Universitat de Lleida

DEGREE CURRICULUM

STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM

Coordination: DESFILIS BARCELO, ESTER

Academic year 2023-24

STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM 2023-24

Subject's general information

<table>
<tr><td>Subject name</td><td>STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM</td></tr>
<tr><td>Code</td><td>102901</td></tr>
<tr><td>Semester</td><td>1st Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Psychology</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
<tr><td>Master's Degree in Neuropsychology</td><td></td><td>COMPLEMENTARY TRAINING</td><td>Blended learning</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
<table>
<tr><th>Activity type</th><td>PRALAB</td><td>TEORIA</td></tr>
<tr><th>Number of credits</th><td>1.8</td><td>4.2</td></tr>
<tr><th>Number of groups</th><td>3</td><td>1</td></tr>
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<tr><td>Coordination</td><td>DESFILIS BARCELO, ESTER</td></tr>
<tr><td>Department</td><td>EXPERIMENTAL MEDICINE</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
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STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM 2023-24

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
DESFILIS BARCELO, ESTER	ester.desfilis@udl.cat	3,4	
GONZALEZ ALONSO, ALBA	alba.gonzalez@udl.cat	3,3	
MEDINA HERNÁNDEZ, LORETA MARÍA	loreta.medina@udl.cat	2,9	

Learning objectives

Learning outcomes:

- To know the basic characteristics of the anatomo-functional organization of the nervous system.

- To be able to differentiate and identify the different regions of the human nervous system.

- To know the basics of neural signaling and communication.

- To know the mechanisms and interactions of the different processes involved in behavioral regulation under normal and pathological conditions.

- To understand the processes of sensory coding and the general organization of sensory pathways, both from a structural and functional point of views.

- To know the interactions between the nervous system and the other of physiological systems, and in particular the importance of the neuromuscular, visceral and neuroendocrine systems.

- To know the basis and applicability of the different techniques and methodologies of study of the nervous system.

- To know how to interpret the experimental results obtained through the different techniques of study of the nervous system.

Competences

Basic Competencies:

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

interdisciplinary collaboration.
CG7 Acting with creativity, research culture and professional communication.
CG8 Identifying and evaluating own competencies, skills and knowledge according to the standards of the profession.
CG9 Recognising diversity and difference as a structural element of the human being, while recognising, understanding and respecting the cultural complexity of today's society.
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 domain of the necessary strategies to access information and value the need of documentary updating.
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.
CT5 To acquire essential notions of scientific thought.

Subject contents

Block 1. Organization of the Nervous System.

Topic 1. Introduction: Mind and Brain.

Topic 2. Cellular organization: neurons and glia cells.

Topic 3. General anatomo-functional organization of the nervous system. General principles.

Block 2. Neurophysiology: generation, transmission and integration of nerve impulses.

Topic 4. Neuronal excitability: Membrane Potential, Action Potential and Graduated Potential.

Topic 5. Neuronal communication: synaptic transmission. Neuronal integration.

Topic 6. Neurotransmitters, neuromodulators and receptors. Mechanisms of action of psychotropic drugs.

Block 3. Functional Anatomy of the Nervous System

Topic 7. Organization of the peripheral nervous system and the spinal cord

Topic 8. Organization of the brain stem.

Topic 9. Organization of the prosencephalon.

Topic 10. Meninges, ventricular system and cerebral vascularization.

Block 4. From sensation to action.

Topic 11. Sensory systems: general principles, receptors and pathways.

Topic 12. Sensory and motor integration: sensory, association and motor cortices.

Topic 13. Reflexes and coordination of voluntary movement: Cerebellum, Basal Ganglia and Descending Pathways.

Topic 14. Systems involved in motivation and emotion: from the associative cortices to neuroendocrine and

autonomic nervous systems.

Methodology

Master classes: in which the teacher 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 posed by the teacher.

Reverse class: students will have to do a non-presential study activity to prepare the class, using material provided by the teacher through the virtual campus. The face-to-face class will be used for discussion, problem solving and group work tasks with the advice of the teacher.

Practices: They facilitate learning based on experience. Attendance is compulsory and active participation by the student is required. Although most of the internships are face-to-face, some may be virtual. On the days prior to the internship, the teacher will provide students with the material to be used during the internship, which must be printed and read before the internship session. After the practice, the student will have to present a file with the results of the activity carried out through the virtual campus. Some practices will be two hours long.

Seminars: These 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.

Evaluation activities: The objective 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 evaluation of the work of the colleagues.

Tutorials: These may be face-to-face or virtual, individual or group (by appointment with the teacher).

Forums: The forums of the virtual campus are intended to encourage active learning by students and collaborative interaction between them. Students must participate in the forums that they will find in the virtual campus of the subject: 1) News: students will search for and publish news related to the subject and comment on it. 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 with the classmates.

Virtual campus: the virtual campus will be the main means of communication between teachers and students outside the face-to-face classes. It will publish information of general interest (call for work placements, group tutorials and assessment tests, assessment results), material for face-to-face classes, practical activities and seminars, suggested readings, links to web pages... In addition, students must present the work they are doing in the Activities section of the virtual campus and contact the teacher through the mail application of the virtual campus.

Development plan

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

Evaluation

The following tests or assessments will be performed:

Assessment of practices, seminars, participation in class and in the virtual campus: 20%.

Tests of knowledge and skills: 80%.

We will do several evaluation tests throughout the course that will be announced in advance. Each test will have a weight in the final grade.

STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM 2023-24

Test	Contents	% Nota
Test 1	Blocks 1 & 2	20%
Test 2	Block 3	20%
Test 3	Block 4	20%
Test 4	Practices	20%
Total		80%

In order to pass, a minimum of 50% of the maximum score must be reached, and it is essential to pass all the evaluation tests taken throughout the course independently, as well as passing the practices and seminars. It is compulsory to take all the evaluation tests (exams).

From the assessment tests, the proportional value of all grades above 4 will be obtained, as long as there is no more than one grade below 5. In the event that any exam has a grade below 4, or there are two or more exams with a grade below 5, the student must take a revaluation (make-up) test at the end of the semester. In order to take a make-up test, the student must have taken the test previously. If the theory is not passed, the final grade will be maximum 4,9.

Those students who, for work reasons, cannot take the continuous assessment may request an "alternative assessment", by means of a formal request to the school secretary. Students who opt for the alternative assessment will take a practical exam at the end of the semester (20% of the final mark) and an exam of the theoretical contents (80% of the final mark). In order to pass, they will have to pass both exams with a grade higher than 5. In the case of not passing either of the exams, they will be able to make up the difference.