

**COURSE DATA****Data Subject**

<b>Code</b>	33169
<b>Name</b>	Animal biology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2019 - 2020

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1102 - Degree in Biotechnology	Faculty of Biological Sciences	2	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1102 - Degree in Biotechnology	81 - Foundations of functional biology	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
GARCERA ZAMORANO, MARIA DOLORES	20 - (HISTÓRICO) BIOLOGÍA ANIMAL
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**SUMMARY**

In the Degree in Biotechnology of the University of Valencia, the Animal Biology course is mandatory and is situated in the first quarter of the second year, with a size of 6 credits. Fundamentals belongs to the field of Functional Biology within the module Fundamentals of Biology. This module aims to provide the biological basis necessary for the student to progress in the knowledge of biotechnology. Matter Biology will provide the student a transversal view of modern biology including the biology of organisms and systems from biological diversity. Fundamentals matter of Functional Biology must complete the biological formation from coming to the functioning of different types of organisms levels and, therefore, the subject will deal primarily Animal Biology study the functioning of animals.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

This is a subject of synthesis, in which the student must understand the functional relationships between the different parts of the animal as well as coordination between them, and which are necessary for the animal to function as a whole. This requires the student has acquired minimum basic knowledge of physics, chemistry, biochemistry, histology and cytology and Animal zoology at the undergraduate level.

## OUTCOMES

### 1102 - Degree in Biotechnology

- Ser capaz de dar una breve charla a un auditorio no especializado sobre un tema general de Biología con impacto actual en la sociedad.
- Aprender a trabajar de forma adecuada en un laboratorio con material biológico (microorganismos, plantas y animales) incluyendo seguridad, manipulación y eliminación de residuos biológicos, y con registro anotado de actividades.

## LEARNING OUTCOMES

Get an integrated view of the functioning of the animal and be able to relate and apply their knowledge. Acquire synthesis capacity to collect, organized and coherent information or data from various sources. Knowing, even in passing, the management of own basic scientific instrumentation (materials and instruments) of the Animal Biology. Acquire sufficient skill in handling laboratory animals and be able to obtain, prepare and manage materials and samples of animal origin and physiological interest. Ability to work together when facing problematic situations collectively. Capacity for speaking to a public audience, such as the class itself, through exposure or intervention in a debate on a controversial topic or issue.

## DESCRIPTION OF CONTENTS

### 1. CLASES TEORICAS

1. Introduction to Physiology.
2. Communication and integration.
3. Introduction to the Endocrine System.
4. Neurons and networks neuronales.- Central and Peripheral Nervous Systems.
5. Sensory Physiology.
6. Physiology Control muscular.- autonomic and somatic motor.
7. Physiology cardiovascular.- blood flow and blood pressure.
8. Physiology respiratoria.- exchange and transport of gases.



9. Excretion and function renal.- electrolyte balance.
10. Digestión.- regulation digestión.- Fundamentals animal energy.
11. Hormonal control of metabolism, growth, reproduction and development.

## **2. Practical Laboratory**

1. Respiratory system: Rhythms respiratorios.- pulmonary ventilation.
2. Effect of  $T^a$  on oxygen consumption.
3. Adjusting the color change in fish.
- 4.- Study of the estrous cycle in the albino mouse.
5. Study of sensory receptors in humans. Electromyography.
6. Preparation and study of electrocardiograms.
7. absorption spectrum of hemoglobin and oxygen saturation degree.
8. Study of blood pressure in humans.
9. Temperature effect on heart rate in Daphnia
10. -Activity osmoregulatory gill Artemia

## **3. COMPUTER SIMULATION**

- Simulation, by computer, of various physiological processes related to:
- Endocrine system (Metabolism and hormones)
- Muscular system. Skeletal muscle physiology.
- Circulatory system. cardiovascular physiology frog. cardiovascular dynamics.
- Respiratory system. Mechanisms of the respiratory system.
- Excretory system. Renal physiology.

## **4. TUTORIALS (classroom)**

1 session of 2 hours will be planned and she planterán and solve cases and problems related to the subject.

## **5. COMPLEMENTARY ACTIVITIES**

1. Questionnaires online through Virtual Classroom.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	32,00	100
Laboratory practices	21,00	100
Classroom practices	5,00	100
Tutorials	2,00	100
Development of individual work	20,00	0
Study and independent work	30,00	0
Preparing lectures	20,00	0
Preparation of practical classes and problem	3,00	0
Resolution of case studies	14,00	0
Resolution of online questionnaires	3,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

The course is organized in a series of activities that are considered essential in the development of matter and must perform all students.

