



1. General information

Course: GENERAL PROCEDURES II**Type:** CORE COURSE**Degree:** 333 - UNDERGRADUATE DEGREE PROGRAMME IN PHYSIOTHERAPY**Center:** 109 - FACULTAD DE FISIOTERAPIA Y ENFERMERÍA**Year:** 2**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 17311**ECTS credits:** 6**Academic year:** 2022-23**Group(s):** 40**Duration:** First semester**Second language:** English**English Friendly:** Y**Bilingual:** N

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2. Pre-Requisites

There are no prerequisites

3. Justification in the curriculum, relation to other subjects and to the profession

Justification: This subject includes the study of the concept, the application technique, the physiological effects and mechanisms of action, indications and contraindications of the general procedures related to electrotherapy and other related procedures such as magnetotherapy, phototherapy or vibrotherapy.

Relation with other Subjects: Human Morphophysiology I, Anatomy of the Locomotor Apparatus and Biochemistry, Biophysics and Biomechanics, Fundamentals of Physiotherapy, Kinesitherapy, Assessment in Physiotherapy, General Pathology, Neuroanatomy and Neurophysiology, Clinical Specialties I, II, III, IV, V and VI, Introduction to Clinical Practices, and Practicum I, II and III.

Relationship with the Profession: Electrotherapy and other related procedures that are addressed in this area are a basic tool in physiotherapy intervention. The management of these procedures facilitate the assessment and diagnosis of physiotherapy, therapeutic intervention in the different clinical specialties and prevention based on scientific evidence. On the other hand, the acquisition of this competences will lay the foundations for lifelong learning in this professional field, since these are procedures closely linked to constant technological advances as well as scientific ones, and this necessitates permanent professional updating for an adequate attention to society.

4. Degree competences achieved in this course

Course competences

Code	Description
CB1	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB2	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB3	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB4	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB5	Have developed the necessary learning abilities to carry on studying autonomously
E17	Students must be capable of describing and explaining the mechanisms involved in the reception, conduction, and modulation of pain in order to select the most appropriate physiotherapeutic procedures for its treatment.
E19	Students must be capable of applying the principles and theories of biophysics to Physiotherapy performances.
E23	Students must show sufficient knowledge of science, models, techniques, and tools on which Physiotherapy is based, articulated, and developed.
E27	Students must be capable of enumerating, differentiating, and understanding the effects of physical agents, justifying their application in Physiotherapy.
E28	Students must be capable of designing an intervention plan in Physiotherapy, taking into account the individuality of the patient and criteria of adequacy, validity, and effectiveness.
E33	Students must be capable of evaluating the evolution of physiotherapeutic treatment outcomes in relation with the set objectives.
E35	Students must be capable of properly selecting and applying general physiotherapeutic procedures: massage therapy, electrotherapy, magnet therapy, phototherapy, vibrotherapy, hydrotherapy, thermotherapy, cryotherapy, press therapy, ergotherapy, spa therapy, thalassotherapy, climatotherapy, as well as derivatives and combinations of other physical agents.
E52	Students must know how to prevent occupational injuries.
E54	Students must incorporate ethical and legal principles that apply to their practice of physiotherapy.
E57	Students must understand the importance of updating knowledge, skills, abilities, and aptitudes of professional competences. Students must show their ability to make educated decisions and solve problems based on available knowledge and information within

G01	their field of study.
G03	Students must demonstrate their skills in terms of analyzing, summarizing both verbally and in writing, as well as producing and defending arguments.
G04	Students must show their skills in terms of verbal and written communication in Spanish.
G06	Students must show their capabilities and management of ITCs in their field of study.
G09	Students must know how to think critically.
G23	Students must have acquired knowledge and understanding of Health Sciences, based on advanced textbooks and cutting-edge knowledge in their field of study.
G26	Students must show respect for Human Rights, fulfilling principles of equality between genders, non-discrimination, and universal accessibility for people with disabilities.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To make a laboratory notebook including the active resolution and practical application of cases seen in laboratory practices, with images of the technique, no spelling errors, and appropriate scientific language.

To describe the biophysical principles and physiological mechanisms on which physical agents operate in electrotherapy and analogous therapies.

