

**Animal Physiology**

Code: 101952  
ECTS Credits: 6

Degree	Type	Year	Semester
2500890 Genetics	OB	1	2

**Contact**

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**Use of Languages**

Principal working language: spanish (spa)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

**Other comments on languages**

The three official languages of the UAB can be used: Catalan, Spanish and English.

**Prerequisites**

Those required for the access to the degree.

All students enrolled in this subject are recommended to review the concepts of general biology, cell biology and histology previously treated (during the first semester of this Degree or in previous studies).

It is strongly recommended to take the course "Integrated Laboratory II" in parallel, where a practical module of Animal Physiology is taught.

English skills are recommended.

**Objectives and Contextualisation**

Physiology is the scientific discipline devoted to the study of the functioning of living beings. Animal Physiology, therefore, studies the functioning of animals from all points of view. Animal Physiology is considered a basic and essential discipline within the training in biomedical sciences.

The general objective of Animal Physiology is the acquisition by the students of integrated knowledge related to the functioning of the organism, from the molecular to the systemic-organic levels, including the ability to apply this knowledge in practical situations, both in the professional context and in everyday situations .

Specific objectives of Animal Physiology as a teaching subject are that the student:

1. Acquires knowledge of organic functions and how they are regulated.
2. Applies the knowledge acquired in other subjects, taken prior to the concepts that are taught within this program, and establishes the appropriate cross-relations.
3. Knows the experimental techniques that have allowed the development of Physiology as a science and becomes familiar with some in particular.

4. Interprets data relative to real or experimentally induced situations from a physiological perspective.
5. Knows the appropriate bibliographic sources related to the subject.
6. Recognizes Physiology as a professional field, from research and teaching perspectives.

Within the Degree in Genetics, Animal Physiology is a basic, compulsory subject, taught in the second semester of the first year. The activities of this subject are complemented by laboratory activities, as they are described in the corresponding practical course (Integrated Laboratory II). It is recommended, therefore, that both courses are taken simultaneously.

Animal Physiology aims to give students an integrated view of the functioning of living organisms and their integrated control, the ultimate result of the mechanisms of genetic regulation in individuals. This knowledge is also necessary to understand the systemic/organic consequences derived from genetic alterations.

## Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Be able to analyse and synthesise.
- Be able to organise and plan.
- Be sensitive to environmental, health and social matters.
- Describe the diversity of living beings and interpret it evolutionally.
- Design experiments and interpret the results.
- Know and interpret the metabolic and physiological bases of organisms.
- 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.

## Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Be able to analyse and synthesise.
3. Be able to organise and plan.
4. Be sensitive to environmental, health and social matters.
5. Describe the basic mechanisms of cell and tissue physiology.
6. Describe the diversity of physiological mechanisms in animals.
7. Describe the function and characteristics of the different components of blood.
8. Describe the function and mechanisms for regulating the different systems of the organism.
9. Describe the function and mechanisms for regulating the endocrine and reproduction systems.
10. Describe the macro- and microscopic structure and the functioning of the nervous system.
11. Design experiments and interpret the results.
12. Explain the functions of the nervous system.
13. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
14. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

## Content

### LECTURES

This part of the content of the subject will be taught as regular lectures/master classes, complemented by the teaching material prepared for this purpose and accessible to all students through the Moodle Classroom (via the UAB Virtual Campus). Students should prepare these sessions in advance, as part of their autonomous work (45-60 min self-study per session), using the material provided.

The following thematic blocks will be treated:

1. Physiological principles
2. Excitable cells and tissues
3. Nervous control systems
4. Endocrine control systems
5. Blood
6. Cardiovascular
7. Respiratory
8. Gastrointestinal
9. Reproductive physiology
10. Excretory systems

A detailed program of contents will be provided In the Moodle Classroom.

#### SEMINARS

The seminars are combined activities of self-learning and supervised work in which topics not addressed in the theoretical classes are discussed or aspects already treated will be further developed. In some cases, they are exercises of a practical nature (practical cases) and/or problems that the student will perform and deliver for their qualification in advance of the seminar (according to the calendar that will be found in the Moodle Classroom). They can also include exercises and/or questionnaires to be done in the classroom, which will be given to the teacher for correction. All the activities carried out will contribute to the process of continuous evaluation of the student. If missed, this type of activities cannot be recuperated.

#### ORAL PRESENTATIONS

The oral presentations are combined activities of self-learning, group work and supervised work in which students (groups of 4-5) prepare and present (in a limited time 5-6 min, plus questions) to the class a subject related to the subject. Both, the work groups and the topic of work will be decided by the teacher and announced in the Moodle Classroom. The oral presentations have a triple qualification: "peer qualification", teacher qualification and self-assessment of the working group. This activity is considered compulsory in order to pass the subject.

