



Teaching Guide

Identifying Data					2022/23
Subject (*)	Digital Orthopedics and Footwear Therapy		Code	750G02117	
Study programme	Grao en Podoloxía				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Second	Obligatory	6	
Language	Galician				
Teaching method	Face-to-face				
Prerequisites					
Department	Ciencias da Saúde				
Coordinador	López López, Daniel	E-mail	daniel.lopez.lopez@udc.es		
Lecturers	Justo Paz, Antonio López López, Daniel Ruíz Sánchez, Francisco Javier	E-mail	antonio.justo.paz@udc.es daniel.lopez.lopez@udc.es f.ruiz@udc.es		
Web	campusvirtual.udc.gal/				
General description	<p>A asignatura de ortesioloxía dixital e calzadoterapia posee unha clara importancia de cara a que o alumnado desenrole coñecementos, habilidades e destrezas importantes no proceso ensinanza ? aprendizaxe do seu proceso formador para mellorar a saúde das persoas.</p> <p>O valor é moi significativo para o futuro podólogo, de cara a comprender, actuar e profundizar no campo terapéutico da ortoprótesis, no uso e a indicación de produtos sanitarios podolóxicos, proporcionándolle unha formación básica de coñecementos teóricos e destrezas prácticas, co fin de que adquira as competencias básicas relacionadas ca prescripción, deseño e obtención das principais orteses dixitais e próteses do pe e coñeza a súa relación co resto do membro inferior.</p> <p>Mediante a prescripción de dispositivos orto-protésicos a medida ou prefabricados, numerosos estudos demostraron a eficacia destes dispositivos tanto na redución da sintomatoloxía, como na recuperación da funcionalidade de diversas situacións patolóxicas debidas a alteracións estruturais ou funcionais do pe ou dalgunha outra estrutura do membro inferior.</p>				

Study programme competences / results

Code	Study programme competences / results
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
A104	CE40 - Desenvolver a habilidade e destreza no uso do instrumental, material e maquinaria empregados para a confección e aplicación de tratamentos ortopodolóxicos identificando os riscos derivados da actividade e implementando as medidas de seguridade necesarias
A106	CE42 -Obter os coñecementos e capacidade para deseñar, obter e aplicar as orteses plantares, ortesis dixitais, próteses e férulas mediante o uso de diferentes técnicas e materiais
A108	CE44 - Coñecer e diferenciar as propiedades dos materiais utilizados na confección ortoprotésica
A110	CE46 - Adquirir a capacidade de prescribir tratamentos ortopédicos da extremidade inferior
A111	CE47 - Coñecer e aplicar os principios da calzadoterapia, diferenciar as partes, os elementos e os diferentes tipos de calzado
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
B26	CB4 -Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado
B27	CB5 -Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía
B28	CG01 - Coñecer e aplicar os fundamentos teóricos e metodolóxicos da Podoloxía e Podiatría



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
B36	CG09 -Valorar de forma crítica a terminoloxía, ensaios clínicos e metodoloxía utilizados na investigación relacionada coa podoloxía
B39	CG12 -Capacidade para a cooperación, o traballo en equipo e a aprendizaxe colaborativo en contornas interdisciplinares
C9	CT01 - - Expresarse correctamente, tanto de forma oral como escrita, nas linguas oficiais da comunidade autónoma
C11	CT03 - Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida
C12	CT04 -Desenvolver o exercicio dunha cidadanía respectuosa coa cultura democrática, os dereitos humanos e a perspectiva de xénero
C16	CT08 - V- Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade
C17	CT09 -Ter a capacidade de xestionar tempos e recursos: desenvolver plans, priorizar actividades, identificar as críticas, establecer prazos e cumprilos

Learning outcomes			
Learning outcomes	Study programme competences / results		
Meet and develop scanning techniques, to make a diagnosis and prognosis, and plan deseñar orthosis treatment of lower extremity pathology. Skeletal muscle injury and ligament. Pathology of the forefoot and hindfoot. Congenital deformities. Neurological injuries. Amputations. Asymmetries.	A104	B25 B36 B39	C9 C12
Prescribe and implement plantar and digital orthoses on podiatric conditions Morphological and functional.	A106 A108	B30	C17
Designing, obtaining and applying different techniques and materials by the orthotics and digital orthoses, prostheses, splints. Plantar and digital orthotics . Study of footwear and therapy shoes. Orthotic treatment prescription lower extremity.	A110 A111	B26 B27	C11
Saber utilizar os instrumentos e materiais empregados na obtención de tratamentos ortopodolóxicos dixitais a medida.	A103 A104 A106 A108	B27 B28 B29 B39	C11 C16 C17
Design, procure and implement using different techniques and the orthotics digital.	A103	B28 B29	C16

Contents	
Topic	Sub-topic
1. Fundament Digital Orthotics	a) Introduction to digital orthotics. b) Current frame digital orthotics.
2. Materials needed for a development of orthoses.	a) Silicone. b) Catalyst. c) Additives or fillers. d) Auxiliary materials and accessories.
3. Making silicone orthoses.	a) Preparation: considerations. b) Protocol. c) Recommendations and rules of use for the patient. d) Handling and working times. e) Evaluation of Silicone orthotics. f) Failures in Silicone orthotics.



