    - 7.6.2.2. Physiological Sensitivity in Birds
    - 7.6.2.3. Analgesic Drugs
      - 7.6.2.3.1. Acetylsalicylic Acid
      - 7.6.2.3.2. Buprenorphine Hydrochloride
      - 7.6.2.3.3. Butorphanol
      - 7.6.2.3.4. *Flunixin-Meglumine*
      - 7.6.2.3.5. Carprofen
      - 7.6.2.3.6. Ketoprofen
      - 7.6.2.3.7. Copper Indomethacin
      - 7.6.2.3.8. Meloxicam
      - 7.6.2.3.9. Other Analgesics
- 7.7. Anesthetic Emergencies
  - 7.7.1. Respiratory Complications during Anesthesia
    - 7.7.1.1. Respiratory Depression
    - 7.7.1.2. Apnea and Respiratory Arrest
    - 7.7.1.3. Airway Obstruction
    - 7.7.1.4. Hyperventilation
    - 7.7.1.5. Hypoxia
  - 7.7.2. Specific Cardiovascular Complications during Anesthesia
    - 7.7.2.1. Bradycardia
    - 7.7.2.2. Tachycardia
    - 7.7.2.3. Hypotension
    - 7.7.2.4. Hypertension
    - 7.7.2.5. Arrhythmias
    - 7.7.2.6. Cardiac Arrest
  - 7.7.3. Hemorrhaging in Avian Patients during Anesthesia
- 7.8. Anesthesia in Caged Birds: Psittaciformes and Passeriformes
  - 7.8.1. Anatomical and Physiological Considerations
  - 7.8.2. The Cardiovascular System
  - 7.8.3. Thermoregulation
  - 7.8.4. Respiratory Ventilation Systems
  - 7.8.5. Preanesthetic Evaluation in Birds
  - 7.8.6. Anesthetic Procedures
  - 7.8.7. Types of Anesthetics Used
  - 7.8.8. Local Anesthesia and Analgesia
- 7.9. Anesthesia in Aquatic and SemiAquatic Birds
  - 7.9.1. Patients: Aquatic and Semi-Aquatic Birds
  - 7.9.2. Physiological Constants Monitoring
  - 7.9.3. Thermoregulation
  - 7.9.4. Anesthetic Procedures
  - 7.9.5. Types of Anesthetics Used
  - 7.9.6. Local Anesthesia and Analgesia

- 7.10. Other Anesthetic Particularities
  - 7.10.1. Anesthetic Particularities in Ratites
    - 7.10.1.1. Anatomical and Physiological Considerations
    - 7.10.1.2. Anesthetic Procedures
    - 7.10.1.3. Types of Anesthetics
    - 7.10.1.4. Local Anesthesia and Analgesia
  - 7.10.2. Anesthesia in Galliforms
  - 7.10.3. Anesthesia in Falconiformes
  - 7.10.4. Euthanasia: A Humane Act
    - 7.10.4.1. Special considerations

## Module 8. Anesthesia and Soft Tissue Surgery

- 8.1. Soft Tissue Surgery
  - 8.1.1. Soft Tissue Surgeon in Birds
  - 8.1.2. Patient Preparation
    - 8.1.2.1. Hypothermia
    - 8.1.2.2. Skin Preparation
  - 8.1.3. Necessary Equipment
  - 8.1.4. Sterile Cotton Balls
  - 8.1.5. Bifocal Surgical Lenses
  - 8.1.6. Microsurgery Tools
  - 8.1.7. Suture Materials
- 8.2. Special Surgical Supplies in Bird Surgery
  - 8.2.1. Hemoclips
  - 8.2.2. Radiosurgery
  - 8.2.3. Surgical Lasers
    - 8.2.3.1. Most Used Types and Equipment
  - 8.2.4. Microsurgery
- 8.3. Skin and Appendage Surgery
  - 8.3.1. Feather Cysts
    - 8.3.1.1. Plumafolliculoma
  - 8.3.2. The Uropygial Gland
    - 8.3.2.1. Most Common Pathologies
  - 8.3.3. Wounds and Soft Tissue Injury Treatment

