Professional Master's Degree
Avian Medicine and Surgery

tech technological university

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Professional Master's Degree
Avian Medicine and Surgery

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

Website: www.techtitute.com/us/veterinary-medicine/professional-master-degree/master-avian-medicine-surgery

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01

Introduction

The number of avian patients is increasing in small animal clinics. The owners expect clinicians to employ the same investigative techniques that are used with dogs and cats, for example. However, birds are the great unknown for clinical veterinarians. For this reason, at TECH we have designed this very complete Professional Master's Degree that aims to qualify veterinarians in diagnosing and treating these animals.

Birds are the great unknown in the veterinary field, so professionals must specialize given the increase in cases in recent years"

The Professional Master's Degree in Avian Medicine and Surgery combines, in the formality of a medical book and the practical methodology of a manual, fundamental aspects to achieve advanced theoretical and practical knowledge applicable to daily clinical practice as a veterinary expert in this field. Hence, a very complete updating program has been developed for professionals who wish to specialize in the field.

This training develops specialized and advanced knowledge in all laboratory diagnostic tests. So, veterinarians specialized in birds can resort to fundamental techniques such as biopsies, hematology and cytology, to provide excellent practice in the profession.

As a novel element, this Professional Master's Degree includes the interpretation of proteinograms in biochemical studies, which opens a truly important diagnostic window. These analyses are more expensive and interpreting the results is still lacks sufficient standardization. Avian electrocardiography, another great unknown for the veterinarian specializing in avian medicine, is also discussed. Although many structures of the avian cardiovascular system are similar to those of mammals, their anatomical differences must be taken into account. Thus, veterinarians face serious problems when they lack knowledge of the cardiorespiratory anatomy in birds.

This Professional Master's Degree also focuses on captive birds, which depend on the care, food, shelter and safety provided to them. This program addresses fundamental aspects such as the nutritional requirements of each species, existing types of nutrition and preparing suitable diets for each one of them.

This specialization provides students with specific tools and skills to successfully engage in professional practice in the wide field of avian medicine and surgery. It addresses key competencies such as knowledge of the reality and daily practice of the veterinary professional, and develops responsibility in the monitoring and supervision of their work, as well as communication skills within the essential teamwork.

As it is an online degree, students will not be bound by fixed schedules or the need to move to another physical location, rather, they can access the content at any time of the day, balancing their professional or personal life with their academic life.

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

- Practical cases presented by experts in of avian medicine and surgery
- The graphic, schematic, and eminently practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice
- The latest development in avian medicine and surgery
- Practical exercises where the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in avian medicine and surgery
- 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

Do not miss the opportunity to do this Professional Master's Degree in Avian Medicine and Surgery with us. It's the perfect opportunity to advance your career"

This degree is the best investment you can make when choosing a refresher program to update your existing knowledge on Avian Medicine and Surgery"

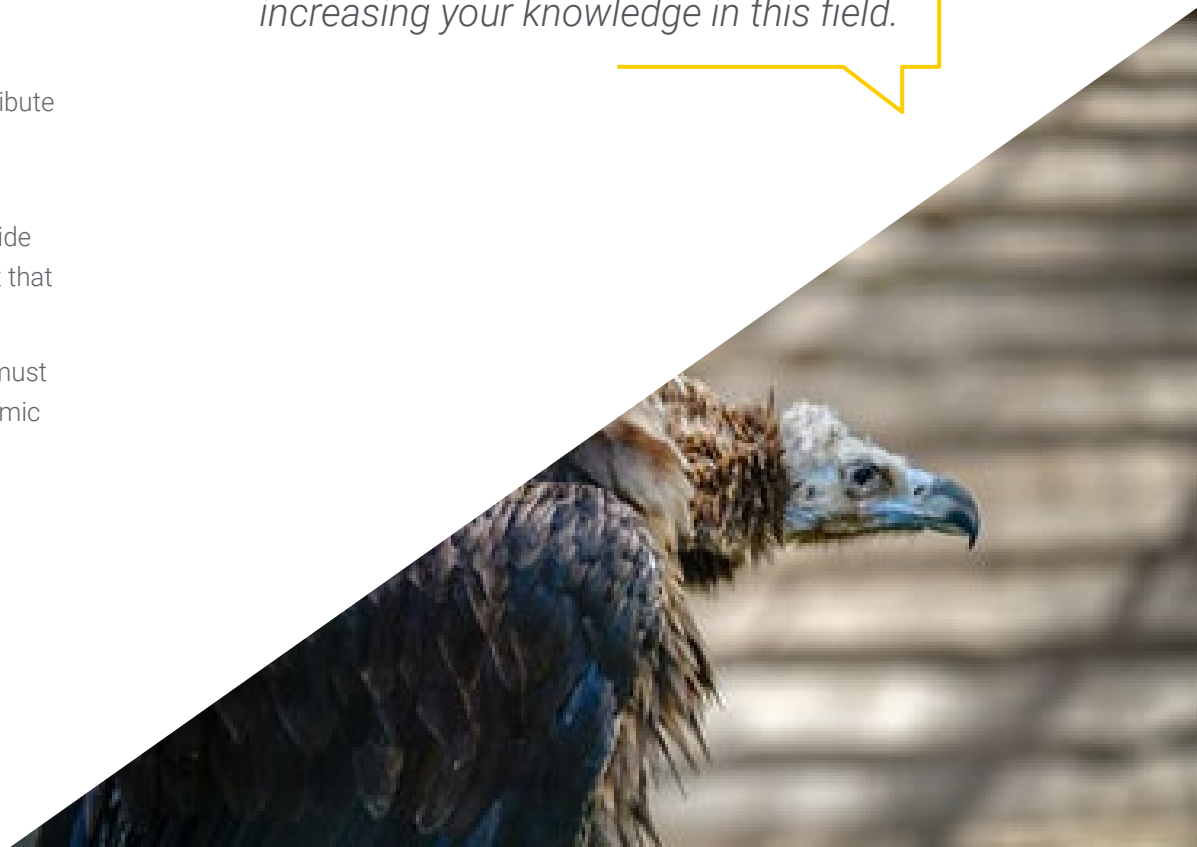
This specialisation comes with the best didactic material, providing you with a contextual approach that will facilitate your learning.

