

Academic Year/course: 2021/22

## 28433 - Equine Integrated Course

### Syllabus Information

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**Academic Year:** 2021/22

**Subject:** 28433 - Equine Integrated Course

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

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

**ECTS:** 7.0

**Year:** 4

**Semester:** Annual

**Subject Type:** Compulsory

**Module:**

## 1. General information

### 1.1. Aims of the course

The goal of the course is to provide students an adequate level of theoretical and practical knowledge of production, clinical and equine health that will serve as a starting point for further professional development.

In order to achieve this general goal, the **specific aims** of this course are to:

1. Know the essential guidelines of a correct nutritional management.
2. Know the different systems of breeding of saddle horses in its different components and the main guidelines of handling of the horses.
3. Know the objectives and criteria of the equine selection schemes.
4. Know the infectious and parasitic processes that affect equids.
5. Recognize the main lesions that the different pathologies originate in the equids.
6. Know the diagnosis, treatment and prognosis of the main pathologies of the equids.
7. Understand and apply assisted reproduction techniques in stallions and mares.
8. Identify and solve the processes that affect the gestational period, the birth and puerperium as well as the associated pathologies of the mare and foal.

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

In the first years of the degree, the student studies subjects related to basic sciences that a veterinarian has to know, as well as subjects that deal with the form and function of animals, general preclinical contents and the fundamental productive and technological bases.

After this initial training, the student reaches the fourth year of the degree, in which the subjects have been organized into subjects by species.

As a consequence of this structure, many of the traditional subjects disappear such as: Infectious Diseases, Parasitic Diseases, Animal Production, Nutrition, Quantitative or Special Genetics, Special Pathology, Medical Pathology, Surgical Pathology, Pharmacotherapy and Reproduction and Obstetrics. These ten subjects have been present as subjects of their own (with identical or similar denominations) in practically all Spanish veterinary curriculum since the 1970s.

The aim of this structure is to ensure that undergraduate students acquire the necessary skills to be able to efficiently develop the professional activities that society entrusts to veterinarians. In this professional reality of the veterinarian the knowledge of the different subjects are used and applied in an integrated way in the different fields of action, which are usually determined by the animal species around which the veterinarian develops his work.

As a result of this, in the fourth year these traditional subjects have been incorporated into six different subjects that, organized by species, integrate the different contents that were previously divided into a dozen subjects. These new subjects are integration in ruminants, small animals, pigs, equids, birds and rabbits and exotic animals and fish.

The course will focus mainly on basic aspects of production, clinical and health of saddle horses.

In the last decades, the socioeconomic development of our country and those of our environment has led to horse to evolve from being exclusively a working tool and a source of animal protein to become the main element of many sporting and recreational activities, which generates significant economic activity in developed countries, often linked to close emotional ties between equines and their owners and carers. This reality makes our society demand specialized services from the professional veterinarian, which need a solid initial base, at grade level, in the productive, clinical and sanitary aspects

related to this species, allowing graduates to continue, if necessary, with the increasingly necessary postgraduate specialization.

Therefore, one of the subjects of this fourth year is the equine integrated course, which aims that the student acquires, from an integrative vision, an adequate level of competence and ability in production, clinical and equine health. The course consists of 7 ECTS credits that respond to the relative importance of the number of graduates who exercise their profession around this species, which is, for census and livestock reasons, much lower than that of veterinarians dedicated to other pets or slaughter animals.

The subject, since there are numerous pathologies, production processes, clinical techniques and very similar health problems among the different species distributed in other subjects of the same course, will have contents related to:

- Integration in pets (e.g. in the diagnosis and medical or surgical treatment of many similar processes in specialities such as ophthalmology, neurology, dermatology, cardiology, fluid therapy, intensive care, anaesthesiology, etc.).
- Integration in ruminants (e.g. in relation to some forage production and feeding patterns - due to the herbivorous condition of horses - as well as to selection mechanisms and schemes; but also in many clinical procedures and techniques, especially due to the similar size of equids and cattle, and even in diseases produced by very similar infectious and parasitic agents, how to prevent them, how to diagnose them, their lesions...).