- 8.3.4. Most Common Neoplasms
  - 8.3.4.1. Lipoma
  - 8.3.4.2. Xanthoma
- 8.4. Reproductive System Techniques
  - 8.4.1. Prior Patient Preparation
  - 8.4.2. Sterilization.
  - 8.4.3. Salpingohysterectomy: Female Sterilization
    - 8.4.3.1. Surgical Technique
  - 8.4.4. Egg Obstruction in the Oviduct Dystocia in Birds
    - 8.4.4.1. Cesarean Section: Egg Obstruction in the Oviduct
    - 8.4.4.2. Uterine Torsion: Coeloma Inflammation
  - 8.4.5. Orchidectomy
    - 8.4.5.1. Anatomical Location of the Testicles: Intracellular
    - 8.4.5.2. Technique
  - 8.4.6. Testicular Endoscopic Biopsy
- 8.5. Gastrointestinal Tract Techniques I
  - 8.5.1. The Tongue
    - 8.5.1.1. Most common pathologies
  - 8.5.2. The Proximal Esophagus
    - 8.5.2.1. Esophageal Strictures: Causes and Treatments
    - 8.5.2.2. Esophageal Trauma: Causes and Treatments
  - 8.5.3. Inguviotomy
    - 8.5.3.1. Localisation
    - 8.5.3.2. Indications. Foreign Bodies
  - 8.5.4. Crop Burns
    - 8.5.4.1. Pathology Origin
    - 8.5.4.2. Adequate Surgical Technique
  - 8.5.5. Others Surgical Techniques of Choice
- 8.6. Gastrointestinal Tract Techniques II
  - 8.6.1. Crop or Esophagus Lacerations
    - 8.6.1.1. Traumatic Diet: Causes and Treatments
    - 8.6.1.2. External Trauma: Causes and Treatments
  - 8.6.2. Inguviostomy Tube Placement
    - 8.6.2.1. Feeding Tube Indications

- 8.6.3. Celiotomy: Opening the Coelomic Cavity
  - 8.6.3.1. Indications and Complications
  - 8.6.3.2. Left Lateral Celiotomy
- 8.6.4. Others Surgical Techniques of Choice
- 8.7. Gastrointestinal Tract Techniques III
  - 8.7.1. Proventriculotomy: Proventriculus or Ventricle Access
    - 8.7.1.1. Indications
    - 8.7.1.2. Surgical Techniques of Choice
  - 8.7.2. Yolk Saculectomy: Newborn Chicks
    - 8.7.2.1. Indications
    - 8.7.2.2. Surgical Techniques of Choice
  - 8.7.3. Enterotomy
    - 8.7.3.1. Cases Where Enterotomy Is Necessary
    - 8.7.3.2. Type of Surgery to Applied
  - 8.7.4. Enterectomy, Intestinal Anastomosis
    - 8.7.4.1. Clinical Situations
    - 8.7.4.2. Surgical Process
  - 8.7.5. Ventral Midline Celiotomy
    - 8.7.5.1. Indication This Type of Surgical Access
    - 8.7.5.2. Approaches
  - 8.7.6. Cloaca Disorders
    - 8.7.6.1. Prolapsed Organs through the Cloaca
    - 8.7.6.2. Cloacalitis
- 8.8. Magnetic Biopsy Procedures
  - 8.8.1. Hepatic biopsy
    - 8.8.1.1. Indication This Type of Surgical Access
    - 8.8.1.2. Approach
  - 8.8.2. Pancreatic Biopsy.
    - 8.8.2.1. Pancreatic Alterations
    - 8.8.2.2. Surgical Indications
  - 8.8.3. Renal Biopsy.
    - 8.8.3.1. Indications
    - 8.8.3.2. Necessary Technical Resources
    - 8.8.3.3. Technique and Approach
- 8.9. Respiratory Surgical Techniques
  - 8.9.1. Respiratory Surgery
    - 8.9.1.1. Necessary Anatomy Recap
  - 8.9.2. Tracheotomy
    - 8.9.2.1. Indications
      - 8.9.2.1.1. Presence of Aspergillomas and Foreign Bodies
    - 8.9.2.2. Surgical Technique
  - 8.9.3. Tracheotomy
    - 8.9.3.1. Indications. Severe Tracheal Stenosis
    - 8.9.3.2. Surgical Technique
  - 8.9.4. Pulmonary Biopsy
    - 8.9.4.1. Indications. Severe Tracheal Stenosis
    - 8.9.4.2. Surgical Technique
  - 8.9.5. Muting in Birds
    - 8.9.5.1. Ethical Considerations
- 8.10. Postoperative Care
  - 8.10.1. Stressful situations
  - 8.10.2. Thermal Recovery and Maintenance
  - 8.10.3. Hospitalization and Swift Recovery
  - 8.10.4. Self-Trauma Prevention
  - 8.10.5. Postoperative Analgesia
  - 8.10.6. Adequate Fluid Therapy
  - 8.10.7. Nutritional Supplements