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

Its teaching staff includes professionals belonging to the veterinary field, who contribute their expertise to this specialization, as well as renowned specialists from leading societies and prestigious universities.

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

This program is designed around Problem-Based Learning, whereby the specialist must try to solve the different professional practice situations that arise during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in avian medicine and surgery with extensive experience.



02

Objectives

The **Professional Master's Degree in Avian Medicine and Surgery** is aimed at facilitating professional medical performance with the latest advances and the most innovative treatments in the sector.

You will learn to analyze the main infectious pathologies in birds: Viral, bacterial, mycoplasmic, fungal and parasitic"

General Objectives

- Identify the differences between birds and mammals.
- Ascertain the most characteristic property in avian patients: The capacity for flight
- Analyze variations between species based on avian anatomy and physiology
- Specify key anatomical points to select diagnostic techniques
- Establish the necessary requirements for keeping birds in captivity
- Examine the key criteria for health, welfare and success in avian husbandry
- Determine nutritional guidelines and specific diets for birds
- Generate guidelines for all birds, including birds of prey and others less clinically studied species such as pigeons
- Compile the most commonly used diagnoses techniques: Radiology, endoscopy and ultrasound
- Develop specialized knowledge in all laboratory diagnostic tests
- Establish the protocols to interrupt biochemical analysis and proteinograms
- Demonstrate the correct necropsy technique in avian patients
- Generate protocols for coprology in birds
- Examine radiology techniques in avian patients
- Anticipate diagnostic difficulties in ultrasound in avian patients
- Propose endoscopy as the diagnostic technique of choice
- Analyze the main infectious pathologies in birds: Viral, bacterial, mycoplasmic, fungal and parasitic
- Develop specialized knowledge of non-infectious pathologies: genetic, metabolic-endocrine, anatomical alterations, physical-chemical imbalances and nutritional deficiencies.
- Define soft tissue pathologies
- Specify treatments and prevention strategies
- Develop specialized knowledge of diseases in birds according to cause, epizootiology and physiopathogenesis
- Determine the close relationship between humans and wild birds
- Identify the routes of disease transmission
- Analyze the most frequent questions that arise in field situations
- Generate specialized knowledge of anesthetic techniques commonly used in bird clinics
- Develop the most important aspects about the types of anesthesia and frequently asked questions by veterinarians
- Analyze management techniques for exploration and anesthetic drug administration
- Determine the most common emergency situations
- Analyze the different anatomical and physiological aspects of birds to apply them to anesthetic techniques
- Examine emergencies in situations of hemorrhage and more advanced surgical problems
- Establish emergency protocols, as in any animal that is injured or needs surgical assistance
- Reach the shock state protocol, which is very difficult to determine in avian patients
- Provide nutritional and fluid therapy requirements for pathology recoveries

- Analyze the relevant aspects of drug administration
- Gain in-depth knowledge of the most used antibiotics, taking into account the routes of administration and the possible and real guidelines that can be followed in each real situation
- Acquire knowledge of new medications for birds
- Develop specialized knowledge to properly treat fractures and determine prognosis
- Determine the proper praxis in resolving fractures in avian patients, using bandages and surgical methods of osteosynthesis, by means of external immobilizations, centromedullary interlocking, external fixators or locks
- Examine the most effective methods for treating each type of bird and potential fractures in terms of physical recovery and total recovery of the limb
- Analyze the different anatomical and physiological aspects of birds to apply them to the most effective treatments

Specific Objectives

Module 1.

- Substantiate the taxonomic classification according to each order
- Examine the skeletal system, anatomical memory of each location
- Identify the common breeds of chickens and hens kept as pets
- Evaluate blood composition and the circulatory system
- Develop the basis of respiratory functioning to advance knowledge of anesthesia and emergency treatment
- Compile all current information on the anatomy and physiology of the digestive system
- Detail the forgotten areas of the sense organs and their fundamental implication in patient recovery
- Collect all the information on the lymphoid organs, especially the characteristic bursa of Fabricius and other glands of interest

Module 2.

- Propose the challenges of keeping poultry and other avian species
- Examine the difficulty of bird scouting
- Determine the requirements for keeping birds in captivity
- Analyze the most relevant clinical characteristics and their importance in physical examination to reach appropriate diagnoses and treatments
- Develop specialized knowledge on capture and adequate containment of avian patients.
- Establish the main routes of drug administration
- Exhaustively analyze the nutritional requirements, types of nutrition and elaborate diets for each species kept in captivity

Module 3.

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

Module 4.

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

Module 5.

- Identify symptoms to be able to detect them in time and act as soon as possible
- Examine the main pathologies derived caused by incorrect handling to avoid them and even prevent death
- Analyze the most frequent emergencies derived from incorrect handling, such as lead poisoning and capture myopathy
- Specify oral cavity disorders and their most appropriate treatments
- Completely and successfully deal with all the pathologies affecting the crop, the proventriculus and the ventriculus
- Delve deeper into all the most common pathologies affecting the distal part of the intestine
- Analyze liver disorders due to external causes, as well as the typical pathologies they present
- Develop specialized knowledge of the great avian unknown: The endocrine system, analyzing each of the endocrine glands in birds and their physiopathogenesis

Module 6.

- Identify the cause of the disease through causal agents
- Develop specialized knowledge of the most common diseases in wild birds
- Make the best use of a list of problems, together with their differential diagnoses to properly design work plans
- Develop the most important viral diseases in wild bird pathologies, understanding that they are the most serious
- Diagnose diseases caused by bacteria, since they are mostly linked to respiratory infections, blood infections, intestinal infections or a combination of any of them
- Analyze parasitic diseases, their symptomatology and the most updated treatments

Module 7.

- Determine the anatomical and physiological characteristics of birds to adequately perform anesthetic procedures
- Perform the anesthetic technique of choice: inhalation anesthesia
- Generate specialized knowledge on cardiorespiratory monitoring and temperature control during and after anesthetic procedures
- Examine injectable anesthesia in birds
- Perform the most up-to-date methods for local anesthesia and analgesia
- Implement the most frequent emergency anesthetics to deal with them successfully
- Determine the anesthetic particularities of each type of bird

Module 8.

