

28411 - Agronomy

Syllabus Information

Academic year: 2023/24

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. 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 feed.

-Analyse and explain the interactions between the components of the agro-livestock ecosystem: climate, soil, plant, animal. - Recognize the importance of agriculture in the production of food for animals and analyse the multifunctionality of pastures and livestock linked to the land in the conservation of the natural environment.

-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 leguminous-grain, forage, co-products and 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 foods.

-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.

3. Syllabus

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

Learning activities:

Master classes, 3 hours.

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

Learning activities:

Master classes, 5 hours.

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

Learning activities:
Master classes, 2 hours.

Block 4 Chemical-bromatological evaluation of plant resources for animal feed. Food classification. Botany and animal nutrition. Main botanical families of interest in animal feed.

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

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

Learning activities:
Master classes, 6 hours.
Practice AGRO2 (partial), 2 hours. Identification of cereals, roots and tubers, energy co-products of agri-food industries.

Block 6 Concentrated protein foods: extraction cakes and flours, grain legumes, protein co-products from agri-food industries.

Learning activities:
Master classes, 6 hours.
Practice AGRO2 (partial), 2 hours. Extraction cakes and flours, grain legumes, protein co-products from agri-food industries.

Block 7 Types of feed and feed manufacturing technology.

Learning activities:
Master classes, 1 hour.
Practical AGRO2 (partial), 1 hour. Raw materials and feed.

Block 8 Energy and protein feed for beehives. Flora and melliferous vegetation. Honey crops.

Learning activities:
Master classes, 1 hour.

Block 9 Volume foods. Pasture and forage. Multifunctionality of pastures and livestock linked to the land. Importance of natural and cultivated pastures in the world.

Learning activities:
Master classes, 4 hours.

Block 10 Fodder conservation, haymaking processes, silage, dehydration.

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

Block 11 Forage grasses. Forage legumes. Alfalfa.

Learning activities:
Master classes, 5 hours.
Practice AGRO2 (partial), 2 hours. Identification of forage grasses and legumes.

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

Learning activities:
Master classes, 4 hours.
Practical AGRO2 (partial), 1 hour. Toxic plants of pastures.

Block 13 Bulk foods of low nutritional quality: by-products of farming and agri-food industries. Unifeed feeds, complete ruminant mixes with concentrates and bulk feeds.

Learning activities:
Master classes, 1 hour.

Other learning activities

Both the work to be done by the students and the AGRO-4, AGRO-5 and AGRO-6 practices 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.