



DEGREE CURRICULUM
ANIMAL PRODUCTION BASES

Coordination: SERRANO PÉREZ, BEATRIZ

Academic year 2021-22

Subject's general information

Subject name	ANIMAL PRODUCTION BASES			
Code	102525			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Agricultural and Food Engineering	2	COMPULSORY	Attendance-based
	Master's Degree in Agronomic Engineering (inter) (R2019)		COMPLEMENTARY TRAINING	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA	TEORIA
	Number of credits	1.8	0.6	3.6
	Number of groups	4	2	1
Coordination	SERRANO PÉREZ, BEATRIZ			
Department	ANIMAL HUSBANDRY			
Teaching load distribution between lectures and independent student work	On-site hours: 60 Off-site hours: 90			
Important information on data processing	Consult this link for more information.			
Language	Catalan: 50% Spanish: 50%			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BLANCO PENEDO, MARIA ISABEL	isabel.blancopenedo@udl.cat	,8	
DE LA FUENTE OLIVER, GABRIEL	gabriel.delafuente@udl.cat	2,1	
FUERTES GIMENO, ESPERANZA	esperanza.fuertes@udl.cat	1,2	
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SERRANO PÉREZ, BEATRIZ	beatriz.serrano@udl.cat	3,8	
VILLALBA MATA, DANIEL	daniel.villalba@udl.cat	2,1	

Subject's extra information

Subject / subject in the whole curriculum

The discipline Bases of the Animal Production as a core subject, within the area of knowledge of Animal Production, in the studies of the Degree in Agricultural and Food Engineering, of the Technical School Superior of Agricultural Engineering of Lleida, is an essential subject for to the understanding and deepening of other subjects that are taught later throughout the same degree.

Learning objectives

Objectives and learning results

The student, after passing the subject, have to be able:

- To show some theoretical and applied knowledge about animal physiology, nutrition and animal genetics.
- To be able to use methodologies and basic instrumental in the laboratory of Anatomy, Physiology and Animal Nutrition.
- To acquire basic knowled in the Animal Genetics.
- To develop autonomus learning skills and transversals skills as integration ability, team work, through based-problem learning.

Competences

General competences

At least the following basic competences will be guaranteed:

CG1: That the students have demonstrated to possess and understand knowledge from the base of the general secondary education at a level that, although it is supported by advanced textbooks, also includes some aspects that imply knowledge coming from the vanguard of said area.

CG2: That students know how to apply their knowledge to their work or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study

CG3: That students have the ability to collect and interpret relevant data to make judgments that include a reflection on relevant issues of a social, scientific or ethical nature. CG4: That students can transmit information, ideas, problems and solutions to both a specialized

and non-specialized audience

CG5: That the students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

Furthermore, the graduate must be able to:

CG6: Analyze concrete situations, define problems, make decisions and implement action plans in search of solutions.

CG9: Use existing computer and communication tools to support the development of your professional activity (UdL strategic competence)

CG11: Understand and express yourself with the appropriate terminology.

CG12: Present information correctly in oral and written form (UdL strategic competence)

Specific competences

The graduate in Bachelor of Agricultural and Food Engineering after completing their studies will have acquired the following knowledge and skills:

CEMC3 The bases of animal production. Livestock facilities.

CEMC4 Applications of Biotechnology in Livestock Engineering

CG11 Capacity and mastery of information and communication technologies.

CE2 Knowledge and use of animal production technologies. Animal anatomy and physiology. Animal production, protection and exploitation systems. Genetics and animal improvement

CE14. Know the chemical composition of food and its chemical reactions.

Subject contents

SYLLABUS

SECTION 1: GENETICS (9h)

Topic 1. Introduction to Genetics and Animal Breeding. Genetic and Animal breeding improvement, objectives, characteristics, restrictions. Principles of Mendelian genetics applied to animal breeding. Individual genes of importance in animal production. The ryr gene (halothane) as an example. (2h)

Topic 2. Principles of quantitative genetics applied to animal genetics. Genetic model. Introduction to the polygenic model. Statistical model. Decomposition of phenotypic values. The parameters of the model. Heredability, description and estimation. (2h)

Topic 3. Selection and crossings. Concept of truncation selection. Use of the additive value and the potential value for selection and elimination. Heterosis and inbreeding. Types of crossings. (2h)

Topic 4. The animal breeding schemes. Prolific species. Low prolific species. Genetic management (3h)

SECTION 2: NUTRITION (9h)

Topic 1. Foods for animal feed. Classification, description, features and identification.

Topic 2. Nutritional principles of food. Weende system, Van Soest system.

Topic 3. Efficiency of food for animals. Main differences between the efficiency of monogastric and ruminant species.