1. Lectures, magisterial type, with a total of **35** hours and will be taught sequentially along the academic year, so that they are integrated with other proposed activities.
2. Practical classes Laboratory. The total of **18** contact hours spread over **6** sessions of 3 hours each. In each session students perform the proposed activities, after consulting the material previously deposited in Virtual Classroom. At the end of each session will respond to a questionnaire that will be delivered to the teacher. Only this questionnaire may be delivered at the end of the relevant practice.
3. Practical classes simulation (non-contact). Computer simulations based on PhysioEx 9.0 software for Human Physiology (see bibliography) is proposed. At the beginning of the semester **1 hour session** will be reserved to explain the importance of simulation in physiology and show the operation of PhysioEx 9. Following the completion of the various simulations the student must send, through virtual classroom, the document with all the responses of the activity. A questionnaire was also done through virtual classroom. This activity is presented as **OPTIONAL** students. Students who wish to apply for registration must necessarily carry out this activity.
4. Practices in classroom. They will be held in classroom with small groups and **4** hours. activities (multimedia materials, questionnaires ...) to deepen certain topics of general interest to students is proposed.
5. General Tutorials. 2 hour session at the end of the semester, after completion of the lectures. In her interactive activities that help the approach and doubt resolution will be proposed
6. Questionnaires "online" via Virtual Classroom. Throughout the course various self-assessment questionnaires will be proposed through Virtual Classroom. The rating that can be obtained from each of them come corrected by a factor according to their degree of difficulty.
7. Testing. The theory and practice must pass a final exam.



## EVALUATION

The evaluation of the contents of the theoretical program will be implemented through a final exam, which will consist of questions from different format (concepts, type test, reasoning, etc. ...). The mark obtained will mean up to 50% of the final grade.

The evaluation of the laboratory practices will be conducted by a practical examination in the laboratory using a test through virtual classroom. The qualification obtained will up to 25% of the final grade. practices will also be assessed through questionnaires that students must submit after each of the practice sessions in the laboratory. These questionnaires will involve up to 5% of the final grade.

The “**classroom practices**” activity will be evaluated through attendance (70%) and through a virtual classroom test (30%). The grade obtained will represent up to 10% of the final grade.

OPTIONAL simulation activity practices will be assessed by delivery through virtual classroom, a memory containing all the answers to the questionnaires proposed in the simulations and through a test through virtual classroom. The mark obtained will represent up to 10% of the final grade

the following distribution of a maximum of 100 points is proposed (BE REACHED 50 POINTS TO APPROVE THE SUBJECT):

* Examen final teórico	50 puntos
* Examen de Prácticas de laboratorio	25 puntos
* Cuestionarios de prácticas	5 puntos
* Prácticas en aula	10 puntos
* Cuestionarios “en línea” Aula Virtual	10 puntos
<b>TOTAL</b>	<b>100 puntos</b>
* Simulaciones	10 puntos

TOTAL 100 points

Particular conditions

- In order to pass the course, it is a necessary condition to approve both the examination of theory and the practice. Only then scores on other activities will be added.
- Failure to reach the minimum score on one of the two exams (theory or practice), you can save the score of the other for a full academic year.
- If you do not pass the subject in the first call (May / June), the ratings corresponding to "questionnaires practices " will be saved, "assistance and use of tutorials", "questionnaires virtual classroom" and , if any, the "practical simulation" for a full academic year. If the student wants to perform again, you must repeat all. These activities can only be made in the period from September to May of each academic year.





In the second call for the highest scores in each section are the same as in the first call

## REFERENCES

### Basic

- Silverthorn, D.E. (2014) Fisiología Humana. Un enfoque integrado. 6ª Edición. Editorial Medica Panamericana. Madrid
- Fox, S.I (2013). Fisiología Humana. 13ª Edición. Mc Graw Hill. Madrid.
- Sherwood, L (2016) Human Physiology: From Cells to Systems, 9th Edition. Brooks/Cole Cengage Learning.
- Koeppen, BM y Stanton, B.A. (Eds) (2009). Berne y Levy Fisiologia. 6ª Edición. Elsevier España, Barcelona.
- Zao, P., Stabler, T., Smith, L., Lokuta, A., Griff, E. (2012) PhysioEx 9.0. Simulaciones de laboratorio de Fisiología. Pearson Educación. S.A. Madrid.

### Additional

- Ganong, W.F. (2013). Fisiología médica. 24ª Edición. Mc Graw Hill. Madrid
- Guyton, A.C. (2016). Tratado de fisiología médica. 13ª Edición. Elsevier.
- Hill, R.W., Wyse, G.A. y Anderson, M. (2016) Animal Physiology. 4th Edition. Sinauer Associates, Inc, Sunderland, Massachusetts
- Stanfield, C.L. (2011). Principios de Fisiología Humana. 4th Edition. Addison Wesley (Pearson). Madrid
- Widmaier, E.P., Raff, H, Strang K.T. (2014). Vanders Human Physiology. The Mechanisms of Body Function. 13th Edition. Mc Graw Hill.

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

**English version is not available**