# COURSE DATA

| Data Subject | |
|---|---|
| **Code** | 42710 |
| **Name** | Developments in neuroscience of language |
| **Cycle** | Master's degree |
| **ECTS Credits** | 10.0 |
| **Academic year** | 2019 - 2020 |

**Study (s)**

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 2119 - M.U. en Especialización en Intervención Logopédica | Faculty of Psychology and Speech Therapy | 1 | First term |

**Subject-matter**

| Degree | Subject-matter | Character |
|---|---|---|
| 2119 - M.U. en Especialización en Intervención Logopédica | 1 - Developments in neuroscience of language | Obligatory |

**Coordination**

| Name | Department |
|---|---|
| ROSELL CLARI, VICENTE JOSE | 300 - Basic Psychology |

# SUMMARY

The course "Advances in Neuroscience of Language" is an obligatory subject that is imparted the character quarterly in the Master in Speech Therapy. It consists of 10 credits to be taken in the first quarter and it has a theoretical and practical subject.

In the course three different sections are observed:

In the first section the main neurolinguistic paradigms (traditional, cognitive and pragmatic-functional) was described. The course focusing attention on implications own the evaluation and rehabilitation communicative disorders in patients with brain damage implications, as well as study and description of the main characteristics of patients with brain damage.

In the second section are provided knowledge about the use of neuroimaging techniques and interpretation data as well as analysis and evaluation of neurobiological signals.

In the third section the basics of voice production and speech, and the fundamentals of acoustics applied to their representation and study are presented. Into this section also are studied material and technical resources for acoustic analysis of voice and speech with a practical orientation.

The teaching of the course aims that students assimilate its contents, managed in a practical way to apply them in a real way both conducting research as to the professional practice of speech therapy.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Es recomendable que el estudiante tenga conocimientos básicos de Neurología, Neurofisiología, Anatomía y Fisiología de la Producción de la Voz y el Habla, así como de sus Patologías más comunes e informática.

## OUTCOMES

### 2119 - M.U. en Especialización en Intervención Logopédica

- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Establecer pronósticos de evolución de acuerdo con las características específicas del paciente.
- Seleccionar criterios adecuados para evaluar la efectividad del tratamiento y las posibles modificaciones.
- Aplicar la metodología científica a la hora de observar, registrar, y comprobar la efectividad y consecuencias de los planes de intervención para fomentar el avance científico de la disciplina.
- Conocer y valorar de forma crítica diferentes aspectos de la investigación en el ámbito de la Logopedia.
- Adoptar un compromiso ético con los derechos humanos, la igualdad de oportunidades y la no discriminación por razones de género, edad, creencias, discapacidad o por otras razones.
- Registrar, sintetizar e interpretar los datos recogidos a partir de los avances tecnológicos, integrándolos en el conjunto de la información del paciente y comunicarlos de manera comprensible a los diferentes agentes implicados en el enfoque terapéutico.

- Integrar la información procedente de diferentes especialistas para poder ofrecer un diagnóstico coherente del paciente.
- Formular pronósticos de evolución en función de los datos procedentes de los diferentes especialistas que integran el equipo multidisciplinar.

## LEARNING OUTCOMES

Describing and explaining the main anatomic and physiological changes associated with neuroplasticity.

Interpreting technical data from structural and functional neuroimaging, results being integrated into the report speech therapy.

Planning of language evaluation for conscious neurosurgery associated with communication structures and interpreting the data from this evaluation for rehabilitation.

Interpreting the acoustic parameters of vocal quality and designing your intervention

Performing an acoustic analysis of voice and speech with different software

Management of technical software and computer resources used in the acoustic analysis in speech therapy.

Identify what biochemical parameters may affect prognosis of the patient speech therapy.

Interpret which of them is a risk factor for a delay in patient outcomes.

