Teaching Guide				
Identifying Data				2023/24
Subject (*)	Functional Rehabilitation in Foot and Leg Disorders		Code	750G02137
Study programme	Grao en Podoloxía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Fourth	Optional	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Fisioterapia, Medicina e Ciencias Biomédicas			
Coordinador	Souto Gestal, Antonio	E-mail	antonio.souto@udc.es	
Lecturers	Souto Gestal, Antonio	E-mail	antonio.souto@udc.es	
Web	https://campusvirtual.udc.gal/			
General description	This subject aims to provide students of the Podiatry degree with an interdisciplinary protocol for the assessment of the ankle and foot joint complex, as well as its global implications on the rest of the body segments, using physical examination and clinical reasoning methods followed in the field of physiotherapy. Building upon the knowledge of clinical biomechanics and neuroscience, they will be able to design neuro-orthopedic and functional assessment protocols to implement therapeutic strategies based on kinesiotherapy in its various modalities, as well as sensorimotor or functional reeducation.			

Study programme competences	
Code	Study programme competences
A66	CE2 -Coñecer a anatomía específica do membro inferior
A69	CE5 - Coñecer os principios físicos aplicables á marcha humana
A70	CE6 - - Coñecer o concepto anatómico e funcional da enfermidade e a clasificación de enfermidades, adquirindo capacidade de describir as patoloxías máis prevalentes do ser humano
A85	CE21 - Coñecer os instrumentos de análise biomecánico e a biomecánica da marcha humana e obter a capacidade de análise da marcha
A86	CE22 - Coñecer as alteracións estruturais do pé e o seu comportamento biomecánico e coñecer as alteracións posturais do aparello locomotor e a súa influencia sobre o pé e viceversa
A89	CE25 - Coñecer e desenvolver as técnicas de exploración física e clínica e os parámetros clínicos normais en decúbito, bipedestación estática e dinámica
A90	CE26 - Coñecer os fundamentos da Podoloxía, o concepto de profesión e saber recoñecer as capacidades profesionais propias da mesma no equipo multidisciplinar de saúde
A96	CE32 - Identificar e analizar os problemas de saúde do pé nos diferentes aspectos ambiéntais, biodinámicos e sociais, así como unha aprendizaxe relativa á avaliación dos feitos cientificamente probados e á análise dos datos en xeral, para aplicar a Podoloxía Baseada na Evidencia Científica
A100	CE36 Coñecer e diferenciar, segundo os parámetros clínicos, os procesos patolóxicos do pé, as afeccións estruturais e funcionais do aparello locomotor, as patoloxías de membro inferior e os procesos sistémicos con repercusión podolóxica
A103	CE39 - Coñecer e desenvolver as técnicas de exploración, para emitir un diagnóstico e prognóstico, e deseñar o plan de tratamento ortopodolóxico de acordo aos obxectivos terapéuticos
A112	CE48 - Coñecer e aplicar os métodos físicos, eléctricos e manuais na terapéutica das distintas patoloxías morfolóxicas e funcionais do pé e no tratamento da dor e a inflamación
B23	CB1 - Que os estudantes demostrasen posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeral, e adóitase atopar a un nivel que, aínda que se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B24	CB2 - Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B25	CB3 -- Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética

B29	CG02 - Coñecer a estrutura e función do corpo humano en especial da extremidade inferior, semioloxía, mecanismos, causas e manifestacións xerais da enfermidade e métodos de diagnóstico dos procesos patolóxicos médicos e cirúrxicos, interrelacionando a patoloxía xeral coa patoloxía do pé.
B30	CG03 - Obter a capacidade, habilidade e destreza necesarias para diagnosticar, prescribir, indicar, realizar e/ou elaborar e avaliar calquera tipo de tratamento podolóxico, ortopodolóxico, quiropodolóxico, cirurxía podolóxica, físico, farmacolóxico, preventivo e/ ou educativo, baseado na Historia clínica
B32	CG05 - Colaborar cos profesionais sanitarios especificamente formados na materia, na adaptación e uso de prótese e axudas técnicas necesarias, segundo as condicións físicas, psicolóxicas e sociais dos doentes
C9	CT01 - Expresarse correctamente, tanto de forma oral como escrita, nas linguas oficiais da comunidade autónoma
C15	CT07 - Desenvolver a capacidade de traballar en equipos interdisciplinares ou transdisciplinares, para ofrecer propostas que contribúan a un desenvolvemento sustentable ambiental, económico, político e social

