



Universitat de Lleida

DEGREE CURRICULUM **ANIMAL PHYSIOLOGY I**

Coordination: GARCIA ISPIERTO, IRINA

Academic year 2023-24

Subject's general information

Subject name	ANIMAL PHYSIOLOGY I				
Code	100304				
Semester	1st Q(SEMESTER) CONTINUED EVALUATION				
Typology	Degree	Course	Character		Modality
	Double bachelor's degree: Bachelor's Degree in Veterinary Medicine and Bachelor's Degree in Science and Production	1	COMMON/CORE		Attendance- based
Course number of credits (ECTS)	6				
Type of activity, credits, and groups	Activity type	PRALAB	PRAULA		TEORIA
	Number of credits	1.5	0.6	0.3	3.6
	Number of groups	4	6	2	1
Coordination	GARCIA ISPIERTO, IRINA				
Department	ANIMAL SCIENCE				
Teaching load distribution between lectures and independent student work	Hores presencials: 60 Hores no presencials: 90				
Important information on data processing	Consult this link for more information.				
Language	Català: 50% Castellà: 50%				

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BOADA PALLAS, JORDI	jordi.boada@udl.cat	3,6	
GARCIA ISPIERTO, IRINA	irina.garcia@udl.cat	4,7	
PALACÍN CHAURI, ROGER JOAN	roger.palacin@udl.cat	1,2	
ROJAS CAÑADAS, EBER	eber.rojas@udl.cat	1,3	
SERRANO PEREZ, BEATRIZ	beatriz.serrano@udl.cat	3	

Subject's extra information

Due to the worldwide pandemia, lessons can be virtual depending on the situation

Learning objectives

Objectives of knowledge: The student that exceeds the subject must: The student who has passed the subject must know the basis of Physiology of the reproduction, lactation, digestion and mechanism of stress of domestic mammals of zootechnical interest, and anatomical - physiological bases of birds Capacity objectives: The student that exceeds the subject must be able to: The student who passes the subject must understand the previously indicated knowledge as a basis for the regulation of the productive process (reproduction, lactation, digestion, post, e.t.c) and their economic implications.

Competences

General competences Strategic competences of the University of Lleida 1. Domain of a foreign language 2. Respect and development of Human Rights, democratic principles, the principles of equality between women and men, and the values of a culture of peace and other democratic values. Cross-disciplinary skills of the degree 1. Interpret studies, reports, data and analyze them numerically. 2. Work alone and in a multidisciplinary team. 3. Understand and express yourself with the right terminology. 4. Discuss and argue in various discussions. 5. Analyze and assess the social and ethical implications of professional activity. 6. Have a critical and innovative spirit. Specific competences CSA 1. Understand the structure and function of healthy animals and the relationship between them 2. To know the basics of the main physiological processes and understand their role in the production process, as well as to predict and evaluate the effects of these on the final product. Other competencies 1. Physical and chemical bases of biological processes and their applications in the veterinary sciences 2. Excitability and cellular communication. 3. Operation and regulation of sections and body systems. 4. Homeostasis

Skills vet+CPA

Basic skills: • CB1 Possess and understand knowledge in an area of study that begins at the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of your field of study • CB2 Apply their knowledge to their job 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. • CB3 Ability to collect and interpret relevant data (usually within their study area) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature • CB4 Being able to transmit information, ideas, problems and solutions to a specialized and non-specialized audience) • CB5 Know how to develop those learning skills necessary to undertake further studies with a high degree of autonomy

Transversal Competences • CT1 Acquire adequate oral and written comprehension and expression of Catalan and Spanish • CT2 Acquire significant command of a foreign language, especially English • CT3 Acquire training in the use of new technologies and information and communication technologies • CT4 Acquire basic knowledge of entrepreneurship and professional environments • CT5 Acquire essential notions of scientific thought

General Competences: • CG2 The prevention, diagnosis and individual or collective treatment, as well as the fight against animal diseases, whether they are considered individually or in groups, particularly zoonoses. Common

Basic Training Competencies • CE2 Identify the physical and chemical principles of biological processes and their applications to the veterinary sciences • CE5 Identify and know the principles and bases of homeostasis, excitability and cellular communication • CE9 Know the microorganisms and parasites that affect animals and those that have an industrial, biotechnological or ecological application, as well as know the techniques of the immune response • CE12 Know the ethical principles of the veterinary profession, apply its rules and regulations as well as apply the principles and bases of Welfare, animal protection and bioethics

Specific Competences • CE45 Recognize when euthanasia is necessary and carry it out humanely using the appropriate method

CPA specific competences

CE4 Know the structure of the eukaryotic cell, its organization, topography and its structure in tissues, organs and systems as well as identify the operation and regulation of apparatus and body systems

Subject contents

THEORY

Topic 1. Introduction to animal physiology.

1.1. Concept and field of study of physiology.

1.2. Cell physiology: Membrane transport mechanism

1.3. Membrane potential and action potential.

1.4 Cellular communication and signaling mechanisms

Topic 2. Nervous system.

2.1. Neurotransmitter synapses.

2.2. Central Nervous System.

2.3. Peripheral nervous system.

Topic 3. Circulatory system.

