



Universitat de Lleida

DEGREE CURRICULUM

FOOD AND ANIMAL BREEDING

Coordination: DE LA FUENTE OLIVER, GABRIEL

Academic year 2023-24

Subject's general information

Subject name	FOOD AND ANIMAL BREEDING			
Code	102550			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Agricultural and Food Engineering	3	COMPULSORY	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	1	1	4
	Number of groups	1	1	1
Coordination	DE LA FUENTE OLIVER, GABRIEL			
Department	ANIMAL SCIENCE			
Important information on data processing	Consult this link for more information.			
Language	catalan (50%) and spanish (50%)			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
DE LA FUENTE OLIVER, GABRIEL	gabriel.delafuente@udl.cat	3	
VILLALBA MATA, DANIEL	daniel.villalba@udl.cat	3	

Learning objectives

The student, on passing the subject, must be able to:

- Demonstrate theoretical and applied knowledge about the importance and characteristics of the different animal species, racial groups and their productive aptitudes in order to be able to choose the most appropriate genetic material based on the different possible productive objectives.
- Demonstrate theoretical and applied knowledge on genetic improvement programs applied to different animal species and interpret the genetic evaluation catalogs of animals to decide the most favorable pairings.
- Determine the nutritional needs of the animals and interpret the rationing formulas.
- Demonstrate theoretical knowledge and apply the different rationing systems.

Competences

General skills

At least the following basic competencies must be guaranteed:

CB1. That students have demonstrated that they possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply knowledge from the forefront of your field of study.

CB2. That students know how to apply their knowledge to their work or vocation in a professional way and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.

CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature.

CB4. That students can transmit information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5. That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

In addition the graduate must be able to:

CG7. Knowledge of basic, scientific and technological subjects that allow continuous learning, as well as an ability to adapt to new situations or changing environments.

CG8. Ability to solve problems with creativity, initiative, methodology and critical reasoning.

Specific skills

The graduate in Degree in Agricultural and Food Engineering after completing his studies will have acquired the following knowledge and skills:

CEEA1 Technologies for animal production. Animal anatomy. Animal physiology. Genetics and animal improvement.

CEMC3 The Basics of Animal Feeding and Genetic Improvement.

CG11 Capacity and mastery of information and communication technologies.

CE2 Knowledge and use of animal production technologies. Animal production, protection and exploitation systems. Genetics and animal breeding.

Subject contents

ANIMAL FEEDING BLOCK (16h)

Module 1. Nutrient metabolism. Anabolism and catabolism. Metabolic efficiency. Metabolism of nutrients obtained from the digestion of carbohydrates, lipids and proteins. Metabolic aspects that affect the production of different animal products (3h)

Module 2. Energy balance. Definition of all inputs and outputs. Main methods for estimating the main inputs and outputs. Factors affecting the energy balance (2h)

Module 3. Protein assessment. Dynamics of the rumen. Degradability. Microbial protein. Protein evaluation index. Limiting amino acids. Availability of amino acids. Ideal protein (2h)

Module 4. Systems of assessment and calculation of energetic needs for ruminants. Classical methods. Energy valuation of food. Calculation of energy needs (2h)

Module 5. Systems of assessment and calculation of protein needs for ruminants. Classical methods. Protein evaluation of foods. Calculation of protein needs (2h)

Module 6. Systems of valuation and calculation of needs for monogastric. System for monogastrics. Food assessment and needs calculation. (2h)

Module 7. Food consumption. Ingestion capacity. Factors affecting ingestion regulation. (1h)

Module 8. Water. Water functions. Water quality and balance. Factors affecting water needs and consumption. (1h)

Module 9. Vitamins and minerals. Functions and classification. Main sources and factors that affect the needs of the animal. (1h)

ANIMAL IMPROVEMENT BLOCK (4pm)

Module 1. Programs and schemes of improvement. Organizations involved in improvement schemes. Differences between species. (2h)

Module 2. The objectives of selection. Definition of selection objective. Calculation of economic weights for different characters. Selection objectives in different species. (2h)

