Universidad Zaragoza

Academic Year/course: 2024/25

28411 - Agronomy

Syllabus Information

Academic year: 2024/25
Subject: 28411 - Agronomy
Faculty / School: 105 - Facultad de Veterinaria
Degree: 451 - Degree in Veterinary Science
ECTS: 6.0
Year: 2
Semester: First semester
Subject type: Compulsory
Module:

1. General information

The objective of the subject is the acquisition by students of a broad and complete knowledge of plant resources relevant to animal feed, usable directly or as raw materials for animal feed, including toxic species. The morphology, ecology, production factors, correct conservation systems, nutritional characteristics and limiting factors for the use of plant resources for animals. Plant production as the basis of the food chain in which livestock farming is involved, connection with human food. The importance of the biodiversity. The purpose of the subject is linked to the training of professionals with a good knowledge of the agricultural environment, in which a significant proportion of veterinary graduates work.

These objectives are aligned with the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), mainly with Objectives 2.3, 2.4 and 2.5 of Goal 2.

2. Learning results

- Indicate the nutritional value, as well as the limiting factors of use and the correct conservation of the main plant resources for animal feed. -Indicate the geographical distribution, agronomic characteristics, ecology and production of the main plant species cultivated for animal feeding.

-Analyse and explain the interactions between the components of the agro-livestock ecosystem: climate, soil, plant, animal. -Recognize the importance of cropping and livestock farming systems and their diversity in the production of feeds for animals and human beings and analyse the multifunctionality of pastures and livestock farming systems linked to the land in the conservation of the environment and the biodiversity.

-Analyse and explain the relationships between the constituents of the plant cell, the types of plant tissues and organs, and the nutritional principles for animal nutrition.

-Differentiate the main plant resources for animal feed: cereals and pulses, forages, co-products, by-products and distinguish some of the toxic plant species of pastures.

-Describe and follow standardized protocols for chemical analysis of food. -Express the results obtained in the laboratory in standardized units and interpret them. -Be familiar with the laboratory work and instrumentation to perform these analytical techniques.

-Describe the main food preservation procedures for animal feed. -Carry out an organoleptic evaluation of various ensiled and hayed forages.

-Classify and define different types of pastures and differentiate the main livestock systems associated with them.

- Collect and manage information related to agri-food sector statistics, including the management of official statistical yearbooks of agricultural areas and productions and livestock censuses at different levels: autonomous community, national, European and global. Assess stocking rates, diversity index, and greenhouse gas emissions of livestock at national scales.

3. Syllabus

Block 1 Agriculture, Livestock and Agronomy. Historical origins. The Agricultural Sector and its importance. Interactions between Plant Production, Animal Production, Food for humanity and Feeds.

Learning activities:
Master classes, 3 hours.

Block 2 The Agroecosystem, the Agro-livestock Ecosystem. Agricultural systems. Agroforestry systems. Mixed crop-livestock systems. Trophic and energetic flows in the agroecosystem. Ecosystem services. Climate and Soil as factors of the Agroecosystem and plant production. Organic farming. Nutrient elements and their interactions in the soil-plant-animal subsystems.

Learning activities:
Master classes, 5 hours.

Practice AGRO6 (partial), 1/2 hours. Greenhouse gas emissions from livestock production at national level

Block 3 Agronomic techniques related to water use, soil fertility and crops.

Learning activities:
Master classes, 3 hours.

Block 4 Chemical-bromatological evaluation of plant resources for animal feeding. Feeds classification. Botany and animal nutrition. Main botanical Families of interest in animal feeding.

Learning activities:
Master classes, 3 hours.
Practice AGRO1, 5 hours. Chemical-bromatological evaluation of plant resources for animal feeding. Weende Analysis.

Block 5 Concentrated energy foods: cereals, roots and tubers, energy co-products of agri-food industries.

Learning activities:
Master classes, 7 hours.
Practice AGRO2 (partial), 2 hours. Identification of cereals, roots and tubers, energy co-products of agri-food industries.

Practice AGRO5 (partial), 1.5 hours. Management of statistical information on the agricultural sector: main cereals used in animal feed, including the handling of statistical in animal feed, including the management of statistical yearbooks of agricultural areas and productions at different geographical levels.

Block 6 Concentrated protein foods: cakes and meals, pulses, protein co-products from agri-food industries.

Learning activities:
Master classes, 6 hours.
Practice AGRO2 (partial), 2 hours. Identification of cakes and meals, pulses protein co-products from agri-food industries.

Block 7 Types of feeds and feed manufacturing technology.

Learning activities:
Master classes, 1 hour.
Practical AGRO2 (partial), 1 hour. Identification of raw materials for manufacturing feeds.

Block 8 Energy and protein feeding for beehives. Melliferous flora and vegetation. Melliferous crops.

Learning activities:
Master classes, 1 hour.

Block 9 Volume feeds. Pastures and forages. Multifunctionality of grasslands and livestock farming linked to the land. Importance of rangelands and cultivated pastures in the world. Contribution of the pastures to the livestock farming sustainability.

Learning activities:
Master classes, 3 hours.

Practice AGRO6 (partial), 0.5 hours. Diversity and Pastoral Value assessments

Block 10 Fodder conservation, haymaking, silage and dehydration processes

Learning activities:
Master classes, 1 hour.
Practice AGRO3, 2 hours. Forage conservation: hay, silage products, dehydrated products.