## Module 9. Pathologies and Medical Treatments

- 9.1. Nutritional Treatments
  - 9.1.1. Fluid Therapy: Clinical Application
    - 9.1.1.1. Types of Fluid Therapy
    - 9.1.1.2. Advantages and Disadvantages
  - 9.1.2. Feeding Tube and Nutritional Support
    - 9.1.2.1. Nutritional Needs
    - 9.1.2.2. Enteric Nutrition Formulas
- 9.2. External Treatment
  - 9.2.1. Claw/Nail and Beak Trimming
  - 9.2.2. Feather Repair
    - 9.2.2.1. Materials Instruments Used in Grafting
    - 9.2.2.2. Bent Feather Repair
    - 9.2.2.3. Partial Feather Substitution
    - 9.2.2.4. Total Feather Substitution
  - 9.2.3. Wing Trimming and Cutting
  - 9.2.4. Wound Treatment Management Objectives
    - 9.3.4.1. Bandage Care
    - 9.3.4.2. Dressing Removal
- 9.3. Trauma Treatments
  - 9.3.1. Bandages and Dressings
    - 9.3.1.1. Bandage and Dressing Functions
      - 9.3.1.1.1. Protection
      - 9.3.1.1.2. Pressure
      - 9.3.1.1.3. Support
      - 9.3.1.1.4. Absorption, Moist Environment, Holding in Place
      - 9.3.1.1.5. Comfort
      - 9.3.1.1.6. Other Ideal Dressing Characteristics
    - 9.3.1.2. Selection Process
    - 9.3.1.3. Injury Evaluation
  - 9.3.2. Types of Bandages Most Used in Orthopedic Surgery
    - 9.3.2.1. EightShaped Bandage
    - 9.3.2.2. EightShaped Bandage to the Body
    - 9.3.2.3. Wing Bandage with Two Circular Bandages around the Body
    - 9.3.2.4. Robert Jones Bandage
    - 9.3.2.5. Ball Bandage
  - 9.3.3. Protective Leg Casts
  - 9.3.4. External Splints
  - 9.3.5. Elizabethan Collars
- 9.4. Administering Drugs in Birds
  - 9.4.1. Relevant Aspects in Drug Administration
  - 9.4.2. Use Routes
  - 9.4.3. Advantages and Disadvantages
  - 9.4.4. Metabolic Drug Adjustment
- 9.5. Most Used Antibiotics in Avian Patients
  - 9.5.1. Amikacin
    - 9.5.1.1. Species Indicated and Dosage
  - 9.5.2. Ceftazidime
    - 9.5.2.1. Species Indicated and Dosage
  - 9.5.3. Doxycycline
    - 9.5.3.1. Species Indicated and Effective Dosage
  - 9.5.4. Enrofloxacin and Marbofloxacin
    - 9.5.4.1. Quinolones and Current Uses
  - 9.5.5. Metronidazole
    - 9.5.5.1. Species Indicated and Effective Dosage
  - 9.5.6. *Trimethoprim* / Sulfamethoxazole
    - 9.5.6.1. Adequate Dosage
  - 9.5.7. Other Antibiotics Used
- 9.6. Most Used Antifungal Drugs in Avian Patients
  - 9.6.1. Amphotericin B
    - 9.6.1.1. Target Species and Dosage
  - 9.6.2. Fluconazole
    - 9.6.2.1. Dosage

