



**Teaching Guide**

| Identifying Data           |   |               |  |                | 2014/15 |
|----------------------------|---|---------------|--|----------------|---------|
| <b>Subject (*)</b>         | FISIOTERAPIA XERAL  |               | <b>Code</b>  | 651G01008      |         |
| <b>Study programme</b>     | Grao en Fisioterapia  |               |  |                |         |
| Descriptors                |   |               |  |                |         |
| <b>Cycle</b>               | <b>Period</b>   | <b>Year</b>   | <b>Type</b>  | <b>Credits</b> |         |
| Graduate                   | Yearly  | First         | Obligatoria  | 9              |         |
| <b>Language</b>            | SpanishGalicianEnglish  |               |  |                |         |
| <b>Prerequisites</b>       |   |               |  |                |         |
| <b>Department</b>          | Fisioterapia  |               |  |                |         |
| <b>Coordinador</b>         | Riveiro Temprano, Socorro   | <b>E-mail</b> | socorro.riveiro.temprano@udc.es  |                |         |
| <b>Lecturers</b>           | Martinez Rodriguez, Alicia<br>Ortigueira Garcia, Serafin<br>Riveiro Temprano, Socorro<br>Souto Gestal, Antonio  | <b>E-mail</b> | alicia.martinez@udc.es<br>serafin.ortigueira@udc.es<br>socorro.riveiro.temprano@udc.es<br>antonio.souto@udc.es |                |         |
| <b>Web</b>                 |   |               |  |                |         |
| <b>General description</b> | <p>Esta materia pretende capacitar ao alumnado para fundamentar a elección da técnica de electroterapia, ultrasonoterapia, fototerapia, magnetoterapia, masoterapia, hidroterapia e balneoterapia, en base aos coñecementos científicos existentes e á experiencia clínica e necesidades específicas (contextuales, clínicas e psicosociais). Para iso é básico o coñecemento do fundamento físico de cada axente, os efectos que produce (distintos parámetros regulables) e cómo se traducen en efectos fisiolóxicos e terapéuticos.</p> <p>En canto á destreza no manexo dos equipos e as técnicas precísase do traballo non presencial a partir da demostración no laboratorio.</p> <p>Un dos grupos para a parte do segundo módulo (electroterapia e ultrasonoterapia) realizarase en inglés para aquel alumnado interesado.</p> |               |  |                |         |

**Study programme competences**

| Code | Study programme competences   |
|------|---|
| A2   | Conocer y comprender las ciencias, los modelos, las técnicas y los instrumentos sobre los que se fundamenta, articula y desarrolla la fisioterapia.   |
| A3   | Conocer y comprender los métodos, procedimientos y actuaciones fisioterapéuticas, encaminados tanto a la terapéutica propiamente dicha a aplicar en la clínica para la reeducación o recuperación funcional, como a la realización de actividades dirigidas a la promoción y mantenimiento de la salud. |
| A8   | Ejecutar, dirigir y coordinar el plan de intervención de fisioterapia, utilizando las herramientas terapéuticas propias y atendiendo a la individualidad del usuario.   |
| B9   | Incorporar a investigación científica e a práctica baseada na evidencia como cultura profesional.   |
| B13  | Asumir riscos e vivir en contornos de incerteza.  |
| B19  | Mostrar a súa orientación ao paciente/usuario.  |
| C1   | Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.  |
| C6   | Valorar críticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.   |

**Learning outcomes**

| Subject competencies (Learning outcomes)  | Study programme competences |     |  |
|---|-----------------------------|-----|--|
| Identify the physical bases of the electromagnetic agents (currents, laser and phototherapy, magnetics therapy), mechanical (ultrasounds, masotherapy, hydrotherapy), thermal (criotherapy and termotherapy) and chemical (balneotherapy) | A2                          |     |  |
| - To know the indications and contraindications of each modality and its causes due to translation of the physical effects into physiological and therapeutic effects.  | A3                          | B13 |  |