In the fifth year, the degree includes practicum-like subjects in which more clinical aspects can be practiced (Clinical Practicum in Small Animals, Exotics and Equids), post-mortem diagnosis (block of post-mortem diagnosis of the Practicum of food animals), health interest and public health related to the species (Zoonoses, Preventive Medicine and Health Policy), as well as food safety (Hygiene, Inspection and Food Control), since we cannot forget that some equids are also produced and destined for human consumption.

### 1.3. Recommendations to take this course

It is recommended that the student has previously acquired the competences acquired in the following subjects:

- Agronomy
- General Pathological Anatomy
- Image Diagnosis
- Embryology and Anatomy I and II
- Epidemiology and biostatistics
- Ethnology and animal welfare
- Pharmacology and Drug Therapy
- Animal physiology
- Genetics
- Micro-biology and Immunology
- Animal Nutrition
- Parasitology
- General Pathology and Propaedeutics I and II
- General surgical pathology, surgery and anesthesiology
- Reproduction and Obstetrics
- Toxicology

## 2. Learning goals

### 2.1. Competences

Student's competencies after completing the course:

1. The basics of equine breeding and the basics of equestrian facilities and environmental hygiene
2. Raw materials for horse feeding and the basis of equine nutrition and ration formulation.
3. Genetic applications to improvement and health programs
4. Methods and procedures for clinical examination in equines, diagnostic and complementary techniques and their interpretation.
5. The clinical study of the sick horse and the medical, surgical or hygienic-dietary treatments required, as well as sporadic diseases affecting groups of horses.
6. Sedation, anaesthesia and equine resuscitation and surgical techniques used in horses
7. Reproductive strategies and procedures, foaling and puerperium in the equine species, necessary care and frequent alterations. Care and diseases of newborn foals.
8. The main infectious, parasitic, medical and surgical processes affecting equids and applying knowledge and skills to real contexts.

9. Technical measures and regulations for the prevention, control and eradication of equine diseases.
10. The technique of necropsy of equidae and the recognition and diagnosis of the different types of lesions and their association with pathological processes.
11. Basic knowledge of a second language, especially in technical aspects related to production, clinical and equine health.

## 2.2. Learning goals

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

1. Know the main nutritional requirements of the horse in its different productive and physiological states and that he is capable of analyzing and elaborating a basic food ration and of explaining and recommending the essential guidelines of a correct nutritional management.
2. Know the different systems of breeding of saddle horses in their different components, as well as the main equestrian disciplines and uses of the horse and that he understands the characteristics and dimensions of the facilities habitually used in the equine industry and the main guidelines of handling of the horses and the consequences derived from the errors of handling.
3. Understand the objectives and selection criteria in the equine selection schemes in Spain, their genetic parameters and genetic evaluation models.
4. Apply the basic protocols of physical restraint, tranquilization, sedation, anesthesia, monitoring and pain management in horses.
5. Know and recognize the main infectious and parasitic processes affecting equids and perform differential diagnosis with other diseases. The student must also demonstrate that he knows the different diagnostic tests that allow the identification of the causal agent and that he has acquired the necessary skills to perform some of them, as well as to apply the therapeutic protocols and the appropriate strategies for the prevention, control and/or eradication of infectious and parasitic processes.
6. Apply the standard necropsy technique in the equine species, which knows and recognizes the main lesions in these species, which knows how to explain the pathogenesis of the detected lesions, and which can orient towards possible etiological diagnoses and their differentials from the observed lesions.
7. Know and understand the symptomatology, etiology, pathogenesis, predisposing factors, differential diagnosis, basic diagnostic aids, essential treatments and the prognosis of the main pathologies that affect the different apparatuses and organic systems of the adult horse and knows how to use the related terminology.
8. Include the characteristics and reproductive control of equids and applies reproductive biotechnologies.
9. Knows the mechanisms involved in foaling, their control and the techniques that favor it, as well as the medical and surgical treatments application in obstetric and reproductive processes
10. Understand the physiological differences between neonates and adult horses and knows and understands the symptomatology, etiology, pathogenesis, predisposing factors, differential diagnosis, basic diagnostic aids, essential treatments and the prognosis of the main diseases that affect the different apparatuses and organic systems of foals and neonates and knows how to use related terminology.

