Universitat de Lleida

DEGREE CURRICULUM

# COGNITIVE NEUROSCIENCE

Coordination: ARQUE FUSTE, GLORIA

Academic year 2023-24

# COGNITIVE NEUROSCIENCE 2023-24

## Subject's general information

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|---|---|
| **Subject name** | COGNITIVE NEUROSCIENCE |
| **Code** | 14800 |
| **Semester** | 1st Q(SEMESTER) CONTINUED EVALUATION |
| **Typology** | |

| Degree | Course | Character | Modality |
|---|---|---|---|
| Master's Degree in Neuropsychology | 1 | COMPULSORY | Blended learning |

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|---|---|
| **Course number of credits (ECTS)** | 6 |
| **Type of activity, credits, and groups** | |

| Activity type | PRAULA | TEORIA |
|---|---|---|
| Number of credits | 1.4 | 4.6 |
| Number of groups | 1 | 1 |

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|---|---|
| **Coordination** | ARQUE FUSTE, GLORIA |
| **Department** | PSYCHOLOGY, SOCIOLOGY AND SOCIAL WORK |
| **Important information on data processing** | Consult this link for more information. |
| **Language** | Catalan, Spanish, English |

# COGNITIVE NEUROSCIENCE 2023-24

| Teaching staff | E-mail addresses | Credits taught by teacher | Office and hour of attention |
|---|---|---|---|
| ABELLANEDA PEREZ, KILIAN AMADEUS | kilianamadeus.abellaneda@udl.cat | 3 | Email professor to schedule a meeting. |
| ARQUE FUSTE, GLORIA | gloria.arque@udl.cat | 3 | Email professor to schedule a meeting. |

## Learning objectives

The **objectives** of the subject are the following:

- Know the cerebrovascular system, the pathologies that derive from its alteration and the neuropsychological repercussions.

- Learn the main types of brain tumors, their incidence, development, location and their neuropsychological repercussions.

- Understand what craniocerebral trauma is and the neuropsychological alterations that result from it.

- Study the cerebral bases of epilepsy and nervous system infections, highlighting the neuropsychological alterations that occur.

It is expected that, once the subject has been completed, the student will be able to:

• Distinguish between types of diseases/disorders.

• Structure and write a research report according to international standards.

• Discriminate between theories of how the brain works.

• Plan neuropsychological examinations taking into account the general functioning of the brain and specific neurological disorders.

• Search effectively for the scientific information that underpins knowledge.

• Critically analyze the scientific information found.

## Competences

**Basic Skills**

CB06 To own and understand knowledge that provides a basis or opportunity to the development and / or application of ideas, often in a research context

CB07 To students can apply the acquired knowledge and have problem-solving capabilities in new or unfamiliar environments within differents contexts (or multidisciplinary) contexts related to their area of study

CB08 That students be able to integrate knowledge and confront the complexity of making judgments based on information that, being incomplete or limited, include reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.

CB09 To let students know how to communicate their conclusions - and the latest knowledge and reasons that support them - to specialized and non-specialized audiences in a clear and unambiguous way

CB10 That students have the learning skills that allow them to continue studying in a way that will be to a large extent self-directed or autonomous

**General Skills**

CG1 Search, analyze and use updated information on advances in neuropsychology through scientific literature, showing a critical critical thinking

CG2 Formulate a work hypothesis in research and clinical practice in the field of neuropsychology by applying the scientific method

CG4 Show skills of cooperation and action with the rest of professionals, as well as attitudes of interdisciplinary work

CG5 Prepare oral and written communications, both scientific and clinical, and informative, adapted to specific contexts on topics related to neuropsychology

**Specific Skills**

CE1 Demonstrate a deep theoretical knowledge of the functioning of the brain and the bases of neuropsychology

CE3 Perform a neuropsychological examination adapted to the type of patient according to age and other relevant characteristics

CE7 Identify the fundamentals and basic knowledge of other health professions directly linked to the field of neuropsychology

## Subject contents

Unit 1: Cerebrovascular pathology

Unit 2: Cerebral tumors

Unit 3: Traumatic brain injuries

Unit 4: Epilepsy and infections of the nervous system

## Methodology

The course methodology is aimed at achieving learning objectives through lectures and practical sessions, the combination of theoretical sessions with practical activities favors the promotion of comprehensive learning. The theoretical and practical content will be presented by the teachers and questions, discussions, debates and the public expression of opinions will be generated to finally reach individual and group conclusions. Wherever possible, active and cooperative and problem-based learning (PBL) methodologies will be used.