Identify what drugs can have side effects in the memory of the patient, concentration and attention during the speech rehabilitation

## DESCRIPTION OF CONTENTS

### 1. Advances in exploration of language and their rehabilitation in patients with brain damage.

1. Neurological diseases and language disorders.
2. Paradigms traditional, cognitive and pragmatic-functional on language processing.
3. The language rehabilitation in Aphasia, a proposal from the pragmatic-functional paradigm.
4. Speech therapy attention on the person with dementia.

### 2.

### 3. Techniques and resources for the acoustic analysis of voice and speech.

1. Production of voice and speech.
2. Fundamentals of acoustics applied to speech therapy.
3. Fundamentals of digital signal processing.
4. Software analysis of voice and speech.
5. Applications to the different pathologies of the voice and speech.

## WORKLOAD

| ACTIVITY | Hours | % To be attended |
|---|---|---|
| Theory classes | 45,00 | 100 |
| Classroom practices | 30,00 | 100 |
| Laboratory practices | 15,00 | 100 |
| Tutorials | 10,00 | 100 |
| Study and independent work | 130,00 | 0 |
| **TOTAL** | **230,00** | |

## TEACHING METHODOLOGY

• Theoretical classes with presentation by the teacher and student participation in discussion and reflection on issues of oral or written.

• Seminars and activities in the classroom or laboratory supervised by the teacher that include resolution of cases, management specific software, performing presentation before the group work, discussion and conclusion.

• Activities of teamwork.

• Individual and group tutoring.

## EVALUATION

The student's evaluation will result in a score ranging from 0 to 10 points. These qualifications represent: from 5 points, approved; from 7 points, remarkable; from 9 points, excellent; 10 points, matriculation of honour (Spanish denomination).

This qualification is a function of the weighted sum of the evaluations of each of the modules that make up the subject according to the number of credits that has been given with respect to the total (P. e .: For a module of 2 credits the percentage respect in the final mark of the subject (10 credits) is 20%.

The evaluations of the subject will be realized at the end of the classes corresponding to all the modules that compose it, through examination programmed by faculty and of the following form:

- Theoretical-practical exam on the contents, cases, problems and practical assumptions of the modules by objective test 50% of the final mark.

- Reports on practical cases discussed and carried out in class or in seminars, and individual or group work 40% of the final mark.

- Class activities and external activities scheduled 10% of the final mark.

The final mark is obtained from the weighted sum of the marks of each part of the evaluation, provided that the part corresponding to the written tests officially summed has been exceeded.

Class attendance is compulsory and at least 80% of classes will be required to pass the course. Non-attendance must be due to well-documented force majeure (overdue health condition, death to family member to third degree, subpoena, official examination, accompaniment to a first-degree relative for medical reasons).

The contents and activities carried out in the face-to-face classes are considered recoverable by means of specific works or written tests to be carried out at the end of the official final test, except for those activities that require instruments, techniques, materials or contents that are not possible to repeat or simulate (P. e.: Videos, audios and other materials that are part of real clinical cases). Each teacher responsible for the module that will be given will inform the students of the contents that are recoverable and which are not, as well as the form and the moment in which they will recover.

## REFERENCES

### Basic

- Rosell-Clari, V. & Hernández-Sacristán, C. (Coordinadores) (2014). MetAphAs. Protocolo de Exploración de Habilidades Metalingüísticas Naturales en la Afasia. Nau Llibres (Valencia).
- Gazzaniga, Michael (2004). The Cognitive Neurosciences (4th Ed.). The MIT press

- Valles González, B. (2014). Programa de Estimulación Metalingüística en Teoría de la Mente para personas con demencia. Edición: Beatriz Valles G.
- Caramazza, A. (1991). Issues in reading, writing and speaking: A neuropsychological perspective. New York: Kluwer Academic/Plenum Publishers.

**Additional**

- Posner, Michael I.; Raichle, ME (1994). Images of Mind. Scientific American Books.
- Coleman, J. (2005). Introducing speech and language processing. Cambridge: Cambridge University Press.
- Kent, D.R. y Ready, C. (2002) The acoustic analysis of speech. Singular Thompson Learning.

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

## English version is not available