UAB
Universitat Autònoma de Barcelona

Fundamentals of Psychobiology I

Code: 102607
ECTS Credits: 6

2024/2025

Degree	Type	Year
2502443 Psychology	FB	1

Contact

Name: David Costa Miserachs

Email: david.costa@uab.cat

Teachers

Margalida Coll Andreu

David Costa Miserachs

Marcos Pallarés i Añó

Meritxell Torras Garcia

Jordi Silvestre Soto

Marta Portero Tresserra

Soleil Garcia Brito

Sílvia Fuentes García

Teaching groups languages

You can view this information at the end of this document.

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

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

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Master classes (whole group)	31.5	1.26	1, 2, 3, 4, 5
Practical sessions (1/2 group)	16	0.64	1, 2, 3, 4, 5, 7
Workshops (1/4 group)	4	0.16	1, 2, 3, 4, 5, 7
Type: Supervised			

Tutoring sessions	11	0.44	1, 2, 3, 4, 5
Type: Autonomous			
Neurotransmitters unit preparation	9	0.36	3, 5
Reading of texts, monographs and papers	10	0.4	5
Search of information on journals, books and internet	10.5	0.42	1, 2, 3, 4, 5, 6
Self-evaluation exercises	2	0.08	1, 2, 3, 5
Study	53.5	2.14	1, 2, 3, 4, 5

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.).

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.

Assessment

Continous Assessment Activities

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

Evaluation activities

The evaluation is continuous and is based on 3 learning evidences. 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

    - Depending on the activity, they will be group or individual.

    - 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.

The subject is considered passed from a final grade of 5 points out of 10, as long as the indispensable condition of having obtained a minimum grade of 4.5 out of 10 in EV3 is met. If the final grade is lower than 5 and/or the EV3 grade is lower than 4.5, the final grade will be suspended.

Single assessment
The request for a single evaluation implies the waiver of the continuous evaluation. To access the single assessment, you must submit a reasoned request to the center within the set deadlines.
The single assessment will be carried out on the same day and place as the test of the second assessment period of the subject and all the contents of the subject will be assessed.
The two partial exams corresponding to evidence EV1 and EV3 will be carried out, plus the delivery of the activities of EV2 corresponding to the enrolled group. Duration 6 hours. The final grade of the subject will be obtained as described for the continuous assessment.

Reassessment tests

All the information regarding reassessment is valid both for students who have followed the continuous assessment and for those who have followed the single assessment.

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

No unique final synthesis test for students who enroll for the second time or more is anticipated.
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

The evaluation of the subject is continuous and will be carried out through the realization of 3 evidences of learning. The final grade will be obtained from the weighted average of the assessment activities carried out:

- Evidence of learning 1 (Ev1)

Open questions from topic 1 and topic 2.
Realization during the first evaluation period on the dates established by the faculty and in person.
- Evidence of learning 2 (Ev2)

Delivery of activities through the virtual campus.
Depending on the activity, they will be group or individual.
The calendar will be fixed for each group.
- Evidence of Learning 3 (Ev3)

Test-type and/or open-ended questions on all the contents of the subject (Topics 1, 2, 3 and 4).
Realization during the second evaluation period on the dates established by the faculty and in person.
The subject is considered passed from a final grade of 5 points out of 10, as long as the indispensable condition of having obtained a minimum grade of 4.5 out of 10 in EV3 is met. If the final grade is lower than 5 and/or the EV3 grade is lower than 4.5, the final grade will be suspended.

Unique assessment
The request for a single evaluation implies the waiver of the continuous evaluation.
The single assessment will be carried out on the same day and place as the test of the second assessment period of the subject and all the contents of the subject will be assessed.
The two partial exams corresponding to evidence EV1 and EV3 will be carried out, plus the delivery of the activities of EV2 corresponding to the enrolled group. Duration 6 hours. The final grade of the subject will be obtained as described for the continuous assessment. The single assessment is requested electronically (E-form) in the specific period (more information on the faculty's website).

Recovery:

- All information regarding recovery is valid both for students who have followed the continuous assessment and for those who have followed the single assessment.

- In order for students to be able to opt for recovery, they must:

Have not met the criteria established to pass the subject and have a grade greater than or equal to 3.5 points.
In other words, the final grade must be less than 5 and greater than or equal to 3.5 points.
Have previously been evaluated in a set of activities whose weight is equivalent to a minimum of 2/3 parts of the total qualification of the subject.
- Recovery test:

Individual and written test.
Open questions on the integration of all the contents of the subject (Topics 1, 2, 3 and 4).
Realization during the recovery period on the dates established by the faculty in person.
Passing this test (minimum 5 points out of 10) will allow you to pass the subject with a final grade of 5.
"Not assessable":

- Students who have submitted evidence of learning with a weight equal to or greater than 4 points (40%) will not be able to be recorded as "non-evaluable" in records.

It is not foreseen that the student of 2nd or later enrollment will be evaluated by means of a single, non-retrievable synthesis test.

Below you will find the link to the faculty's evaluation guidelines: Evaluation guidelines for the degrees of the Faculty of Psychology

The delivery of the translation of the face-to-face assessment tests can be requested if the requirements established in article 263 are met and the request is made in week 4 electronically (E-form) more information on the website of the faculty

Bibliography

Basic bibliography:

Mark F. Bear, Barry W. Connors, Michael A. Paradiso (2016) Neurociencia:Explorando el cerebro, 4a edición. Barcelona: Wolters Kluwer.

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

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). (online access UAB library)

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).(online access UAB library)

Dale Purves,George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, James O. McNamara, S. Mark Williams, 5 ª 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).(online access UAB library)

Dale Purves,George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, James O. McNamara, S. Mark Williams, 6 a edición (2018). Neuroscience. New York: Oxford University Press

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

Compementary bibliography

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

Duane E. Haines, GregiryA. 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)

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	11	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	12	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	21	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	22	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	31	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	32	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	41	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	42	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	51	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	52	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	111	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	112	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	113	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	114	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	211	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	212	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	213	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	214	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	311	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	312	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	313	Catalan	first semester	morning-mixed

(PLAB) Practical laboratories	314	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	411	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	412	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	413	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	414	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	511	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	512	Catalan	first semester	morning-mixed
(PLAB) Practical laboratories	513	Catalan	first semester	morning-mixed
(TE) Theory	1	Catalan	first semester	morning-mixed
(TE) Theory	2	Catalan	first semester	morning-mixed
(TE) Theory	3	Catalan	first semester	morning-mixed
(TE) Theory	4	Catalan	first semester	morning-mixed
(TE) Theory	5	Catalan	first semester	morning-mixed