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| - To act looking for the hygiene and the prevention of infections, as well as for the correct preservation of the machines and elements used.  | A2       |     |    |
| To select the body position, placement of the machine, pillows and other elements to preserve the patient's and physiotherapist's ergonomics and the efficiency of the intervention.             | A2       |     |    |
| To select and use correctly the parameters of application and elements associated to the machine or technical selected.  | A2<br>A3 |     |    |
| To adapt the application to the concrete needs of health- clinical or psychosocial ones- recognizing the complementary character of the majority of the passive therapeutic modalities.          | A8       | B19 |    |
| To identify the alarm signs to stop the therapy or to change the parameters selected.  |          | B13 |    |
| To differentiate the applications based in the clinical experience from that based in the scientific evidence, using the first empiric knowledge when scientific evidence does not exist.        |          | B9  | C6 |
| To explain the actions to the patients using a comprehensible language: the possibilities of intervention, the possible adverse effects and the existence of other alternatives of intervention. |          | B19 | C1 |

| Contents                                   |  |
|--|--|
| Topic                                      | Sub-topic  |
| MÓDULO I MASOTHERAPY AND OTHER THERAPIES   | History of masotherapy.<br>Effects.<br>Modalities of application.<br>Indications and contraindications.  |
| -Unidad 1. Masotherapy and other therapies |  |
| TEMA 1. Masotherapy                        |  |
| TEMA 2. Magnetotherapy                     | Definition<br>Effects.<br>Parámetros.<br>Indications and contraindications.  |
| TEMA 3. Hidrotherapy and balneotherapy     | Concept and general topics.<br>Types of water, physical-chemistry principles<br>Modalities of application<br>Effects<br>Indications of contraindications |
| TEMA 4. Climatotherapy and talasotherapy   | Concept and general topics.<br>Types of climates.<br>Effects<br>Indications of contraindication  |
| TEMA 5. Termotherapy and criotherapy       | Concept and general principles.<br>Modalities of application<br>Effects<br>Indications and contraindications   |
| TEMA 6. Fototerapia                        | Concept and general principles.<br>Modalities of application<br>Effects<br>Indications and contraindications   |
| TEMA 7. Ohter therapies. Vibrotherapy.     | Concept and general topics.<br>Modalities of application<br>Effects<br>Indications and contraindications   |



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| <p>PRACTICAL LESONS. MASOTHERAPY AND OTHER THERAPIES</p> <p>1.- Masotherapy<br/>2.- Magnherapy<br/>4.-Termotherapy<br/>5.-Crioherapy<br/>6.-Phototherapy</p>   | <p>Description of the machines<br/>Description of the applicacion protocols.<br/>To apply the technics.</p>   |
| <p>II: Electrotherapy and ultrasonotherapy. Professor: Alicia Martínez Rodríguez.</p> <p>-Module 1. Electritherapy and ultrasonotherapy bases.</p> <p>TEMA 1. Introduction and main points.</p>  | <p>Therapeutic use of the electrical and sound phisical agents.<br/>Context of the intervention in the biopsicosocial model.</p>  |
| <p>THEME 2. Electrotherapy and ultrasonotherapy principles.</p>  | <p>Electromagnetic spectrum.<br/>Main paramenters of the electromagnetic currents.<br/>Mechanical waves: ultrasound phisical principles.</p>  |
| <p>TEMA 3. Clasifcation of electrical and electromagnetical currents for clinical use.:low frequency, medium frequency and high frequency currents.</p>  | <p>Definition of electrotherapy.<br/>Clasifcation: polarity; continuity/pulsed (direct, altern or pulsed current).Other parameters to clasify the currents:<br/>specific denomination<br/>frequency of the current; ow frequency, medium frequency and high frequency currents.</p> |
| <p>- UnidadE 2. Electrotherapy: low frequency, medium frequency and high frequency currents.</p> <p>TEMA 4. Galvanic current. Low frequency pulsed currents I (diadynamics, Träbert). Iontophooresis</p>   | <p>Physical characteristics<br/>Efects.<br/>Main parameters.<br/>Perfonance.<br/>Indications and contraindications.</p>   |
| <p>TEMA 5. Low frequency pulsed currents II: analgesic and healing (microcurrents, high voltage and TENS).<br/>TEMA 6. Low frequency pulsed currents III: strengthening.<br/>TEMA 7: Medium frequency currents: Interferencial currents, Russian currents and Aussie currents.<br/>TEMA 8: High frequency currents: shortwave and microwave.</p> | <p>Physical characteristics<br/>Efects.<br/>Main parameters.<br/>Perfonance.<br/>Indications and contraindications.</p>   |
| <p>- Module 3. Ultrasonotherapy</p> <p>TEMA 9: Ultrasounds and combined therapy (ultrasound-electrical currents).</p>  | <p>Physical characteristics<br/>Efects.<br/>Main parameters.<br/>Perfonance.<br/>Indications and contraindications.</p>   |