Learning outcomes			
Learning outcomes	Study programme competences		
Be able to apply the technicians of clinical examination of the musculoskeletal system in supine position, static bipedestation and dynamic for the diagnostic of the foot dysfunctions	A66 A69 A70 A85 A86 A89 A100 A103	B23	C9
Be able to apply the protocol of analytical examination of foot and ankle complex, as well as to identify its possible relation with the superjacent levels (knee, hip, pelvic belt and raquis), integrating these appearances in the treatment of the more frequent foot dysfunctions.	A66 A69 A85 A86 A89 A100 A103	B23 B24 B25 B29 B30	C9 C15
Be able to identify the physiotherapy techniques (curative or palliative) employees in the treatment of the foot dysfunctions.	A90 A96 A112	B32	C15
To know the principles and indications of the physical agents used in the treatment of the foot dysfunctions.	A90 A96 A112	B23 B24 B25 B29 B30 B32	C15
Be able to apply some physical agents in the treatment of the foot dysfunctions.	A90 A96 A100 A103 A112	B32	C15
Know the therapeutic foundations of the handle of the patient with pain	A70 A89 A96 A100 A103 A112	B24 B25 B29 B30	C15

Contents	
Topic	Sub-topic
Thematic Block I. Functional assessment of the foot and lower limb.	Unit 0. Anatomical-biomechanical recollection of the foot and its kinetic and kinematic relationships with the lower limb. Unit 1. Functional and neuro-orthopaedic examination of the lower limb. Generalities of the assessment process. Concept of dysfunction and biomechanical adaptation. The nervous system as an integrating structure. Heterometries, ascending and descending dysfunctional chains.
Thematic Block II. Functional re-education and physiotherapy in inflammatory and degenerative processes of the foot. Model of tissue stress and soft tissue regeneration.	Unit 2. The fascial system as a source of pain and dysfunction. Cellular mechanotransduction. Unit 3. Nervous system and neuromechanics. The nervous system as a source of pain and dysfunction. Evaluation and principles of neurodynamic treatment. Unit 4. Soft tissue regeneration model based on controlled mechanical stimulus. Inflammatory response, phases and clinical implications. Ankle sprain, local and ascending implications. Chronic ankle instability. Proprioception and postural sensors. Unit 5. Tissue stress model. Rotational theory and the windlass system. Kinetic considerations and their clinical implications. Upward and downward relationships.
Thematic Block III. Assessment and functional intervention in the main podiatric disorders. Pain, proprioception and motor control.	Unit 6. Manifestations of tissue stress in the sole-Achilles-plantar system. Achilles tendinopathy. Local and ascending implications. Unit 7. Tissue stress manifestations in the tibial system: medial tibial stress syndrome, tarsal tunnel and posterior tibial dysfunction. Local and ascending implications. Unit 8. Tissue stress manifestations of plantar tissues. Local and ascending implications. Unit 9. Tissue stress manifestations in the forefoot: metatarsalgia, predislocation syndrome, perineural fibrosis and dysfunction of the first radius. Local and ascending implications.
Practical Block I. Functional assessment of the foot. Neuro-orthopaedic examination of the foot and lower limb.	Practical lesson 1. Examination of posture and postural sensors. Practical lesson 2. Neurodynamic exploration of the lower limb: neural provocation test and evaluation of the potential mechanical conflict points of the peripheral nervous system in the lower limb. Practical lesson 3. Static and dynamic assessment of the pelvis. Orthopaedic and functional tests. Practical lesson 4. Examination of the statics and dynamics of the coxofemoral joint. Torsional alterations and rotational capacity. Exploration of the knee. Practical lesson 5. Examination of the analytical joint mobility of the ankle-foot complex. Practical lesson 6. Dynamic assessment: gait and functional motor control tests.