- Develop specialized knowledge in soft tissue surgery, starting from supplies in the operating room prior to any surgery
- Determine the special surgical supplies for avian patients
- Establish the main surgical problems of the skin and its appendages
- Perform all surgical techniques on male and female reproductive systems
- Evaluate all surgeries of the digestive and respiratory systems, following comprehensive and updated protocols
- Demonstrate the need for biopsies to reach a definitive diagnosis
- Emphasize the necessary guidelines for patient recovery

Module 9.

- Compile the most important nutritional treatments, understanding dehydration as one of the key factors for each treatment recovery
- 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
- Attain the maximum knowledge of traumatic injury treatments
- Present the routes of administration of drugs and their advantages and disadvantages
- Develop the list of antibiotics, antifungals and antiparasitics most commonly used, including dosage and clarifications
- Propose the success in nebulization treatments
- Reach peak knowledge of eye drops and ophthalmologic treatments

Module 10.

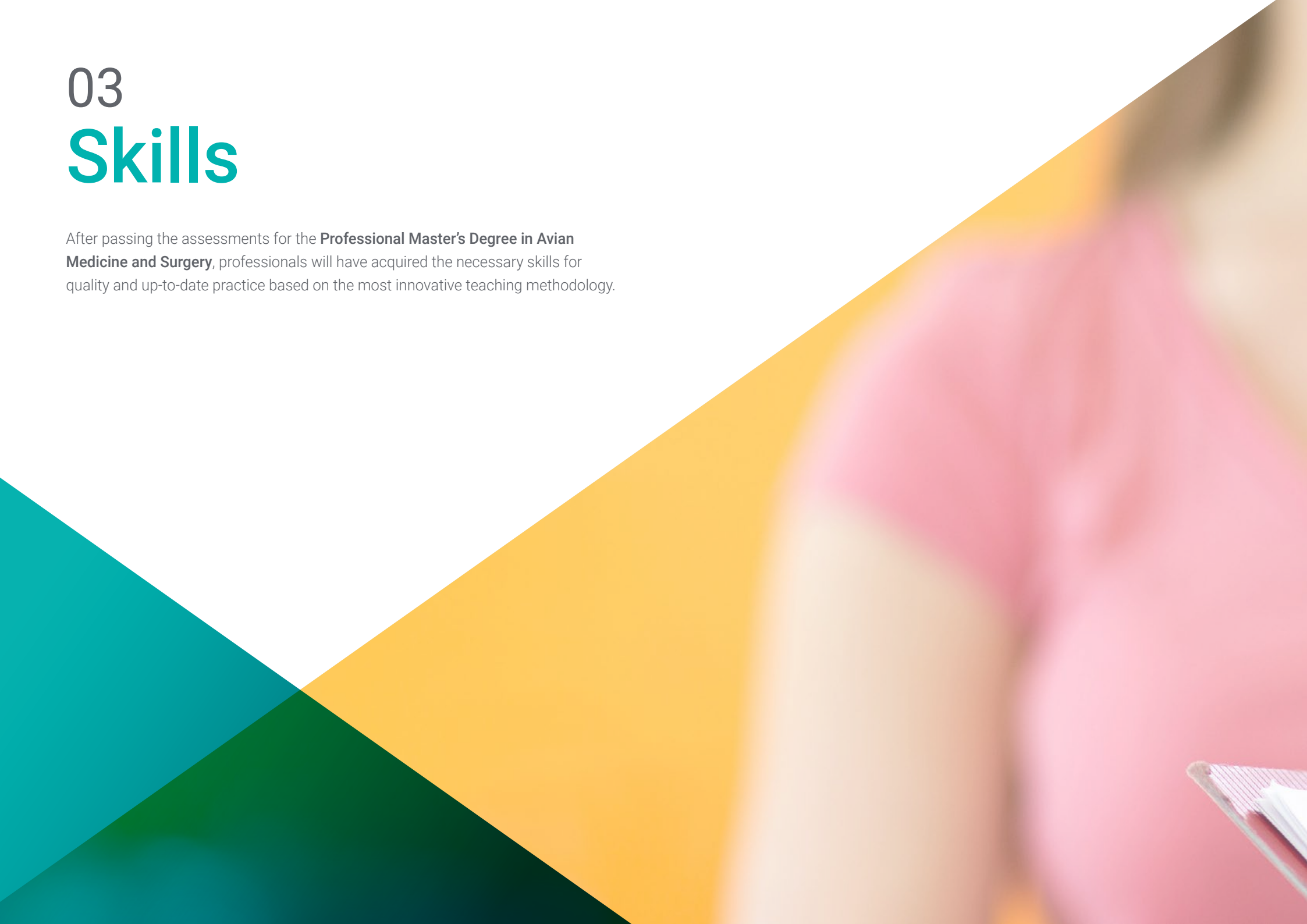
- Develop specialized knowledge regarding the most frequent ocular pathologies and the most updated treatments
- Analyze the most frequent pathologies in obese birds in captivity: nails
- Address bone fracture emergencies situations and treatments
- Establish bone fixation methods in wings and shoulder girdles
- Analyze the osseous injuries in bird carpus and tarsus
- Determine how to conduct bone repairs of the femur and their surgical treatments
- Gain in-depth knowledge of postoperative care in repaired fractures

Join one of the largest online universities in the world"

03

Skills

After passing the assessments for the **Professional Master's Degree in Avian Medicine and Surgery**, professionals will have acquired the necessary skills for quality and up-to-date practice based on the most innovative teaching methodology.



This program will help you acquire the skills you need to excel in your daily work"

After completing this training, the professional will be able to:

General Skill

Specialize veterinary professionals in each of the specialized areas necessary to work as veterinary specialists, with new and updated Knowledge of ophthalmology, diagnostic imaging, pathology, anesthesia and monitoring, pediatric medicine, new laboratory techniques, soft tissue surgery and traumatology.