## 2.3. Importance of learning goals

They allow students to acquire an adequate level of theoretical and practical knowledge of breeding, clinical and equine health that will serve as a starting point for your subsequent professional development.

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

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

**Theory sessions** will be assessed by means of written exams which may consist of a combination of multiple choice, short answer and medium development questions. The grade for this test is 75% of the final grade.

The examination of the theoretical contents will be the following ones:

- **Assessment:** the first midterm exam
- **Assessment:** the second midterm exam

The weight of each of these tests in 75% of the final grade corresponding to the theoretical part, will be weighted according to the extent of the thematic blocks included in each test.

In order to pass these theoretical tests it will be necessary to reach at least 50% of the maximum score of the exam. Passing these tests will accredit the achievement of the theoretical component of learning outcomes 1 to 9. Assessment tests 1 and 2 will take place on the dates indicated in the examination schedule drawn up by the centre. The midterm exam grades are saved for sessions of the same academic year.

## Assessment of the knowledge and practical skills

**Assessment 3:** The grade of this exam is 25% of the global grade, but it will be only counted if the two theory midterm exams have been passed separately. Passing these tests will accredit the achievement of the practical part of the learning outcomes 1 to 9. It breaks down in three parts

**Part 1:** Making the most of the practical sessions: At the end of each practice, the teacher will verify that the student has passed the objectives of the practice. The continuous assessment of the performance in the practical sessions will suppose 10% of the final grade of the subject.

**Part 2:** Written examination of practical knowledge given in practical sessions attended by all groups only in the first midterm exam. Only students who have attended more than 75% of the practical sessions of the first midterm exam (in the same academic year or in previous years) may take this test. It will be held on the same day of the **Assessment 1**. No minimum grade is required to pass this part.

**Part 3:** Written exam of practical skills taught in practical sessions attended by all groups only during the second midterm exam throughout the course (excluding sessions attended by all groups in the first part). Only students who have attended more than 75% of the practical sessions of the second midterm exam (in the same academic year or in previous years) may take this test. It will be held on the same day of the **Assessment 2**.

Parts 2 and 3 may combine multiple-choice, short answer and mid-development questions, documented questions with multimedia files, and case and problem solving.

Students who do not attend 75% of the scheduled practical sessions will be required to take a practical test, which may include demonstrations of animal, biomodel, or specimen skills, as well as written questions, which may combine multiple-choice, short-answer, and mid-development questions, questions documented with multimedia files, and case and problem solving.

The grade of the practical part shall be saved for future sessions

### Global assessment

In June and September sessions, students will be able to take **Assessments 1 and 2** as well as **Part 1 and 2** of the **Assessment 3** if they have attended at least 75% of the practices.

Students who have not attended at least 75% of the scheduled practical activities should take a practical exam, which may include demonstrations of skills on animals, biomodels or specimens, as well as written questions, which may combine multiple-choice, short answer and mid-development questions, questions documented with multimedia files, and case and problem solving.

### Evaluation criteria and requirement levels

In the different assessment tests the theoretical and practical knowledge, skills and transversal competences included in this subject will be evaluated. In the multiple-choice questions of the written examinations incorrect answers will be penalized with the value of the question divided by the number of wrong options.

### 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 designed for this topic is based on lectures, demonstrations and laboratory sessions, problem and case-based learning sessions, on-line multimedia material and autonomous work. No minimum grade is required to pass this part.

