Universidad Zaragoza

Academic Year/course: 2023/24

28422 - Diagnostic Imaging

Syllabus Information

Academic year: 2023/24
Subject: 28422 - Diagnostic Imaging
Faculty / School: 105 - Facultad de Veterinaria
Degree: 451 - Degree in Veterinary Science
ECTS: 6.0
Year: 3
Semester: Annual
Subject type: Compulsory
Module:

1. General information

The general objective is for students to acquire theoretical and practical knowledge of diagnostic imaging techniques used in veterinary medicine, in order to use them in the development of their profession.

This objective and the contents taught are aligned with some of the Sustainable Development Goals of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: Goal 3: Health and wellness; Goal 4: Quality Education; Goal 5: Gender Equality. 8 Decent Work and Economic Growth; Goal 13: Climate Action

To take this subject the student must have passed the subjects of Basic Sciences for Veterinary Medicine, Anatomy and Embryology I and II.

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

1. Know the technical basis and fundamentals of imaging techniques commonly used in different animal species of veterinary interest.

2. Know the indications of imaging techniques commonly used in different animal species of veterinary interest.

3. Know the language and terms used in the different diagnostic imaging systems.

4. Know the mechanisms of interaction of X-rays with matter and radioprotection measures.

5. Know how to interpret normal patterns in different imaging techniques.

6. Recognize and know how to diagnose the main types of pathological patterns and lesions observed in the use of different imaging techniques.

7. Is able to practically perform quality radiography, use ultrasound equipment and know the basics of how to perform an endoscopy.

3. Syllabus

1. THEORETICAL PROGRAM

General Module

Topic 1. Fundamentals of Radiology (2 h)

Topic 2. Fundamentals of Ultrasound (2 h)

Topic 3. Other imaging media: CT, MRI, nuclear medicine. Fundamentals and diagnostic applications (2 h)

Topic 4. Basic aspects of endoscopy (1 h) SMALL ANIMALS MODULE

Topic 5. Thorax 1: Anatomy applied to diagnostic imaging in the thoracic cavity (1 h)

Topic 6. Thorax 2: Thorax radiology (4 h)

Topic 7. Thorax 3: Echocardiography (2 h)

Topic 8. Abdomen 1: Radiological Anatomy and Radiology of the abdomen (4 h)

Topic 9. Abdomen 2: Ultrasound Anatomy and Abdominal Ultrasound (4 h)

Topic 10. Anatomy applied to diagnostic imaging of the head and neck. Radiology of the head and neck (2 h)

Topic 11. Anatomy applied to spine imaging. Spinal radiology (2 h)

Topic 12. Anatomy applied to diagnostic imaging in extremities. Extremity radiology (2 h)

Equine module

Topic 13. Diagnostic imaging of the head (1 h) Topic 14. Diagnostic imaging of the neck and axial region (1 h)

Topic 15. Diagnostic imaging of the thorax. Upper respiratory tract, lung and lower respiratory tract. (2 h)

Topic 16. Diagnostic imaging of the abdomen 1: gastrointestinal and urinary tract (1 h)

Topic 17. Abdominal imaging 2: reproductive system (1 h)

Topic 18. Diagnostic imaging of extremities 1: finger (hoof and pastern) (1 h)

Topic 19. Diagnostic imaging of extremities 2: fetlock and shank (metacarpus and metatarsus) (1 h)

Topic 20. Diagnostic imaging of extremities 3: proximal regions of the forelimb (carpus, forearm, elbow, upper arm, upper arm, shoulder joint, back) (1 h)

Topic 21. Diagnostic imaging of extremities 4: proximal regions of the hind limb (hock, leg, stifle, thigh, hip) (1 h)

Module other species

Topic 22: Diagnostic imaging in exotic species and fish (1 h)

Topic 23: Diagnostic imaging in livestock species (2 h) 2.

2. PRACTICAL PROGRAM

PRACTICE 1. General ultrasound: types of ultrasound, basic technique, artifacts. (2 hours)

PRACTICE 2. General radiology: quality control (detail, contrast), artifacts, safety. (1 hour 30 min)

PRACTICE 3. Abdominal ultrasound of small animals: protocol for abdominal ultrasound examination, normal patterns. (2 hours)

PRACTICE 4. Radiology in pets: positions, handling and exposure parameters. (2 hours)

PRACTICE 5. Echocardiography: techniques, access windows, normal patterns. (1 hour)

PRACTICE 6. Radiology in horses: quality control (detail, contrast), artifacts, safety, handling, positions. (2 hours 30 min)

PRACTICE 7. Ultrasound in horses: techniques, access windows, normal patterns. (2 hours 30 min) PRACTICE 8. Endoscopy: basic techniques, equipment handling and description (1 hour)

PRACTICE 9. Diagnostic imaging in slaughter animals. (2 hours)

3. VOLUNTARY SEMINARS

SEMINAR 1. Echocardiography and augmented reality (1 hour)

SEMINAR 2. Clinical cases of small animal radiology (1 hour)

SEMINAR 3. Clinical cases of equine diagnostic imaging (1 hour)

4. Academic activities

The teaching-learning methodology combines different types of teaching resources that will be used for integrated learning (combining the different topics) of the contents of the subject:

-Participative master classes (42 hours)

-Practical sessions (16.5 hours): 9 sessions with small groups of around 1 and 2.5 hours

-Voluntary seminars (2 hours): presentation of clinical cases

-Autonomous student work (63 hours)

- Assessment tests (3 hours)

5. Assessment system

In order to pass the subject, a theoretical exam (75% of the final grade) and a practical exam (25%) must be passed. In case of passing one of the exams, it will be kept between calls.

The overall theoretical exam will be taken in writing in June and July. To pass, the student must obtain at least 50% of the total grade. The theoretical part can also be taken in midterm exams in January, June and July. The student must obtain at least 60% of the total grade in each of the two midterm exams in order to pass. Passed midterm exams will be kept between exam calls of the same year. In the event that the theoretical exam is taken in midterm exams and they have been passed separately, the grades of both will be averaged.

The practical exam will be taken in writing in June and July and will be passed with 50%. If the student has not attended all the practical sessions, there will be an oral practical exam.

Exam questions may include images and may be justified short answer, medium development or multiple choice.