Two individual works are proposed: a) a critical analysis of the scientific literature, and b) a report on the resolution of a specific case.

The training activities will consist of face-to-face and non-face-to-face activities:

<u>In-class activities</u>

• Lectures, in which the teaching staff 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 raised.

• Practical classes that allow students to apply the theoretical knowledge acquired.

Non in-class activities

• Virtual forums / Online seminars.

• Search for bibliographic information.

• Independent student work with the materials provided for each subject.

• Reading academic and scientific documentation.

• Critical analysis of scientific publications.

• Elaboration of reports and/or works.

## Development plan

This subject will last four weeks and will be structured in two blocks. The first block will focus on vascular pathology and intracranial tumors, while the second block will address head trauma, epilepsy and nervous system infections. Each block will consist of two topics, and there will be two face-to-face sessions for each of them. In total, therefore, four topics will be covered during the course's four-week duration. The study material related to each subject will be provided at the beginning of the subject. The face-to-face sessions of the second block are scheduled for October 6, 7, 11 and 20, 2023. The schedules are available on the master's website: https://masterneuropsicologia.udl.cat/ca/calendari-horaris/ timetable/

## Evaluation

The skills of this subject will be assessed through: student participation, attendance at face-to-face sessions, the completion of a written work of critical analysis and a report on the resolution of a clinical case. The evaluation consists of the following evaluation evidence:
• Evaluation evidence 1: participation in the debate and comment on cases in face-to-face and/or online format (10%). Non-recoverable evidence.
• Evaluation evidence 2: attendance at face-to-face sessions (4 sessions, 10%). Non-recoverable evidence.
• Evaluation evidence 3: preparation of a written work on the critical analysis of scientific material (40%). Recoverable evidence.
• Evaluation evidence 4: preparation of a report on the resolution of a specific clinical case (40%). Recoverable evidence.
To pass the subject you must obtain a grade equal to or higher than 5 (as long as a grade equal to or higher than 4 has been obtained in each of the evidences separately).

| Nº | Evaluation evidence | Ponderation |
|---|---|---|
| 1 | Participation in debates and suggested cases in face-to-face and/or online sessions. | 10% |
| 2 | Attendance at face-to-face sessions (4 sessions). | 10% |
| 3 | Completion of a written work on a critical analysis of scientific material. | 40% |
| 4 | Elaboration of a report on the resolution of a specific clinical case. | 40% |

The grading system will be expressed using the following numerical grading: 0-4.9 = Pass; 5-6.9 = Passed; 7-8.9 = Remarkable; 9-10 = Excellent; 9-10 = Honor Roll. The subject is considered approved when the final mark is higher than 5 out of 10 points. The final knowledge test must have a grade higher than 5/10. The mention of "Matricula d'Honor" may be awarded to students who have obtained a qualification equal to or higher than 9.0.

## Bibliography

Tirapu Ustárroz, Ríos Lago, M., & Maestú Unturbe, F. (2011). *Manual de neuropsicologia* (2a ed.). Editorial Viguera. (Capítulo 1: Visión histórica y concepto de neuropsicología. Capítulo 11: Neuropsicología del daño cerebral adquirido; Capítulo 12: Neuropsicología y epilepsia).

Muñoz Marrón, E., Noreña D., Sanz, A. (2017). *Neuropsicología del daño cerebral adquirido. Traumatismos craneoencefálicos, accidentes cerebrovasculares y tumores del sistema nervioso central.* Editorial UOC. (Capítulo I: Neuropsicología del daño cerebral adquirido. Capítulo II: Neuropsicología de los traumatismos craneoencefálicos)

Armstrong, C. L., & Morrow, L. (Eds.). (2010). *Handbook of medical neuropsychology: Applications of cognitive neuroscience.* Springer Science + Business Media.

Lodhi, S., & Agrawal, N. (2012). Neurocognitive problems in epilepsy. *Advances in Psychiatric Treatment, 18*(3), 232-240.

Winston, A., & Spudich, S. (2020). Cognitive disorders in people living with HIV. *The Lancet HIV, 7*(7), e504–e513.

Wallace, D. R. (2022). HIV-associated neurotoxicity and cognitive decline: Therapeutic implications. *Pharmacology & Therapeutics, 234*, 108047.

de Haan, L., Sutterland, A. L., Schotborgh, J. V., Schirmbeck, F., & de Haan, L. (2021). Association of Toxoplasma gondii Seropositivity With Cognitive Function in Healthy People: A Systematic Review and Meta-analysis. *JAMA Psychiatry, 78*(10), 1103–1112.