4. Therapeutic elements Silicone orthotics.	a) Description of elements comprising silicone orthoses. b) Frequent digital orthotics.
5. Therapeutic Application of Digital Orthotics	a) Biomechanical effect. b) Therapeutic Application.
6. Nail Orthotics.	a) Introduction to the nail orthotics. b) Development of the nail orthotics. c) Therapeutic Application.
7 Introduction to therapy shoes.	a) Parts shoe: sole and cut. b) Lasts footwear.
8. Therapeutic devices in the Shoes.	a) External modifications: heels, wedges, increases. b) Set the shoe. Gradation chart and numbering systems.
9. Properties footwear according to different population groups.	a) Conventional footwear for adults. b) Children conventional shoes. c) domestic footwear. d) Work Shoes. e) Special Shoes for orthotics. f) Child Special footwear. g) Special shoes for deformed feet or geriatric / peripheral vascular disease. h) Postoperative shoes.
10. Types of shoes.	a) Bootie or shoe salon. b) Moccasin. c) Derby or Oxford dress shoe. d) Boots. Booties. e) Slippers, slippers and sandals.
11. Accessories and footwear.	a) With and without compression socks. b) Stockings, Pantyhose and graduations. c) Ankles with and without stabilization. d) Pinkis.

Planning

Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Mixed objective/subjective test	A106 A110 B28	2	28	30
Guest lecture / keynote speech	A103 A108 A111 B29	21	32	53
Seminar	B25 B26 B30 B39 C9 C11 C16 C17	7	14	21
Laboratory practice	A104 B27 B36 C12	18	18	36
Personalized attention		10	0	10

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

Methodologies

Methodologies	Description
Mixed objective/subjective test	Exam with 30 questions and 3 short objective test questions. The review will include questions related to the contents developed in both keynote sessions, and seminars and labs.
Guest lecture / keynote speech	The master class sessions consist of master-participatory exhibition of basic contents of the subject, supported by images, video, etc classes. The keynote sessions will focus on the main contents of the syllabus.



Seminar	Students will be provided the agenda with the basic theoretical contents of the subject, as well as material to work in the classroom or outside it. All material will be accessible to students in distance learning platform Moodle https://campusvirtual.udc.es/moodle/ .
Laboratory practice	Lab The labs are specifically targeted: 1 - Knowing scan protocol and digital deformities performance. 2 - Accurately diagnose the condition of the forefoot. 3 - Apply ortesiológico timely treatment, as appropriate. 4 - Mastering methodology making silicone orthoses. 5 - Evaluate and adapt the general footwear citizenship. 6 - Prescribe special shoes and customized for different population groups.

Personalized attention

Methodologies	Description
Seminar Laboratory practice Mixed objective/subjective test Guest lecture / keynote speech	The personalized service will run on a scheduled basis in times of teacher attention to students, to face service; and virtually, through email and other electronic means to enable the virtual platform. The personalized service is designed to solve any issue related to the different methodologies and / or contents of the subject

Assessment

Methodologies	Competencies / Results	Description	Qualification
Seminar	B25 B26 B30 B39 C9 C11 C16 C17	The seminar related activities are mandatory and can not be recovered or replaced by other activities of the course. The rating of each activity of the seminar will be specified with each activity.	15
Laboratory practice	A104 B27 B36 C12	Attendance at labs is mandatory in its entirety to pass the subject. The last 2 hours of practice will be used for a practical test with theoretical and practical questions about the contents of the material developed in practice. For the fit in the labs, you must answer / successfully complete 50% of the activities and / or exam questions, in addition to attending all practices.	20
Mixed objective/subjective test	A106 A110 B28	On the written test score information in the questions provided.	65

Assessment comments



The presentation of the topic Digital Orthotics and Therapy Shoe succinctly explain the curriculum and course standards for the evaluation of the same, which will be available to students in the distance learning platform Moodle, be indispensable condition for approving subject to: 1 REGULAR FIRST CALL OPPORTUNITY;

1.1 assist to 80% of the seminars and complete the proposed activities and get a total score on a numerical scale from 1 to 10 of 5 (suitable), which has only in the case of pass the test completely mixed.