Practical Block II. Functional re-education and physiotherapy in the main podiatric disorders.	Practical lesson 7. Joint techniques of the ankle-foot complex. Practical lesson 8. Stretching, manual and instrumental myofascial techniques. Practical lesson 9. Strategies for improving proprioception and motor control of the lower limb. Practical lesson 10. Functional and proprioceptive taping.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A66 A69 A70 A85 A86 A96 A100 A103 A112 B23 B24 B25 B29 B30 B32 C9	21	21	42
Laboratory practice	A66 A69 A85 A86 A89 A96 A100 A112 B24 B25 B29 B30 B32 C9 C15	7	14	21
Directed discussion	A90 A96 A100 B23 B24 B25 B32 C9 C15	7	7	14
Case study	A70 A85 A86 A90 A96 A100 A103 A112 B23 B24 B25 B29 B30 B32 C9 C15	7	21	28
Workbook	A66 A69 A70 A86 B29	0	20	20
Mixed objective/subjective test	A89 A96 A100 A103 A112 B23 B24 B25 B29 C9	2	18	20
Introductory activities	A66 A69 A70 A90 C9 C15	2	0	2
Personalized attention		3	0	3
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Oral exhibition complemented with the use of audiovisual means and the introduction of some questions headed to the students, with the purpose to transmit knowledges and facilitate the learning.
Laboratory practice	Methodology that allows that the students learn sure enough through the realisation of activities of practical character, such like demonstrations, exercises, experiments and investigations. In this matter the practical modules will centre by a part in the static exploration-dynamic of the complex articulate foot-ankle as well as his relation with the global assessment of the superjacent levels. Later they will experience some of the therapeutic technicians that give answer to the possible dysfunctions that result of the process of assessment, fundamentally consistent in the technician of taping (rigid, elastic and neuromuscular) as well as in the correct application of other physical agents.

Directed discussion	Methodology that allows that the students learn sure enough through the realisation of activities of practical character, such like demonstrations, exercises, experiments and investigations. Technician of dynamics of groups in which the students argue of free form, informal and spontaneous on a subject, especially the resolution of a problem generally of pathomechanics topic relative to clinical field, proposed and coordinated by the moderador of the debate, in this case the professor.
Case study	Methodology where the students confront in front of the description of a specific situation that arouses a problem that has to be comprised, valued and resolved by a group of students, through a process of discussion.
Workbook	Group of texts and documentation written that they were collected and/or edited with the aim to serve like source of profundización of the contents worked through other methodologies.
Mixed objective/subjective test	Regarding questions of essay, collects open questions of development. Besides, regarding objective questions, can combine questions of multiple answer, of ordenación, of brief answer, of discrimination, to complete and/or of association.
Introductory activities	After the presentation of the subject, will establish a colloquium in which it will treat of identify which are the interests of the students in relation to the topics, its possible practical utility, as well as the initial knowledges of which splits . Activities that carry out before initiating or process of education-learning, with the purpose to know the competitions, student´s interests and/or motivations for the attainment of the aims that pretend reach, linked to a formative program. With her it pretends obtain notable information that allow to articulate the teaching to favour an effective and significant learning, that split of the previous knowledges of the students.

Personalized attention	
Methodologies	**Description**
Laboratory practice Directed discussion Case study	In laboratory practices, the professor will personally carry out a demonstration and subsequently individually review the correct execution by each student. In guided discussions and clinical case studies, the professor will be responsible for moderating the debate and posing questions that foster participation, ensuring that each student benefits from the ideas contributed by all. A total of 3 hours is estimated for personalized attention in the form of tutorials, where all kinds of doubts can be resolved, with particular emphasis on resolving clinical cases. Personalized attention will preferably be carried out through telematic means (Microsoft Teams platform, Virtual Campus, or email), although it will also be offered in-person during established hours and/or upon request by the student.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Laboratory practice	A66 A69 A85 A86 A89 A96 A100 A112 B24 B25 B29 B30 B32 C9 C15	The assessment of the practices of laboratory does reference fundamentally to the attitude and active participation and with exploitation of the same, what translates in the correct execution and in the degree of improvement reached in the techniques taught.	10
Case study	A70 A85 A86 A90 A96 A100 A103 A112 B23 B24 B25 B29 B30 B32 C9 C15	Delivery in time and form of the resolutions of clinical cases posed along the course, and that will request with antelación sufficient for his realisation or will realise during the face-to-face hours (interactive classes).	40
Mixed objective/subjective test	A89 A96 A100 A103 A112 B23 B24 B25 B29 C9	The mixed exam will consist in a combination of questions type test of only answer and one or several short questions about the assessment and/or resolution of a clinical case posed during the course.	40

