

Animal Production

Code: 102624
ECTS Credits: 5

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OB	3	2

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

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Susana María Martín Orue
David Sola Oriol
Lorena Castillejos Velázquez
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Prerequisites

There are no established official prerequisites, but the student must use the knowledge acquired in Bases of Animal Production and Management, Ethnology and Ethology, Agronomy and Agricultural Economics, Integrated Animal Production 1 and Animal Nutrition.

Objectives and Contextualisation

The training objectives of Integrated Animal Production II are:

- To know the importance of food production in the world and the new
 - To know the needs and the impact of the facilities and the environment
 - To know the determining factors of the relationship between animal and
 - To know the key factors of the organization and operation of the agri
 - To quantify the costs and indicators of economic profitability of the c
- This subject participates in the Pilot Test of Teaching in English that is ca

(demonstrate knowledge of English to communicate orally and in writing in academic and professional contexts).

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Demonstrate knowledge and understanding of structural and functional disorders of the animal organism.
- Demonstrate knowledge and understanding of the aspects of organisation, finance and management in all fields of the veterinary profession.
- Handle the correct protocols and technologies used to modify and optimise different animal production systems.
- Properly evaluate the nutritional status of animals and know how to advise others on breeding and feeding principles.

Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Apply physiological knowledge to production objectives.
3. Describe the basic principles of pasture and animal fodder.
4. Evaluate feeding programs: Know how to assess the main methods of animal fodder preparation, conservation and administration.
5. Evaluate the quality of products of animal origin.
6. Evaluate the technical and economic indexes of a farm: recognise problems and offer solutions.
7. Formulate rations for animals in the most conventional situations.
8. Identify and evaluate the factors that affect the production of products of animal origin.
9. Identify cost calculation systems, the different entries and their practical uses.
10. Identify the different stages of livestock production cycles.
11. Identify the different types of business organisation.
12. Identify the production systems of different domestic species, integrating physiological and economic knowledge.
13. Locate and identify the main producers of foodstuffs of animal origin, as well as their economic dimension.
14. Recognise the basic characteristics of the different stages of livestock production cycles and how they function.
15. Use correct and suitable financial terminology.
16. Use current feeding systems: Know how to obtain the nutritious value of foodstuffs and calculate animals' nutrition requirements.

Content

THEORY (26 h)

INTRODUCTION:

The role of animal products in human nutrition:

The role of animal products in the omnivorous diet. Differential nutritional profile of products of animal origin. Impact of the consumption of products of animal origin on health. Recommendations.

Needs, production and production forecasts of food of animal origin in the world:

Importance of animal production in the world. Characteristics of European livestock farming. The role of livestock in the Sustainable Development Goals. New livestock paradigms.

CHALLENGES FOR LIVESTOCK PRODUCTION IN THE 21ST CENTURY

Economic and social sustainability of animal production

The organisation of the agricultural enterprise as an economic unit of production. The management of economic resources. Profit and loss account and profitability. Financing in agricultural holdings. Investment evaluation and selection methods. Livestock activity and its contribution to the social dimension of sustainability.

Environmental sustainability of animal production

Interaction between animal production and the environment from the point of view of the Agenda 2030 Sustainable Development Goals and Environmental Footprints. How official data is assessed and interpreted, and strategies to make livestock production an ally for a more sustainable environment. In particular SDG13-Climate action, carbon footprint and nitrogen footprint.

IMPROVEMENTS OF THE PRODUCTIVE PROCESS

Improvement of animal welfare from facilities and management

Environment and facility needs in animal production, welfare and health. Evaluation of the indicators of comfort and animal welfare. Environmental comfort. Productive and economic impact of facilities and well-being.

Hygiene in livestock production

Good hygiene practices in the production process from the "one health" perspective. Basic principles in relation to facilities, personnel, waste, veterinary treatments and particularly feed with analysis of the main hazards and strategies for control and prevention.

Application of new technologies in animal production (Precision Livestock Farming, PLF)

New technologies for precision livestock farming. Potential impact on productivity, health, welfare, environment and herd management. What is precision livestock farming? How and when will it be implemented? How can digitalisation help us to improve the production process? What challenges do farmers and veterinarians face at farm level when working with the digitalisation of livestock farming?. To delve into some examples of technology and digitisation most commonly implemented in poultry, pig and ruminant farming. And explore more experimental methodologies with potential for future implementation.

PRACTICES (18 h)

Computer room

- Costs and profitability of agricultural enterprises (PAI1)
- Financial evaluation of agricultural investments (PAI2)
- Calculation of animal waste (slurry and nitrogen) in cattle (PAI3)
- Purine Management: The Case of Nitrogen (PAI4)
- Carbon Footprint in Dairy Cattle. Integrated Farm System Model (PAI5)

Classroom

- Animal production and sustainability (PAUL) (SPA1)
- Results and discussion. Purine Management: The case of Nitrogen (Seminar) (SPA2)
- Results and discussion. PC work in a dairy cattle farm (Seminar) (SPA3)
- Results and discussion. Welfare assessment protocol in sheep (PAUL) (SPA4)

Farm

- Animal welfare assessment protocol.