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| <p>PRACTICAL LESSONS</p> <ol style="list-style-type: none"> <li>1. Physical bases, electrodes, connections body position and performance.</li> <li>2. Galvanic current, diadynamics and Trabert. Iontophoresis.</li> <li>3. Low frequency currents analgesic effect I- TENS</li> <li>4. Low frequency currents analgesic effect II - high voltage.</li> <li>5. Low frequency currents strengthening effect (NMES I)</li> <li>6. Medium frequency currents analgesic effect (Interferencial currents)</li> <li>7. Medium frequency currents for strengthening (NMES II)</li> <li>8. High frequency currents I- short-wave</li> <li>9. High frequency currents II- microwave</li> <li>10. Ultrasound I</li> <li>11. Ultrasound II</li> </ol> | <p>Machine description and taking care of the materials.</p> <p>Protocol description.</p> <p>Doing the practices.</p> <p>Clean and tidy the used materials.</p> |
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| Planning                        |                      |                               |             |
|---------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests           | Ordinary class hours | Student's personal work hours | Total hours |
| Collaborative learning          | 20                   | 20                            | 40          |
| Laboratory practice             | 36                   | 72                            | 108         |
| Mixed objective/subjective test | 5                    | 30                            | 35          |
| Guest lecture / keynote speech  | 38                   | 0                             | 38          |
| Introductory activities         | 0                    | 2                             | 2           |
| Personalized attention          | 2                    | 0                             | 2           |

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

| Methodologies          |  |
|------------------------|--|
| Methodologies          | Description  |
| Collaborative learning | <p><b>MASSOTHERAPY AND OTHER THERAPIES PART</b></p> <p>The work will consist of reading papers or chapters in groups of 3-4 people, or in the resolution of questions raised by the teacher:</p> <p>It should emphasize the most important ideas, summarize, explain to colleagues and submit a final paper of the findings of all the readings. Its implementation will be monitored throughout the course and will be delivered as deadline day of the test to access it.</p> <p><b>ELECTROTHERAPY AND ULTRASONOTHERAPY PART</b></p> <p>Resolution of issues related to the competence of the matter in groups of 3-4 people which shall be released as if the resolution of issues relating to the powers given subject in groups of 3-4 people which shall be released as they are the addressing the content. Its realization along the course will be monitored.</p> |



