

**COURSE DATA****Data Subject**

<b>Code</b>	44637
<b>Name</b>	Functional recovery and new neurorehabilitation technology
<b>Cycle</b>	Master's degree
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2021 - 2022

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
2220 - Master's Degree in Functional Recovery in Physiotherapy	Faculty of Physiotherapy	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
2220 - Master's Degree in Functional Recovery in Physiotherapy	6 - Functional recovery and new neurorehabilitation technology	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
SANCHEZ SANCHEZ, MARIA LUZ	191 - Physiotherapy

**SUMMARY**

This course primarily aims to train students in the functional needs of patients with neurological conditions to adapt therapeutic interventions in the most efficient and successful as possible. This subject will be introduced in the field of neurorehabilitation and therefore the use of technology for therapeutic purposes depending on the disease or syndrome with the patient.

**PREVIOUS KNOWLEDGE****Relationship to other subjects of the same degree**



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

### Other requirements

## COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

### 2220 - Master's Degree in Functional Recovery in Physiotherapy

- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Ser capaces de obtener y de seleccionar la información específica y las fuentes relevantes para la resolución de problemas, elaboración de estrategias y planes de actuación, asesoramiento y ejecución de las diferentes actuaciones fisioterápicas en los ?ámbitos de la recuperación funcional.
- Ser capaz de elaborar informes orales y escritos acerca de la situación funcional de las/os pacientes.
- Adquirir la metodología científica suficiente para la elaboración de proyectos de investigación en el campo de la recuperación funcional.
- Adquirir conocimientos específicos sobre los factores que influyen en la adherencia a la práctica física y las técnicas adecuadas para incrementarla.
- Ser capaces de saber utilizar el ejercicio físico terapéutico en todos los ámbitos de actuación de la recuperación funcional.

## LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

At the end of the course the students will be able to design functional recovery programs to promote health and/or prevent secondary complications associated with neurological disorders. In addition, they will know the newest tools and procedures in the functional recovery of these patients.

## DESCRIPTION OF CONTENTS

### 1. Physical activity

Recommended levels of physical activity for maintaining the health of the patients with neurological conditions.



**2. Assisted therapy and/or robotics**

assisted therapy and / or robotics: application of these therapies (with torque feedback platforms, functional electrostimulation, Armeo ®, exoskeletons [eLegs, ReWalk, etc]) for recovery of certain functional capabilities.

**3. Virtual reality**

Virtual reality as a tool for therapeutic support and dynamic exercise.

**4. Mirror neurons and motor imagery**

Training techniques based on mirror neurons and motor imagery for motor recovery and treatment of neuropathic pain.

**5. Transcranial magnetic electro-stimulation**

Transcranial magnetic electro-stimulation as a method to evoke movements in the neurological patient.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	24,00	100
Laboratory practices	12,00	100
Development of group work	15,00	0
Study and independent work	54,00	0
Readings supplementary material	15,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	20,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

Theoretical-practical face-to-face classes in which the contents of the subjects will be worked on, discussed and carried out using different teaching resources.

The purpose of group work is to promote cooperative learning and reinforce the individual.

The individual and collective tutorials should serve as a means to coordinate the students in the individual tasks and group.



**EVALUATION**

Assessment system	Percentage of qualification
Individual work. The individual work may consist, depending on the characteristics of the subject received, in a bibliographic search on a specific subject of the subject taught, in a work on clinical cases, in activities on solving practical cases, a critical work.	10%
Assistance and participation at class. This evaluation system takes into account the implication of the student in the classroom. It will be taken into account that the student responds to the questions formulated by the teacher, raises interesting debates about the information imparted in class, formulates doubts after having reviewed the previously received concepts and/or proposes activities that may be of interest for the dynamics of classroom.	20%
Theoretical-practical final test. This test will integrate the knowledge acquired during each of the subjects. Contents that may be conceptual or procedural. The exam may be written or oral depending on the nature of the subject taught.	80%

The final mark of the subject will be the weighted average of the different parts of the evaluation, as long as the student has obtained at least a 50% of the maximum mark in each of the tests.

**REFERENCES**

**Basic**

- Carr J, Shepherd R. 2010. Neurological Rehabilitation. Optimizing motor performance. 2nd Edition. Edinburgh; New York: Churchill Livingstone
- Lennon S, Stokes M. 2009. Pocketbook of neurological physiotherapy. New York: Churchill Livingstone
- Lamotte G et al. Effects of endurance exercise training on the motor and non-motor features of Parkinson's disease: a review. J Parkinsons Dis. 2015;5(1):21-41. doi: 10.3233/JPD-140425.
- Pearson Met al. Exercise as a therapy for improvement of walking ability in adults with multiple sclerosis: a meta-analysis. Arch Phys Med Rehabil. 2015 Jul;96(7):1339-1348.e7. doi: 10.1016/j.apmr.2015.02.011. Epub 2015 Feb 21.



### **Additional**

- Carr J, Shepherd R. 2004. Rehabilitación de pacientes en el ictus: pautas de ejercicios y entrenamiento para optimizar las habilidades motoras. Elsevier España
- Motl RW et al. Benefits of Exercise Training in Multiple Sclerosis. Curr Neurol Neurosci Rep. 2015 Sep;15(9):62. doi: 10.1007/s11910-015-0585-6.

## **ADDENDUM COVID-19**

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

This addendum will only be activated if the health situation so requires and with the prior agreement of Consell de Govern

### **1. Contents:**

The contents initially included in the teaching guide are maintained.

### **2. Workload and temporary teaching planning:**

The proportion of the different activities that add up to the hours of dedication in ECTS credits marked in the original teaching guide has been maintained.

### **3. Teaching methodology:**

Depending on the needs, teaching will be adapted to the blended or non-classroom mode, through the implementation of the corresponding teaching strategies (i.e. hybrid teaching, videoconference sessions, voice-over presentations, videos or additional multimedia material).

The tutorials may be conducted virtually, following the guidelines of the Universitat de València, via e-mail or videoconference, through the Blackboard Collaborate or Teams platform.

### **4. Evaluation:**

The final evaluation tests will be presential, and only in case of problems caused by the evolution of the pandemic, final evaluation tests will be done online through Aula Virtual of the Universitat de València.