



Information about the subject

Degree: Bachelor of Science Degree in Veterinary Medicine

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 1260410 **Name:** Animal production and genetic improvement II

Credits: 6,00 **ECTS Year:** 4 **Semester:** 2

Module: Module of Animal Production

Subject Matter: Animal Production **Type:** Compulsory

Department: Animal Production and Public Health

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:



Module organization

Module of Animal Production

Subject Matter	ECTS	Subject	ECTS	Year/semester
Animal Production	30,00	Animal production and genetic improvement I	6,00	4/1
		Animal production and genetic improvement II	6,00	4/2
		Aquaculture	6,00	4/2
		Economy and Business in the veterinarian domain	6,00	3/2
		Nutrition and animal feeding	6,00	4/1



Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student connects the theoretical and practical contents through projects and assignments.
- R2 Basic business concepts with an emphasis on veterinary service businesses and agricultural enterprises.
- R3 Economic fundamentals of the market.
- R4 Marketing for the veterinary company.
- R5 The student is able to solve problems related to the contents of the module.
- R6 The student knows how to use different working techniques in the laboratory and interpret the results.
- R7 The student searches bibliographic information from different sources and knows how to analyse it with a critical and constructive spirit.
- R8 The student argues according to rational criteria based on his or her work.
- R9 The student is able to describe the production systems of ruminants as well as the facilities and accommodation systems.
- R10 The student is able to identify the aspects related to the behaviour and management of ruminants.
- R11 The student analyses farms from a multifactorial approach.
- R12 The student broadens his or her knowledge in population genetics and quantitative genetics and includes crossbreeding schemes.
- R13 The student understands genetic analysis of quantitative traits of economic interest and applies it for genetic evaluation of producers and selection methods.



Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB2	Capacity to apply knowledge to work or occupation in a professional way and have the competences that are proved by preparing and arguing topics and problem-solving in their specific field of study.		X		
CB3	Capacity to gather and interpret relevant data usually within their specific field of study and capacity to make judgments that include reflection on relevant social, scientific or ethical issues.		X		
CB4	Capacity to communicate information, ideas, problems and solutions at specialist and non-specialist levels.		X		
CB5	Capacity to develop those learning skills needed to undertake further studies with a high degree of autonomy.		X		
GENERAL		Weighting			
		1	2	3	4
CG0	Capacity to speak well in public.			X	
CG3	Understanding and applying control of animal breeding, management, health, reproduction, protection, and feed as well as improving production.			X	
CG4	Understanding and applying methods and processes for obtaining efficient animal products under optimal conditions and costs, and assessing environmental impacts.		X		
CG5	Understanding and applying laws, regulations and administrative provisions in all areas of the veterinary profession and public health, understanding the ethical implications of health in a changing global context.		X		
CG6	Developing professional practice, acquiring skills related to teamwork, with an efficient use of resources and quality management.	X			



CG7 Identifying emerging risks in all areas of the veterinary profession.

x

SPECIFIC		Weighting			
		1	2	3	4
E44	Knowing and applying the basics of animal production: traditional and modern systems.				x
E45	Knowing and applying raw materials for animal feeding: characteristics, production and preservation.		x		
E46	Knowing and applying the basics of animal nutrition, ration formulation and feed manufacturing.		x		
E49	Knowing and applying genetics to health improvement programs.				x
E51	Knowing and applying the fundamentals of livestock facilities and environmental hygiene.			x	
E52	Knowing and applying the principles of production and marketing process.		x		
E53	Knowing and applying sustainable development.		x		
TRANSVERSAL		Weighting			
		1	2	3	4
T1	Capacity of analysis, synthesis, implementation of knowledge for problem-solving and decision-making.		x		
T2	Understanding and applying the scientific method to professional practice including evidence-based medicine.		x		
T3	Basic knowledge of the veterinary profession: legal, economic, administrative, planning and time management issues and the veterinarians' society together with the importance of monitoring quality, standardization and protocols of veterinary practice.	x			
T4	Mastering fluency in oral and written mother tongue communication, listening and responding effectively using a language appropriate to audience and context.			x	



T6	Using information technology to communicate, share, search for, collect, analyze and manage information, especially related to the veterinarian practice.	x		
T7	Ability to adapt to new situations, self-critical ability, being aware of personal limitations and understanding when and where seeking and obtaining advice and professional help.	x		
T8	Efficient and effective work, both independently and as a member of a multidisciplinary team or unit, showing respect, appreciation and sensitivity to the work of others.	x		
T9	Keeping an ethical behaviour in the exercise of given responsibilities toward the profession and society.	x		
T10	Ability to learn, to research, and to be aware of the need to keep knowledge updated, and attending training programs.			x



Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	60,00%	Written assessment of acquired knowledge and skills. The test may consist of a series of open-ended questions or multiple-choice questions about the theoretical contents of the module and/or practical exercises (problem-solving).
	15,00%	Evaluation of the practical laboratory work, which must demonstrate the competences acquired by the student and his or her ability to use them to solve the different situations and problems that arise in a laboratory; this assessment may consist of one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experience, the delivery of an individual or group report on the work carried out in the laboratory.
	10,00%	Evaluation of group work through a system of continuous assessment throughout the course based on the delivery of assignments the objectives and content of which will be proposed by the teacher.
	15,00%	Evaluation of activities in which the student must do some research individually and structure information related to each of the topics through a system of continuous assessment throughout the course based on the delivery of papers, the objectives and contents of which will be proposed by the teacher.

