

Animal Physiology

Code: 100932
ECTS Credits: 6

Degree	Type	Year	Semester
2500253 Biotechnology	FB	2	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

Albert Quintana Romero

Prerequisites

It is recommended to refresh concepts learnt at the subjects of the first course 'Cellular Biology' and 'Biochemistry', and first semestre second course 'Probability and Statistics'.

Objectives and Contextualisation

To gain knowledge of the organization, the anatomical bases and the functional aspects of animal physiological systems, focused in humans.

To identify the role and importance of the main regulatory or control systems.

To know the biophysical, cellular, molecular and biochemical bases of the physiological systems to better understand how they work.

To understand the different physiological systems as highly interrelated and integrated entities.

To be able to understand the basics of physiology as a necessary basis for the development of biotechnological applications.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Describe the molecular, cellular and physiological bases of the organisation, functioning and integration of living organisms in the framework of their application to biotechnological processes.
- Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
- Learn new knowledge and techniques autonomously.
- Read specialised texts both in English and one's own language.

- Search for and manage information from various sources.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Think in an integrated manner and approach problems from different perspectives.
- Use ICT for communication, information searching, data processing and calculations.
- Work individually and in teams

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Analyse the functional mechanisms of hydrosaline and acid-base equilibrium in organisms.
3. Describe the basic mechanisms of cell and tissue physiology.
4. Describe the macro- and microscopic structure and the functioning of the nervous system
5. Explain the function and characteristics of the different components of blood.
6. Explain the function and the mechanisms regulating the cardiovascular, respiratory, excretory, digestive, endocrine and reproductive systems in men and women.
7. Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
8. Learn new knowledge and techniques autonomously.
9. Read specialised texts both in English and one's own language.
10. Search for and manage information from various sources.
11. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
12. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
13. Think in an integrated manner and approach problems from different perspectives.
14. Use ICT for communication, information searching, data processing and calculations.
15. Work individually and in teams

Content

Introduction to Physiology.

Intercellular communication.

Electrical excitability I: neurons.

Electrical excitability II: muscle.

Liquid compartments. Blood.

Cardiovascular physiology.

Respiratory physiology.

Renal function.

Gastrointestinal physiology.

Endocrine system.

Reproduction.

Nervous system.

Methodology

Lectures

Master classes given by the Lecturer about the basic skills and knowledge on a particular physiological subject to be acquired by the students, with the support of audiovisual teaching material, previously accessible at the Campus Virtual. It is highly recommended to attend the Lectures, and must necessarily be accompanied by the personal study.

Problems / Seminars

In these classes, students will normally work in small groups and sometimes individually, in: 1. solving questions, cases and physiological problems, 2. reading and critical analysis of news, scientific dissemination texts and / or scientific literature, 3. resolution of doubts that arise as the course progresses, 4. workshop on scientific communication, 5. preparation and public presentation of topics that the teachers will indicate.

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			
Lectures	30	1.2	1, 12, 2, 3, 4, 6, 5
Seminars	15	0.6	1, 12, 11, 8, 2, 14, 10, 3, 4, 6, 5, 7, 9, 13, 15
Type: Supervised			
Case/problem-solving	15	0.6	8, 2, 3, 4, 6, 5, 13, 15
Type: Autonomous			
Personal study	55	2.2	8, 2, 3, 4, 6, 5, 9, 13
Preparation of works	25	1	8, 14, 10, 9, 15

Assessment

This subject is evaluated along the course and includes more than three evaluation activities, with different evaluation typologies, distributed along the course. None of these activities represents more than 50% of the final mark.

Theory. It will be evaluated individually in two partial exams, each consisting of 30-50 test-type questions. Each partial exam will weigh 50% of the theory. The two partial exams will be averaged only if the mark of each partial is ≥ 4.00 . When the mark of one partial exam is < 4.00 and the mark of the other partial exam is ≥ 5.00 , the final exam will have to be only taken for the failed part, with one exception: if the mark of the first partial exam is ≥ 8.00 and the mark of the second partial exam is ≤ 3.00 , the student will have to attend the final exam of all the subject. Likewise, if a student takes one partial exam only, he/she does not obtain the maximum mark, and he/she does not attend the examination of the other partial, he/she will have to attend the final examination of all the subject as well. This theoretical part represents 80% of the final mark of the subject and must be

passed with a mark ≥ 5.00 in order to make a weighted average with the mark of seminars/problems.

Seminars / problems. There will be several individual and collective evaluations (in small groups), which will be based on problem solving, written comments on scientific news / articles, preparation and exhibition of works, etc. Each of these activities will be evaluated and qualified, and the final mark will be the weighted average of those activities. This part represents 20% of the final grade of the subject and it is not required to attain a minimum mark to be weighted-averaged with the mark of theory.

Final exam. It will consist of 4-10 written answered questions.

The subject will be passed with a weighted final mark ≥ 5.00 .

Final remarks

1. "To be eligible for the retake process, the student should have been previously evaluated in a set of activities equaling at least two thirds of the final score of the course or module. Thus, the student will be graded as Non-evaluable" if the weighting of all conducted evaluation activities is less than 67% of the final score".
2. "Attendance to practical sessions (or field trips) is mandatory. Students missing more than 20% of programmed sessions will be graded as Non-Avaluable".

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evaluation of seminars/problems	20%	6	0.24	1, 12, 11, 8, 14, 10, 3, 7, 9, 13, 15
Exams of theory	80%	4	0.16	8, 2, 3, 4, 6, 5, 9, 13, 15

Bibliography

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- Koeppen BM, Stanton BA. Berne & Levy Physiology. Elsevier, 7a ed, 2017.
- Pocock G, Richards CD, Richards DA. Human Physiology. Oxford University Press, 5a ed, 2017.
- Silbernagl S, Despopoulos A. Fisiología. Texto y Atlas. Editorial Médica Panamericana, 7a ed, 2009.
- Tortora GJ, Derrickson BH. Principles of Anatomy and Physiology. Médica Panamericana, 15a ed, 2021.
- Tresguerres J.A.F. Fisiología Humana. McGraw-Hill Interamericana de España SL, 4a ed, 2010.
- Widmaier EP, Raff H, Strang KT. Vander's Human Physiology. The Mechanisms of Body Function. McGraw-Hill Education, 15a ed, 2018.

Software

None.