SELF-TEACHING

- Costs and profitability of a pig farm (A1)
- Case study, Nitrogen balance of a pig farm (A2)
- Case study, carbon footprint in dairy cattle (A3)

Methodology

The center of the learning process is the student's work. The student learns by working, while the mission of the teaching staff will be to help students in this task (1) by providing information or showing them the sources where information can be obtained and (2) directing students steps so that the learning process can be carried out effectively.

In line with these ideas, and in accordance with the objectives of the subject, the development of the course is based on the following activities:

1. Master classes:

The student acquires the knowledge of the subject by attending the master classes and complementing them with personal study of the topics explained. The master classes are conceived as a fundamentally one-way method of transmitting knowledge from the teacher to the student, but it stimulates the expansion of information through the provision of bibliographic references and Internet addresses.

2. Practical training:

There will be several practices with different environments: farm, and computer applications. Each of them will be used to raise awareness of a specific concept of Animal Production and allows working in different environments. Some of these practices will be related to the self-study work that must be done.

3. Seminars:

The seminars will allow the presentation and discussion of some aspects not covered in the master classes, and will have a format that allows interaction between students.

4. Self-learning work:

The student must solve the practical cases and rations proposed in each of the blocks (economic sustainability, environmental sustainability, well-being, hygiene in the production process and application of technology to animal production).

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer classroom practices	10.5	0.42	7, 16
Farm practice	2	0.08	2
Master classes	26	1.04	2, 4, 3, 11, 9, 12, 8, 10, 13, 14, 15, 5
Seminars	5.5	0.22	11, 9, 15

Type: Autonomous

Self-learning work	26	1.04	1, 2, 6, 4, 7, 11, 9, 16, 15
study	53	2.12	2, 3, 11, 9, 12, 8, 10, 13, 14, 15, 5

Assessment

The evaluation of the subject will be done as follows:

- Exam of the theoretical and practical contents (2 exams). The total weight of these exams on the final grade is 60%, distributed in 35% the first partial and 25% the second partial.
- The works assigned to the practical training/seminars, will be weighted as follows:
 - Costs and profitability of a pig farm (12%).
 - Case study, Nitrogen balance of a pig farm (10%)
 - Case study, carbon footprint in dairy cattle (10%)
- Classroom activities (PAI3) and on-farm activities (sheep welfare evaluation protocol) will have a weight of 3% and 5%, respectively.

Regarding works assigned to the practical training/seminars, to present the work A1, attendance to PAI1 practice will be mandatory, to present the work A2, attendance to PAI4 practice and SPA2 seminar will be mandatory and to present the work A3, attendance to PAI5 practice and SPA3 seminar will be mandatory.

To pass the course is required:

- Obtain a grade $\geq 4.0/10.0$ in each of the written exams and a minimum of 4.5/10 in the average grade (weighted according to their proportional weight) of the two exams.
- Solve at least two of the three self-learning cases, and
- To achieve, with the set of all the evaluation activities, a final grade equal to or greater than 5.

At the end of the semester there will be a second-chance exam.

Students who do not take any exam will be considered as not evaluable.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exam	60%	2	0.08	1, 6, 11, 9, 8, 13, 14, 16, 15, 5
Resolution of cases	32%	0	0	1, 6, 7, 11, 9, 12, 16, 15
Workshops/seminars	8%	0	0	1, 2, 6, 4, 3, 11, 9, 10, 14, 15

Bibliography

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- Water Footprint Network website: <https://waterfootprint.org/en/>

- Nitrogen Footprint website: <http://www.n-print.org/>

- The International Dairy Federation (FIL/IDF) website: <https://fil-idf.org/>

- DECRETO 153/2019, de 3 de julio, de gestión de la fertilización del suelo y de las deyecciones ganaderas y de aprobación del programa de actuación en las zonas vulnerables en relación con la contaminación por nitratos procedentes de fuentes agrarias (DOGC núm. 7911 - 05/07/2019):

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- Transforming the livestock sector through the Sustainable Development Goals:

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Economy

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<https://www.oie.int/en/animal-welfare/animal-welfare-at-a-glance/>
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<http://www.welfarequalitynetwork.net/en-us/reports/assessment-protocols/>

HYGIENE OF THE FOOD PRODUCTION PROCESS

Animal Feed Contamination Effects on Livestock and Food Safety. Editor(s): Johanna Fink-Gremmels.. 2012, Woodhead Publishing Limited. (ISBN: 9780857093615)

Integrated food safety and veterinary public health. Editor(s): Buncic, S. 2006 CABI (H ISBN 9780851999081)

Journals

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British Poultry Science
INRA Productions Animales
Journal of Animal Science
Journal of Dairy Research
Journal of Dairy Science
Meat Science
Mundo Ganadero
Producción Animal
Poultry Science

WEBS

www.agrodigital.com
www.mapya.es
www.ruralcat.net

Software

Granja Virtual 3.0 (www.granjadevacas.es / www.granjadevaques.es; Servei de Nutrició i Benestar Animal, Universitat Autònoma de Barcelona)

Integrated Farm System Management (IFSM), USDA, University Park, Pennsylvania, US.