#### TUTORIES

Individual or small group sessions for the resolution of doubts related to the subject. This type of activity will be carried out at the students' request (individually or in groups) or will be proposed by the teacher on a voluntary basis. Therefore, it is not an activity assessed in the count of hours included in this teaching guide, nor is it included in the evaluation criteria.

#### POSSIBLE MODIFICATIONS:

These contents may be modified (prioritized or reduced) in accordance with unforeseen incidents, duly justified.

## Methodology

The contents of the subject "Animal Physiology" aim to give the student a general introduction to the physiology of living organisms. As a whole, the programmed activities are oriented to the integration of knowledge in order to provide students with tools to address practical problems, with professional implications, from a physiological perspective. The training activities programmed include both supervised and self-learning time.

*Lectures:* This part of the content will be taught as master classes, complemented by the teaching material prepared for this purpose and accessible to students in the Moodle Classroom of the subject (Virtual Campus of the UAB). Students should prepare these sessions in advance, as part of their autonomous work, using the material provided. This activity is complemented by the student's personal work outside the classroom and with personalized tutoring in accordance with the requirements that the student and the teacher consider appropriate.

*Cases:* The cases are a combination of self-learning exercises (individual or group) and supervised work in which issues not covered during lectures are discussed or extended and are associated with discussion and / or correction seminars. These are exercises of a practical nature that the student will perform and deliver for their qualification in advance to the discussion seminars. The seminars will be activities of teacher's feedback and discussion about the work done. The cases will have a completion time of one week, approximately, according to the progress of the academic calendar. Deadlines will be announced opportunely both in class and at the virtual campus of the UAB.

*Oral presentations:* Oral presentations are combined exercises of self-learning (in groups, 4-5 people) and supervised work in which the students prepare (group work) and present (in a maximum time of 5-7 min) to the rest of the class a subject, assigned by the teacher, related to the subject. This activity aims to develop transversal attitudes of collaboration (group work), decision making, synthesis and integration and communication skills (preparation of audiovisual material and oral expression). Given the limited time available, this activity will be carried out at previously agreed hours with the coordination of the degree and indicated in the timetables. All the topics discussed are considered subject of examination. The teacher will make all presentations, or a summary of them, available to all students in the virtual campus.

*Tutorials:* Discussion time and time for resolution of doubts/problems that might arise during the self-learning time and guidance from the teacher in the learning process. They will be done individually or in small groups depending on the requirements and the issues to be discussed. Their schedule will be decided upon agreement between the teacher and the student(s). The completion of, at least, one group tutoring before each of the exams will be recommended in a timely manner for the resolution of doubts.

*Self-learning:* Autonomous training activities (individual or group) in which the student works the material presented in the theoretical classes or in the cases or searches, analyzes and integrates complementary information.

### POSSIBLE MODIFICATIONS:

The proposed teaching methodologies may undergo some modification depending on unforeseen incidents, duly justified.

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	34	1.36	1, 14, 13, 4, 5, 10, 6, 9, 8, 7, 12, 2, 3

Preparation, resolution and drafting of case studies	13	0.52	4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
Resolution and discussion of practical cases (seminars)	12	0.48	4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
Type: Supervised			
Oral presentations and discussion time	2	0.08	1, 14, 4, 5, 10, 6, 9, 8, 7, 12, 2, 3
Type: Autonomous			
Preparation of oral presentations	4	0.16	1, 14, 13, 4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
Selfstudy	71	2.84	5, 10, 6, 9, 8, 7, 12, 2, 3

## Assessment

General Evaluation System: Continuous evaluation

Final grade based on:

Mid-term test (25 - 35% of the final grade)

End-term test (25 - 35% of the final grade)

Cases and activities at seminars (30% of the final grade)

Oral presentation (10% of the final grade)

Mid-term and end-term tests:

Combination of "Test-type questions: Short development questions"

1. 80-95 2-choice test questions (True / False) with a 1: 1 penalty (an incorrect answer subtracts a correct answer).

Alternatively, the test may consist of multiple choice questions (40 -50 questions with 4 or 5 options), with penalty 3:1.

Sufficient advance notice will be given of the characteristics of the test, which once set will be the same for the entire course.

2, 2-3 short case-type questions (reasoning).

There will be 2 test during the semester (mid-term and end-term), on dates previously communicated and fixed by the coordination of the Degree. Both tests contribute between 25% and 35% to the final score (depending upon the content of each test), taking into account that they, together, cannot represent more than 60% of the final grade.

Score averages will only be considered with grades at partial tests  $\geq 4.75$ .

Final exam:

Required for those students that in any of the two partial tests have not obtained a grade  $\geq 4.75$  (and therefore cannot average).

To be eligible for the retake process, the student should have been previously evaluated in a set of activities equaling at least to 50% of the activities of the course.

Combination of "Test-type questions: Short development questions"

1. 80-95 2-choice test questions (True / False) with a 1: 1 penalty (an incorrect answer subtracts a correct answer).