### 4.2. Learning tasks

The activities are detailed in the following table

Learning Task	Face to face hours	FACTOR	Off-site hours	TOTAL
Theory lectures	60	0.83	50	110
Practices and wet-lab sessions	27.5	0.54	15	42.5
Multimedia			11	11

Tutorials			6.5	6.5
Exams	No		5	5
<b>Total</b>	87.5	1	87.5	175

### 4.3. Syllabus

**LECTURES:**60 hours

#### **MODULE 1 (5 h)**

- Topic 1: General overview of management, uses, facilities and official documentation of horses (1)
- Topic 2: Equine nutrition (2)
- Topic 3: Breeding in saddle and sport horses (1)
- Topic 4: Sedation and anesthesia in horses (1)

#### **MODULE 2: GASTROINTESTINAL TRACT (12 h)**

- Topic 5: Oral cavity (1)
- Topic 6: Parasitic diseases with particular impact in the digestive tract (including dicytocolosis) (2)
- Topic 7: Diseases of the gastrointestinal tract without acute colic symptomatology: EGUS, esophageal choke, inflammatory bowel disease and malabsorption, chronic diarrhoea (1)
- Topic 8: Colic syndrome: classification and clinical exploration. Importance of endotoxemia in equine clinic (2)
- Topic 9: Fluid therapy and medical treatments of colic (1)
- Topic 10: Decision making, principles of colic surgery and postoperative complications (1)
- Topic 11: Diseases that cause colic in stomach, small intestine and cecum
- Topic 12: Diseases that cause colic in large colon (including acute colitis) (1)
- Topic 13: Diseases that cause colic in small colon. Other clinical processes: rectal lacerations and prolapse, peritonitis and abdominal herniation (1)
- Topic 14: Acute and chronic diarrhoea. Inflammatory bowel disease and malabsorption (including pathology) (1)

#### **MODULE 3: OTHER ORGANIC SYSTEMS AND APPARATUS (13 h)**

- Topic 15: Main cardiac arrhythmias and heart murmurs (1)
- Topic 16: Main urinary diseases: bladder stones, acute and chronic renal insufficiency (1)
- Topic 17: Endocrine, metabolic and liver diseases (1)
- Topic 18: Main diseases in equine ophthalmology (1)
- Topic 19: Main non-infectious or parasitic neurological diseases (1)
- Topic 20: Neurological infectious diseases (2)
- Topic 21: Neurological parasitic diseases. Systemic and notifiable parasitic diseases (1)
- Topic 22: Systemic and notifiable infectious diseases (2)
- Topic 23: Dermatology: skin neoplasms, processes of allergic origin (1)
- Topic 24: Dermatology: processes of parasitic and infectious ethiology (1)
- Topic 25: Gross pathology of module 5 (1)

#### **MODULE 4: RESPIRATORY TRACT (7 h)**

- Topic 26: Upper respiratory tract: nasal cavity, sinus, pharynx, larynx, guttural pouches and trachea (2)
- Topic 27: Lower respiratory tract: not-infectontagious diseases. Pneumonia. Conditions of the pleural cavity and chest wall, pleuropneumonia (2)
- Topic 28: Bacterial respiratory diseases (1)
- Topic 29: Viric respiratory diseases (1)
- Topic 30: Gross pathology of respiratory tract (1)

#### **MODULE 5: LAMENESSES (10 h)**

- Topic 31: Semiology and diagnosis. Diagnostic regional and intrasynovial blocks (1)
- Topic 32: Hoof care. Principles of normal and therapeutic shoeing (0'5)
- Topic 33: Laminitis (1'5)
- Topic 34: Injuries of the hoof (1)
- Topic 35: Bone diseases (1)
- Topic 36: Wound management, orthopedic emergencies and bandages (1)
- Topic 37: Osteoarthritis (Degenerative Joint Disease) (1)
- Topic 38: Podothroclear syndrome and caudal hoof pain (1)
- Topic 39: Tendon and ligament injuries (1)
- Topic 40: Muscular diseases and myopathies. Causes of back pain (1)

## **MODULE 6: REPRODUCTION. STUD FARM DISEASES (8 h)**

- Topic 41: Exploration of the mare (including uterine biopsies and cytology) and estrous cycle control (1)
- Topic 42: Stallion exploration. Semen extraction, evaluation and conservation (1)
- Topic 43: Mare and stallion infertility (1)
- Topic 44: Natural breeding, artificial insemination and embryo transfer (1)
- Topic 45: Infectious and parasitic diseases of reproductive tract and sexual transmission, including infectious abortions (1)
- Topic 46: Management of gestation. Problems during pregnancy and non-infectious abortions (1)
- Topic 47: Partum induction, dystocia, caesarean-section and puerperal problems (1)
- Topic 48: Stallion and mare urogenital surgery (sudden procedures) (1)