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| Laboratory practice | <p><b>MASSOTHERAPY AND OTHER THERAPIES PART</b></p> <p>As a classroom activity, will be performed in the laboratory of exercise therapy in groups of 10 students in 1.5 hours classes, prior to the demonstration and explanation of the teacher. The practice after the class is very important to acquire the necessary skills.</p> <p>The self-work after practical lessons consist of a portfolio of practices, in groups of 3-4. The document must include: computer components, place, date and time of the completion of the practice, role of each person(physical therapist, patient facilitator ...), to address health needs or desired effect, selected equipment (just in case), patient position, position of physiotherapist parameters used (full description), achieved results (hyperemia, muscle relaxation ...) and adverse effects have occurred and reflections / conclusions. An overview of patient positioning, with other participants in action and the other with equipment and parameters (if applicable): three photographs of each practice will be included. Delivery will be necessary to access the exam requirement.</p> <p><b>ELECTRTERAPY AD ULTRASOTHERAPY PART</b></p> <p>As a classroom activity, will be performed in the laboratory of electrotherapy in groups of 10 students in 1.5hours classes , ater the demonstration and explanation of the teacher. ES much needed subsequent practice of the students to acquire the necessary skills.</p> <p>The self-work after practical lessons consist of a portfolio of practices. It will be pointing out the practical to do for each group of students and their presentation in class. The document must include: computer components, place, date and time of the performance, role of each (physical therapist, patient facilitator) to address health needs or desired effect, patient position, position of physiotherapist parameters used (full description), achieved results (hyperemia, muscle relaxation)adverse effects have occurred and reflections / findings and response to questions. An overview of patient positioning, with other participants in action and the other with equipment and parameters (if applicable): three photographs of each practice will be included. The exposure and subsequent delivery will be essential to access the exam requirement.</p> <p>The note for both modules can go from 0 to 20% of the final ark, adding one if you have approved the reviews.</p> |
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| <p>Mixed objective/subjective test</p> | <p><b>MASSOTHERAPY AND OTHER THERAPIES PART</b></p> <p>A theoretical and a practical exam will count till 50% and 30%- respectively- of the final mark.</p> <p>The theoretical exam will have several open-questions of variable length depending on the group learning dynamics.</p> <p>Practical exam will be carried out for a clinic problem and all the parameters used will be explained. The maximum time will be 10 minutes per case. The following parameters will be assessed: a valid argument for selection the parameters; adequacy of blocks, pillows and so on and correct patient position; correct and relevant application parameters (time, intensity ...); quickly performance and absence of negative effects (&amp;quot;pinch&amp;quot; drop,?).</p> <p><b>ELECTROTHERAPY AND ULTRASONOTHERAPY PART</b></p> <p>A theoretical and a practical exam will count till 50% and 30%- respectively- of the final mark.</p> <p>The theoretical exam will have several open-questions of variable length depending on the group learning dynamics. Also, there will be a type test part, consisting of 4 options and only one valid, wrong answer is taken account to eliminate random influence.</p> <p>Practical exam will be carried out for a clinic problem and all the parameters used will be explained. The maximum time will be 10 minutes per case. The following parameters will be assessed: a valid argument for selection the parameters; adequacy of blocks, pillows and so on and correct patient position; correct and relevant application parameters (time, intensity ...); quickly performance and absence of negative effects (&amp;quot;pinch&amp;quot; drop,?). Misuse of equipments and materials will low the mark until 50% and if something is broken the student will fail automatically.</p> <p><b>BOTH PARTS:</b></p> <p>A final average mark will be given only if both parts have been successful.</p> |
| <p>Guest lecture / keynote speech</p>  | <p><b>MASOTHERAPY AND OTHER THERAPIES PART</b></p> <p>The possibility of interactive classes for the whole group, although it will work starting from the teacher's explanation and then questions or solving problems in groups of students to encourage active job is bid.</p> <p><b>ELECTROTHERAPY AND ULTRASONOTHERAPY PART</b></p> <p>It will begin with lectures and interactive sessions for the whole group to advance in the subject before practice. Interactive classes for the following classes will be a theoretical and practical combination and will encourage student participation and meaningful learning.</p>  |
| <p>Introductory activities</p>         | <p><b>ELECTROTHERAPY AND ULTRASONOTHERAPY PART</b></p> <p>Reading: physical basis in electrotherapy and ultrasonotherapy: electromagnetic and mechanic waves.</p>   |

