# ANIMAL PHYSIOLOGY

<table>
<thead>
<tr>
<th>MODULE</th>
<th>CONTENT</th>
<th>YEAR</th>
<th>TERM</th>
<th>CREDITS</th>
<th>TYPE</th>
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</thead>
<tbody>
<tr>
<td>FUNDAMENTAL BIOLOGY</td>
<td>Animal Physiology</td>
<td>2nd</td>
<td>2nd</td>
<td>6 ECTS</td>
<td>Required (Mandatory)</td>
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**LECTURER(S)**

<table>
<thead>
<tr>
<th>Dr. Laura Garcia Rejon (Coordinator)</th>
<th>Dr. Alba Martinez Burgos</th>
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<tbody>
<tr>
<td>Dept. Zoology / Animal Physiology Unit. Science Faculty. 2nd floor of the building biology. Office 4. email <a href="mailto:lagarcia@ugr.es">lagarcia@ugr.es</a></td>
<td>Dept. PHYSIOLOGY Faculty of Pharmacy email <a href="mailto:malbam@ugr.es">malbam@ugr.es</a></td>
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**DEGREE WITHIN THE SUBJECT IS TAUGHT**

<table>
<thead>
<tr>
<th>Degree in Biotechnology</th>
<th>Tutoring and Meetings</th>
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<tbody>
<tr>
<td>Dr. Laura Garcia Rejon</td>
<td>L 12: 00-14: 00</td>
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<tr>
<td></td>
<td>M 12.00-14.00</td>
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<tr>
<td></td>
<td>V 12: 00-14: 00</td>
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<tr>
<td>Science Faculty. 2nd floor of the building biology. Office 4.</td>
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<tr>
<td>Dr. Alba Martinez Burgos</td>
<td>L 9: 00-11: 00</td>
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<td>M 9.00-11.00</td>
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<td></td>
<td>J 9: 00-11: 00</td>
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<tr>
<td>Science Faculty. Tutorials office</td>
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**PREREQUISITES and/or RECOMMENDATIONS (if necessary)**
**Prerequisites:** It is recommended to have studied the subjects of Biology and Cell Biology and Biochemistry Macromolecular

**Recommendations:** A good standard of English and informatics skills are also required.

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**BRIEF ACCOUNT OF THE SUBJECT PROGRAMME**


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**GENERAL AND PARTICULAR ABILITIES**

**GENERAL ABILITIES:**

- CG4 - Know the basic principles of the structure and function of biological systems.
- CT1 - Capacity for analysis and synthesis.
- CT2 - Ability to organize and plan.
- CT3 - Ability to apply knowledge in practice and solve problems.
- CT5 - Critical reasoning.
- CT6 - Ethical commitment to equal opportunities, non-discrimination on grounds of sex, race or religion and the attention to diversity.
- CT7 - Sensitivity to environmental issues.
- CT8 - Ability for decision-making.

**PARTICULAR ABILITIES:**

- CE10 - Capacity of description, analysis and modification of phenomenology and systems of interest in biotechnology through the application of the principles of Animal Physiology.
- CE11 - To collaborate in the design / proposal of actions based biotechnology related to human health and / or improving animal production and actively participate in the implementation of these proposals processes.
- CE16 - Understanding the general principles that regulate metabolism and mechanisms to adapt to changing environmental and physiological conditions.

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**OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)**

- The basic concepts and procedures of the Animal Physiology
- The principles operating in the functioning of animals, including humans, in relation to its surroundings
- The comparative aspects of physiology of various groups: demonstrations unit and various aspects of the physiology of animals
- Structure / function in animals at the subcellular, cellular, organ system.
- The nature and importance of the mechanisms involved in the regulation / adaptation of the different functions in animals.
- The possible applications of the knowledge acquired on various professional fields of biotechnology: human health and welfare, animal production, management and maintenance of biodiversity, research in this field, specific knowledge transfer, etc.

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**DETAILED SUBJECT TOPICS**

**THEORETICAL UNITS**

**UNIT 1. GENERAL INTRODUCTION TO ANIMAL PHYSIOLOGY**

1. Basic and fundamental concepts of animal physiology. Animal functions. The cell membrane functions as a support relationship and
keeping animals.

UNIT 2: FUNCTIONAL NERVOUS SYSTEM BASES
2. Elements and basic functional organization of the nervous system. Neurons and glial cells. The central and peripheral nervous system. The protective elements.