Guest lecture / keynote speech	A66 A69 A70 A85 A86 A96 A100 A103 A112 B23 B24 B25 B29 B30 B32 C9	Oral dissertation complemented with the use of audiovisual media and the introduction of some questions headed to the students, with the purpose to transmit knowledges and facilitate the learning. It will value fundamentally the assistance and active participation in the same, through the punctual delivery of small proofs of knowledge of immediate answer (methodology socrative) that facilitate the assimilation of the key ideas.	10

Assessment comments
For regular enrolled students, 40% of the course evaluation depends, as indicated in the table, on the mixed exam, which is conducted in writing and combines questions of different nature and scope. Another 40% will correspond to the development and presentation of case study assignments. 10% of the grade is reserved for the continuous evaluation of the master sessions and interactive activities. The final 10% will correspond to the continuous evaluation of the practical sessions. To pass the course, the following conditions must be met: Attendance to a minimum of 70% of the practical sessions is required. Absences properly justified due to health reasons will not be taken into account for this purpose. Only a maximum of 20% absences from practical sessions without providing the corresponding justification will be considered. A grade higher than 5 out of 10 must be obtained in the mixed exam. This exam will generally have a maximum execution time of 1 hour. The grade "Not Attended" will be assigned to students who do not take the mixed exam, regardless of the grade obtained in the continuous evaluation of the practical and interactive block, as well as in the case study. PART-TIME ENROLLMENT: There are no different teaching methodologies or evaluation systems contemplated for part-time students. ACADEMIC EXEMPTION: Given the practical, applied, and clinically oriented nature of the course, the possibility of an academic exemption that exempts students from attending the practical and seminar/interactive sessions is not contemplated. SECOND OPPORTUNITY: There are no different evaluation methodologies contemplated for the second chance. REPEAT ENROLLMENT: For second or subsequent enrollment students, including early opportunity, the obtained grade in the sections of continuous evaluation of the practical and interactive block, as well as in the case study, may be retained upon prior request, provided that they were passed in previous academic years. Otherwise, these sections will be evaluated through a practical exam that will have a value equal to 60% of the course grade. WITH HONORS DISTINCTION: Students who obtain a grade equal to or higher than 9/10 may be eligible for the mention of With Honors Distinction, in accordance with the limits established in Article 21 of the "Norms for Evaluation, Review, and Complaint of Grades for Bachelor's and Master's Degrees" at UDC. The honors enrollment will be granted in all cases to the highest overall grades. PLAGIARISM: In the completion of course assignments, plagiarism and the use of non-original material, including material obtained through the internet, without explicit indication of its source and, if applicable, permission from its author, will be graded as a failure (0.0) in the activity. This is without prejudice to the disciplinary responsibilities that may arise from the corresponding procedure. Once fraudulent completion of tests or evaluation activities is confirmed, it will directly result in a failing grade in the corresponding examination period: the student will be graded as "failed" (numerical grade 0) in the relevant examination period of the academic year, whether the offense occurs in the first opportunity or the second. In this regard, if necessary, the grade in the first examination period will be modified in the record.

