

**Physiological Psychology I**

Code: 102547  
ECTS Credits: 6

Degree	Type	Year	Semester
2502443 Psychology	OB	2	1

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: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: Yes  
Some groups entirely in Spanish: No

**Other comments on languages**

Group 5 of Physiological Psychology will conduct virtual sessions in English

**Teachers**

Laura Aldavert Vera  
María del Pilar Segura Torres  
Anna Vale Martínez  
Marta Portero Tresserra  
Carles Soriano Mas

**Prerequisites**

There are no prerequisites, but the knowledge acquired in the first-year of Degree in Psychology (Foundations of Psychobiology I, II) is assumed. It is advisable to have knowledge of written English.

**Objectives and Contextualisation**

This subject, which is compulsory in the UAB's Degree in Psychology, is taught in the second semester of the second year, after having completed the subjects Foundations of Psychobiology I and II. The basic knowledge of genetics, neurophysiology, neurochemistry and functional neuroanatomy, studied in the previous subjects, will be considered completed.

Physiological Psychology has a multidisciplinary nature since it requires the knowledge of many scientific fields, mainly psychology, biology and biochemistry. The general objective of the subject is the knowledge of the biological bases of the following processes: consciousness, perception of sensory stimuli and planning and execution of motor behaviour.

At the end of the course, the students will be able to:

1. Describe the main paradigms, methods and research techniques in Psychobiology.
2. Identify and recognize the main neuroanatomic and neurophysiological characteristics of the perceptive (body senses, vision, hearing, taste and smell) and sensomotor processes.
3. Think over the biological bases of consciousness.
4. Describe and explain how the brain analyses and processes information from the environment through mental representations, plans behaviour and drives responses.

## Competences

- Analyse scientific texts written in English.
- Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
- Develop strategies for autonomous learning.
- Identify, describe and relate the biology of human behaviour and psychological functions.
- Identify, describe and relate the structures and processes involved in basic psychological functions.
- Maintain a favourable attitude towards the permanent updating through critical evaluation of scientific documentation, taking into account its origin, situating it in an epistemological framework and identifying and contrasting its contributions in relation to the available disciplinary knowledge.
- 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.
- Use different ICTs for different purposes.
- Work in a team.

## Learning Outcomes

1. Analyse scientific texts written in English.
2. Describe the alterations in sensory-perceptive processes in relation to the changes in the underlying neurophysiological and neurohormonal mechanisms.
3. Describe the neuronal circuits, the neurophysiological, neurochemical and hormonal mechanisms involved in language and consciousness.
4. Describe the neuronal circuits, the neurophysiological, neurochemical and hormonal mechanisms involved in sensory-perceptual processes (somesthesia, vision, hearing, balance, taste and smell) and sensory-motors.
5. Develop critical thought and reasoning and be able to communicate them effectively, both in your own language and second or third languages.
6. Develop strategies for autonomous learning.
7. Evaluate the contributions of a psychobiological approach to advancing the understanding of the neurobiological basis of language and consciousness.
8. Evaluate the contributions of a psychobiological approach to advancing understanding of sensory-perceptual processes (somesthesia, vision, hearing, balance, taste and smell) and sensory-motors.
9. Identify the main authors and their scientific contributions to the development of knowledge in the area of neurosciences in general and physiological psychology in particular from a historical perspective.
10. Maintain a favourable attitude towards the permanent updating through critical evaluation of scientific documentation, taking into account its origin, situating it in an epistemological framework and identifying and contrasting its contributions in relation to the available disciplinary knowledge.
11. Recognised the main methods and techniques for research in physiological psychology.
12. Relate neuroanatomical, neurophysiological and neurohormonal alterations with disorders of sensory-perceptual processes (somesthesia, vision, hearing, balance, taste and smell) and sensory-motors.
13. Relate neuroanatomical, neurophysiological, neurohormonal and genetic alterations with language disorders.

14. Relate somesthesia, vision, audition, balance, taste and smell with their neuronal bases and the neurophysiological, hormonal and genetic underlying mechanisms.
15. 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.
16. 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.
17. Use different ICTs for different purposes.
18. Work in a team.

