

**Fundamentals of Psychobiology I**

Code: 102607  
ECTS Credits: 6

Degree	Type	Year	Semester
2502443 Psychology	FB	1	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

Name: David Costa Miserachs  
Email: David.Costa@uab.cat

### 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

The literature and materials are in Catalan, Spanish or English. Group 5 will be partially taught in English.

### Teachers

Margalida Coll Andreu  
David Costa Miserachs  
Marcos Pallarés Anyo  
Isabel Portell Cortés  
Meritxell Torras García  
Jordi Silvestre Soto  
Soleil García Brito

### Prerequisites

No prerequisites are required.

### Objectives and Contextualisation

This subject is considered basic and compulsory within the Degree in Psychology at the UAB.

The course aims to provide the necessary knowledge of physiology of the neuron and neurochemistry to study the relationships between the behavioural processes and their biological substrate in the subsequent subjects of the area of Psychobiology. The purpose is that the students should be able to understand and correctly use the terminology of the subject, and demonstrate knowledge of:

1. The main characteristics of neurons and glial cells.

2. The characteristics of the nervous impulse and its conduction.
3. The characteristics of the synaptic transmission and of the neurotransmitters.

## Competences

- Develop strategies for autonomous learning.
- Identify, describe and relate the biology of human behaviour and psychological functions.
- 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.
- Use different ICTs for different purposes.
- Work in a team.

## Learning Outcomes

1. Develop strategies for autonomous learning.
2. Discover the main components of nerve tissue and explain the basic structural, ultrastructural and molecular characteristics of nerve cells and different types of synapses.
3. Explain the characteristics of the nerve impulse and its conduction.
4. Explain the main characteristics of synaptic transmission and the best-known systems of substance transmission.
5. Explain what psychobiology is and how it is related to the rest of psychology.
6. 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.
7. Use different ICTs for different purposes.
8. Work in a team.

## Content

UNIT 1. The Cells of the Nervous System.

UNIT 2. Excitability and Neuronal Conductivity.

UNIT 3. Synaptic Transmission.

UNIT 4. Transmitting substances.

## Methodology

The teaching methodology is based on different training activities. Depending on the case, master classes (1/1), practical sessions (1/2), workshops (1/4), supervised and autonomous activities will be performed.

### Type: directed

- Master classes (whole group): weekly sessions where the contents of the subject will be explained
- Classes in small groups (1/2 and 1/4): sessions with a reduced number of students to work on the contents of the subject through different activities such as problem-solving or practical exercises.

### Type: supervised

- Tutoring sessions (online and classroom attendance) to solve doubts.

### Type: autonomous

- Search for documentation and preparation of the basic and complementary material of the subject (study materials available through the virtual campus, textbooks of the subject, monographs and articles).
- Self-assessment exercises.
- Preparation of a part of the syllabus corresponding to neurotransmitters.
- Study of basic concepts of the subject (creation of scripts, concept maps, synthesis, etc.).

N.B. The proposed teaching and assessment methodologies may experience some modifications as a result 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"

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
Type: Directed			
Master classes (whole group)	31.5	1.26	2, 3, 4, 5, 6
Practical sessions (1/2 group)	16	0.64	2, 3, 4, 5, 6, 8
Workshops (1/4 group)	4	0.16	2, 3, 4, 5, 6, 8
Type: Supervised			
Tutoring sessions	11	0.44	2, 3, 4, 5, 6
Type: Autonomous			
Neurotransmitters unit preparation	9	0.36	1, 4, 6
Reading of texts, monographs and papers	10	0.4	6
Search of information on journals, books and internet	10.5	0.42	2, 3, 4, 5, 6, 7
Self-evaluation exercises	2	0.08	2, 3, 4, 6
Study	53.5	2.14	2, 3, 4, 5, 6

## Assessment

### Evaluation activities

The evaluation is continuous and is based on 3 learning evidences, which are written and individual. The final grade will be obtained based on the weighted average of the learning evidences:

- Learning evidence 1, EV1:
  - Open questions about the nervous system cells and the physiology of the neuron. Unit 1 and 2.
  - Timing: First assessment period.
- Learning evidence 2, EV2:

- Evaluating activities to be delivered via moodle
- Schedule will be established for every group
- Learning evidence 3, EV3:
  - Test and/or open questions of all the units (unit 1, 2, 3 and 4).
  - Timing: Second assessment period.

Subject passed: The subject is considered passed when the weighted average of the learning evidences is equal or greater to 5.