Topic 4. Analysis of food. Sampling. Main analysis systems. Weende System and Scheme Van Soest. (4h)

SECTION 3: ANIMAL PHYSIOLOGY (9h)

Topic 1. Introduction to Animal Anatomy and Physiology. (2h)

Lectures	Class (Main Group)	Explanation of main concepts	32.5	Study of concepts	50	3.5	86	3.4
Seminar	Participatory Class (Middle Group room)	Practical activities: understanding principles, taking measurements..	2	Learn to solve problems and case situations.			2	0.1
Lab	Practice (Small Group room)	Practical activities: understanding principles, taking measurements...	15.5	Study and write reports. Test through Virtual Campus or Kahoot.	15	0.5	15	1.8
Informatic room	Practice (Middle group room)	Practical activities: understanding principles, taking measurements..	6	Study and write reports. Test through Virtual Campus or Kahoot.	10		15	0.7
Aimed activities	Student task	To guide students about the development of a task (supervision in office hours)		Write bibliographic or practic reports	15		15	0.6
Total			56		90	4	150	6

Development plan

The course is structured in four blocks of knowledge that include theoretical and practical activities in computer room, laboratory and seminars. The calendar developed by the Director of Studies will be strictly followed.

Theoretical activities are virtual due to the Covid-19, but if the circumstances change, the possibility of doing them in person will be valued.

The **practical activities** are face-to-face excepting computing practices in computer classroom or in a regular classroom:

- Dissection room and Histophysiology Laboratory: ETSEA, building 1, floor 0, laboratory 1 (1.0.01).
- Microscope classroom: ETSEA, SHV building, floor 2, classroom 02 (2.2.02).
- Nutrition Laboratory: ETSEA, building 1, floor 1, laboratory 08 (1.1.08).

It is MANDATORY that students wear the following personal protective equipment (PPE) during the teaching practices:

- White lab coat.
- Chemical / biological protection gloves (Physiology block)
- Mask

NOTE - Please be aware of changes regarding schedules in the classroom or virtualization of activities to adapt to any change in the health situation.

Evaluation

Activity type	Grading System		Grading weight
	Procedure	Number	
Lecture	Written test on they syllabus	4	70
Problems and cases	Delivery of reports or exams about cases	1	7.5
Lab	Delivery of reports. Written or test exams.	1	15

Computer room	Delivery of reports. Written or test exams.	1	7.5
Total			100

NOTES:

- In order to pass the evaluation it is necessary to obtain a minimum of a 35% of the value in each individual test and 40% in the set of four tests. The evaluation will be passed with a grade ≥ 5 (provided obtained 40% theory)
- Students who pass the practical part but not the theoretical part will not pass the subject, but they will keep the practical grade for the next course. Theory grades will not be saved.
- In the case of confinement, face-to-face exams can be substituted by exams on line.

Bibliography

Basic Bibliography

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

FALCONER DS, MACKAY TFC. 2001. Introducción a la genética cuantitativa. Editorial Acribia.

BOWMAN JC. 1982. Introducción a la mejora animal. Omega. Barcelona.

BLAS BEORLEGUI CD, MATEOS GC, REBOLLAR PG. 1999. Normas FEDNA para la formulación de piensos compuestos. Fundación Española para el Desarrollo de la Nutrición Animal.

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.

CUNNINGHAM JG. 2013. Fisiología Veterinaria. Elsevier, Cunningham. 5ª edición

DALTON DC. 1982. Introducción a la genética animal práctica. Acribia, Zaragoza.

DE BLAS, C, DORIAN, G, RUVINSKY, A. (Eds.). 2015. The Genetics of Cattle. CABI Publishing.

FRANDSON RD. 1984. Anatomía y Fisiología de los Animales Domésticos. Ed. Interamericana

GARCÍA SACRISTÁN, A. Fisiología Veterinaria. 2018. Ed.Tébar Flores. (Ebook)

GRIFFITHS, AJ F, MILLER, JH, SUZUKI, DT, LEWONTIN, RC, GELBART WM. 2008. Genética. McGraw-Hill/Interamericana de España.

GONZALEZ G, ARGAMENTERIA A, 1987. Nutrición y alimentación del ganado. Mundi-Prensa.

PIPER, L, RUVINSKY, A. (Eds.). 1997. The Genetics of Sheep. CABI Publishing.

POND K, POND K. 2000. Introduction to Animal Science. John Wiley & Sons.

ROTHSCHILD, M F, RUVINSKY, A (Eds). 2011. The genetics of the pig. Wallingford: CAB Internacional

SENGER PL. 2015. Pathways to pregnancy and parturition. Current Conceptions, Inc. Washington State University Research & Technology Park, Pullman, WA. 3ª edición.

Young B, Woodford G, O'Dowd P. 2014. Wheater. Histología funcional: Texto y Atlas en color, 6ª edición.

Complementary Bibliography

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>.

ANAPORC: Asociación Nacional de Porcinocultura Científica. <https://www.archivo-anaporc.com/>

FEDNA. Fundación española para el desarrollo de la nutrición animal. <http://www.fundacionfedna.org/>

Herramienta de autoaprendizaje de Histología a través del campus virtual de la UdL: <http://cv.udl.cat/cursos/100302/histologia/basicos/index.html>

Revista Frisona Española. <http://www.revistafrisona.com/>