To summarize and extract the main conclusions from a scientific text, and to highlight or critically justify areas of improvement based on acquired knowledge on electrotherapy and analogous therapies.

To correctly solve cases posed by the teacher, verbally and in writing, pinpointing therapeutic objectives, critically selecting the ideal technique to apply, and applying electrotherapy procedures and analogous techniques taking into account safety measures for both the professional and the patient.

6. Units / Contents

Unit 1: Introduction to electrotherapy

Unit 2: Galvanic current

Unit 3: Iontophoresis

Unit 4: Introduction to low-frequency variable currents in electrotherapy

Unit 5: Pain management by low-frequency electrical currents

Unit 6: Medium frequency currents

Unit 7: Introduction to high frequency currents. Capacitive resistive electric transfer diathermy

Unit 8: Short wave diathermy

Unit 9: Microwave diathermy

Unit 10: Introduction to phototherapy

Unit 11: Infrared light therapy

Unit 12: Laser therapy

Unit 13: Therapeutic ultrasounds

Unit 14: Magnetic fields therapy

Unit 15: Electromyographic biofeedback

Unit 16: Extracorporeal shock wave therapy

Unit 17: Electrodiagnosis and neuromuscular electrical stimulation by low frequency electrical currents

ADDITIONAL COMMENTS, REMARKS

Laboratory practices

- Galvanic currents
- Iontophoresis
- Pain management by low-frequency currents
- Neuromuscular electrical stimulation by low-frequency currents
- Electrodiagnosis
- Myotendinous stretching by neuromuscular electrical stimulation
- Proprioception by neuromuscular electrical stimulation
- Neuromuscular electrical stimulation by medium-frequency currents
- Pain management by medium-frequency currents
- Microwave diathermy
- Infrared light therapy
- Laser therapy
- Ultrasound therapy
- Ultrasound combination therapy
- Electromyographic biofeedback
- Radial extracorporeal shock wave therapy

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB1 CB2 CB3 CB5 E17 E19 E23 E27 E28 E33 E35 E52 E57 G01 G03 G04 G26	1.2	30	Y	N	
Class Attendance (practical) [ON-SITE]	Combination of methods	CB1 CB2 CB3 CB4 CB5 E17 E23 E27 E28 E33 E35 E52 E54 G01 G03 G04 G09 G26	1.4	35	Y	N	

Group tutoring sessions [ON-SITE]	Problem solving and exercises	G04 G26	0.2	5	Y	N
Final test [ON-SITE]	Assessment tests	CB1 CB2 CB3 CB4 CB5 E17 E19 E23 E27 E28 E33 E35 E52 E54 E57 G01 G03 G04 G06 G09 G23 G26	0.2	5	Y	Y
Practicum and practical activities report writing or preparation [OFF-SITE]	Case Studies	CB1 CB2 CB3 CB4 CB5 E17 E19 E27 E28 E33 E35 E52 E54 G01 G03 G04 G06 G26	0.6	15	Y	Y
Analysis of articles and reviews [OFF-SITE]	Reading and Analysis of Reviews and Articles	CB1 CB2 CB3 CB5 E57 G06 G09 G23	0.4	10	Y	N
Study and Exam Preparation [OFF-SITE]	Self-study	CB1 CB2 CB3 CB4 CB5 E17 E19 E23 E27 E28 E33 E35 E52 G01 G03 G04 G09 G23	2	50	Y	N
Total:			6	150		
Total credits of in-class work: 3			Total class time hours: 75			
Total credits of out of class work: 3			Total hours of out of class work: 75			