1.2 assist to 80% of the laboratories, and to carry out the proposed activities and get a total score on a numeric scale of 1 to 10 of 5 (suitable), which has only in the case of passing the tests completely mixed.

1.3 The written exam mixed (Test and short Questions) and separately (a score on a numeric scale of 1 to 10) of 5 (suitable) in each of the two parts of which comprises the mixed test test test and short questions .

2 REGULAR SECOND CALL, AND FUTURE MEETINGS EARLY OPPORTUNITY:

2.1 Get in the mixed test (Test and short Questions) and separately (a score on a numerical scale from 1 to 10), from 5 Suitable in each of two parts.

2.2 The scores of seminars and laboratories do not count as necessary to overcome the efforts to pass the course in successive calls.

3. PARTIAL TUITION CLASS:

3.1 Get in the mixed event (and brief essay questions) and separately (a score on a numerical scale from 1 to 10), from 5 Suitable for every two parts that make up the test set, the percentage of rating gives 60% of the final mark.

3.2 Perform laboratory practice test and get a total score on a numeric scale of 1 to 10, 5 (suitable), the percentage of the grade 40% of the final mark, calculated only in the case of fully overcome the mixed test.

Sources of information



Basic

- Álvarez-Calderón O, Alonso F, López D, Gómez B, Sánchez R (2008). Análisis del calzado en una población mayor de 60 años. . Revista Internacional de Ciencias Podológicas, 2 (1), 19-26.
- López D (2011). Podología y Salud: Un análisis de las representaciones sociales de las enfermedades del pie desde una perspectiva psicosocial.. A Coruña: Universidade da Coruña.
- Gordillo-Fernández A (2006). Fabricación a medida de productos sanitarios ortopodológicos en la Comunidad Valenciana.. Valencia: Generalitat Valenciana, Consellería de Sanitat-Agencia Valenciana de Salut
- Queralt M^a (2004). Manual de Técnicas en Ortopodología.. Barcelona: Ediciones Especializadas Europeas
- Levy AE, Cortés JM (2003). Ortopodología y Aparato Locomotor. Ortopedia de pie y tobillo.. Barcelona: Masson
- Vázquez B (2009). Manual de Ortopodología.. Barcelona: Ediciones Especializadas Europeas
- Philips JW. (1995). The functional foot orthosis.. New York: Churchill Livingstone
- López-López D, Araújo R, Losa-Iglesias ME, Becerro-de-Bengoa-Vallejo R, Santos A, Rodríguez-Sanz D, (2018). Influence of custom foot orthoses on venous status: A quasi-experimental study. J Mech Behav Biomed Mater. 2018 Mar;79:235-238
- Prat J (1999). Introducción a la Ortoprotésica. Guía de uso y prescripción de productos ortoprotésicos a medida.. Valencia: Instituto Biomecánico de Valencia
- Prat J (1999). Ortesis plantares y calzado ortopédico a medida. Guía de uso y prescripción de productos ortoprotésicos a medida.. Valencia: Instituto Biomecánico de Valencia
- Pratt D, Tollafield D (2007). Una introducción a las terapéuticas mecánicas. En: Turner WA, Merriman LM. Habilidades clínicas para el tratamiento del pie. . Madrid: Elsevier
- Richie D (2007). Orthotics. In: Di Giovanni C, Greisberg J. Coordinadores. Foot & Ankle: Core Knowledge in Orthopaedics. . Philadelphia: Elsevier; 2007.
- Donatelli R, Wooden M (1996). Biomechanical orthotics. In: Donatelli R. Coordinador. Biomechanics of the foot and ankle. 2^a ed. . Philadelphia: F.A. Davis Company
- Palomo-López P, Becerro-de-Bengoa-Vallejo R, Losa-Iglesias ME, Rodríguez-Sanz D, Calvo-Lobo C, López (2017). Footwear used by older people and a history of hyperkeratotic lesions on the foot: A prospective observational study. Medicine (Baltimore). 2017 Apr;96(15):e6623
- Roca-Dols A, Losa-Iglesias ME, Sánchez-Gómez R, Becerro-de-Bengoa-Vallejo R, López-López D, Rodríguez (2018). Effect of the cushioning running shoes in ground contact time of phases of gait.. J Mech Behav Biomed Mater. 2018 Dec;88:196-200
- Roca-Dols A, Losa-Iglesias ME, Sánchez-Gómez R, Becerro-de-Bengoa-Vallejo R, López-López D, Palomo-L (2018). Electromyography activity of triceps surae and tibialis anterior muscles related to various sports shoes. J Mech Behav Biomed Mater. 2018 Oct;86:158-171
- Losito J (1996). Impression casting techniques. In: Valmassy R. Coordinador. Clinical biomechanics of the lower extremities. . Missouri: Mosby
- Jones L (1996). Prescription writing for functional and accommodative foot orthoses. In: Valmassy R. Coordinador. Clinical biomechanics of the lower extremities. . Missouri: Mosby
- Olson W (1996). Orthotic materials. In: Valmassy R. Coordinador. Clinical biomechanics of the lower extremities.. Missouri: Mosby
- Kirby K (1996). Troubleshooting functional foot orthoses. In: Valmassy R. Coordinador. Clinical biomechanics of the lower extremities. . Missouri: Mosby
- Whitney A, Whitney K. (2006). Padding and Taping Therapy. In: Levy L, Hetherington V. Editors. Principles and practice of Podiatric Medicine.. Maryland: Data Trace PC
- Janeiro JM, Alonso F, Bouzas MC, Calleja J, López L (2002). Orígenes de las Siliconas. El Peu Vol. 22 (1) 32-35
- Tovaruela-Carrión N, Becerro-de-Bengoa-Vallejo R, Losa-Iglesias ME, Palomo-López P, Munuera-Martínez (2018). Accurately Determining Proper Shoe Size in Patients With Rheumatoid Arthritis. Rehabil Nurs. 2018 Sep/Oct;43(5):285-289
- Roca-Dols A, Losa-Iglesias ME, Sánchez-Gómez R, López-López D, Becerro-de-Bengoa-Vallejo R, Calvo-Lo (2018). Electromyography comparison of the effects of various footwear in the activity patterns of the peroneus longus and brevis muscles. J Mech Behav Biomed Mater. 2018 Jun;82:126-132
- López D, Cosín J, Álvarez-Calderón O, Cosín E, Barriuso M, López L (2006). Aplicación de un tratamiento