Take the step to get up to date on the latest developments in Avian Medicine and Surgery"

Specific Skills

- Achieve advanced theoretical and practical knowledge applicable to daily clinical practice
- Discern the particularities of birds versus the treatment of other animals
- Determine variations between species based on avian anatomy and physiology
- Treat and handle sick birds
- Evaluate anatomical changes in birds to diagnose possible ailments
- Perform clinical management of a single patient or flock
- Perform clinical diagnosis, laboratory tests and applied treatments
- Perform radiology, anesthesiology and ophthalmology, soft tissue surgery and traumatology diagnoses and treatments in birds
- Employ complementary diagnostic techniques, many based on diagnostic imaging such as radiology, endoscopy and ultrasound
- Provide a suitable home for birds kept in captivity

04

Course Management

The program's teaching staff includes leading experts in Avian Medicine and Surgery, who contribute their vast work experience to this training program. Professionals of recognized prestige have joined forces to offer you this high-level training.

Our teaching team will help you achieve professional success"

Management

Ms. Trigo García, María Soledad

- 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
- Degree in Veterinary Medicine from the Alfonso X el Sabio University (2012)
- Postgraduate degree in General Practitioner Certificate Program in Exotic Animals, Improve International
- Postgraduate degree in Food Safety from the Complutense University of Madrid
- Veterinary consultant at the José Peña Wildlife Center, and various veterinary clinics in Madrid
- Director of the Exotic Animal Service at the Prado BOADILLA veterinarian center

Professors

Mr. Beltrán, Javier

- Clinical Veterinarian at Privet Veterinary Hospital (2015-Present)
- Degree in Veterinary Medicine, ULE University
- Master's Degree in Medicine and Surgery
- Exotic Animals Forvetex
- Advanced Master's Degree in Exotic Animal Medicine and Surgery Forvetex
- Diploma in Herpetology, UCM
- National and International University Lecturer - Management and Clinical Practice: Birds and Reptiles - University of León, 2017

Dr. Corrales Mantecón, Diana

- Veterinary Clinic Exóticos
- Veterinary Clinic Veterinarios, Madrid
- Degree in Veterinary Medicine, Complutense University of Madrid, 2018
- Organization of the fifth scientific conference on pathology and management of exotic, wild and zoo animals
- Collaborator in the organization and assistance for the AMVAC annual congress

Dr. García Hernando, Javier

- Responsible for Internal Medicine for Exotic Animals at Privet Veterinary Hospital
- Outpatient veterinarian for exotic animal medicine and surgery, Madrid
- Degree in Veterinary Medicine from the UAX
- Diploma in in Herpetology, UCM

Dr. García Rodríguez, Jennifer

- Degree in Veterinary Medicine, Complutense University Madrid
- Diploma Course in Clinical Cardiology in Small Animals, Complutense University of Madrid
- Intern at the Hospital Clínico Veterinario Complutense in the Cardiology, Anesthesiology and Ruminant Medicine Services
- Stays in the ONCE Guide Dog Foundation, and in zoos such as Selwo Aventura and Selwo Marina

Dr. González Fernández-Cid, José Vicente

- Owner of the Exotic Veterinary Clinic in Fuenlabrada
- 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
- 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

Dr. Esteve, David

- Partner at Amvac
- Degree in Veterinary Medicine from the Complutense University of Madrid
- National Course in Endoscopy from CCMIJU
- Collaborator on the MasterClass of Traumatology in Exotic Mammals, Forvetex

Dr. Fernández Boto, Rubén

- Clinical Veterinarian at Exotic Veterinary Clinic
- Member of AVEPA
- Degree in Veterinary Medicine from the UCM
- Postgraduate Certificate in Abdominal Ultrasound in Small Animals
- Update Course in Exotic Animal Medicine and Surgery

Dr. Manzanares Ferrer, Estefanía

- Veterinarian at Los Sauces Veterinary Center
- Graduate in Veterinary Medicine, University of Santiago de Compostela
- Master's Degree in Exotic Animal Medicine and Surgery, Servet Oriental Training
- Superior technician in the management and organization of agricultural enterprises, School of Agricultural Training
- Course in Veterinary Medicine and Wildlife Conservation

Dr. Melián Melián, Ayose

- 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 Veterinary Medicine from the ULPGC
- Diploma in Advanced Studies with distinction in the Doctoral Program on Animal Health and Pathology, University of LPGC
- Postgraduate Degree in Exotic Animal Clinics, GPcert (ExAP), European School of Veterinary Postgraduate Studies

Dr. Moraleda Berral, Pablo

- Clinical Veterinarian at Exotic Veterinary Clinic
- Degree in Veterinary Medicine, University of Santiago de Compostela, 2018
- Degree Training in Exotic and Wild Animal Clinics, attending congresses, stays in specialized centers such as GREFA, CRAS, Bioparc Fuengirola, Faunia, etc.
- Certificate Degree in Exotic and Wild Animals, Complutense University of Madrid
- Enrolled in the PhD program on Veterinary Medicine at UCM in the field of wildlife parasitology

Dr. Bonvehí Nadeu, Cristina

- Veterinarian at Los Sauces Veterinary Center, Madrid
- Degree in Veterinary Medicine, Autonomous University of Barcelona
- Accredited in Specialty in Surgery and Medicine of Exotic Animals
- Master's Degree in Exotic Animal Medicine and Surgery, Forvetex
- Course on Exotic Animal Medicine and Surgery, Novotech
- Participated in the AEVA Exotic Animal Ophthalmology Clinic Session

Mr. Gallego Agúndez, Miguel

- Member of GMCAE (Group of Medicine and Surgery of Exotic Animals) and AVEPA (Association of Spanish Veterinarians Specialists in Small Animals)
- Worked in several veterinary clinics, including outpatient exotic animal medicine and surgery and the foundation of the Centro Veterinario Madrid Exóticos
- Degree in Veterinary Medicine from the UCM

Dr. Fernández Gallardo, Nuhacet

- Director of the Veterinary Services and Laboratory of Loro Parque and Loro Parque Fundación
- Member of the Working Group on Exotic Animal Medicine and Surgery (GMCAE) of the Association of Small Animal Veterinarians (AVEPA)

