

**Fundamentals of Psychobiology II**

Code: 102606  
ECTS Credits: 9

Degree	Type	Year	Semester
2502443 Psychology	FB	1	2

## Contact

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## Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

## Teachers

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## Prerequisites

There are no prerequisites, but the knowledge acquired in the first semester (Foundations of Psychobiology I) is assumed.

## Objectives and Contextualisation

Psychology is an incredibly rich discipline, including aspects related to health, society, education, work, justice, etc. Knowledge of behaviour and the mind requires, among others, an understanding of the biological bases that support them. This is the aim of Psychobiology in general and of those compulsory subjects in the 2nd year (Physiological Psychology I and Physiological Psychology II), as well as several optional subjects in the 4<sup>th</sup> year. In order to be able to understand the biological substrate of behaviour and mental processes it is necessary to previously understand the components and functioning of the nervous and endocrine systems, as well as the fundamental genetic mechanisms.

Objectives

At the end of the course the student will:

- Understand how genes and environment act to influence the behaviour and the different psychopathologies.
- Recognize and distinguish between different types of inheritance. Interpret and draw conclusions from data provided through graphics, histograms, etc.
- Use the knowledge acquired to apply it to genetic counselling, justifying the actions in each case presented.
- Describe the main features of the organization of the nervous system in invertebrates and vertebrates.
- Understand the main aspects of the morphological and histological development of the nervous system.
- Demonstrate knowledge of the main milestones of nervous system maturation throughout childhood and adolescence, and their relationship with behavioural and mental capacities.
- Understand the significance of some aspects of the development of the nervous system being dependent on experience.
- Describe the main mechanisms of degeneration of the nervous system and explain the anatomical and functional regenerative capacities of the central and peripheral nervous system.
- Describe the structure and organization of the main subdivisions of the nervous system.
- Relate the different parts of the central and peripheral nervous system with the functional aspects more directly linked to each one of them.
- Locate, on maps, models, three-dimensional computer images, etc., the main regions of the brain and the spinal cord.

## Competences

- Identify and describe the processes and stages in psychological development through the life cycle.
- Identify, describe and relate the biology of human behaviour and psychological functions.
- Recognise the determinants and risk factors for health and also the interaction between people and their physical and social environment.
- Use different ICTs for different purposes.
- Work in a team.

## Learning Outcomes

1. Explain the key features of the anatomical and functional organization of the human nervous and neuroendocrine systems and their phylogenetic and ontogenetic evolution of the person and his physical and social environment.
2. Explain the mutual interaction between the physical and social environment of the person and the genetic, hormonal and neural factors.
3. Identify molecular and cell bases of inheritance and the main chromosome anomalies.
4. Identify, discover and relate genetic bases of behaviour.
5. Relate the highlights of the development, maturation and aging of the nervous system with the main stages of psychological development system.
6. Use different ICTs for different purposes.
7. Work in a team.

## Content

### SECTION A. GENETIC BASES OF BEHAVIOUR

Unit A1. What is Behavioural Genetics?

Unit A2. How do genes work?

Unit A3. How do environments exert their influence on behaviour?

Unit A4. How is genetic research on behaviour conducted?

Unit A5. How mental disorders emerge? (I) Mendelian or monogenic inheritance

Unit A6. How mental disorders emerge? (II) Multifactorial inheritance

Unit A7. How mental disorders emerge? (III) Chromosomal abnormalities

Unit A8. How can we apply all this information?: The case of genetic counselling

## SECTION B. NEUROANATOMY

Unit B1. Phylogenetic development of the nervous system

Unit B2. Gross anatomy and systems of protection of the nervous system

Unit B3. Spinal cord

Unit B4. Brainstem

Unit B5. Cerebellum

Unit B6. Diencephalon

Unit B7. Nuclei of the cerebral hemispheres

Unit B8. Cerebral cortex

Unit B9. Sensomotor pathways and centers

Unit B10. Homeostasis control systems

Unit B11. Ontogenetic development of the nervous system

Unit B12. Degeneration and regeneration of the nervous system

## Methodology

The teaching methodology is based on different types of learning activities. Depending on the case, master classes, seminars, laboratory practices, supervised and autonomous activities will be performed. Different activities based on students-focused active learning methodologies involving problem solving are also proposed.