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Practicum and practical activities reports assessment	10.00%	10.00%	The student must deliver the practice report at the time of taking the practical final test. In the case of not passing the practical test, it will be returned and will be valued in the next call. The 50% of the evaluation of the work will be carried out through the production of a portfolio that will include the content of the practical blocks (statement; objective; type of current and parameters; application of each case). On the other hand, during the course development, students must make resolution of clinical cases, one corresponding to each of the first five practical blocks (galvanic, electroanalgesia, NMES, Medium frequency and phototherapy). This section will suppose 50% of the total mark of the practical notebook.
Theoretical exam	50.00%	50.00%	1. WRITTEN TEST: 1.1- A multiple choice test will be applied with 4 response options to choose one and penalize errors. 1.2-Short answer questions. It will be essential to exceed 40% of the value of the written test to access the practical test.
Practical exam	40.00%	40.00%	2- PRACTICAL EXAMINATION OF EXECUTION OF SIMULATED TASKS: The student must solve a simulated case and execute the application of the electrotherapy technique and related procedures more appropriate to the case that arises. The test will be public and the following items will be valued in the percentage that is reflected: 2.1- Choosing the most appropriate technique for the case. 25% 2.2- Argumentation of the technique 15% 2.3- Execution of the technique (preparation of the material, device-patient coupling, security measures, selection of application parameters and autonomy of execution). 50% 2.4- The test will have a maximum execution time (10%) It will be essential to pass 40% of point 2.1 and 2.3 to pass the test.
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

In order to pass the subject, the student must pass 40% of the value of the theoretical test and 40% of the value of the practical test. Chronologically the theoretical test will be carried out first, therefore those students who do not pass the theoretical test will not access the practical test. In the event that the theoretical test is passed but the practical test is not passed, the student must take both tests in the next call since theory and practice are closely linked. The preparation of the practice notebook is mandatory. The student who does not prepare the practical memory will not pass the subject. If the student does not pass the theoretical test or the practical test, the grade that will appear in the report will be that of the test not passed.

Non-continuous evaluation:

The evaluation of the activities that replace the continuous evaluation will be carried out through a specific test in which the competences related to the different training activities will be evaluated.

Specifications for the resit/retake exam:

Same as term exam

Specifications for the second resit / retake exam:

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Group tutoring sessions [PRESENCIAL][Problem solving and exercises]	5
Final test [PRESENCIAL][Assessment tests]	5
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	10
Unit 1 (de 17): Introduction to electrotherapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Unit 2 (de 17): Galvanic current	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Unit 3 (de 17): Iontophoresis	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Unit 4 (de 17): Introduction to low-frequency variable currents in electrotherapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	.5
Unit 5 (de 17): Pain management by low-frequency electrical currents	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	6
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Unit 6 (de 17): Medium frequency currents	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Combination of methods]	7
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Unit 7 (de 17): Introduction to high frequency currents. Capacitive resistive electric transfer diathermy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Unit 8 (de 17): Short wave diathermy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Unit 9 (de 17): Microwave diathermy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Unit 10 (de 17): Introduction to phototherapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	1
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	1.5
Unit 11 (de 17): Infrared light therapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Unit 12 (de 17): Laser therapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Class Attendance (practical) [PRESENCIAL][Combination of methods]	1
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	.5

Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Unit 13 (de 17): Therapeutic ultrasounds	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Unit 14 (de 17): Magnetic fields therapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Unit 15 (de 17): Electromyographic biofeedback	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Unit 16 (de 17): Extracorporeal shock wave therapy	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Unit 17 (de 17): Electrodiagnosis and neuromuscular electrical stimulation by low frequency electrical currents	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Class Attendance (practical) [PRESENCIAL][Combination of methods]	3
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Global activity	
Activities	hours
Class Attendance (practical) [PRESENCIAL][Combination of methods]	35
Class Attendance (theory) [PRESENCIAL][Lectures]	30
Practicum and practical activities report writing or preparation [AUTÓNOMA][Case Studies]	15
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	10
Final test [PRESENCIAL][Assessment tests]	5
Group tutoring sessions [PRESENCIAL][Problem solving and exercises]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	50
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Cabello M., Martín J, Marhuenda J. (eds)	Electroterapia Práctica: Avances en investigación clínica	Elsevier España	Madrid	9788490227626	2016	
Robertson Val, Ward Alex, Low John, Reed Ann	Electrotherapy explained : principles and practice https://catalogobiblioteca.uclm.es/cgi-bin/abnetopac/O7101/ID96f5f61d/NT2#	Elsevier/Butterworth Heinemann		978-0-7506-8843-7	2006	
Rodríguez Martín, José María	Electroterapia en fisioterapia	Médica Panamericana		9788498357585	2014	
Watson, Tim	Electroterapia : práctica basada en la evidencia https://catalogobiblioteca.uclm.es/cgi-bin/abnetopac/O7101/ID96f5f61d/NT9	Elsevier		978-84-8086-444-2	2009	