Ms. Jaime Aquino, Sara

- Veterinary Assistance at Prado de Boadilla
- Collaborator in the Exotic Animal Medicine and Surgery Service at Alfonso X El Sabio University
- Nova Veterinary Clinic, Boadilla del Monte
- Degree in Veterinary Medicine Alfonso X El Sabio University

Mr. Arenal Ferreira, Alfonso

- Veterinarian specializing in exotic animals, as well as generalist in small animals, Hospital Veterinario Privet Aluche, Madrid
- General veterinarian and head of the GMC Vet Group Clinic, Madrid
- General Veterinarian in the Emergency and Hospitalization Service, Miramadrid Veterinary Hospital, Madrid
- Degree in Veterinary Medicine, Alfonso X El Sabio University
- Author of original animal-themed texts for WinVet

Mr. Sánchez Góngora, Juan

- Veterinarian at Clinique Vétérinaire de l´Epte, Gisors
- Degree in Veterinary Medicine, Complutense University Madrid
- Speaker at the XVII Congress of Veterinary and Biomedical Sciences in relation to Bacterial Stomatitis in Chameleons Calumma parsonii in Captivity
- External stays at ZooAquarium, Madrid

05

Structure and Content

The content structure has been designed by the best professionals in the Avian Medicine Surgery area, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied, and diagnosed, and with extensive knowledge of new technologies applied to veterinary.

We have the most complete and up-to-date academic program in the market. We strive for excellence and for you to achieve it too"

Module 1. Bird Taxonomy, Anatomy and Physiology

1.1. Taxonomic Classification of Psittaciformes
- 1.1.1. Taxonomic Classification
- 1.1.2. Global Spread
- 1.1.3. Anatomic Differences

1.2. Taxonomic Classification of Passerine Birds: Wild Birds
- 1.2.1. Taxonomic Classification
- 1.2.2. Global Spread
- 1.2.3. Anatomic Differences

1.3. Taxonomic Classification of Falconiformes and other Orders
- 1.3.1. Taxonomic Classification
- 1.3.2. Global Spread
- 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 and Hypoaxial Muscles
  - 1.4.3.1. Cervical Vertebrae
  - 1.4.3.2. Thoracic Vertebrae
  - 1.4.3.3. The Synsacrum: 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

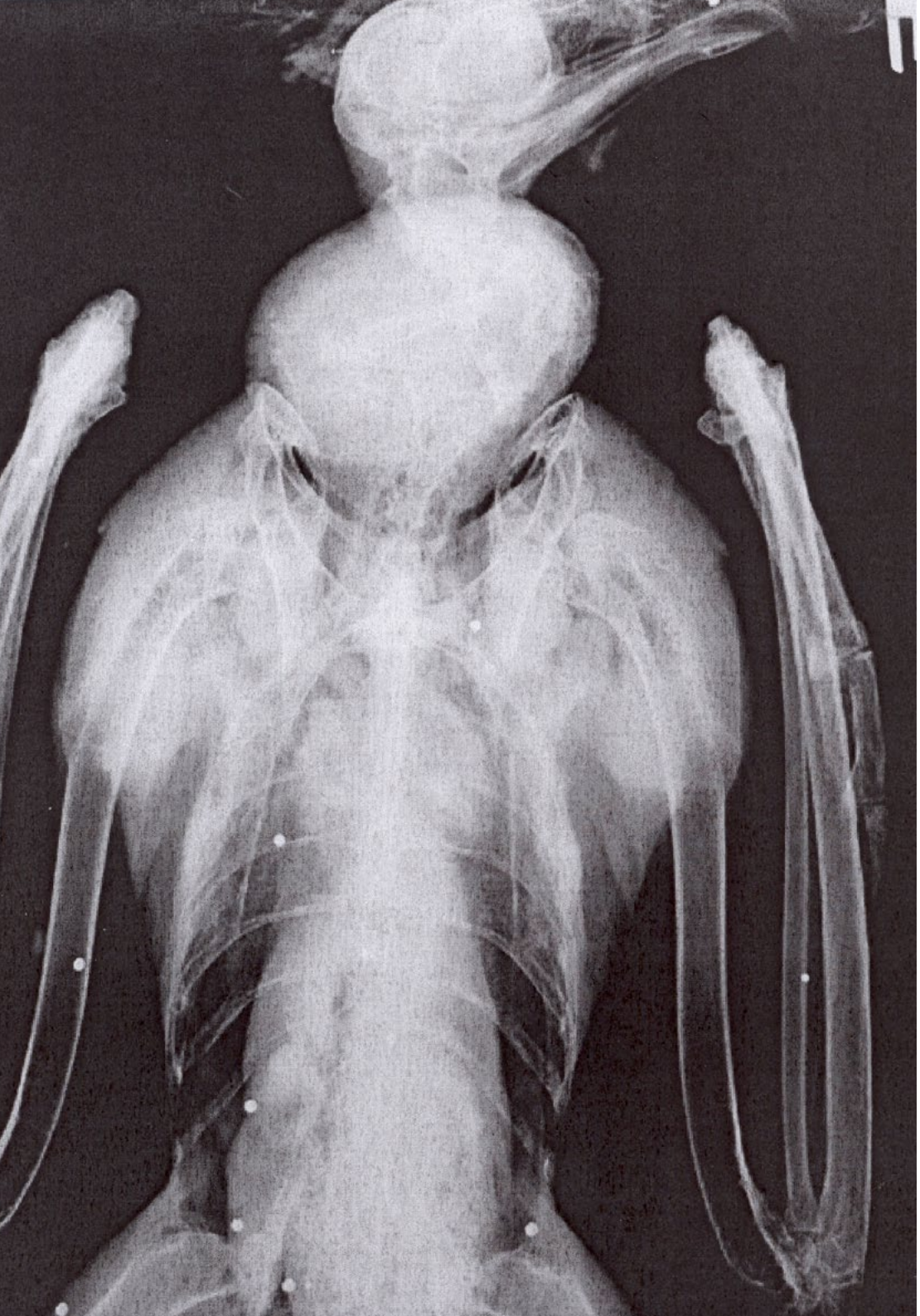
1.5. The Circulatory System
- 1.5.1. Arterial Anatomy
- 1.5.2. Venous Return
- 1.5.3. The Renal Carrier System
- 1.5.4. Blood Composition: Nucleated Red Blood Cells

