Universitat Autònoma de Barcelona

2020/2021

Agronomy and Agricultural Economics

Code: 102628
ECTS Credits: 6

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OB	1	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

María José Milán Sendra
Josepa Plaixats Boixadera
Antoni Graupera García
Jordi Bartolomé Filella

Prerequisites

There are no official requirements but it is convenient for the student to review the contents related to high school biology.

Objectives and Contextualisation

It is a subject of the first year. It develops the scientific and technical aspects needed to improve the performance and quality of plant-based foods used in animal nutrition. Additionally, it will help to understand the mechanisms that affect training of prices, the operation of the markets and the commercialization of agricultural products.

The specific training objectives are:

1) Study the botanical and physiological characteristics and their relationship with the chemical composition and nutritional value of the main plant species with veterinary interest.

2) Give the main knowledge about the bases of agricultural production. Understand the plant-animal-medium relationship.

3) Know the main plant species used in animal feeding, their production objectives and the different ways of use.

4) Understand the functioning of the markets of agricultural products.

5) Know the political and economic framework in which the agricultural activity and the agri-food sector are developed.

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Demonstrate knowledge and understanding of the aspects of organisation, finance and management in all fields of the veterinary profession.
- Demonstrate knowledge of the botanic and physiological characteristics and chemical composition of plant species of veterinary interest.
- Seek and manage information related with professional activity

Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Distinguish the mechanisms involved in the formation of prices, market operations and the sale of agricultural products.
3. Explain the political and economic framework in which agricultural activity and the agrifood sector are developed.
4. Identify the relationship between plant production, chemical composition and nutritious value of the species used to feed animals.
5. Identify the toxic elements of plants and their relationship with nutritious value.
6. Seek and manage information related with professional activity
7. Use correct and suitable financial terminology.

Content

THEORETICAL LESSONS

SECTION I

Chapter 1. Agriculture and food production. Concept, origin and evolution of agriculture. Current situation. Production systems. Relationships among Agriculture and Animal Feeding, Economy and Environment. Cultivated species and productive balance. Perspectives of Agriculture.

Chapter 2. Climate and vegetal production. Definition. Climate elements and factors. Critical climatic conditions for vegetables. Regulation of plant growth and development. Climate as a factor limiting crops. Agricultural classification of climates. Agriculture, livestock and climate change.

Chapter 3. The Soil. Soil organization: Solid, liquid and gaseous phases. Inorganic and organic constituents. Profile and horizons. Physical and chemical properties. The atmosphere of the soil. The role of soil organisms.

Chapter 4. Fertilization and fertilizers. Classification. Inorganic and organic fertilizers. The purines: Impact, management and use. Correction of soil properties.

Chapter 5. Plant morphology, growth and development. Differential characteristics of the plant cell. The root, stem, leaves, flower, fruits and seeds. Cycles of development and usage.

Chapter 6. Physiology of cultivated plants. Type of photosynthesis: C3, C4 and CAM plants and their agricultural interest. Plant Nutrition. Essential elements. Absorption. Deficiencies and phytotoxicity.

Chapter 7. Levels of organization. Systematics, taxonomy and botanical nomenclature. Morphological levels of organization: Protista, Fungi and Plantae. Main families of interest in agriculture and animal feeding.

SECTION II

Chapter 8. The Gramineae. Classification and morphology. Cycles of development. Importance of cereals in food. Structure of the grain and its chemical composition. Industrial processing and by-products of cereals.

Chapter 9. Winter and summer cereals. Winter cereals. Summer cereals. Utilization and nutritional value. Productive objectives.

Chapter 10. Forage grasses. Growth phases. Descriptive and cultivation characteristics of ryegrass and other forage grasses. Utilization and nutritional value. Productive objectives.

Chapter 11. Legumes. Classification and morphology. Cycles of development and fruiting. Fixation of atmospheric nitrogen. Importance and situation of its production at an international and national level. Structure and chemical composition. Toxic elements and quality.

Chapter 12. Pulses. The soybeans. Other pulses. Utilization and nutritional value. Productive objectives.

Chapter 13. Forage legumes. Descriptive and cultivation characteristics of alfalfa and other forage legumes. Utilization and nutritional value. Productive objectives

Chapter 14. Other crops of interest in animal feeding. Roots and tubers of forage interest. Other crops. Utilization and nutritional value. Productive objectives

Chapter 15. Forage production and conservation. Wild and cultivated meadows. Concept and objectives of grazing. Fodder conservation: Hay and silage.

SECTION III

Chapter 16. Introduction to the economy. Economy concept. The problem of resource allocation. The production-possibility frontier. Concepts: opportunity cost, efficiency, law of diminishing returns.

Chapter 17. Decision units. The factors of production. Delimitation and characteristics of agricultural markets. The market as an allocation mechanism.

Chapter 18. The demand. The demand function. Factors that affect the demand.

Chapter 19. The offer. The market offer. Factors that affect the offer. The elasticity of supply and demand.

Chapter 20. The market. The equilibrium price in a market of perfect competition. Displacements of demand and supply. Other forms of market.

Chapter 21. Applications of the theory of price I. The instability of prices and incomes in the agricultural sector. Price control and agriculture. The dynamics of the supply of agricultural products.

Chapter 22. Applications of the theory of price II. Effect of taxes and subsidies. The dynamics of the supply of agricultural products. Intervention in the agricultural sector.