Sources of information

Basic	- Rueda-Sánchez, M. (2004). Podología: los desequilibrios del pie.. Barcelona: Paidotribo - Kirby, K. A. (2012). Biomecánica del pie y la extremidad inferior. Payson: Precisión Intracast - Neumann, Donald A. (2017). Kinesiology of the musculoskeletal system : foundations for rehabilitation. St. Louis : Elsevier - Butler, David S. (2009). Movilización del sistema nervioso. Barcelona: Paidotribo - Zamorano Zárate, E. (2013). Movilización neuromeníngea : tratamiento de los trastornos mecanosensitivos del sistema nervioso. Madrid : Panamericana - Jon Parsons, Nicholas Marcer (2007). Osteopatía: modelos de diagnóstico, tratamiento y práctica.. Madrid : Elsevier, - Cleland, Joshua (2022). Netter, Exploración clínica en ortopedia : un enfoque para fisioterapeutas basado en la evidencia. Barcelona : Elsevier - Ricard F.; Munuera P., Oliva Pascual Vaca, A. y Rodríguez Blanco C. (2012). Medicina osteopática: miembro inferior. Alcalá de Henares: Escuela de Osteopatía de Madrid, - Mulligan, Brian R. (2010). Manual therapy : NAGS, SNAGS, MWMs etc.. Wellington: Plane View - Myers, Thomas W. (2021). Vías anatómicas : meridianos miofasciales para terapeutas manuales y profesionales del movimiento. Barcelona : Elsevier Masson - Arnold G. Nelson, Jouko Kokkonen (2020). Anatomía de los estiramientos. Madrid: Tutor - Kisner, Carolyn (2010). Ejercicio terapéutico: fundamentos y técnicas. Buenos Aires: Médica Panamericana, - Bové, T (2021). El vendaje funcional. Barcelona: Elsevier - Fernández de las Peñas, C., Cleland J.A., Dommerholt J. (2016). Manual therapy for musculoskeletal pain syndromes : an evidence and clinical informed approach. London: Elsevier - Quesada Molina, C. F. (2022). Pie y tobillo : consideraciones generales y síndromes dolorosos. Madrid: Panamericana - Vleeming, A., Mooney, V., Stoeckart, R. (2008). Movimiento, estabilidad y dolor lumbopélvico : integración de la investigación con el tratamiento. Barcelona : Elsevier Masson - Bryan, E. (2018). The Comprehensive Manual of Therapeutic Exercises Orthopedic and General Conditions. Thorofare, NJ: Slack Incorporated
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Anatomy General/750G02103 Specific Anatomy of the Lower Limb/750G02104 Biomechanics of the Lower Limb/750G02111 Biological Basis and Physical Human Movement/750G02106 Physical Podiatry/750G02121
Subjects that are recommended to be taken simultaneously
Final Dissertation/750G02133 Practicum III/750G02136
Subjects that continue the syllabus
Final Dissertation/750G02133
Other comments

<p>As this subject is usually taken by fourth-year students, it is recommended that it be taken simultaneously with Practicum 3, so that they can apply the new knowledge to the clinical-care context.</p><p>ADAPTATION OF PRESENTATION TO THE EPIDEMIOLOGICAL SITUATION: All classroom activities will be carried out with pre-assigned seats, masks, ventilation, not allowing the consumption of food and drink and ensuring that the centre's prevention and hygiene measures established and published at: https://udc.es/es/fep/coronavirus/ are complied with.</p><p>In the event that the lecture teaching group exceeds the capacity of the classroom, rotating hybrid teaching groups will be established, where students who do not fit in the classroom will follow the telematic teaching that week and the following week will be face-to-face, and another group will follow the telematic teaching, according to the planning established by the lecturer of the subject.</p><p>Environmental considerations:</p><p>SUSTAINABLE DEVELOPMENT OBJECTIVES: To help achieve an immediate sustainable environment and comply with the objective of action number 5: "Healthy and environmentally and socially sustainable teaching and research" of the "Green Campus Ferrol Action Plan":</p><p>The delivery of the documentary work carried out in this subject will be done through Moodle, in digital format without the need to print them, in the case of being done on paper: no plastics will be used, double-sided printing will be carried out, recycled paper will be used and the printing of drafts will be avoided.</p><p>A sustainable use of resources and the prevention of negative impacts on the natural environment should be made, taking into account the importance of ethical principles related to sustainability values in personal and professional behaviour.</p><p>The full integration of students who, for physical, sensory, mental or socio-cultural reasons, experience difficulties in gaining suitable, equal and beneficial access to university life will be facilitated.</p>