

## 28432 - Aquatic animals and exotic pets Integrated Course

### Syllabus Information

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**Academic Year:** 2020/21

**Subject:** 28432 - Aquatic animals and exotic pets Integrated Course

**Faculty / School:** 105 - Facultad de Veterinaria

**Degree:** 451 - Degree in Veterinary Science

**ECTS:** 6.0

**Year:** 4

**Semester:** Annual

**Subject Type:** Compulsory

**Module:** ---

## 1.General information

### 1.1.Aims of the course

The subject and its expected results respond to a single approach and goal: On one hand, the Graduate has to be able to respond to the needs and requirements of the Aquaculture sector both in its productive and sanitary management, being able to act also on those wild species closely linked to the natural environment and, on the other hand, learning about the main diseases affecting exotic animals (birds, reptiles and mammals), knowing how to apply an appropriate diagnostic, therapeutic and preventive protocol.

### 1.2.Context and importance of this course in the degree

The adaptation of the Spanish university qualifications to the EEES has forced to modify the structure, contents and methodologies of the curricula of the traditional veterinary degrees in our country. In the design of this new curriculum, it has been tried to give the Degree an approach based, fundamentally, on the competencies that the profession demands and the society needs of a titled and / or graduated in veterinary medicine. After an initial training where the students are acquiring a basic training that emphasizes in particular some general preclinical contents and / or basic productive and technological bases that must have a veterinary professional, they arrive at fourth grade, in which the subjects have been Organized jointly in subjects distributed by species following a completely new structure within veterinary studies, including aquatic and exotic organisms.

Aquaculture is one of the productive activities that has undergone greater evolution and technological growth during the last decades, due in large part to the need to seek solutions to the overexploitation of natural fishery

resources, and our country has not been unaware of this change. In this sense, the veterinary profession has played and must continue to play a preponderant and very active role in the search for new formulas that better improve, if possible, the level of production and health of aquaculture farms, adapting to the new regulations that regulate sustainability The sector and therefore the aquatic environment. For all this, the formation of future veterinarians also in this field acquires a special relevance.

The field of Clinical and Health of Exotic Animals requires the training provided by basic subjects such as Embryology and Anatomy I and II and Physiology and is closely linked to subjects of the same course as Integration of Companion Animals or Integration in Birds and Rabbits. Its bases are centred around the knowledge of medical pathology, reproductive pathology, surgical pathology, infectious and parasitic diseases and special pathological anatomy of the most important diseases for exotic animals. The knowledge in this field will be complemented with the clinical practice of exotic animals that all the students must realize in fifth course.

### 1.3.Recommendations to take this course

In order to facilitate the understanding of the different contents of the fields that integrate this subject, it is advisable that the student has acquired and passed the knowledge of some previous subjects related to biology, chemistry, anatomy, ethnology and animal welfare, parasitology, microbiology and immunology, physiology, pharmacology, general pathology and clinical propaedeutic, general pathological anatomy and reproduction.

## 2.Learning goals

### 2.1.Competences

On successful completion of this course, students will be able to:

1. Know the general and basic terminology of aquatic and exotic animals.
2. Analyse the different management systems of both productive and reproductive aquatic animals
3. Assess the possible impact of a fish farm and apply the current legislation.

4. Carry out methods and procedures of clinical exploration, an adequate sampling and to apply diagnostic techniques depending on the nature of the pathogenic agent and according to each clinical case.
5. Recognize and diagnose the most common diseases in aquatic and exotic animals.
6. Solve those problems related to the health management of an operation
7. Know and apply those legal and administrative provisions of the scope of these animal species.
8. Maintain an ethical and responsible behaviour in the exercise of the profession.
9. Solve problems and make decisions in the professional veterinary field.
10. Work in multidisciplinary teams and show respect, appreciation and sensitivity to the workmates

## 2.2.Learning goals

If students complete the course successfully, they should be able to:

### AQUACULTURE

1. Know the general and basic terminology of the Aquaculture, as well as its history, evolution and current trends at local and global level.
2. Knows the main production systems and the regulations that govern this activity.
3. Knows the facilities and the techniques of feeding, reproduction and improvement, of application in the Aquaculture.
4. Knows the impact this activity has on the environment and its legislation.

### ICHTHYOPATHOLOGY

1. Know and understand the major pathological processes affecting aquatic animals.
2. Make a sampling according to the nature and characteristics of the disease establishing the most appropriate diagnostic tests.
3. Prescribe and apply the most appropriate treatments in each case.
4. Design and implement control and prevention programs according to the nature and the pathological process and the characteristics of the exploitation.
5. Know and apply the current legislation that regulates these species.