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. 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. The Male Reproductive System
- 1.8.6. The 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 Hypophysis
- 1.10.5. The Thyroid and Parathyroid Glands
- 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: Diet
- 2.6.1. Feeding Guidelines
- 2.6.2. Nutritional Composition in 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 and 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. Lovebird (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. Amazona (Amazona Sp)
- 2.9.2. Macaw (Ara Sp)
- 2.9.3. Cockatoo (Cacatua Sp)
- 2.9.4. Ecleptus (Ecleptus Roratus)
- 2.9.5. Loris
- 2.9.6. Psittacine Diet Conversion

2.10. Other Dietary Aspects
- 2.10.1. Diet 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. Reaching Accurate Diagnoses
- 3.1.2. Consideration for Sample Preparation
- 3.1.3. Sample Transport and Processing

3.2. Hematology: 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 Commonly 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. Anatomo-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 and 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. Necropsies
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 Further 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 Skeletal System
- 3.8.3. The Sensory System
- 3.8.4. The Muscle 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 Evaluation
- 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. Patients: Holding 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 in the Respiratory System
- 4.5.3. Abnormal Radiographic Findings in the Digestive System
- 4.5.4. Abnormal Radiographic Findings in 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. Avian Influenza

Module 5. Management-Related Pathologies

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 Injuries
- 5.3.2. Most Common Injuries: Causes and Types
- 5.3.3. Symptomatology and Susceptible Species
- 5.3.4. Current Diagnoses and Treatments
- 5.3.5. Long Bone Deformities: Twisting and Bending
  - 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 the 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. Neoplasms
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 and 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. Crop 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. Liver Pathologies
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. Hypophysis: 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 and 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. Spread
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. Spread
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, Ringworm
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 (Ixodide)
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 in 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 Suscultation

7.4.4.2. Capillary Refill Time
7.4.4.3. Electrocardiogram
7.4.4.4. Doppler Cardiac Monitoring 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 Semi-Aquatic 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. The 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 Supplies
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. Plumafoliculoma
8.3.2. The Uropygian 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. Ingluviotomy
8.5.3.1. Location
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. Ingluviostomy Tube Placement
8.6.2.1. Diet 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 Be 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 for 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. Cloacolito
8.8. Magnetic Biopsy Procedures
8.8.1. Hepatic biopsy
8.8.1.1. Indication for 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 management
8.9.3. Tracheotomy
8.9.3.1. Indications: Severe Tracheal Stenosis
8.9.3.2. Surgical Management
8.9.4. Pulmonary Biopsy
8.9.4.1. Indications: Severe Tracheal Stenosis
8.9.4.2. Surgical Management
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 and 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 Commonly Used in Orthopedic Surgery
9.3.2.1. Eight-Shaped Bandage
9.3.2.2. Eight-Shaped 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: Antifungal Macrolide
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. Adrenocorticotropic 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. Other 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 Treatment
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. Disadvantages
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 Kirschnner-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 for 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. Location
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

This specialization will allow you to swiftly and effectively advance your career"

06

Methodology

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

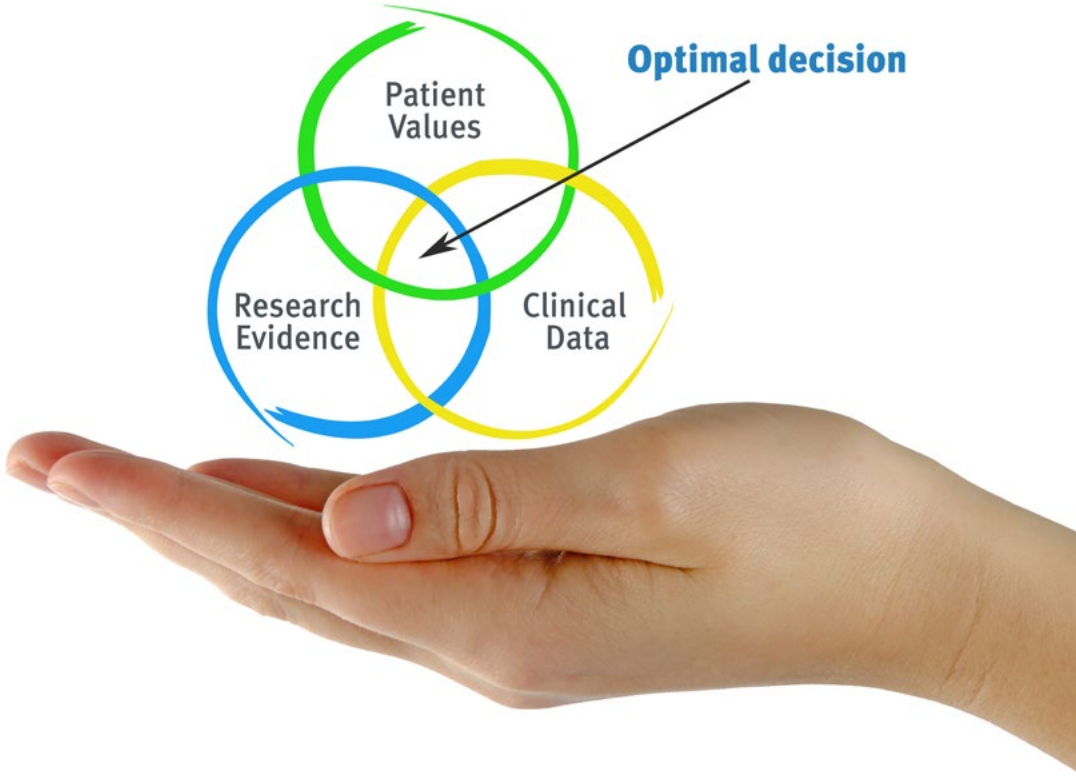
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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:

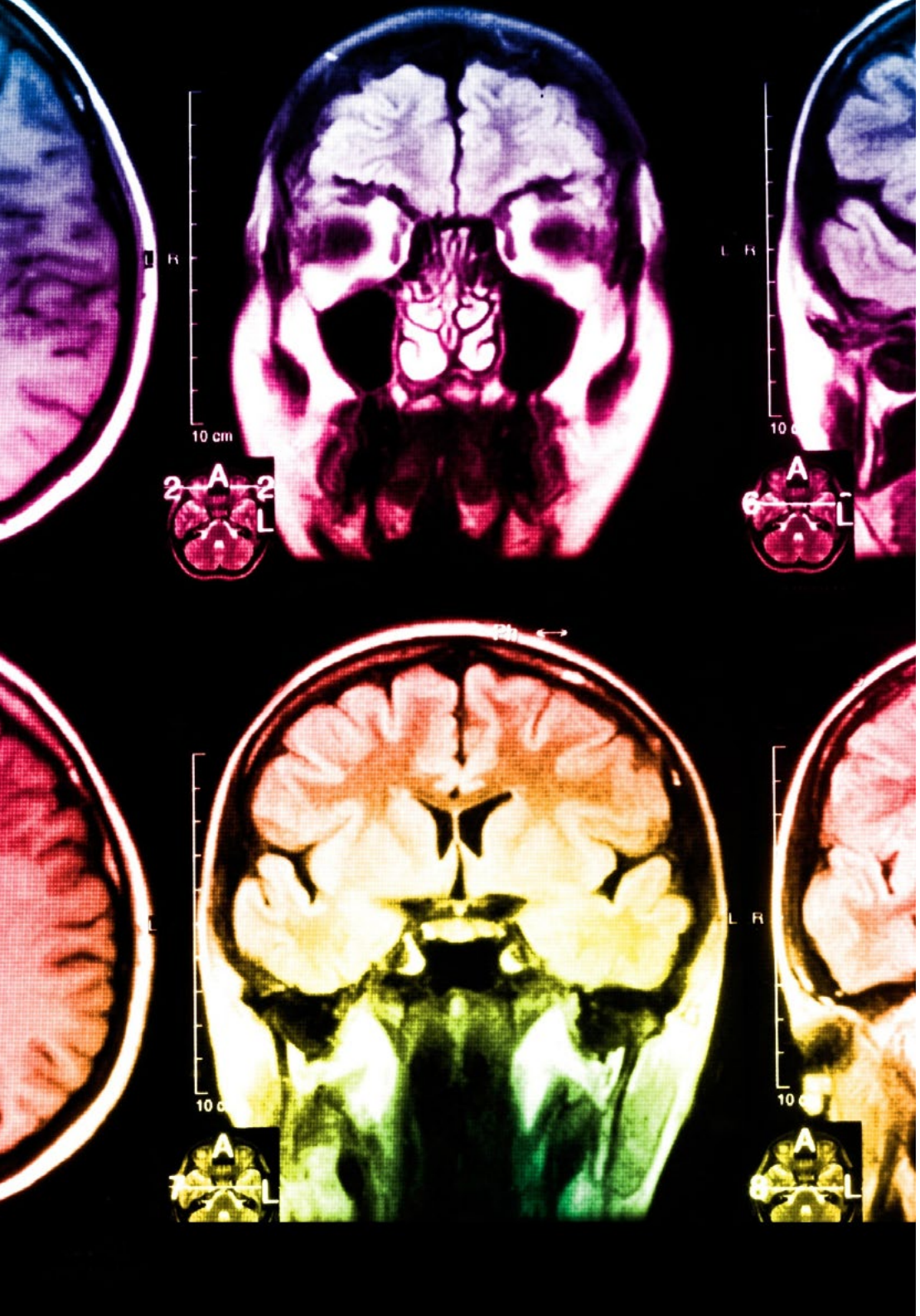
1. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real 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 Harvard case method with the best 100% online teaching methodology available: Relearning.

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

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



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

With this methodology more than 65,000 veterinarians have been 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.