## **Content**

### Unit 1. Sensation and Perception

1. Mind, consciousness and perception
2. General principles of sensory processing

### Unit 2. Body Senses

1. Somatosenses
2. Receptors, somaesthetic pathways and transduction
3. Analysis of somatic information in the cerebral cortex
4. Pain and analgesia

### Unit 3. Vision

1. The stimulus: light
2. The eye, the retina and the optical pathways
3. Transduction and encoding of the retinal visual information
4. Analysis of visual information: striate cortex
5. Analysis of the visual information: associative visual cortices

### Unit 4. Audition

1. The stimulus: sound
2. Anatomy of the ear
3. Transduction and encoding of auditory information in the cochlea
4. Analysis of auditory information in the central nervous system
5. Vestibular system

### Unit 5. Chemical senses: Taste and Smell

1. Gustation
2. Olfaction

### Unit 6. Control of Movement

1. Organization of the senso-motor function
2. Skeletal muscle
3. Control of movement by the spinal cord
4. Control of movement by the brain

## **Methodology**

DIRECTED ACTIVITY (30%)

a) MASTER CLASSES (WHOLE GROUP, 14 weeks face-to-face and 10 weeks on-line).

- Master classes with ICT support and questions for debate.
- Practical exercises and problem solving.
- Viewing and discussing short videos.

b) SEMINARS (4 weeks).

- Reading of papers and other texts.
- Practical exercises and self-evaluation.
- Problem solving and debates.
- Development of cooperative team work and oral presentation.

#### C) WORKSHOPS (2 weeks).

- Models of the sense organs: skin, eye, ear, nose, tongue and the muscle. Anatomy and physiology activities on the sensory systems and muscle control and problem-solving exercises.

#### SUPERVISED ACTIVITY (5%)

- Tutorials. On line and one-to-one.
- Correction and supervision of answers to the key questions the key questions of the syllabus.
- Reflections on readings.
- Clarifying doubts.
- Individualized study strategies.

#### AUTONOMOUS ACTIVITY (60%)

- Documentation.
- Comprehensive reading of materials (books, scientific papers, outreach articles, webs).
- Study of basic concepts of the subject (conceptual maps, synthesis).
- Team project to create an oral presentation and discussion.
- Exercises and activities for continuous evaluation and self-evaluation.
- Regular participation in communication forums, and other spaces of the Moodle platform, coordinated by the teacher.

#### ASSESSMENT ACTIVITY (5%)

- Individual oral and/or written tests (multiple-choice, open questions or practical exercises).
- Oral presentation and written abstract.
- Tasks and activities (carried out in class or at home).

N.B. The proposed teaching and assessment methodologies may experience some modifications because of the restrictions on face-to-face learning imposed by the health authorities. The teaching staff will use the Moodle classroom or the usual communication channel to specify whether the different directed and assessment activities are to be carried out on site or online, as instructed by the Faculty.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Master classes with ICT support and questions for debate	33	1.32	3, 4, 2, 11, 14, 12, 13, 7, 8
Seminars (8h) and Workshops (4h)	12	0.48	1, 2, 6, 5, 10, 14, 18, 17
Type: Supervised			
Tutorials On line and one to one	8	0.32	6, 18, 17
Type: Autonomous			
Comprehensive reading of materials	20	0.8	1, 2, 6, 10, 14, 17
Documentation	11	0.44	1, 6, 10, 17

Exercices and activities	20	0.8	3, 4, 2, 16, 11, 14, 12, 13, 7, 8
Study of basic concepts of the subject	30	1.2	1, 3, 4, 2, 6, 5, 10, 11, 14, 12, 13, 7, 8
Team project to create an oral presentation	12	0.48	1, 6, 10, 15, 18, 17

## Assessment

The evaluation of the subject is based on a continuous assessment through different tests and activities in which the students will have to demonstrate that they have achieved the corresponding competences and learning results. It consists of 4 learning evidences:

1. EV1. Learning Evidence 1 (compulsory, first evaluation period): Written or oral individual test (multiple-option, open questions and/or short questions). Topics of master, seminar and workshop classes on Units 1, 2 and 3 (40% of final grade).
2. EV2. Learning Evidence 2 (compulsory, second evaluation period): Written or oral individual test (multiple-option, open questions and/or short questions). Topics of master, seminar and workshop classes on Units 4, 5 and 6 (40% of final grade).
3. EV3. Learning Evidence 3 (optional, at the seminars): Team-work: short oral presentation, discussion, and written abstract (20% of final grade).
4. EV4. Learning Evidence 4 (optional, throughout all the sessions): Exercises and tasks, carried out in class or at home (5% of final grade).

The evaluation criteria will be the following:

- a) Provision of compulsory learning evidences, EV1 and EV2.
- b) Students providing learning evidences with a weight equal to or greater than 40% will be considered evaluable.
- c) The final grade will be obtained from the weighted average of all the assessment activities carried out.
- d) The subject will be passed with a weighted average (of all the evidences provided) equal to or greater than 5 points out of 10, with a minimum of 3.5 points (on a scale of 0 to 10) in each of the 2 compulsory evidences (EV1 and EV2). If these requirements in section d are not met, the maximum grade that can be obtained is 4.9 points.
- e) The re-assessment test may be made by students that have completed the compulsory evidences (EV1 and EV2) but have obtained a continuous assessment grade (EV1 + EV2 + EV3 + EV4) of less than 5 points and equal to or greater than 3.5 points out of 10. The test will consist of the repetition of one of the compulsory learning evidences (usually the lower graded one) according to the teacher's criteria. The criterion to pass the re-assessment will be the same as for section d, and the grade of the re-assessed evidence will be replaced. Thus, a minimum score of 3.5 in the evidence to be re-assessed (EV1 or EV2) must be obtained in order to be able to pass the subject (overall grade greater than 5). The highest possible grade will be 7 out of 10. If the established requirements are not fulfilled, the highest grade that may be included in the academic record is 4.9 points.
- f) Students of second or subsequent enrolments may choose, before the date specified at the beginning of the course, to follow the continuous assessment or carry out integrative test, which will consist of a written test with questions on the whole subject, with no option to be reassessed.

Link to the Evaluation Guidelines of the Faculty of Psychology:

<https://www.uab.cat/web/estudiar/graus/graus/avaluacions-1345722525858.html>

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
EV1. Written or oral individual test of open questions or short questions.	40	2	0.08	4, 2, 9, 11, 14, 12, 7, 8
EV2. Written or oral individual test of open questions or short questions.	40	2	0.08	3, 4, 2, 9, 11, 14, 12, 13, 8
EV3. Team-work: short oral presentation, discussion, and written abstract.	20	0	0	1, 4, 6, 10, 16, 12, 17, 8
EV4. Exercises and tasks, carried out in class or at home.	5	0	0	1, 4, 6, 5, 10, 15, 14, 12, 18, 17, 8

## Bibliography

"Psicobiología Fonamental". Available web material on the Moodle platform.

- Bear, Mark F.; Connors Barry W.; Paradiso, Michael A. (2016) Neuroscience: Exploring the brain (4th ed) Wolters Kluwer.
- Carlson Neil R.; Birkett, Melissa A. (2018) Fisiología de la Conducta (12 edición) Madrid: Pearson Educación.
- Carlson Neil R.; Birkett, Melissa A. (2017) Physiology of Behavior (12th Edition) Madrid: Pearson (versió digital UAB: <https://ebookcentral-proquest-com.are.uab.cat/lib/uab/reader.action?docID=5186462>)
- Morgado Bernal, Ignacio. (2019) Los sentidos: cómo percibimos el mundo. Barcelona: Ariel.
- Purves, Dale; Augustine, George J.; Fitzpatrick, David; Hall, William C.; Lamantia, Anthony-Samuel; White, Leonard E. (2012) Neuroscience (5th Ed). Oxford University Press. (versió digital UAB<http://www.medicapanamericana.com.are.uab.cat/VisorEbookV2/Ebook/9788498359831#%22Pagin>)