#### Reassessment tests

Reassessment test can be done only by those students who:

- have not achieved the established criteria to pass the subject and have a score greater than or equal to 3.5 points. That is, the final grade must be less than 5 and equal or equal to 3.5 points.
- have previously been evaluated in activities whose weight equals to a minimum of 66.6% parts of the total grade of the subject.
- Reassessment test:
  - Individual and written test.
  - Open questions to assess the comprehension and integration of all the units (unit 1, 2, 3 and 4)
  - Timing: resit examination period.
  - Passing this test (minimum of 5 points out of 10) will allow the student to pass the subject with a 5.

#### Definition of "Not-assessable student"

Students who have not performed any of the assessment tests or have completed learning evidences with a weight lower than 40% for the whole subject will be marked as "Not evaluable"

#### Students registered for the subject for the second (or more) time

These students will have to follow the same evaluation system as those registered for the first time.

Only in exceptional cases, such as students who are studying abroad with the Erasmus program, will the possibility of a final exam be considered, instead of continuous assessment. These students will take a single final exam, with no possibility to be reassessed. To be eligible for this type of assessment, students should contact the teachers during the first two weeks of the course. After this period, students will no longer be eligible for the final exam, and will be assessed by the standard continuous assessment system.

At this link the assessment guidelines of the Faculty of Psychology can be checked:

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

### Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Learning evidence 1	30%	1	0.04	2, 3, 5
Learning evidence 2	20%	0	0	2, 1, 3, 4, 5, 7
Learning evidence 3	50%	1.5	0.06	2, 1, 3, 4, 5, 6, 8, 7

### Bibliography

### Basic bibliography:

Neil R. Carlson (2018). Fisiología de la conducta, 12<sup>a</sup> edición. Madrid: Pearson Educación. (Tema 1, Tema 2, Tema 3 i Tema 4. Capítulo 2. Estructura y funciones de las células del sistema nervioso). (Accés online a través biblioteca UAB)

Neil R. Carlson (2017). Physiology of behavior, 12 ed. Pearson (Accés online a través biblioteca UAB)

Juan Antonio García-Porrero Pérez, Juan Mario Hurlé González (2015). Neuroanatomía Humana. Madrid: Editorial Médica Panamericana. (Tema 1: Capítulo 1: componentes celulares y organización funcional del tejido nervioso).

Eric J. Nestler, Steven E. Hyman, David M. Holtzman, Robert C. Malenka (2017). Neurofarmacología molecular. Fundamentos de neurociencia clínica, 3e. Madrid: McGraw-Hill/Interamericana de España. (Tema 3 i Tema 4. Parte I: Fundamentos de Neurofarmacología, Parte II: Sustratos Neurales de la acción farmacológica).

Dale Purves, George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, James O. McNamara, S. Mark Williams, 5<sup>a</sup> edición (2015). Neurociencia. Madrid: Medica Panamericana. (Capítulo Tema 1: 1 Estudio del sistema nervioso. Tema 2, Tema 3 i Tema 4: Unidad I. Señalización neural).

Diego Redolar Ripoll (2018) Psicobiología. Madrid: Panamericana. (Tema 2: Capítulo 7: Potencial de reposo y potencial de acción).

### Complementary bibliography

Águeda del Abril, Ángel A. Caminero, Emilio Ambrosio, Carmen García, M<sup>a</sup> Rosario de Blas, Juan M. de Pablo (2009) Fundamentos de Psicobiología. Madrid. Sanz y Torres.

Duane E. Haines, Gregory A. Mihailoff (2019). Principios de neurociencia: aplicaciones básicas y clínicas. Elsevier (Accés online a través de la biblioteca UAB)

James W Kalat (2004) *Psicología Biológica*. Madrid: Thomson Paraninfo.

Bryan Kolb, Ian Whishaw (2002) *Cerebro y Conducta. Una Introducción*. Madrid: McGraw-Hill/Interamericana.

John P.J. Pinel (2007) *Biopsicología*. Madrid: Pearson Educación.

Mark R. Rosenzweig, S. Marc Breedlove, Neil V. Watson, N.V. (2005) Psicobiología. Una introducción a la Neurociencia Conductual, Cognitiva y Clínica. Barcelona: Ariel

Stephen M. Stahl (2014) Psicofarmacología esencial de Stahl: bases neurocientíficas y aplicaciones prácticas. Madrid: Aula médica, Formación en Salud. (Tema 4).

### **Software**

SimNeuron (available in classrooms AI31 to AI35)