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)	48	1.92	1, 3, 4, 5

Practical sessions	23	0.92	2, 1, 3, 4, 5, 7
Workshops (OE group)	6	0.24	1, 6
Type: Supervised			
Tutorials (on line and one-to-one)	15	0.6	2, 1, 3, 4, 5, 6
Type: Autonomous			
Documentation	14	0.56	2, 1, 5, 6
Section A Project	21	0.84	3, 4
Software for nervous system visualization	13	0.52	1
Study	70.5	2.82	2, 1, 3, 4, 5, 6
Unit B9 preparation	11	0.44	1

## Assessment

### Assessment (learning evidences)

The subject will be assessed based on the following learning evidences:

EV1. There are two evidences, corresponding to a 34% of the final grade, and include contents of Behavioural genetics (Section A). The evidences are:

- EV1a (25.5% of final grade). Continuous work to solve Behavioural genetics cases corresponding to Section A. This work will be carried out both individually and as a group throughout several sessions in the classroom (½ group seminars), as well as autonomously outside the classroom. Timing: Continuously throughout the semester, with ongoing close interactions between the whole group classes (master classes) and the ½ group seminars of this section.

- EV1b (8.5% of the final grade). Content taught until the moment in Section A will be evaluated in a written exam. Timing: first assessment week.

EV2. It includes 3 evidences, with a global weight of 66% of the final grade, and it corresponds to Section B of Neuroanatomy. The evidences are:

- EV2a (16% of the final grade). Content taught until the moment in Section B will be evaluated in a written exam. Timing: first assessment week.

- EV2b (40% of the final grade). The comprehension and integration of the content of all the units of Section B will be assessed in a written exam. Timing: second assessment week.

- EV2c (10% of the final grade). Continuous evaluation through the delivery of distinct activities. Timing: during all the semester.

### Definition of Non-Assessable

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 NA (Non-Assessable).

### Grades from Sections A and B

- The Section A grade (weight: 3.4 points of the whole course) corresponds to that obtained in EV1a and EV1b.

- The Section B grade (weight: 6.6 points of the whole course) is obtained from the weighted average of EV2a to EV2c grades.

### Reassessment tests

Only those students who have completed evidences with a weight equal or greater than 66.7% of the total grade will be eligible for reassessment. Students who have completed evidences with a weighting of between 40-66.6% of the total grades will be assessable but will not be allowed to do the assessment tests.

There will be two types of reassessment tests:

- Reassessment of the continuous work in Section A. This will be carried out continuously throughout the semester. The final Section A grade will already include the reassessment grades when carried out.
- Reassessment of Section B. When after the weighted average of Sections A and B, the grade is lower than 5, but equal or higher than 3,5 (out of 10), and Section B has been failed, students can perform a reassessment of Section B. The reassessment test will consist of an examination of written questions on general contents of the entire B block course. Reassessment of Section B will consist of an exam with written questions about all Section B unit. The maximum grade that can be obtained in this reassessment is 5 (out of 10). The grade obtained in the reassessment replaces the grade of section B obtained previously.

### Subject passed

The subject will be considered passed when the weighted average of Section A (or its continuous reassessment) and Section B (or its final reassessment), is equal to or greater than 5.

### Students registered 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 evaluation guidelines of the Faculty of Psychology can be checked:

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

### Language note

The written exams, in principle, will be performed in Catalan. The group 5, where the teaching of the Section B will be imparted in English, will perform the written assessment of this Section in English. If the student solicits translation of the examinations to Spanish (or to Catalan regarding group 5-Section B), contact the coordinator during maximum the 4 first weeks.

### UNIQUE ASSESSMENT

Total duration of written test: 2 h + 2.15 (4 h 15 min, with a 15-min break between EV1 and EV2.

EV1 (34%) (genetic bases): Written exam + problem-solving test + case-solving test. Duration 2 hours

EV2a (16%) (Neuroanatomy): Written exam with open questions and localization of structures (Duration: 45 min)

EV2b (40%) (Neuroanatomy): Written exam with open questions, test questions and structure localization questions (Duration: 1.5 hours)

EV2C (10%) (Neuroanatomy): Delivery via moodle of two tasks.

The same subject recovery process as that applied to the continuous assessment process will be applied.