### CLINICAL AND HEALTH OF EXOTIC ANIMALS

1. Know what an exotic animal is and know the legislation related to them.
2. Know the appropriate conditions of habitat and maintenance, as well as nutrition and reproduction
3. Know and understands the most frequent and important diseases that affect these animals.
4. Diagnose adequately the pathologies that affect them, taking samples and selecting the most appropriate diagnostic techniques for each case and interpreting the results.
5. Know and apply adequately the pharmacological and surgical treatment most appropriate to each pathology.
6. Know how to introduce preventive measures to prevent the emergence of the most important diseases

## 2.3.Importance of learning goals

Veterinary professionals trained in these disciplines will be able to contribute their comparative dimension, i.e. the ability to relate patterns of disease seen in fish populations in comparison with other animal populations and, on the other hand, the contribution of integrated knowledge, which arises from an epidemiological approach to the disease, which takes into account the factors that condition the presentation and evolution of these pathologies over time, elements that will allow the subsequent implementation of health management measures capable of providing solutions to the real needs of the aquaculture sector, improving the productivity and profitability of farms.

The content of the subject of Clinical and Exotic Animal Health is fundamental for the student to acquire the knowledge and skills necessary to develop, in their professional life, clinical activities in the field of exotic animals, since this subject will address all aspects relating to the exploration and identification of symptoms of disease, application of diagnostic techniques, application of medical and surgical treatments and establishment of preventive measures.

## 3.Assessment (1st and 2nd call)

### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

**Written exam:** The theoretical knowledge acquired in each of the subjects that make up this subject will be assessed jointly by means of a final written exam. This test will constitute 70% of the final grade and will include multiple-choice questions (of four alternatives, just one right answer and no negative score) and short answer questions distributed in three independent blocks, and weighted according to the number of credits in them. This test will take place on the dates indicated in the examination calendar drawn up and approved by the centre.

However, those students who so wish may take a partial written test (on the dates determined by the centre) of an eliminatory nature in the theoretical part of the subjects taught in the first four-month period and of the same characteristics described for the final test.

Practice sessions: Practical knowledge will be assessed through compulsory attendance control, interest and attitude and the

delivery of reports of practices and teaching work and will constitute the remaining 30% of the final grade. Those students who have not attended or carried out these practices or have not reached the minimum grade to pass them may take a theoretical-practical examination of the contents taught in all the practices of the subject. This exam will take place on the same dates as the final written test.

#### **Assessment criteria and requirement levels**

The theoretical and practical rating for each of the subjects will be assessed on a total of 10 points, with the weighting factors 0,7 and 0,3 being applied respectively.

In order to pass the subject, it will be required that, on each of the four-month periods, the grade of both parts (theoretical and practical) be higher than 50% and the final grade of the subject be equally higher than 50%.

#### **Marking system:**

According to the national regulation Law 1025/2003, 5th of September which lays down the European system of credits and marking system for the university degree.

0-4,9: FAIL.

5,0-6,9: PASS

7,0-8,9: GOOD (NT).

9,0-10: EXCELLENT (SB).

As the article 158 of the Statutes of the University of Zaragoza lays down, provisional grades will be displayed at least for 7 days and students will be able to review them on the date, time and place provided for that purpose.

## **4.Methodology, learning tasks, syllabus and resources**

### **4.1.Methodological overview**

The learning process that has been designed for this subject is based on the following methodology:

Following the guidelines set by the ANECA, the Governing Council of the University of Zaragoza approved a presence of 50%, so that the 6 ECT credits allocated to this subject mean in practice 75 hours of student work, structured in participatory master classes, resolution and discussion of problems and clinical cases and practices in farms and teaching laboratories.

### **4.2.Learning tasks**

For the learning of this subject, the student will perform different types of activities.

Participatory lectures. They include 9.5 h Aquaculture; 25.5 h of Ichthyopathology and 20 h of Clinic and Health of Exotic Animals.

Resolution and discussion of problems and clinical cases related to Ichthyopathology (two sessions of 2 hours each), which seeks to promote the capacity for analysis and decision making as close as possible to actual professional practice, including search for relevant information for this and placing special emphasis on the various ways of resolution and justification of the decisions taken that in addition, will have to present their colleagues in public.

There will also be a session of two hours of resolution and discussion of problems and clinical cases related to exotic animals, with the same methodology and objectives indicated above for Ichthyopathology.

Practices in farms and teaching laboratories, in order that the student can achieve mastery of those skills and practical management essential in the acquisition of the corresponding professional competences. The IAAEx-1 practice (Clinical and exotic animal health), will be taught in farms where students will carry out the management, containment, exploration and sampling of different exotic species. Also note that the practices IAAEx-6 and IAAEx-8 corresponding to the ichthyopathological matter will be sequential and therefore the contents will be entirely related.

In the matter of Aquaculture also includes a laboratory practice (IAAEx-3) aimed at the practical knowledge on the part of the students of the techniques related to the induced reproduction in fish species.

### **4.3.Syllabus**

The program offered to the student to help him achieve the expected results includes the following activities ...

#### **1. CLINICAL AND HEALTH PROGRAM IN EXOTIC PETS**

Lectures (20 h)

I. Birds (Psittacidae and Passeriformes)

Unit 1: Anatomical and pathophysiological bases. Basic techniques in the bird clinic

Unit 2: Maintenance and nutritional pathologies.

Unit 3: Digestive pathologies and associated organs.

Unit 4: Respiratory and systemic pathologies.