Module 3. Schemes of improvement in little prolific species (2h)

Module 4. Schemes of improvement in prolific species (2h)

Module 5. Genetic management in little prolific species. (2h)

Module 6. Genetic management in prolific species. (2h)

Module 7. Biotechnology and Animal Improvement. Molecular markers. Selection assisted by markers. Older people and QTL: main examples in production animals (2h)

Practical activities

COMPUTER CLASSROOM PRACTICES

- Rationing practices for ruminants and monogastrics (2h)

PROBLEMS AND CASES

- Solving an energy balance case. (2h)
- Solving problems of assessment of needs and food inputs. (2h)

SEMINARS

- Animal feeding seminar (2h)
- Genetic improvement seminar (4h)

Development plan

All sessions will be held in person, virtually or semi-in person according to the recommendations, regulations or restrictions of the health authorities.

Evaluation

Type of activity	Evaluation activity		Weight qualification
	Procedure	Number	(%)
Block 1. Animal Nutrition. Theory	Written tests	1	35
Block 2. Animal Breeding. Theory	Written tests	1	35
Block 3. Animal Nutrition. Practical	PA1. Written tests on problems and cases PA2. Use of formulation programs in monogastrics	3-5 1	15
Block 4. Animal Breeding. Practical	PM1. Interpretation of breeding programs PM2. Catalogs of stallions in species that are not very prolific PM3. Genetic Management in prolific species	1 1 1	15
Total		10	100

To pass the evaluation it is essential to obtain at least 4/10 in each of the blocks 1 and 2 and 5/10 in the general calculation.

Only blocks 1 and 2 will have a second-chance. In case of second-chance, the maximum grade to be obtained may not exceed 6/10. Failure to attend any of the activities within blocks 3 and 4 will result in a 0 in that activity

Alternative assessment:

In case of requesting the alternative evaluation, this will consist of a single written test on the date of the second-chance exam with a value of 70% and assistance to the practical blocks with a value of 30%

Bibliography

Basic bibliography

ALFONSO, L. y ESTANY, J. (1996). Organización y esquemas de mejora animal. Universitat de Lleida

BUXADÉ, C. (1995) (Coord.). Zootecnia: bases de producción animal. Tomo II: Reproducción y Alimentación. Mundi-Prensa. Madrid.

BUXADÉ, C. (1995) (Coord.). Zootecnia: bases de producción animal. Tomo III: Alimentos y Racionamiento. Mundi-Prensa. Madrid.

BUXADÉ, C. (1995) (Coord.). Zootecnia: bases de producción animal. Tomo IV: Genética, patología higiene y residuos animales. Mundi-Prensa. Madrid.

DE BLAS, C, GONZALEZ, G, ARGAMENTERIA A, (1987). Nutrición y alimentación del ganado. Mundi-Prensa. Madrid.

McDONALD, P, EDUARDES, R.A. y GREENHALGH, J.F.D. (1985). Nutrición animal. Ed. Acribia. Zaragoza.

Further reading

BOWMAN, J.C. (1982). Introducción a la mejora animal. Omega. Barcelona. DALTON, D.C. (1982). Introducción a la genética animal práctica. Acribia, Zaragoza.

FEDERACIÓN ESPAÑOLA PARA EL DESARROLLO DE LA NUTRICIÓN ANIMAL (2003). Tablas FEDNA de composición y valor nutritivo de alimentos para la fabricación de piensos compuestos (2ª edición). Disponible a Internet: <http://www1.etsia.upm.es/fedna/tablas.htm>.

INRA (2008). Alimentation des bovins, ovins et caprins. Besoins des animaux – Valeurs des aliments. Ed. Quae. París.

LAZARO, R. Y MATEOS, G.G. (2008). Necesidades nutricionales para avicultura. Normas

FEDNA. Asociación Española de Ciencia Avícola (sección Española de la WPSA).

LEGATES, J.E. y WARWICK, E.J. (1992). Cría y mejora del ganado. Ed. Interamericana. Mc

Graw-Hill, México.

NRC (1998). Nutrient requirements of swine. National Academy Press. Washington D.C.