The single assessment will take place in the second assessment period.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
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Evidence 1a. Continuous Project in Behavioural Genetics, classroom	25.5%	0	0	3, 4, 7
Evidence 1b. Exam of the first block of Behavioral Genetics. Individual, written, face to face	8.5%	1	0.04	2, 3, 4
Evidence 2a. Exam of the first block of neuroanatomy (individual, written, face to face)	16%	1	0.04	2, 1, 5, 6
Evidence 2b. Neuroanatomy exam (individual, written, face to face)	40%	1.5	0.06	2, 1, 5, 7, 6
Evidence 2c. Continuous project in Neuroanatomy.	10%	0	0	2, 1, 5, 6

## Bibliography

### Basic bibliography for section A (Genetic bases of behaviour)

Darbra i Marges, Sònia i Martín-García, Elena (2017). Mecanismos de la herencia humana: modelos de transmisión genética y anomalías cromosómicas. En D. Redolar (Ed.), Fundamentos de Psicobiología. Madrid: Editorial Panamericana.

Martí Carbonell, M<sup>a</sup> Assumpció i Darbra, Sònia. Genètica del Comportament. (2006) Servei de Publicacions UAB.

### Basic bibliography for section B (Neuroanatomy)

#### In Spanish:

Bear, Mark F; Connors, Barry W; Paradiso, Michael A. (2016). Neurociencia. La exploración del cerebro (4ª edición). Barcelona: Wolters Kluwer. (Capítols 7 i 23)

Carlson, Neil R.; Birkett, Melissa A. (2018). Fisiología de la Conducta (12a edición). Madrid: Pearson Educación. (Capítol 3) (paperback and online: [https://www-ingebookom.are.uab.cat/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=7811](https://www-ingebookom.are.uab.cat/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7811))

Crossman, Alan R. i Neary, David (2019). Neuroanatomía: texto y atlas en color. Elsevier. (online: <https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C2019000684X>) (en paper, edició del 2015)

Felten, David L; O'Banion, M Kerry; Maida, Mary E. (2016). Netter. Atlas de Neurociencia (3ª edición). Barcelona: Elsevier. (Paperback and online 2017: <https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C20160001870>)

Nolte, Jack (2009) El encéfalo humano en fotografías y esquemas (3ª edición). Barcelona: Elsevier.

García-Porrero Pérez, Juan A. i Hurlé González, Juan M. (2015). Neuroanatomía humana. Editorial Médica Panamericana. (online: <https://www-medicapanamericana-com.are.uab.cat/VisorEbookV2/Ebook/9788498358575#%22Pagina%22:%22>)

#### In English:

Bear, Mark F.; Barry W. Connors; Paradiso, Michael A. (2016) Neuroscience: exploring the brain (4th edition). Philadelphia: Wolters Kluwer.

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Felten, David L, M. Kerry O'Banion, Mary Summo Maida. (2016). Netter's atlas of Neuroscience (3rd edition) Philadelphia: Elsevier. (online: <https://www-sciencedirect-com.are.uab.cat/book/9780323265119/netters-atlas-of-neuroscience>)

Nolte, Jack (2010). Essentials of the human brain. Philadelphia, PA: Mosby/Elsevier.

Vanderah, Todd W. i Gould, Douglas (2015). Nolte's The human brain. An introduction to its functional anatomy (7th edition) Philadelphia, USA: Elsevier. (online:  
<https://ebookcentral-proquest-com.are.uab.cat/lib/uab/detail.action?pq-origsite=primo&docID=2036217>)

Vanderah, Todd W (2020). Nolte's The human brain in photographs and diagrams. (5th Edition) Philadelphia, PA: Elsevier. (paperback, Science and technology library, UAB)

Complementary Bibliography (Spanish and English)

Del Abril, Águeda, Ambrosio, Emilio, Caminero, Ángel A, García, Carmen, de Blas M<sup>a</sup> del Rosario, de Pablo, Juan M., Higuera, Alejandro (2016) Fundamentos de Psicobiología. Madrid. Sanz y Torres.

Diamond, Marian C i Scheibel, Arnold B. (2014). El cerebro humano: libro de Trabajo. Barcelona: Ariel.

Haines, Duane E. (2013). Principios de Neurociencia. Aplicaciones básicas y clínicas. (4<sup>a</sup> edición). Barcelona: Elsevier. (paperback and online:  
<https://cienciasbasicas-lwwhealthlibrary-com.are.uab.cat/book.aspx?bookid=2873>)

Kiernan, John A. i Rajakumar, Raj (2014). Barr. El Sistema Nervioso Humano (10ena edición). Barcelona: Wolters Kluwer Health España.

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Purves, Dale (2016). Neurociencia. Editorial Médica Panamericana. (online:  
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## Software

N/A