Unit 5: Dermatological pathologies.

Unit 6: Reproductive and genitourinary pathologies.

Unit 7: Emergency, intensive care and surgery.

II. Reptiles (Chelonians, Lacertilians and Ophidians)

Unit 8: Anatomical and pathophysiological bases. Basic techniques in the reptile clinic.

Unit 9: Maintenance and nutritional pathologies.  
Unit 10: Digestive pathologies and associated organs.  
Unit 11: Respiratory and systemic pathologies.  
Unit 12: Dermatological pathologies.  
Unit 13: Reproductive and genito-urinary pathologies.  
Unit 14: Emergency, intensive care and surgery.

III. Mammals (Rabbit, Rodents-Guinea Pig, Chinchilla, Hamster, Carnivores-Ferrets)

Unit 15: Maintenance and nutritional pathologies.  
Unit 16: Digestive and respiratory diseases.  
Unit 17: Reproductive, genito-urinary, dermatological and systemic pathologies.  
Unit 18: Emergency, intensive care and surgery.

Seminar 1. CITES and legislation related to the transportation and possession of NACs.  
Seminar 2. Zoonoses transmitted by the NAC (epidemiology and international legislation).

Practical sessions (5 h)

Practice IAAEx-1. Clinical exploration and sampling in birds and reptiles (3 h).  
Practice IAAEx-2. Problem solving and clinical cases (2 h).

## 2. AQUACULTURE PROGRAM

Lectures (9,5 h)

Unit 1: Basic aspects of fish, crustaceans and molluscs aquaculture.  
Unit 2: Fish reproduction.  
Unit 3: Nutrition in fish, crustaceans and molluscs.  
Unit 4: Continental and marine aquaculture facilities. Water quality.  
Unit 5: Sustainable aquaculture. Pollutants.  
Unit 6: Aquaculture economics and management.

Seminar 1. Introduction to aquaculture. General concepts. Historical evolution, current situation and perspectives. Aquaculture sector, value chain and the role of veterinarians.

Seminar 2. Reproductive and gametes management. Applied biotechnology in aquaculture breeding.

Practical Sessions (3 h)

Practice IAAEx-3. Sexual differentiation: Dissection, techniques of fertilization, sex change and triploidization.

## 3. PROGRAM IN ICHTHYOPATHOLOGY

Lectures (25.5 h)

I. Basic concepts

Unit 1: Environmental factors that influence the disease.  
Unit 2: Anatomical and psysiopathological bases in ichthyopathology.  
Unit 3: Fish immunology.

II. Abiotic disease factors affecting fish

Unit 4: Diseases due to alterations in water quality.  
Unit 5: Nutritional diseases and developmental disorders (malformations).

III. Biotic disease factors affecting fish

Unit 6: Ecto-protozoosis in fish.  
Unit 7: Ecto-helminthiasis in fish.  
Unit 8: Arthropod, leech and glochidial infestation.  
Unit 9: Endo-protozoosis in fish (flagellates and coccidiosis).  
Unit 10: Microsporidia infection.

Unit 11: Myxozoan infection.

Unit 12: Endo-helminthiasis in fish.

Unit 13: Fish borne helminthic zoonoses.

Unit 14: Notifiable fish diseases. Viral haemorrhagic septicaemia and infectious hematopoietic necrosis.

Unit 15: Infectious salmon anemia, infectious pancreatic necrosis and salmonid alphavirus.

Unit 16: Infection with koi herpesvirus and spring viraemia of carp.

Unit 17: Lymphocystis and nodavirus diseases.

Unit 18: Furunculosis and other diseases caused by *Aeromonas*.

Unit 19: Streptococcosis and bacterial kidney disease.

Unit 20: Myxobacterioses and red mouth disease.

Unit 21: Vibriosis and pasteurellosis.

Unit 22: Saprolegniasis and ichthyophoniasis.

IV. Biotic factors of disease affecting molluscs.

Unit 23: Protozoan parasites of bivalve molluscs I: Bonamiosis and Mikrocytosis.

Unit 24: Protozoan parasites of bivalve molluscs II: Marteiliosis and Perkinsosis.

V. Biotic factors of disease affecting crustaceans.

Unit 25: Notifiable shellfish diseases. Afanomicosis of the native crayfish.

Practical sessions (12 h)

Practice IAAEx-4. Problem solving and cases I (2 h).

Practice IAAEx-5. Problem solving and cases II (2 h).

Practice IAAEx-6. Ichthyopathological study I (4 h).

Practice IAAEx-7. Ichthyopathological study II (2 h)

Practice IAAEx-8. Interpretation of results of the Ichthyopathological diagnosis (2 h).

#### **4.4.Course planning and calendar**

The dates and key landmarks of the subject are described in detail, along with those of the other subjects of the fourth year in the Degree of Veterinary, in the Web page of the Faculty of Veterinary Medicine (<https://veterinaria.unizar.es/academico/Veterinary-grade-study-plan>). This link will be updated at the beginning of each academic year.

#### **4.5.Bibliography and recommended resources**

<http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=28432>