



## Information about the subject

**Degree:** Bachelor of Science Degree in Biotechnology

**Faculty:** Faculty of Veterinary Medicine and Experimental Sciences

**Code:** 1100204 **Name:** Animal Physiology

**Credits:** 6,00 **ECTS Year:** 2 **Semester:** 2

**Module:** Fundamentals of Biology

**Subject Matter:** Animal physiology **Type:** Compulsory

**Department:** Basic and Cross-disciplinary Sciences

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

### Lecturer/-s:

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## Module organization

### Fundamentals of Biology

Subject Matter	ECTS	Subject	ECTS	Year/semester
Biology	12,00	Cell Biology	6,00	1/1
		Plant and Animal Biology	6,00	1/1
Animal physiology	6,00	Animal Physiology	6,00	2/2
Plant Biology	6,00	Plant Physiology	6,00	2/1
Microbiology	6,00	Microbiology	6,00	2/1
Virology	6,00	Virology	6,00	3/2



## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student has understood and assimilated the contents of the subject.
- R2 The student is able to solve problems or case studies related to the subject contents, by using different resources (bibliographic, IT, etc.)
- R3 The student is able to work in a laboratory, carrying out basic operations correctly and taking into account the corresponding safety standards. He/she understands the planning, development and purpose of the experience, and is able to contrast and validate the obtained results.
- R4 The student is able to write an intelligible and organized text on different aspects of the subject.
- R5 The student is able to present and defend his/her work adequately.
- R6 The student seeks bibliographic information from different sources and can analyze it with a critical and constructive spirit.
- R7 The student collaborates with the teacher and his/her peers throughout the learning process; he/she works in a team; treats everyone with respects, is proactive and fulfills the organization rules of the course.



## Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students acquire and understand knowledge in their field of study based on general secondary education but usually reaching a level that, although supported on advanced text books, also includes aspects involving state-of-the-art knowledge specific to their area.			X	
CB2	Students are able to apply knowledge to their work in a professional way and have the competences enabling them to state and defend views and opinions as well as perform problem-solving tasks in their field of study.			X	
CB3	Students are able to collect and interpret relevant data (generally in their field of study) and give opinions that involve reflection on relevant social, scientific or ethical issues.			X	
CB4	Students can communicate information, ideas, problems and solutions to a specialized or non-specialized audience.			X	
CB5	Students develop the necessary learning skills to undertake further studies with a high level of autonomy.				X

GENERAL		Weighting			
		1	2	3	4
CG01	Capacity to analyze and synthesize.			X	

SPECIFIC		Weighting			
		1	2	3	4
CE22	Knowing and understanding contents, principles and theories related to biotechnology.			X	





CT12 Critical and self-critical capacity.

x

CT13 Ethics.

x

CT14 Capacity to learn

x

CT15 Capacity to adapt to new situations

x

CT16 Capacity to produce new ideas (creativity)

x

CT17 Leadership abilities

x

CT18 Taking initiatives and enterprising spirit

x

CT19 Capacity to apply theoretical knowledge

x

CT20 Research skills

x

CT21 Sensitivity to environmental issues

x



## Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
	60,00%	Written test
	10,00%	Submission of papers
	30,00%	Laboratory test

### Observations

According to the general evaluation and qualification regulations, the preferred evaluation system will be by means of continuous evaluation. There will be a continuous evaluation of the theoretical and practical part of the course. After the teaching of the theoretical part of each didactic unit, there will be questionnaires in class type test, for the theoretical part, and of development for the practical part, imitating the evaluation system of both parts of the final exam of the course, and after the realization, it will be corrected in class so that all students receive feedback of their results.

Each of the parts must be approved to pass the course. The minimum passing grade is 5 out of 10.

### MENTION OF DISTINCTION:

In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.



## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.
- M2 Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.
- M3 Activities carried out in spaces with specialized equipment.
- M4 Supervised monographic sessions with shared participation..
- M5 Application of multidisciplinary knowledge.
- M6 Personalized and small group attention. Period of instruction and/or guidance carried out by a tutor to review and discuss materials and topics presented in classes, seminars, readings, papers, etc.
- M7 Set of oral and/or written tests used in initial, formative or additive assessment of the student
- M8 Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical , practical and/or small-group tutoring sessions. Work done on the university e-learning.
- M9 Student's study: Individual preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical, practical and/or small-group tutoring sessions. Work done on the university e-learning platform.





## IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
ON-CAMPUS CLASS M1	R1, R2, R5, R6	37,40	1,50
PRACTICAL CLASSES M2	R2, R3, R6, R7	4,20	0,17
LABORATORY M3	R3	10,40	0,42
SEMINAR M4	R5, R6, R7	2,00	0,08
GROUP PRESENTATION OF ASSIGNMENTS M5	R5, R6, R7	2,00	0,08
TUTORIAL M6	R1, R2, R4, R5, R6	2,00	0,08
ASSESSMENT M7	R1, R2, R3, R4, R5, R6	2,00	0,08
<b>TOTAL</b>		<b>60,00</b>	<b>2,40</b>

## LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
AUTONOMOUS GROUP WORK M8	R1, R2, R3, R4, R5, R6, R7	17,90	0,72
AUTONOMOUS INDIVIDUAL WORK M9	R1, R2, R3, R4, R5, R6, R7	72,10	2,88
<b>TOTAL</b>		<b>90,00</b>	<b>3,60</b>



## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

Content block	Contents
1. Introduction to animal physiology	Basics Relationship between structure and function Histology
2. The cell membrane and cell excitability	Transport mechanisms Membrane potential and action potential Signal propagation
3. The nervous system	General characteristics Types of nerve cells Sensory systems in general
4 Physiology of movement	Muscular structure Mechanics of muscle contraction and its regulation
5. Respiratory system	Introduction and general concepts Oxygen and carbon dioxide in the blood: transport Gas transfer in the air: lungs Regulation pH corporal
6. Fluids and circulation.	The heart Arterial and venous system Regulation of circulation Circulatory systems
7. Excretory system	Renal physiology and their excretory ducts Urinary system and excretion of nitrogen
8. Food digestion and absorption	Catabolism and anabolism Nutritional needs Digestion and absorption



9. Endocrine system. Hormone secretion and transport  
Mainly hormones and their regulation
10. Reproduction and development. Types of reproduction  
Morphology of reproductive organs  
Fertilization  
Growth and development
11. PRACTICAL BLOCK
- PR1. Handling of laboratory animals, anatomy and histology.  
PR2. Hematology: Obtaining plasma and blood serum.  
Hematocrit value. Anticoagulants Blood count and leukocyte formula  
PR3 Electrocardiography  
PR4. Urinalysis  
PR5. Gamete Physiology  
P.C 1 PRACTICAL PROBLEM RESOLUTION  
P.C 2 GROUP ACTIVITY

## Organization of the practical activities:

	Content	Place	Hours
PR1.	Handling of laboratory animals, anatomy and histology.	Laboratory	2,00
PR2.	Hematology: Obtaining plasma and blood serum. Hematocritvalue. Anticoagulants Blood count and leukocyte formula	Laboratory	2,00
PR3.	Electrocardiography	Laboratory	2,00
PR4.	Urinalysis	Laboratory	2,00
PR5.	Gamete Physiology	Laboratory	2,00
PR6.	SOLVED PRACTICAL PROBLEM	Lecture room	2,50
PR7.	GROUP ACTIVITY	Computer	2,50



## Temporary organization of learning:

Block of content	Number of sessions	Hours
1. Introduction to animal physiology	2,00	4,00
2. The cell membrane and cell excitability	2,00	4,00
3. The nervous system	4,00	8,00
4 Physiology of movement	2,00	4,00
5. Respiratory system	2,00	4,00
6. Fluids and circulation.	2,00	4,00
7. Excretory system	2,00	4,00
8. Food digestion and absorption	2,00	4,00
9. Endocrine system.	2,50	5,00
10. Reproduction and development.	2,00	4,00
11. PRACTICAL BLOCK	7,50	15,00

## References

GARCÍA SACRISTÁN, A. Fisiología veterinaria. EDITORIAL: Tébar Flores. 2018  
GUYTON A.C. Y HALL J. Tratado de fisiología médica. Interamericana-McGraw-Hill. 2016  
HILL R.W., WYSE G.A., ANDERSON M. Animal physiology. Sinauer Associates. 2004