3.1. Histology

3.2. Blood

3.3. Heart.

3.4. Blood vessels.

3.5. Regulation mechanisms

Topic 4. Respiratory system.

4.1. Histology

4.2. Respiratory mechanics

4.3. Transport and gas exchange

4.4. Mechanisms of regulation of respiratory function.

Topic 5. Excretory system and acid-base regulation

5.1. Histology 5.2. Glomerular filtration and urine formation

5.3. Mechanisms of regulation of renal function.

5.4. Integration of acid-base regulation mechanisms.

Topic 6. Endocrinology.

6.1. Histology

6.2. Endocrine glands: pituitary, thyroid, parathyroid, adrenal glands, endocrine pancreas, gonads and placenta.

6.3. Neuroendocrine integration.

Topic 7. Metabolism

7.1. Definition

7.2. Metabolic Rate.

7.3. Energy metabolism and physical activity

7.4. Regulation of food intake and energy balance

7.5. Endocrine regulation of digestive activities

7.6. Endocrine regulation of carbohydrate metabolism

7.7. Endocrine regulation of lipid metabolism and protein metabolism

7.8. General metabolism of ruminants

Topic 8. Thermoregulation

8.1. Introduction

8.2. Concepts of Homeotherm and Poikilotherm.

8.3. Mechanisms of heat interchanges:

8.4. Control of heat loss.

8.5. Control of heat production.

8.6. Concepts of Hibernation.

PRACTICAL AGENDA

- Practice 1. Computer simulation. Transport through membranes and action potential Practice 2-4. Computer simulation. Physiological functions of the circulatory, respiratory and renal systems
- Practice 5. Circulatory-respiratory histology
- Practice 6. Excretory-endocrine histology
- Practice 7. Approach of endocrine interactions
- Practice 8. Metabolism seminar: cooperative learning
- Practice 9. Clinical cases seminar

Methodology

This subject will be developed in sessions of 3-5 hours a week interspersing theory and practice. Material in the form of summaries, diagrams or other teaching material such as links of interest will be provided. Self-learning will be encouraged and teamwork will be carried out.

Development plan

The subject is structured in three blocks of knowledge that include theoretical and practical activities. The calendar developed by the Directorate of Studies will be strictly followed.

- Practices in computer classroom or in regular classroom (to be determined)
- Regular classroom: ETSEA, building 3, floor 0, classroom 01 (3.0.01)
- Microscope classroom: ETSEA, SHV building, floor 2, classroom 02 (2.2.02)

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

Evaluation

Test-type exams:

block 1: 27%

block 2: 27%

Block 3: 24%

Practice block: 10%

Endocrinology work block: 12%

If you cannot do a practice, you can do the corresponding test on the CV but you will get half of the grade achieved.

There will be a recovery of each theoretical exam. A minimum of 4 is needed in each of the theoretical exams (block 1, 2 and 3) to be weighted with the practices and other assessments.

The alternative evaluation will consist of a final exam of 75% and a practical one of 25%

Bibliography

BRODY S. 1945. Bioenergetics and growth, with special reference to the efficiency complex in domestic animals. New York, Reinhold.

BUTTERY et al. 1986. Control and manipulation of animal growth. Ed. Butterworths.

DE DUVE C. 1988. La célula viva. Ed Labor. Barcelona: Prensa Científica. Barcelona.

EURELL I FRAPPIER. 2006. Dellmann's textbook of Veterinary Histology. 6th ed. Blackwell.

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

GANONG WF. 2006. Fisiología Médica. 20a. Ed. Panamericana.

GANONG WF. 2005. Review of Medical Physiology. 22a Ed. McGraw-Hill/Appleton & Lange.

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

GUYTON AC, HALL JE. 2006. Tratado de Fisiología Médica. 11a Ed. Elsevier-Saunders.

HAMMOND, J. 1966. Principios de la explotación animal reproducción, crecimiento y herencia. Ed. Acribia.

HOLLIS G.R. 1993. Growth of the Pig. Ed. CAB International.

LAWRENCE T.L.J. 1980. Growth in Animals. Ed Butterworths.

KIERSZENBAUM AL. TRES LL. 2012. Histología y Biología Celular. Introducción a la Anatomía Patológica. 3^a Edición. Elsevier Saunders.

KOLB E. 1971. Fisiología veterinaria. Zaragoza: Ed Acribia.

NICKEL R, SCHUMMER A, SEIFERLE E. 1979. The viscera of the domestic animals. Berlin: Ed Paul Parey.

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

ROSENFELD R.G. AND ROBERTS C.T. 1999. The IGF system. Humana Press.

SENGER PL. 1999. Pathways to pregnancy and parturition. Current Conceptions, Inc. Washington State University Research & Technology Park, Pullman, WA.

SISSON S, GROSSMAN JD. 1972. Anatomía de los Animales Domésticos 4a Ed. Barcelona: Ed Salvat.

WHEATHER. Histología funcional: texto y atlas en color (2014). - 6^o ed. / Barbara Young, Geraldine O'Dowd, Phillip Woodford. Elsevier.