

Physiology of Behaviour

Code: 106067
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OT	4	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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: Yes

Prerequisites

Have approved the subject of Estructure and Function of the Nervous System

Objectives and Contextualisation

Know the basic concepts of ethology and the theoretical basis of different aspects of behavior in animals and humans

Know the neurobiological substrate that regulates behavior in animals and humans

Identify the keys of the behavior and understand the physiological mechanisms of regulation of the same

Train the student to understand the biological basis of behavioral alterations in animals and humans

Acquire the practical skills necessary to understand, program and carry out experiments related to the physiological regulation of behavior.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Display knowledge of the basic life processes on several levels of organisation: molecular, cellular, tissues, organs, individual and populations.
- Display theoretical and practical knowledge of the major molecular and cellular bases of human and animal pathologies.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Read and critically analyse original and review papers on biomedical issues and assess and choose the appropriate methodological descriptions for biomedical laboratory research work.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.

- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- 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.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Describe the organisation of the cerebral crust and the sensory and motor cortex.
3. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
4. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
5. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
6. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
7. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
8. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
9. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
10. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
11. Understand and critique scientific articles on biomedicine and society.
12. Understand the behavioural and cognitive development of the human brain.
13. Understand the principal neuronal disorders.
14. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

1. The study of behavior and its biological bases: historical aspects.
2. The plasticity of the behavior at ontogenetic and phylogenetic level. Instinct versus learning.
3. Hormones and behavior: bidirectional relationships between the nervous system and the endocrine system. Conceptual aspects.
4. Biological rhythms: physiological bases and implications.
5. General concept of motivation and reinforcement. Thirst.

6-8. Food intake behavior. Endocrine and neurobiological substrate. Pathological alterations of feeding behavior (obesity, anorexia and bulimia).

9-10. Social behavior and intra-specific interactions: general aspects. Territoriality Relationships of hierarchy and dominance.

11. Neurobiological bases of inter-specific and intra-specific aggression.

12-14. Behavior and reproduction. Parental behavior. Physiological bases.

15-18. Emotions. Concept and types of emotions. The expression of emotions and emotional behavior. Integration of emotion and motivation. The contribution of physiology to the conceptual study of emotions.

19-20. Physiological response to emotional situations and stress. Physiological and pathological implications.

21-23. Learning and memory concept. Types of learning and factors that modify it.

24-25. Biological bases and nervous circuits involved in different types of learning.

26-30. Biological bases of psychiatric pathology.

Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents

Methodology

Theoretical classes:

Systematized exposition of the content of the subject, giving special relevance to the concepts related to the behavior (since they constitute the basis of what will be regulated), to the evolutionary flexibility of the behavior and to the biological mechanisms and areas of the nervous system involved in the regulation of normal and pathological behavior.

Seminars and problems:

Preparation and discussion of topics related to psychiatric pathologies

Practices:

Understanding and realization of various animal models (in rodents) with translational value in psychiatry. The experimental results obtained will be analyzed and discussed.

Tutorials:

They will be done in a personalized way in the teacher's office (hours to be arranged) or collectively at scheduled times. Their objectives are to clarify doubts and concepts.

The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities

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
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Type: Directed		
Laboratory Practices	12	0.48
Seminars	8	0.32
Theoretical classes	32	1.28
Type: Supervised		
Tutorial	5	0.2
Type: Autonomous		
Problem resolution and analysis of data	28	1.12
study	60	2.4

Assessment

The evaluation will be based on theoretical tests (questions to be developed), seminars and practical classes. Th

Theory, seminars and practices will be evaluated separately. For average of the three parts a minimum of 4 is rec

In the final exam: (a) if it is submitted to a part of the subject, it must be approved independently of the grade obtained in the other part; (b) if presented at all, the overall score will be taken into account.

Attendance at practical sessions is mandatory. The students would obtain the grade of "Not Valuable" when their absence is superior to 20% of the programmed sessions.

To participate in the recovery, students must have been previously evaluated in a set of activities the weight of which equals a minimum of two thirds of the total grade of the subject or module. Therefore, the students will obtain the "Not Valuable" qualification when the evaluation activities carried out have a weight lower than 67% in the final grade.

Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Laboratory Practices	15%	1	0.04	1, 10, 9, 12, 13, 11, 2, 3, 8, 7, 6, 4, 5, 14
Seminars	15%	2	0.08	1, 10, 9, 12, 13, 11, 2, 3, 8, 7, 6, 4, 5, 14
Theoretical classes	70%	2	0.08	1, 10, 9, 12, 13, 11, 2, 3, 8, 7, 6, 4, 5, 14

Bibliography

Eibl-Eibesfeldt I: Etología: introducción al estudio comparado del comportamiento, Ediciones Omega, Barcelona, 1979 (lecture book to understand ethology)

Carlson NR and Birkett MA: Physiology of Behavior, 12 ed., Pearson, 2017 (*)

Kalat JM: Biological Psychology, 10 ed., Cengage Learning, 2018 (*)

Breedlove SM, Watson NV, Rosenzweig MR: Biological Psychology: an introduction to behavioral, cognitive and clinical neuroscience, 10 ed., Sinauer Assoc., 2010

Squires LR et al: Fundamentals Neuroscience, Elsevier, 2013 (*)

Kandel ER et al: Principles of neural science, McGraw Hill, 2013 (*)

(*) Electronic access

Software

We do not use any software