UNIT 3: PERCEPTION OF THE INTERNAL AND EXTERNAL ENVIRONMENT: SENSORY MECHANISMS
4. Sensory receptors. General transduction mechanisms. Somatosensory sensibility skin receptors, proprioceptors and nociceptors
5. The special senses. Physiology of hearing and balance. Physiology of taste and smell. Physiology of vision / photoreception

UNIT 4: EFFECTOR SYSTEMS
6. Types of effectors. Physiology of different types of muscle: skeletal, smooth, heart.

UNIT 5: SENSORY-MOTOR INTEGRATION
7. Integration somatic motor and vegetative. The different levels and integration centers.

UNIT 6: ENDOCRINE PHYSIOLOGY

UNIT 7: VEGETATIVE FUNCTIONS

UNIT 8: REPRODUCTIVE FUNCTION
17. Physiology of pregnancy, childbirth and lactation. Applications to birth control, induced breeding, etc. Applications to improving animal production.

PRACTICAL SESSIONS
Seminars / Workshops
Studio and scientific publications related to the subject content. Preparation and problem solving and practical / clinical cases.
Academic tutorials
Regular meetings will be held in specific tutoring, in which it is intended to resolve questions raised by the students.
Laboratory Practice

Practice 1. Sensory and motor physiology. Study of sensory and motor reflexes receptors.


SYSTEM FOR ASSESSING THE ACQUISITION OF THE COMPETENCES AND KNOWLEDGE

1. Continuous Assessment

1.1 Ordinary Call

1. Oral / written exam of the theoretical part of the course (SE1): 70% of the overall grade. Attendance and participation of students in class (SE4) is also evaluated in this section.

2. Consideration of the practical activities (SE2): 20% of the overall score. In this rating, 60% a practical test and 40% attendance, attitude and student participation in them is assigned.

3. Group work (seminars, case studies, etc.) (SE3, SE5, SE6): up to 10% of the overall score.

To pass the course will need to obtain at least 50% of the maximum score on each of paragraphs (1) and (2).

Each course and in good time, you will be clearly informed of the specific weights of each of the above items numbers that course.

1.2 Special Call

• In this competition, students will necessarily examine the part / s suspended / s (theoretical and / or practical).
• Students have the option to be submitted to the (s) part (s) it seems appropriate (theoretical and / or practical)
• Students who are present at a party will lose the mark obtained earlier in this part.
• A student who fails to appear at a part, keep the mark achieved in the ordinary call in that part.

All matters relating to the assessment shall be governed by the regulations on teacher planning and organization of current tests at the University of Granada.

2. Final evaluation only

According to the Policy Evaluation and Qualification of Students of the University of Granada, making a final assessment only to those students who cannot meet the continuous assessment method for work, health status may benefit contemplated, disability or any other duly justified reason preventing them follow the continuous assessment system.

To qualify for the single final assessment, the student, in the first two weeks of teaching of the subject, it shall request the Director of the Department.

The final evaluation will be performed only in one academic ceremony on the official examination for the subject and will consist of two distinct tests: a test of theoretical knowledge and other skills, which counted for 70% and 30% Note end, respectively.

The grading system is expressed by numerical rating in accordance with the provisions of art. 5 R. D 1125/2003, of 5 September, by which the European credit system and the grading system in the university degrees of official and valid in the country is established.
# BIBLIOGRAPHY

## PRINT BOOKS ON PHYSIOLOGY

### KEY REFERENCES:
- CONTI F. Medical Physiology. McGraw-Hill / Interamericana de Mexico, 2010
- Cunningham J. G. and KLEIN, B.G. Veterinary Physiology, Elsevier, 2013
- MARTIN CUENCA E. Fundamentals of Physiology, Thomson, 2006

### FURTHER READING:
- KRONENBERG H. M., Melmed S., K. S. POLONSKY And Larsen P.R. Williams Treaty of Endocrinology, Elsevier, 2009
- MADRID J.A. and LAMA'S ROLE A. (drs.) Chronobiology, Editec @ Red, 2006
- PURVES D., G. J. AUGUSTINE Neuroscience, Panamericana, 2008

## RECOMMENDED INTERNET LINKS

[http://www.ugr.es/local/fisioai](http://www.ugr.es/local/fisioai)