- 9.6.3. Itraconazole
  - 9.6.3.1. Dosage
- 9.6.4. Ketoconazole: fungistatic
  - 9.6.4.1. Dosage
- 9.6.5. Nystatin: a macrolide antifungal drug
  - 9.6.5.1. Target Species and Dosage
- 9.6.6. Other Antifungal Drugs of Clinical Interest
- 9.7. Most Used Antiparasitics in Avian Patients
  - 9.7.1. Ivermectin
    - 9.7.1.1. Target Species and Dosage
  - 9.7.2. Albendazole
    - 9.7.2.1. Target Species and Dosage
  - 9.7.3. Fenbendazole
    - 9.7.3.1. Target Species and Dosage
  - 9.7.4. Levamisole
    - 9.7.4.1. Species Type and Dosage
  - 9.7.5. Selamectin
    - 9.7.5.1. Species Type and Dosage
  - 9.7.6. Toltrazuril
    - 9.7.6.1. Dosage and Target Species
  - 9.7.7. Other Antiparasitics of Clinical Interest
- 9.8. Other Drugs Used in Birds
  - 9.8.1. Most Used Antivirals in Avian Patients
    - 9.8.1.1. Aciclovir
      - 9.8.1.1.1. Posology, Target Species and Dosage
    - 9.8.1.2. Other Antivirals of Clinical Interest
  - 9.8.2. Hormones Used in Birds
    - 9.8.2.1. Drenocorticotrophic hormone: ACTH
      - 9.8.2.1.1. Bird Type and Dosage
    - 9.8.2.2. Cabergoline
      - 9.8.2.2.1. Effective Dosage
    - 9.8.2.3. Oxytocin
      - 9.8.2.3.1. Effective Dosage
    - 9.8.2.4. Other Hormones of Clinical Interest

- 9.9. Medications Used for Nebulization
  - 9.9.1. Nebulizer Use
  - 9.9.2. F10 Use
  - 9.9.3. Gentamicin
  - 9.9.4. Amikacin
    - 9.9.4.1. Dosage and Use
  - 9.9.5. Amphotericin B
    - 9.9.5.1. Dosage and Use
  - 9.9.6. Clotrimazole
    - 9.9.6.1. Dosage and Use
  - 9.9.7. Others Medications Used for Nebulization
- 9.10. Ophthalmological Drops Used in Birds
  - 9.10.1. Ciprofloxacin
  - 9.10.2. Chloramphenicol
  - 9.10.3. Tobramycin
  - 9.10.4. Diclofenac
  - 9.10.5. Prednisone

## Module 10. Orthopedic and Ophthalmologic Surgery in Birds

- 10.1. Avian Ophthalmology: Eye and Eyelid Lesions
  - 10.1.1. Anatomy Recap
  - 10.1.2. Differences Between Species
  - 10.1.3. Eyeball Pathophysiology
  - 10.1.4. Most Used Treatments
- 10.2. Pododermatitis: Nails
  - 10.2.1. Pathology Characteristics
  - 10.2.2. Most Affected Bird Species
  - 10.2.3. Current Treatments
    - 10.2.3.1. Medical Treatment
    - 10.2.3.2. Surgical Management
      - 10.2.3.2.1. Necrotic Debridement
  - 10.2.4. Prevention
  - 10.2.5. Treatment

