



Universitat de Lleida

# DEGREE CURRICULUM **NEUROSCIENCE AND BEHAVIOUR**

Coordination: DESFILIS BARCELO, ESTER

Academic year 2023-24

## Subject's general information

Subject name	NEUROSCIENCE AND BEHAVIOUR			
Code	102911			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Bachelor's Degree in Psychology	2	COMPULSORY	Attendance-based
	Master's Degree in Neuropsychology		COMPLEMENTARY TRAINING	Blended learning
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRAULA		TEORIA
	Number of credits	1.8		4.2
	Number of groups	2		1
Coordination	DESFILIS BARCELO, ESTER			
Department	EXPERIMENTAL MEDICINE			
Important information on data processing	Consult <a href="#">this link</a> for more information.			
Language	English (90%), Catalan/Spanish (10%)			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
DESFILIS BARCELO, ESTER	ester.desfilis@udl.cat	3,8	
FREIXES VIDAL, JÚLIA	julia.freixes@udl.cat	2	
MEDINA HERNÁNDEZ, LORETA MARÍA	loreta.medina@udl.cat	2	

## Learning objectives

To know the conceptual and historical foundations of behavioural neuroscience.

To appreciate the contributions of the different disciplines that study the neurobiological bases of behaviour.

To analyse how organisms respond and adapt to the environment according to the organization of their nervous system and how it processes and integrates the information it receives.

To know the basis and applicability of the different techniques and methodologies used for the study of behavioural neuroscience.

To know how to interpret the experimental results obtained by means of these techniques and methodologies.

Analyse human behaviour as a result of the activity of systems operating at different levels of organisation and apply it to the explanations of different human behaviours.

Know the biological bases of human behaviour under normal and pathological conditions.

To know the biological foundations that underlie perception, learning and memory, language, attention and consciousness.

Understand the neurobiological mechanisms that regulate the sleep-wake cycle and other biological rhythms.

Know the biological foundations that regulate normal emotional response and the biological basis of emotional disorders.

To know the brain reward systems and their involvement in addictive behaviours.

## Competences

### Basic skills:

CB2 Apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated by developing and defending arguments and solving problems within their area of study.

CB3 Ability to gather and interpret relevant data (usually within their area of study) to make judgements that include reflection on relevant social, scientific or ethical issues.

CB4 Ability to convey information, ideas, problems and solutions to both specialized and non-specialized audiences.

CB5 To be able to develop those learning skills necessary to undertake further study with a high degree of

autonomy

## **General Competencies:**

CG1 Developing the ability to adapt to new situations and solve problems effectively.

CG5 Demonstrating critical ability to make relevant decisions.

CG6 Reflecting on one's own limitations in a self-critical manner, considering the possibility of requesting interdisciplinary collaboration.

CG7 Acting with creativity, research culture and professional communication.

CG8 Identify and evaluate own competencies, skills and knowledge according to the standards of the profession.

CG10 Respecting the fundamental rights of equality between men and women, the promotion of human rights and the values of a culture of peace and democratic values.

## **Specific Competencies:**

CE9 Use the different documentary sources in psychology, show a mastery of the strategies needed to access information and assess the need to update documents.

CE10 Manage, analyze and interpret data within the framework of the disciplinary knowledge of the different fields of psychology.

CE11 Make critical decisions on the choice, application and interpretation of the results derived from the different psychological research methods.

CE12 To disseminate the knowledge derived from theoretical reviews and from the results of psychological research.

## **Transversal competences:**

CT1 Acquire adequate oral and written comprehension and expression of Catalan and Spanish.

CT2 To acquire a significant command of a foreign language, especially English.

CT3 To acquire training in the use of new technologies and information and communication technologies.

CT5 To acquire essential notions of scientific thought.

## Subject contents

1. Introduction to behavioural neuroscience.
2. Chemical perception, homeostasi and intake control.
3. Somatosensory system and nociception.
4. Visual perception, attention and awareness.
5. Auditory perception and language.
6. Reinforcement and addiction.
7. Learning and memory.
8. Chronobiology. Sleep and wakefulness.
9. Sexual, parental and social behaviours.

## Methodology

Master classes: the Professor will explain part of the theoretical content of the subject. In these classes students are expected to be attentive and actively participate by asking questions and answering the questions, paradoxes and problems proposed by the Faculty.

Reverse class: students will have to prepare the class, using material provided by the teacher on the virtual campus. The in-class session will be used for discussion, problem solving and group work tasks with the advice of the Professor.

Practices: They facilitate learning based on experience(s). The active participation of the student is required.

Although many of the practical activities are in-class, some may be virtual. On the days prior to the practical activity, the professor will make available to students the materials, which it should be printed and read before the session. After the practice, the student will have to submit, on the virtual campus, a file with the results of the activity carried out.