**Personalized attention**

| Methodologies | Description |
|---------------|-------------|
|---------------|-------------|



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|---|---|
| <p>Laboratory practice<br/>Mixed<br/>objective/subjective<br/>test<br/>Guest lecture /<br/>keynote speech</p> | <p>MASOTHERAPY AND OTHER THERAPIES PART</p> <p>The keynote session is conducted in the classroom 1 with relevant visual and teaching aids (transparencies, slides ...) starting with a question and develop its implications for the classroom. That's direct involvement of the student is needed.</p> <p>The labs will have a demonstrative character. To acquire the relevant skills the students will have to practice on their own.</p> <p>It is recommended not to leave any questions for the end, as well as hinder learning, it is likely that given the demand can not be resolved to everyone.</p> <p>ELECTROTHERAPY AND ultrasonotherapy PART</p> <p>The keynote session is conducted in the classroom 1 with relevant visual and teaching aids (transparencies, slides, wax ...) starting with a question and develop its implications for the classroom. That's direct involvement of the student is needed.</p> <p>The labs will have a demonstrative character. To acquire the relevant skills the student will have to practice on his/her own.</p> <p>There will be a schedule of face tutorials and one of non-contact, in order to resolve doubts or reinforce specific content. It is recommended not to leave any doubts as to the end, in addition to hinder learning, it is likely that given the demand can not be resolved in time. The delivery schedule set of non-contact work for the center for sequencing the work will continue.</p> <p>Also will seek to create a forum with frequently so that they can be consulted by everyone doubts.</p> |
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| Assessment          |   |               |
|---------------------|---|---------------|
| Methodologies       | Description   | Qualification |
| Laboratory practice | <p>MASOTHERAPY AND OTHER THERAPIES PART</p> <p>- Practices by students and supervised practical work in groups of 3-4 students. Reflections of selected practices will be presented (see methodology). The delivery document is provided until the day of the examination.</p> <p>ELECTROTHERAPY AND ULTRASONOTHERAPY PART</p> <p>The practicals will not have extra score but are essential to pass the subject.</p> <p>As self-learning, in groups of 3-4 -a portfolio of practices. Each group of students will have to performance and present the practical cases and the questions given.</p> | 20            |



|                                 |   |    |
|---------------------------------|---|----|
| Collaborative learning          | <p>Both modules</p> <p>Will be conducted in groups of 3-4 people. The teacher will present the questions / topic that must be solving for the students. It does not count for general note, except as to benefit the student in the case of showing a steady and dedicated work during the course and previously exceeding 50% of the score. They are compulsory to be able to succeed to the exam.</p> <p>Module for ELECTROTHERAPY AND ULTRASONOTHERAPY, may raise questions in class to solve as a partial test.</p> <p>For this module, there will be a peer tutoring program that will add a point to the final mark. For this, the students will have to present as tutor as late in the 8th week of class have students interested -a maximum of 4 students per tutor-. The mark will depend on the tutor mark (to 0.1), the supervised students' marks (up to 0.1) , the activities, doubts and submitted report (to 0.6), and the assessment of the tutor (up to 0.2).</p> | 0  |
| Mixed objective/subjective test | <p>Electrotherapy MODULE AND ultrasonotherapy</p> <p>The theoretical examination will up to 50% of the grade, and the practical test 30% of the final grade.</p> <p>Theoretical exam: may have a first part of test questions, and a second part of open questions, reasoning ability or capacity of synthesis of networking and writing are checked.</p> <p>To be able to average at least 50% of the maximum score in each of the examinations of the parts (theoretical and practical) must be achieved. The continuous assessment will be added if the theoretical and practical exams were passed.</p> <p>Only each theoretical or practical part will be saved for July if the mark is at least 60% of the maximum score.</p> <p>FOR BOTH MODULES</p> <p>The mean mark will only be done if boths parts are passed.</p>   | 80 |

#### Assessment comments

Attendance at the laboratory is highly recommended and non-attendance should be well justified and may prevent the continuous assessment.