- 10.3. Fractures. Bone Definition Loss
  - 10.3.1. Bird Skeletons
  - 10.3.2. Necessary Surgical Supplies and Preliminary Technical Considerations
  - 10.3.3. Physical Examination and Preoperative Management of Avian Patients
  - 10.3.4. Types of Bone Fractures and Dislocations
- 10.4. Fracture Correction: Fracture Treatment Objectives
  - 10.4.1. Osteosynthesis Techniques in Birds
    - 10.4.1.1. Advantages
    - 10.4.1.2. Inconveniences
  - 10.4.2. Internal Fastening
    - 10.4.2.1. Medullary Nailing (Intramedullary or Centromedullary)
    - 10.4.2.2. Banding
  - 10.4.3. External Fastening: Bone Scaffolds
    - 10.4.3.1. The Kirschner-Ehmer Splint
- 10.5. Fastening Methods Humerus, Clavicle and Coracoid Fractures
  - 10.5.1. Shoulder Girdle and Forelimb Anatomy
  - 10.5.2. Humerus Fractures
  - 10.5.3. Fastening Method for Distal and Subcondylar Humerus Fractures
    - 10.5.3.1. Crossed Needles
- 10.6. Fastening Methods for Diaphyseal Forelimb Fractures
  - 10.6.1. Relevant Aspects
  - 10.6.2. Needles Placement in Different Fasteners
  - 10.6.3. Proximal Ulnar Diaphysis Fractures, with Intact or Fractured Radius
  - 10.6.4. Diaphyseal and Distal Ulnar Fractures, with Intact or Fractured Radius
  - 10.6.5. Special Forelimb Cases
    - 10.6.5.1. Proximally or Distally Fractured Radius
    - 10.6.5.2. Intact Ulna
  - 10.6.6. Elbow Dislocations





- 10.7. Fastening Methods the Carpus and Tarsus
  - 10.7.1. Fastening the Carpal Joint
    - 10.7.1.1. Relevant Aspects
    - 10.7.1.2. Specific Treatment Recommendations
  - 10.7.2. Fastening Tibiotarsus Fractures
    - 10.7.2.1. Relevant Aspects
    - 10.7.2.2. Tibiotarsus Fractures and Surgical Stabilization
  - 10.7.3. Fastening Choices for Tarsometatarsal Fractures
- 10.8. Fastening Methods and Orthopedic Femur Pathologies
  - 10.8.1. Relevant Aspects
  - 10.8.2. Femur Fractures
    - 10.8.2.1. Surgical Stabilization
  - 10.8.3. Knee Dislocation
    - 10.8.3.1. Choice Treatment
- 10.9. Less Common Bone Injuries
  - 10.9.1. Neck Dislocation and Fracture
    - 10.9.1.1. Symptoms, Diagnosis and Treatment
  - 10.9.2. Keel Injuries
    - 10.9.2.1. Pathology
    - 10.9.2.2. Treatment
  - 10.9.3. Wing Tip Injuries
    - 10.9.3.1. Wing Wounds and Ulcers
      - 10.9.3.1.1. Types of Wounds and Treatment
    - 10.9.3.2. Bursitis
      - 10.9.3.2.1. Symptoms and Treatment
    - 10.9.3.3. Edema and Dry Gangrene Syndrome: Avascular Necrosis
      - 10.9.3.3.1. Localisation
      - 10.9.3.3.2. Symptoms and Treatment
- 10.10. Postoperative Patient Care for Repaired Fractures
  - 10.10.1. Physical Therapy for Wing Fracture Treatment
  - 10.10.2. Patagium Treatment
  - 10.10.3. Physical Rehabilitation and Physiotherapy in Birds

07

# Clinical Internship

After passing the online theoretical period, the student will be able to carry out a practical internship for 3 intensive weeks in one of the most important international centers. Here, you will have access to real clinical cases, state-of-the-art equipment and an assistant tutor, who will guide you through the entire process of the internship, both in the preparation and the development of it.