**Seminars:** They are set up as debates around a relevant topic from a social, scientific and/or ethical point of view. The student will have to elaborate and defend adequately founded arguments and think critically.

**Essays:** reading activity of a scientific publication would complement each of the parts of the subject and later elaboration of a short-essay. This activity allows the elaboration of the concepts of the parts and facilitates the continuous work of the students, as well as the continuous evaluation.

**Evaluation activities:** The aim is to collect information that allows to improve the teaching and learning strategies, and to introduce the necessary corrections in the current process. To this end, several objective tests are carried out throughout the course, as well as self-evaluation tests and assessment of the students' work. These activities allow for the monitoring of the student's individual progress, and at the same time allow for the detection of concepts that are not clear to the professors. The self-evaluation activities will be carried out in person or through the evaluation tool of the virtual campus.

**Tutorials:** These can be face-to-face or virtual, individual or group (by appointment with Faculty).

**Forums:** The forums of the virtual campus aim to favour the active learning of students and the collaborative interaction between them. The student will have to participate in the forums that he/she will find in the virtual campus of the subject: 1) News: students will look for and publish news related to the subject and they will comment on them. The objective is to be aware of the rapid advances in research in this field and the social impact of the topics discussed in class, and to be critical of the way the media present the information. 2) Examination questions: students will publish examination questions related to the subject matter of the course, answer questions posed by peers and/or correct questions or answers by peers. The aim is to learn how to extract the relevant information from each topic, encourage cooperative work and altruism to the class.

**Campus Virtual:** The campus virtual will be the main way of communication between faculty and students. Information of general interest will be published (call for internships, group tutorials and assessment tests, assessment results), material for the practical classes, practical activities and seminars, suggested readings, links to web pages... In addition, students must present the homework and assessments on the Activities section of the virtual campus and contact the professor by mail in the virtual campus.

## Development plan

The development plan will be explained on the first day of teaching. Attendance at this class is mandatory.

## Evaluation

The following tests or assessments will be carried out:

Assessment of practices, seminars, participation in the classes and in the virtual campus (forums, on-line questions, auto-test): 20%

Exams of knowledge and skills: 80%.

Exam 1: 40%.

Exam 2: 40%

In order to pass, a minimum of 50% of the maximum score must be reached, and it is essential to take and pass all the exams, as well as to pass the practices and seminars. Exams with grades higher than 4 can be compensated. Exams with grades lower than 4 must be recovered. In order to be able to take the make-up exam of a test, the student must have previously taken that test.

If due to work-related reasons, you are not able to make a continuous assessment, you can request an "alternative assessment", by means of a formal request to the faculty secretary. Students who opt for the alternative assessment will take an exam at the end of the semester on the theoretical and practical contents of the course. In order to pass the exam, students must obtain at least 5,0.

## Bibliography

### Recommended manuals

Carlson, N.R. (2006). Fisiología de la conducta (8ª ed.). Madrid: Pearson Educación.

Carlson, N.R. (2010). Fundamentos de fisiología de la conducta (10ª ed.). Madrid: UNED-Pearson Educación, 2010.

Carlson, N.R., Birkett, M.A. (2017). Physiology of Behavior (12th ed.). Edinburgh: Pearson.

Kalat, J.W. (2004). Psicología Biológica (8ª ed.). Thomson, Madrid.

Kandel, E.R., Schwartz, J.H., Jessell, T.H. (1996). Neurociencia y conducta. Madrid: Prentice-Hall.

Kandel, E.R.; Schwartz, J.H., Jessell, T.M. (2001). Principios de Neurociencia (4ª ed.). Madrid: McGraw-Hill-Interamericana.

Pinel, J.P.J. (2007). Biopsicología (6ª ed.). Madrid: Pearson Educación.

Purves D., et al. (2016). Neurociencia (5ª ed.). Madrid: Editorial Médica Panamericana.

Rosenzweig, M.R., Breedlove, S. M., Watson, N.V. (2005). Psicobiología. Una introducción a la Neurociencia conductual, cognitiva y clínica (2ª ed.). Barcelona: Ariel Neurociencia,.

Breedlove, S. M., Watson, N.V. (2013). Biological Psychology: An introduction to behavioral, cognitive, and clinical neuroscience (7th ed.). Sunderland, Massachussetts: Sinauer Associates.

### Particularly recommended

Watson, N.V., Breedlove, S. M. (2015). The Mind's Machine: Foundations of Brain and Behavior (2th ed.). Sunderland, Massachussetts. Sinauer Associates

Striedter, G.F. (2016). Neurobiology: A functional Approach. New York: Oxford University Press.