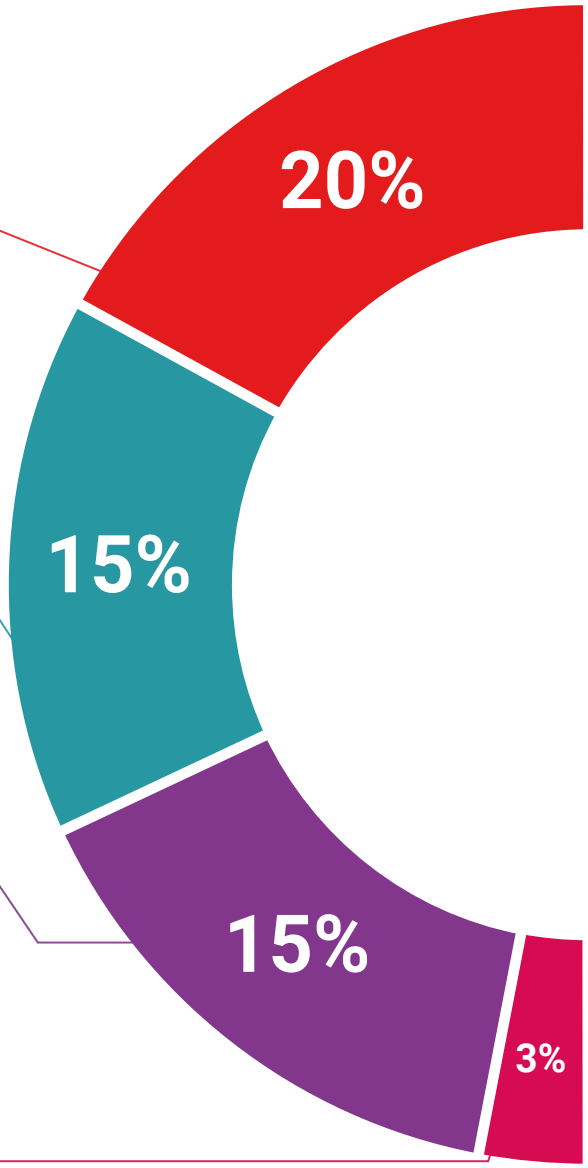
Interactive Summaries

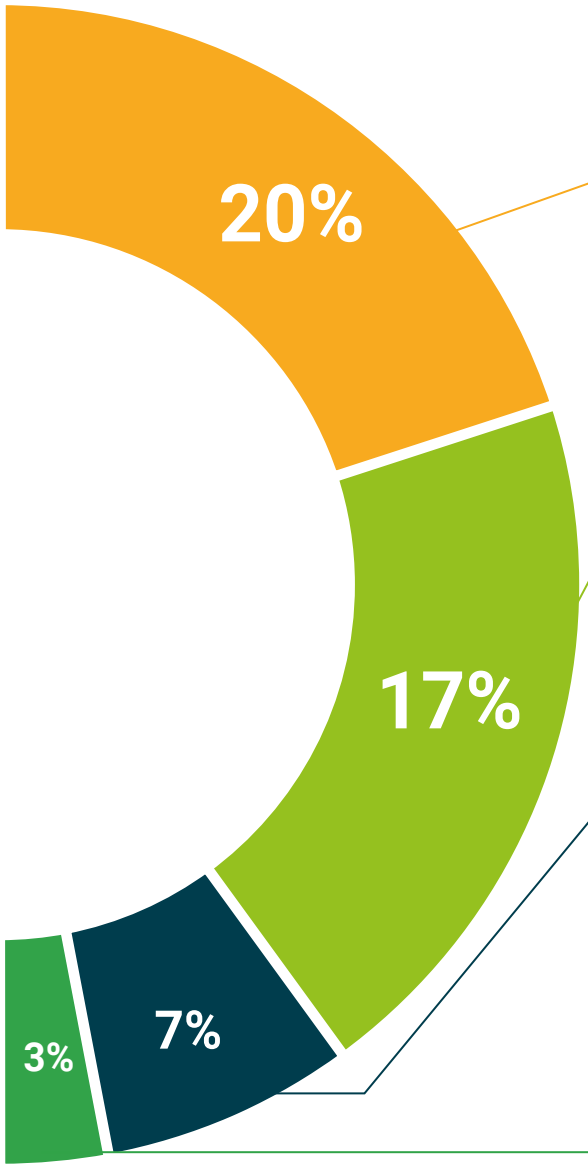
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.

07

Certificate

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your training. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.

Include in your training a Professional Master's Degree in Avian Medicine and Surgery: A highly qualified added value for any professional in the field"

This **Professional Master's Degree in Avian Medicine and Surgery** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree** diploma issued by **TECH Technological University by** tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional from career evaluation committees.

Title: **Professional Master's Degree in Avian Medicine and Surgery**

Official Number of Hours: **1,500 h.**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having successfully passed and accredited the following program

PROFESSIONAL MASTER'S DEGREE

in

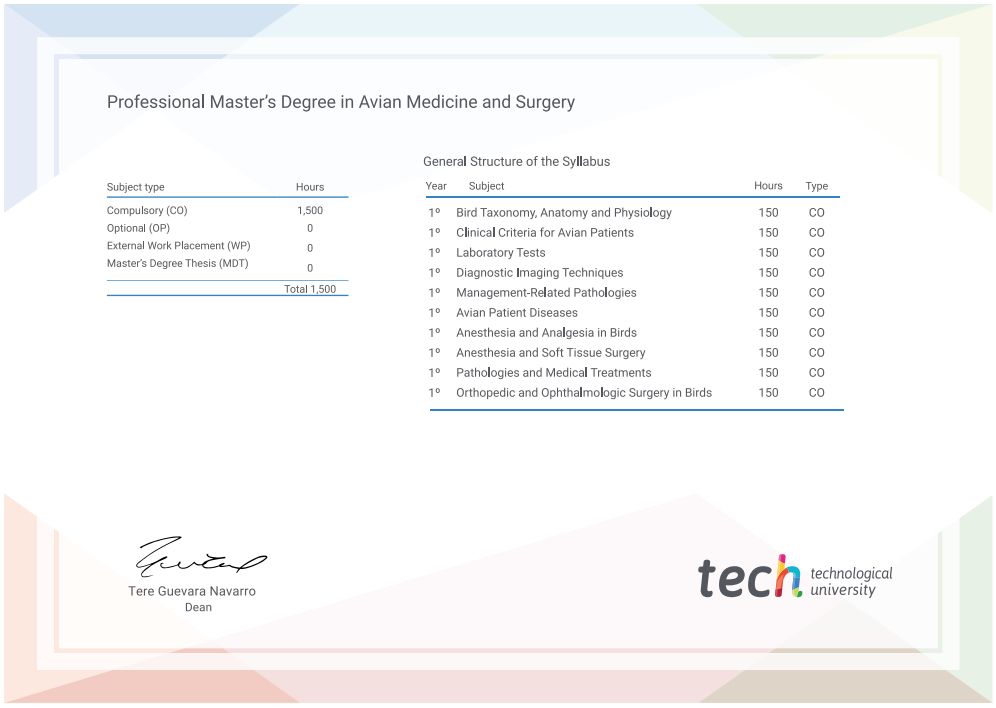
Avian Medicine and Surgery

This is a qualification awarded by this University, equivalent to 1,500 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean


Professional Master's Degree in Avian Medicine and Surgery

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 1,500

General Structure of the Syllabus

Year	Subject	Hours	Type
1º	Bird Taxonomy, Anatomy and Physiology	150	CO
1º	Clinical Criteria for Avian Patients	150	CO
1º	Laboratory Tests	150	CO
1º	Diagnostic Imaging Techniques	150	CO
1º	Management-Related Pathologies	150	CO
1º	Avian Patient Diseases	150	CO
1º	Anesthesia and Analgesia in Birds	150	CO
1º	Anesthesia and Soft Tissue Surgery	150	CO
1º	Pathologies and Medical Treatments	150	CO
1º	Orthopedic and Ophthalmologic Surgery in Birds	150	CO

Tere Guevara Navarro
Dean

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*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.

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Professional Master's Degree
Avian Medicine and Surgery

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

Professional Master's Degree
Avian Medicine and Surgery

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