“

*During 3 weeks you will be immersed in an intensive learning process in which you will perform the most relevant activities to specialize in the surgical treatment of birds"*

The internship period of this program consists of a 3-week stay in a veterinary clinic, from Monday to Friday with 8-hour consecutive days. In them, specialists will carry out practical training alongside an assistant specialist, with whom they will be able to assist real patients, thereby applying the most innovative diagnoses and establishing the most appropriate state-of-the-art treatments for each pathology.

In this training proposal, completely practical in nature, the activities are aimed at developing and perfecting the skills necessary for the provision of sports care in areas and conditions that require a high level of qualification, and are oriented towards specific training for the exercise of the activity, in a safe environment and high professional performance.

This program represents a unique opportunity for veterinarians to learn through a variety of activities to become familiar with the latest developments in testing and treatment of small or exotic birds. This active participation is key to improving their skills for a future career in the industry.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of knowledge (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow trainees that facilitate teamwork and multidisciplinary integration as transversal competencies for the practice of Aesthetic Medicine (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the training, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:



Module	Practical Activity
<b>Laboratory tests and diagnostic imaging techniques</b>	Extract, analyze and evaluate hematology.
	Assessing Biochemical Analysis in Birds
	Developing urinalysis tests
	Develop fundamental and advanced cytological techniques, with an emphasis on the study of cells
	External and internal assessment of the patient in the <i>postmortem</i> examination.
	Develop Diagnostic Procedures for the Necropsy Technique
	Practicing with the patient the necessary holding and positioning necessary to perform an efficient diagnostic imaging test
	applied Contrast Radiography Studies
	Develop radiological interpretations
	Endoscopy to analyze a hollow organ or body cavity.
To develop clinical analyses related to avian cardiology.	
<b>Approach of pathologies related to the avian patient and their management</b>	Rate Pathologies Derived from Poor Nutrition
	Develop examinations for disorders of the oral cavity
	Analyze Esophagus and Gullet Pathologies
	To analyze pathologies of the proventriculus
	Analyze Gizzard or Ventricle Pathologies
	Examination of avian intestinal pathology
	Assess and determine liver pathologies
	Analyze the different types of endocrine disorders.
	Develop tests for fungal diseases
	Develop ectoparasite analysis
	Performing Coprological Analysis in Birds
	Conduct protozoan evaluations
	Perform analysis of hemoparasites

Module	Practical Activity
<b>Techniques of anesthesia and analgesia in birds</b>	Perform remote anesthesia administration.
	Evaluating inhalation anesthesia in birds
	Practice monitoring during anesthesia.
	Analyze injectable anesthesia
	Application of anesthesia in caged birds: psittaciformes and passerines.
	Applying anesthesia in aquatic and semi-aquatic birds.
	Apply anesthetic techniques for the reproductive system.
	Apply anesthetic techniques for the Gastrointestinal system.
	Perform biopsies
	performance Respiratory Surgical Techniques
<b>Management handling of the different medical treatments</b>	Apply Nutritional treatment
	Apply External treatment
	Practice the Administering Drugs in Birds
	Practice the administration of the most commonly used antibiotics in the avian patient.
	Perform tests of the most commonly used antifungals in the avian patient.
	Apply the Most Used Antiparasitics in Avian Patients
	Analyze and administer medications used for nebulization.
Evaluate the Ophthalmological Drops Used in Birds	

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

For this purpose, this educational entity undertakes to take out a liability insurance policy to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry if they have to deal with an unexpected situation and will be covered until the end of the practical program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Hybrid Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** Professionals who pass the Hybrid Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

# 08

## Where Can I Do the Clinical Internship?

To ensure that the teaching is of high quality, TECH has selected the most prestigious clinical centers at international level, where students will be able to carry out the activities they need to face the new challenges posed in their profession. In this sense, students will be able to carry out their internships in both national and international environments, which will allow them to open borders and put into practice everything they have learned about avian health.