## **MODULE 7: NEONATOLOGY AND COLTS (5 h)**

- Topic 49: Birth: fetal viability, neonatal resuscitation, adaptation of extra-uterine life. The sound foal. Sick newborn warning signs. Neonatal hypoxic-ischemic encephalopathy (1)
- Topic 50: Failure of passive immunity transfer. Neonatal sepsis. Neonatal isoerythrolysis. (1)
- Topic 51: Other common diseases of the newborn foal and colts: umbilical and scrotal hernias, umbilical stump and bladder disorders, septic arthritis/polyarthritis (1)
- Topic 52: Developmental Orthopedic Diseases, (1)
- Topic 53: Gross pathology of modules 6 and 7(1)

### **PRACTICAL SESSIONS: 27,5 face-to-face workshop hours**

- Session 1: Preparation of rations (2 hours) (12 groups) Computer room
- Session 2: Qualitative and quantitative coprology of parasitic processes. Parasitological post-mortem diagnostic (2 hours) (12 groups) Laboratory of Parasitology.
- Session 3: Lameness examination: inspection and static exam with lame horses (1.5 hours) (24 groups) HVUZ.
- Session 4: Lameness examination: dynamic exam with lame horses and/or and/or Computerized Lameness Simulator

(1.5 hours). (24 groups) HVUZ and/or Computer room.

- Session 5: Peri-neural anesthesia and arthrocentesis of the distal limb of the horse, dissection of the distal limb (3 hours) (24 groups) Wet lab with postmortem specimens in Surgical lab.
- Session 6: Case-based learning session: SOS: my horse is in colic! (2 hours) (12 groups)
- Session 7: Case-based learning session: My horse show respiratory noises...! My horse coughing with/without nasal discharge...! (2 hours) (12 groups)
- Sessions 8 and 9: Genital exploration of the mare. Evaluation and preparation of seminal doses (3.5 hours) (24 groups). Teaching farm-ship with mares and Biotechnology lab
- Session 10: Case-based learning session: Infertile mare...! Danger: abortions...! (2 hours) (12 groups)
- Session 11: Case-based learning session: My newborn foal is ill...! (2 hours) (12 groups)
- Session 12: Problem-based learning session: I just bought a horse...! (2 hours) (12 groups)
- Session 13: Necropsy technique in horses: visualization of the equine digestive tract and other internal organs (2 hours) (6 groups) Necropsy room.
- Session 14: Advanced clinical examination - Pre-purchase examination (2 hours). (24 groups) Teaching farm-ship with horses

### **MULTIMEDIA FILES SELF-STUDY: 11 hours of autonomous work**

Students must watch (individually or in a group) the following multimedia files. These activities must be carried out before the respective theoretical lectures.

- Video: The horse digestive system, Horse digestion guide Equine Nutrition Feedstuffs y The horse body condition (1 hour) (before Topic 2)
- CD Equine Dental (before Topic 5) (1 hour)
- CD Passing a nasogastric tube in the horse (before Topic 7) (1 hour)
- DVD Equine Colic (before Topic 8) (2 hours)
- CD Cardiac sounds (before Topic 15) (1 hour)
- CD Equad: upper respiratory tract (before Topic 26) (1'5 hours)
- CD Reproductive ultrasound in mares (before Topic 41) (0'5 hours)
- CD Foal in Mare (before Topic 47) (1 hour)
- CD Fetal and maternal dystocia in the mare (before Topic 47) (1 hour)
- Video: Urogenital surgeries in the horse (before Topic 48) (1 hour)

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

The key dates and milestones of the course are described in detail, along with those of the rest of the subjects of the third year in the Veterinary Degree, on the website of the Faculty of Veterinary Medicine (link: <http://veterinaria.unizar.es/gradoveterinaria/>). This link will be updated at the beginning of each academic year.

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

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28433>