Alternatively, the test may consist of multiple choice questions (40 -50 questions with 4 or 5 options), with penalty 3:1.

2. 2-3 short case-type questions (reasoning)

Averages only with a score  $\geq 4.75$ .

Cases / problems / classroom activities:

Failure to present a case/problem is equivalent to obtaining a grade of 0.0 for that activity.

Some practical cases include an evaluable activity to be carried out in the classroom (during the face-to-face session). These cases, whenever the development of the course allows, will be announced in advance. The no participation in a classroom activity represents a grade of 0.00 for that particular activity.

The cases/problems and evaluable classroom activities cannot be recuperated.

Oral presentations:

Oral presentations are a compulsory activity to pass the subject.

Oral presentations will be scored based on: evaluation by the teacher, evaluation by a peers system (the students themselves will be evaluators) and a self-assessment of the group work (according to pre-established rules).

The grade obtained will not necessarily be the same for all members of the working group. The no participation in the oral presentation and/or preparation of the material and/or evaluation/self-evaluation of the group implies not being able to pass the subject.

Detailed instructions of the organization and scoring system will be found in the Moodle Classroom of the course.

Calculation of the final grade:

(Mid-term / End-term / Final exam)  $\times 0.6$  + Cases  $\times 0.3$  + Oral presentation  $\times 0.1$

The subject is considered passed ONLY if the final grade is  $\geq 5.0$ .

Averages will only be made with a grade  $\geq 4.75$  in the section corresponding to the Mid-term / End-term / Final exam.

Not evaluated:

The qualification of "Not Evaluated" will be obtained when the number of evaluation activities carried out is less than 50% of the programmed activities.

Improvement of final grade:

Students passing the subject that want to improve their final grade can only do so by attending the final exam (evaluation of the whole subject). In this case, it is understood that the student waives the previous qualifications of the partial tests and his/her final grade is calculated from the new grade of the final exam. Therefore, this change can represent both a rise and a drop in the final grade.

In no case will it be possible to improve the final grade with a presentation or other types of activities.

Students repeating the subject:

Failure to pass the subject involves the repetition of all activities, given its integrative nature.

## POSSIBLE MODIFICATIONS:

Student's assessment may experience some modifications depending on unforeseen incidents, duly justified.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Cases and activities in seminars	30 %	6	0.24	13, 4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
End-term test	25 - 35 %	3	0.12	4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
Mid-term test	25 - 35 %	3	0.12	4, 5, 10, 6, 9, 8, 7, 11, 12, 2, 3
Oral presentation	10 %	2	0.08	1, 14, 13, 4, 5, 6, 8, 2, 3

## Bibliography

### Basic references

- Koeppen, B.M., Stanton, B.A. Berne y Levy - Fisiología 7a ed. Elsevier Mosby, 2018
- Pocock, G., Richards C.D. Fisiología humana: La base de la medicina, 2a ed. Masson 2005.
- Tresguerres, J.A.F. Fisiología Humana: La base de la medicina. 4ª ed. Interamericana McGraw-Hill. 2010
- Tortora, Derrickson. Principios de Anatomía y Fisiología, 11ava ed. Médica Panamericana, 2007
- Raff H, Levitzky M. Fisiología Médica. Un enfoque por aparatos y sistemas. McGrawHill - Lange, 2013

### Complementary references

- Fox, S.I. Fisiología Humana. 14a ed. McGraw-Hill Interamericana, 2016
- Ganong. Fisiología médica. 25a ed. McGraw-Hill - Lange, 2016
- Guyton, A.C., Hall, J.E.. Manual de Fisiología Médica. 13a ed. Elsevier España, 2017
- Johnson MH, Essential Reproduction. 8ª ed. Blackwell Publishing, 2018
- Martín Cuenca E, Fundamentos de Fisiología Thomson 2006
- Silverthorn, Fisiología Humana. Un enfoque integrado 6ª ed. Panamericana 2014
- Vander, Sherman, Luciano. Fisiología Humana. McGraw-Hill 1999

### Related Web pages

<http://www.telmeds.org/AVIM/index2.htm> (atlas virtual de medicina)

<http://virtual.ujaen.es/atlas/> (atlas d'histologia virtual)

<http://www.medicine.mcgill.ca/physio/vlab/> (Laboratori virtual de fisiologia)

<http://neocortex.med.cornell.edu/VL-Physio/> (enllaços amb recursos d'interés en fisiologia)

### On line courses - MOOCs

<https://www.coursera.org/learn/physiology>

Bibliography in digital format:

Several of the proposed texts are available in digital version through the UAB Library Service. It is recommended to follow the following guide for the location of digital texts:  
<https://ddd.uab.cat/pub/guibib/224929/bibrecdigitals.pdf>

## **Software**

This course does not use any specific software.