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*This is a unique opportunity for you, specialize in avian medicine and surgery in the center of your choice with the best professionals in the sector"*



Students can take the practical part of this Hybrid Master's Degree at the following centers:



Veterinary-medicine

**GREFA - Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat**

Country	City
Spain	Madrid

Address: C. Monte del Pilar, s/n, 28220 Majadahonda, Madrid

GREFA specializes in the study and conservation of nature

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**Related internship programs:**  
Wildlife Management  
- Avian Medicine and Surgery







“

*Enroll now and advance in your field of work with a comprehensive program that will allow you to put into practice everything you have learned”*

09

# Methodology

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

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





“

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

## At TECH we use the Case Method

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

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



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

“

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

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

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



## Relearning Methodology

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

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



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

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

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

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

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

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



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



#### Study Material

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

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



#### Latest Techniques and Procedures on Video

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



#### Interactive Summaries

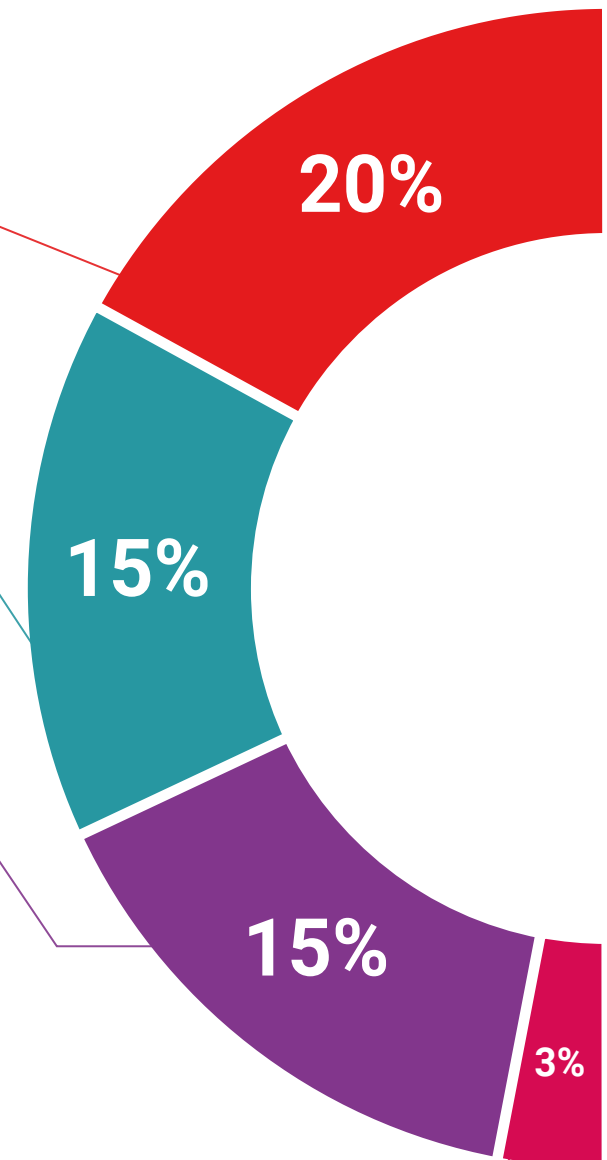
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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



#### Additional Reading

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







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

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



#### Testing & Retesting

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



#### Classes

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

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



#### Quick Action Guides

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



# 10 Certificate

The Hybrid Master's Degree in Avian Medicine and Surgery guarantees students, in addition to the most rigorous and up-to-date education, access to a qualification issued by TECH Global University.





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

This program will allow you to obtain your **Hybrid Master's Degree diploma in Avian Medicine and Surgery** 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** title 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: **Hybrid Master's Degree in Avian Medicine and Surgery**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**



\*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.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service information  
knowledge present quality  
online training  
development languages  
virtual classroom



## Hybrid Master's Degree Avian Medicine and Surgery

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

# Hybrid Master's Degree Avian Medicine and Surgery