Block 11 Forage grasses. Forage legumes. Alfalfa. Other forage legumes.

Learning activities:
Master classes, 3 hours.
Practice AGRO2 (partial), 2 hours. Identification of forage grasses and legumes.

Practice AGRO5 (partial), 0.5 hours. Information management of agricultural sector statistics: main fodder crops,
including the management of statistical yearbooks of agricultural areas and productions at various geographical levels

Block 12 Grazing and Ecosystem Services. Stocking rates. Water. Toxic plants in pastures. Transhumance and Transterminance. Grazing and forage calendars.

Learning activities:
Master classes, 1 hour.
Practical AGRO2 (partial), 1 hour. Toxic plants of pastures.

Block 13 Bulk feeds of low nutritional quality: by-products of farming and agri-food industries. Unifeed feeds, total mixed rations.

Learning activities:
Master classes, 1 hour.

Other learning activities
Both the work to be done by the students and the AGRO-4 practice will be related to different thematic blocks.

4. Academic activities

Master classes: 38 hours, in which the contents of the subject will be presented and developed
Laboratory practices: 19 hours
Chemical-bromatological evaluation of resources of agricultural origin for animal feed
Identification of resources of agricultural origin for animal feed and toxic species
Forage conservation
Research and management of official statistics on the agri-food sector

Pastures: biodiversity and diversity; pastoral value. Livestock loads.
Teaching assignments: 3 hours
Personal study: 85 hours
Assessment tests. 5 hours

5. Assessment system

1. Written test of global evaluation of knowledge. Theoretical knowledge will be evaluated by means of a written test in the official exams scheduled by the Faculty of Veterinary Medicine. This written test will consist of 35 to 50 multiple-choice questions, each with five possible alternatives and only one correct option. They will be graded as follows: 1 point for each question answered correctly; 0.25 negative points for each question answered incorrectly; and 0 points for each question not answered. To pass this test, the student must obtain at least 50% of the total points.

The grade for this test will only be considered for the final grade if the written practical knowledge tests have also been passed.

The theoretical part will account for 60% of the final grade.

2. Written test of evaluation of the practices. For the evaluation of the practical laboratory sessions, 3 written tests of the knowledge acquired in three types of practices will be carried out. These tests will take place a few days after the corresponding practices and will consist of: for the practical AGRO-1 and AGRO-3, an exam of problems and multiple-choice questions, with similar characteristics and evaluation as those of the theoretical knowledge tests. For the practice AGRO-2. the test will consist of the identification by visu of a set of raw materials, products, co-products and by-products of plant origin for animal feed.
The overall grade for the three practices is an average of each of them. The practice grade represents 24% of the final grade. The practices will be passed with an overall grade of at least 5 out of 10.
Students who have not taken these tests or have not passed them during the term may take the exam for the three types of practices together in the official calls, along with the theory tests.

The grade of this test will only be considered for the final grade if the written test of theoretical knowledge has been passed.

The practices grade will be maintained in the official course examinations.

3. Teamwork. The written (60%) and oral (40%) presentation of the work on relevant topics related to the subject will be assessed. It will be submitted in writing and defended in public. Among other aspects, the degree of creation of the work, the clarity and precision in the use of language, the relevance of the contents, the ability to synthesise, the adjustment to the time established for the presentation and the quality of the bibliography used will be evaluated. In relation to practice AGRO-4, bibliographic management and preparation of the work, students will submit an exercise related to this practice.

The grade for this work will represent 8% of the final grade and will only be considered for the final grade if the written tests of theoretical and practical knowledge have been passed.

The grade of the work will be maintained in the official calls of the subject.

4. In relation to the practices AGRO-5 (survey and management of official statistics of the agri-food sector) and AGRO-6 (biodiversity and diversity calculations; estimation of the pastoral value of various types of pastures; calculation of livestock loads), students will hand in exercises related to these practices. Questions related to these two types of practices may be asked in the written test for the global evaluation of knowledge.

5. Exercises carried out in class throughout the semester on the theoretical contents of the subject. These tests will take place during theory classes, with all the study material available to the student (notes, slides) and without prior notice from the teacher. They will consist of various types of exercises related to the theory session being taught: true/false test questions, problem solving, interpretation of tables and graphs, short questions or other types of exercises. These tests will be handed in to the teacher in class, or in some cases via ADD (Anillo Digital Docente).

The grade for these exercises together will account for 8% of the final grade. It will only be considered for the final grade if the written tests of theoretical and practical knowledge have been passed.

The grade of these tests will be maintained in the official calls of the subject, but not in successive academic years.

Assessment criteria and levels of demand
1. In order to pass the subject, the grade for theoretical knowledge must be 5 out of 10 or higher, and the grade for the practices must also be 5 out of 10 or higher.
2. The final grade will be obtained through a weighted average of all the evaluation activities with the following values: the theoretical part will account for 60%, the practical part 24%, the team work 8% and the class exercises 8%. Grades for class work and exercises will only be considered if the written tests of theoretical and practical knowledge have been passed.

6. Sustainable Development Goals

2 - Zero Hunger
12 - Responsible Production and Consumption
15 - Life on Land