SEMINARS

S1. Chemical composition and nutritional value of vegetable products

S2. Plants and animal phytotherapy

S3. Alternative and crop rotation

S4. Production factors. The production-possibility frontier

S5. The functions of supply and demand and the equilibrium point of the market

S6. The elasticity of supply and demand

S7. Effects of the Intervention and the Common Agricultural Policy (CAP)

S8. The current global model of food production and food sovereignty

PRACTICAL LESSONS

P1. Bases of agricultural production of veterinary interest

P2. Recognition of plant foods and raw materials of plant origin by microscopy

P3. The production and its cost. The production function and the law of decreasing marginal returns

P4. Index, economic projections and macroeconomic table

Depending on the restrictions by the health authorities, a prioritization or reduction of these contents may be modified.

Methodology

Several teaching-learning strategies will be combined in order to achieve the objectives of the course.

Theoretical lessons: The lectures will be the main type of activity and will be carried out in the classroom since basic concepts are transferred to students in a short time. The learning contents and concepts explained during the lectures require student's autonomous work in order to assimilate them.

Seminars: Sessions with a small number of students with double purposes. On the one hand, the scientific-technical knowledge exposed in the theoretical lessons will be applied in order to complete their comprehension by developing diverse activities: information analysis, problem solving, problem-based learning, etc. On the other hand, they are a forum to encourage the discussion between students. In addition, these sessions allow the teacher to monitor the student and make the student aware of their progress in the matter.

Practical lessons: The objective of the practical lessons is to complete, apply and reinforce the knowledge acquired in the theoretical lessons. During the lab sessions, students will work different materials (soils, seeds, flours and plants), performing different types of analysis and observations. At each session, the student will prepare a document that will be delivered to the teacher at the end of the practice.

Case study: The students will make a case of the Agronomy part. The students can solve a problem of a real situation. The mission of the case study is to promote the capacity for analysis, reasoning and solving problems.

The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practical lessons	20	0.8	1, 2, 5, 4
Seminars	10	0.4	1, 2, 3, 4, 7
Theoretical lessons	22	0.88	1, 2, 3, 5, 4, 7
Type: Autonomous			

Case study	12	0.48	1, 4
Preparation of reports	25	1	6, 2, 3, 5, 4, 7
Study and problem solving	59	2.36	1, 2, 3, 5, 4, 7

Assessment

Exams. The knowledge acquired by the student will be evaluated individually. There will be two partial tests, which can be passed if a score is ≥ 4.5. This evaluation has a weight on the final grade of 80%, distributed in 50% the first partial (Agronomy) and 30% the second partial (Agricultural Economy).

Agronomy practical lessons. The practical sessions are compulsory, evaluating both the student's attendance and his attitude. During the practical sessions, the student will prepare a document of each practice. These practical lessons will worth 7% of the final grade.

Practical case of Agronomy. The capacity for synthesis and coherence in the discussion of results will be assessed. It will have a value of 9% of the final grade.

Agronomy seminars. The acquired knowledge during the seminars will be evaluated in the partial exams and with a specific test that will worth 3% of the final grade.

Seminars and practices of Agricultural Economy in computer classroom. The attendance and participation of the student will worth 1% of the final grade, as long as the attendance is not less than 5 sessions.

To pass the course, it is necessary to obtain a global average score ≥ 5, taking into account to the score weights previously indicated and the attendance of the practical sessions.

A Student will be considered as 'non-evaluable' only if not attending to any of the evaluation activities.

Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Case study	9%	0	0	1, 6, 4
Exams	80%	2	0.08	2, 3, 5, 4, 7
Practical lessons	7%	0	0	1, 6, 2, 5
Seminars	4%	0	0	1, 2, 7

Bibliography

BIBLIOGRAPHY

- AGUADO J.C., LACALLE M., CEPEDA I. (2005) Lecciones básicas de Economía. Ed. Thomson. Madrid.

- CAÑEQUE V., SANCHA J. (1998) Ensilado de forrajes y su empleo en la alimentación de rumiantes. Ed. Mundi-Prensa, Madrid.

- GIMENO J.J., GUIROLA J.M. (1997) Introducción a la Economía. Microeconomía. McGraw-Hill/Interamericana de España S.A. Madrid.

- GUERREO A. (1999) Cultivos herbáceos extensivos. Ed. Mundi-Prensa, Madrid.

- GUERRERO A. (2000) El suelo, los abonos y la fertilización de los cultivos. Ed. Mundi-Prensa, Madrid.

- LIPSEY R.G. (1999) Introducción a la Economía Positiva. (13ª edición), (12 primeros capítulos). Ed. Vicens-Vives, S.A. Barcelona.

- LIPSEY R.G., CHRYSTAL K.A. (2002) Introducción a la microeconomía. Ed. Vicens-Vives, S.A. Barcelona.

- MUSLERA PARDO E. (1991) Praderas y Forrajes: producción y aprovechamiento. Ed. Mundi-Prensa, Madrid.

- PINDYCK R. S. (2009) Microeconomía (7ª edición). Ed. Prentice Hall, cop. Madrid.

- URBANO TERRÓN P. (2001) Tratado de Fitotecnia general. Ed. Mundi- Prensa, Madrid.

- VANDENBERGHE N. (1995) Breve teoría del mercado para la Economía Agraria. Ed. Acribia, S.A. Zaragoza.

- VILLALOBOS F.J., MATEOS L., ORGAZ F., FERRES E. (2002) Fitotecnia: bases y tecnologías de la producción agrícola. Ed. Mundi-Prensa, Madrid.

Web

+ FAO (Food and Agriculture Organization): http://www.fao.org/

+ MAPA (Ministerio de Agricultura, Pesca y Alimentación): https://www.mapa.gob.es/es/

+ DARP (Departament d'Agricultura, Ramaderia, Pesca i Alimentació): http://www20.gencat.cat/portal/site/DAR/

+ Informació agrària: http://www.infoagro.com/

+ Comisión Europea, Agricultura y Desarrollo Rural: https://ec.europa.eu/agriculture/index_es