Approved each quarter note to the July, including saved. If it had not approved the two modules in July, the part will be saved for the following year if the score is at least 70% of the grade. If someone is presented to test one of the two parts and not the other, will be considered as not presented in the final grade. If it is presented at both parts can no longer be considered as not presented.&nbsp;

For this course, MASSOTHERAPY AND OTHER THERAPIES &nbsp;will the first part (in the first quarter) and will continue with electrotherapy and ultrasonotherapy part in the second quarter

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#### Sources of information





|                             |   |
|-----------------------------|---|
| <p><b>Basic</b></p>         | <ul style="list-style-type: none"> <li>- ( ) .</li> <li>- Andrade, Carla-Krystin, (2004). Masaje basado en resultados. Barcelona : Editorial Paidotribo</li> <li>- Koury JM (1998). Acuaterapia. Barcelona:Ediciones Bellaterra</li> <li>- Schmid F (1987). Aplicación de corrientes estimulantes. Barcelona:Ed. Jims</li> <li>- Robinson AJ, Snyder-Mackler LS. ( 2008). Clinical Electrophysiology. Electrotherapy and electrophysiologic testing. Philadelphia: Lippincott Williams &amp; Wilkins</li> <li>- Hernández Álvaro J y Tovar Pescador J (1997). Electricidad y magnetismo. Jaén: Universidad de Jaén</li> <li>- Watson T. (2009). Electroterapia basada en la evidencia. Barcelona. Elsevier</li> <li>- Sheila Kitchen, Sarah Bazin (1998). Electroterapia de Clayton . São Paulo : Editora Manole</li> <li>- Rodriguez M (2004). Electroterapia en fisioterapia. . Madrid: Ed. Médica Panamericana</li> <li>- Low, J (1999). Electrotherapy explained : principles and practice . Boston, MA : Butterworth-Heinemann</li> <li>- San José Arango, C (2012). Hidrología médica y terapias complementarias. Sevilla: Publicaciones universitarias</li> <li>- Termatalia (2008). Jornadas técnicas sobre hidrología médica.</li> <li>- Martínez et al (1998). Manual de medicina física. Barcelona: Harcourt Brace</li> <li>- Prentice WE (1990). Medicina deportiva. Técnicas terapéuticas. Barcelona: Mosby</li> <li>- Pérez Fernández et al. (2005). Principios de hidroterapia y balneoterapia. Madrid: McGraw Hill Interamericana</li> <li>- Albornoz Cabello M, Meroño Gallut J. (2012). Procedimientos generales de fisioterapia. Práctica basada en la evidencia. Barcelona: Elsevier</li> </ul> |
| <p><b>Complementary</b></p> |   |

### Recommendations

#### Subjects that it is recommended to have taken before

#### Subjects that are recommended to be taken simultaneously

ANATOMÍA I E HISTOLOXÍA/651G01001

ANATOMÍA II/651G01002

BIOFÍSICA E BIOQUÍMICA/651G01004

MARCO TEÓRICO DA FISIOTERAPIA E A REHABILITACIÓN FÍSICA/651G01006

#### Subjects that continue the syllabus

#### Other comments

It is recommended as basic carrying a day theoretical and practical classes to get the maximum and to pass the course, given the density of content, abstraction of their fundamentals and the first course. It is important to have knowledge of English or do some of the same course, especially for Electrotherapy And Ultrasound therapy part.&nbsp;Although the language most commonly used by teachers of this subject is Spanish, interchangeably use Spanish and Galician and, of course, students can express themselves in the language of their choice. The exam in Galician will be provided at the request of interested students. Such request shall be made not later than one week before the exam.&nbsp;For part of electrotherapy and ultrasonic therapy in practice lessons, there is the possibility of participating in a group in which the language used is English.

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.