Observations

Internship is considered mandatory. During the practical sessions the teacher will take control of the attendance. Failure to pass the practices due to non-attendance will make it impossible for the subject to be approved as a whole in the first call.

For the final qualification, the results of the different evaluation activities programmed are weighted. The evaluation system consists of four parts:



- 1-Written exam will account for 60% of the final grade for the subject.
- 2-evaluation of the practices by written test (may coincide with the day of the written exam), where questions about basic aspects seen in the practices and in the theoretical sessions will be answered. To pass the subject, 50% will be necessary. This evaluation will suppose 15% of the final mark of the subject.
- 3-realization of an oral presentation of a group work on articles published in dissemination magazines that will be proposed by teachers. This evaluation will represent 10% of the final grade of the subject.
- 4.-realization of 3 tasks online on the teaching platform or in the classroom. This evaluation will suppose 15% of the final mark of the subject.

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 On-site training activity aimed primarily at acquiring knowledge acquisition skills. It is characterised by the fact that students are spoken to. Also called master class or exposition, it refers to the oral presentation made by the teacher, (with the support of blackboard, a computer and a projector for the display of texts, graphs, etc.), in front of a group of students. They are expository, explanatory or demonstrative sessions of contents. The size of the group is determined by the limit or physical capacity of the classroom; therefore, it is a single group.
- M2 On-site training activity aimed primarily at obtaining knowledge application and research skills. Knowledge is built through interaction and activities. The activity consists of supervised monographic sessions with shared participation (teachers, students, experts). The size of the group is variable, from one large group to various small groups, with a minimum of 6 students to ensure interaction. The evaluation will be based on follow-up records kept by the teacher. Participation and the development of the capacity to problematize should be taken into account.



- M3 On-site group-work training activity oriented toward problem solving under the supervision of a teacher. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students, to differentiate it from a master class.
- M4 On-site training activity in groups that takes place in the classroom. It includes working with documents and formulating ideas without handling animals, organs, objects, products, or corpses (e.g., work with articles or documents, clinical case studies, diagnostic analyses, etc.). It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M5 On-site training activity in groups that takes place in the Computer Lab where the computer is used as support for learning. It includes work with computer models, specific software, Web queries, etc. It would correspond to "Animal-free supervised practical work", type e1, from the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M6 On-site training activity in groups carried out in the laboratory. It includes the sessions where the students develop laboratory experiments, make dissections or use the microscopes for the study of histological or histopathological samples actively and autonomously, under the supervision of the professor. It also includes work with healthy animals, objects, products, corpses (e.g., animal handling, bacteriological practices, physiology or biochemistry, meat inspection, etc.). It would correspond to the "Supervised practical non-clinical animal work" type e2 of the European evaluation of EAEVE. The size of the group is variable, in a range of 10 to 20 students.
- M7 On-site training activity that is defined as the clinical practical work developed in the Veterinary Clinical Hospital or clinical centres ascribed to the University, as well as itinerant clinical practices, mainly with ruminants, equids, pigs, birds and aquatic animals. Also included are necropsies, surgical workshops and training in clinical examination techniques or diagnosis with healthy patients. In these practical sessions the student will always work with animals, which can be healthy (e.g. propaedeutic or obstetrics) or clinical cases (individual or collective), including a protocol or work scheme, being supervised by a teacher and assuming the provision of a service. This type of training corresponds to type e3 of the EAEVE European evaluation called "Clinical Training" (strickly hands-on)". The size of the group will be 5 students or fewer.
- M8 A set of on-site training activities carried out by the teacher to provide personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, carrying out projects, etc. The aim is to ensure a truly comprehensive education of the student rather than a mere transfer of information. It is, therefore, a personalized assistance relationship in which the tutor assists, facilitates and guides one or more students in the learning process.



- M9 Set of processes that attempt to evaluate the learning outcomes of students expressed in terms of acquired knowledge, capacities, skills or abilities developed and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments). It also includes the Official Calls.
- M10 Autonomous training activity, including activities and coursework, bibliographic searches. The results obtained from unsupervised group and teamwork will be evaluated, with particular attention paid at the time of evaluation to the acquisition of specific knowledge development skills through group work.
- M11 Autonomous training activities related to personal study, or the preparation of individual course assignments. The individual preparation of readings, essays, problem solving, papers, reports, etc. will be evaluated through presentations or submissions during theoretical classes, practical classes, seminars and/or tutorials. The evaluation of the submitted papers will consider the structure of the paper, the quality of the documentation, originality, spelling and presentation.



IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons (TL) M1, M2	R2, R3, R5, R9, R10, R11, R12, R13	54,00	2,16
Seminars (S) M1	R2, R3, R8, R9, R11	4,00	0,16
Evaluation (Ev) M9	R1, R2, R3, R5, R7, R8, R9, R10, R11, R12, R13	2,00	0,08
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M4, M10	R1, R7, R8, R9, R10, R11, R12, R13	30,00	1,20
Individual work M11	R1, R3, R5, R9, R10, R11, R12, R13	60,00	2,40
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
TU 1. Beef and veal production	U1 Beef and veal production bases. Censuses and productions. CMO. U2. Calf fattening facilities U3. General beef handling techniques U4. Extensive beef models U5. Code of Good Agricultural Practice. Environmental impact and manure management. Sustainable development. U6. Beef cattle feed. Systems and rationing U7. Lidia cow. Censuses and productions in Spain and worldwide. Specific productions. P1 Technical visit to beef farm.
TU 2. Production of dairy cattle	U1. Dairy cattle production bases. Censuses and productions. CMO. U2. Dairy cattle production systems. Production cycles U3. Accommodation for dairy cattle. U4. Milking facilities. Good husbandry practices U5. Quality of milk on farms. Letter Q. U6 Dairy cattle feed. Systems and rationing. P1 Technical visit to dairy cattle farm.
TU 3. Sheep and goat production.	U1. Productive bases of the small ruminant farming U2. Production cycles and facilities for small ruminants U3. General handling techniques P1. Productive management of small ruminant farms P2. Technical visit to a small ruminant farm



TU 4. Genetic improvement and selection schemes in ruminants

- U1. Basic concepts of genetic improvement.
- U2. Benefit functions and economic weights.
- U3. BLUP methodology.
- U4. Genomic selection.
- U5. Genetic improvement and selection schemes in beef cattle.
- U6. Genetic improvement and selection schemes in dairy cattle.
- U7. Genetic improvement and selection schemes in sheep.
- U8. Genetic improvement and selection schemes in goats.

Organization of the practical activities:

	Content	Place	Hours
PR1.	Visit to a dairy farm	Technical visit	3,00
PR2.	Visit to the fattening cattle farm	Technical visit	2,00
PR3.	Visit to a small ruminant farm	Technical visit	3,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
TU 1. Beef and veal production	6,00	12,00
TU 2. Production of dairy cattle	10,00	20,00
TU 3. Sheep and goat production.	4,00	8,00
TU 4. Genetic improvement and selection schemes in ruminants	10,00	20,00



References

Bibliografía básica

- Buxadé, C. 1995: Zootecnia, bases de la producción animal. Tomo II: Reproducción y alimentación. Tomo III: Alimentos y racionamiento. Ediciones Mundi-Prensa. Madrid.
- Caravaca Rodríguez et al. 1999: Bases de la Producción Animal.
- D ´Mello, J.P.F. 2000: Farm animal metabolism and nutrition. CABI Publishing.
- Frandsen, R.D. 1995: Anatomía y fisiología de animales domésticos. 5ª Edición Ed. McGraw-Hill. Mexico.
- García Sacristan, A. 1995: Fisiología Veterinaria. Ed Interamericana. McGraw-Hill. Madrid.
- Hafez et al., 2002. Reproducción e inseminación en animales. Ed. Interamericana. MacGraw-Hill. México.
- Swatland, H.J. 1991: Estructura y desarrollo de los animales de abasto. Ed. Acribia. S.A. Zaragoza.

Bibliografía Complementaria:

- Cole, H.H. y Cupps, 1984: Reproducción de los animales domésticos. Ed. Acribia. Zaragoza.
- Correa, A. 2003: Investigación sobre la optimización de la gestión y tratamiento de residuos ganaderos.
- Correa, A. Fraser, A.F. 1982: Comportamiento de los animales de granja. Ed. Acribia. González, S y Ortuño, S. (1999). La ganadería extensiva en España. Un elemento imprescindible en la gestión del medio ambiente. Ed. Bellisco.
- Gordon, I. 2006: Tecnología de la reproducción de los animales de granja. Ed. Acribia
- Gimeno, M. A. Guía de identificación animal y trazabilidad de carnes argentinas
- Grandin T., 2000. Livestock handling and transport. Editorial CABI Publishing. UK
- Hernández Benedí, J.M., 1989: Manual de nutrición y alimentación del ganado. Servicio de Extensión Agraria. MAPA
- Herranz, A. 2004: Bienestar animal. Ministerio de agricultura, pesca y alimentación
- Hunter, R.H.F. 1987: Reproducción de los animales de granja. Ed Acribia.
- Johansson, I. y Rendel, J. 1971 Genética y mejora animal. Ed. Acribia.
- Pamio, I.O. 2005. Introducción a la producción animal. Ed. Oge
- Samper, J., 2002. Definición e interés de la trazabilidad. Actas del Curso Avanzado sobre Trazabilidad de los Productos Cárnicos; sistemas y técnicas. Instituto Agronómico Mediterráneo (IAMZ). Zaragoza, España.
- Vanoni, E 2005. Pastoreo racional intensivo. ed. Oge
- Younie, D. 2004. Ganadería ecológica. ed Acribia