- ortesiológico en una malformación del miembro inferior: a propósito de un caso. *Revista española de podología*, 17 (4) 170-176
- Calvo-Lobo C, Ramos García A, Losa Iglesias ME, López-López D, Rodríguez-Sanz D, Romero-Morales C, B (2018). The Relationship between Shoe Fitting and Foot Health of Persons with Down Syndrome: A Case Control Study.. *Int J Environ Res Public Health*. 2018 May 14;15(5). pii: E983
 - Munuera PV (2009). *El primer radio biomecánica y ortopodología*. Santander: Exa Editores S.L.
 - Rodríguez-Sanz D, Becerro-de-Bengoa-Vallejo R, Losa-Iglesias ME, Martínez-Jiménez EM, Muñoz-García D (2018). Effects of Compressive Stockings and Standard Stockings in Skin Temperature and Pressure Pain Threshold in Runners with Functional Ankle Equinus Condition.. *J Clin Med*. 2018 Nov 21;7(11). pii: E454
 - Kerrigan DC, Franz JR, Keenan GS, Dicharry J, Della Croce U, Wilder RP (2009). The effect of running shoes on lower extremity joint torques.. *Journal American Academy of Physical Medicine and Rehabilitation*, 1(12), 1058-63.
 - López D, Ramos J, Alonso F, García R (2012). *Manual de Podología*. Conceptos, Organización Psicológica y Práctica Clínica. . Madrid: CERSA.
 - López-López D, Expósito-Casabella Y, Losa-Iglesias M, Bengoa-Vallejo RB, Saleta-Canosa JL, Alonso-Ta (2016). Impact of shoe size in a sample of elderly individuals.. *Rev Assoc Med Bras (1992)*. 2016 Nov;62(8):789-794
 - Casado-Hernández I, Becerro-de-Bengoa-Vallejo R, López-López D, Gómez-Bernal A, Losa-Iglesias ME (2018). Aluminum foot insoles reduce plantar forefoot pressure and increase foot comfort for motorcyclists. *Prosthet Orthot Int*. 2018 Dec;42(6):606-611
 - López López D, Losa Iglesias ME, Becerro de Bengoa Vallejo R, Palomo López P, Morales Ponce Á, Soria (2015). Optimal choice of footwear in the elderly population.. *Geriatr Nurs*. 2015 Nov-Dec;36(6):458-61
 - Sánchez-Sáez JM, Palomo-López P, Becerro-de-Bengoa-Vallejo R, Calvo-Lobo C, Losa-Iglesias ME, López- (). Stability of Three Different Sanitary Shoes on Healthcare Workers: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2019 Jun 16;16(12). pii: E2126
 - Casado-Hernández I, Becerro-de-Bengoa-Vallejo R, Losa-Iglesias ME, López-López D, Rodríguez-Sanz D, (2019). Electromyographic Evaluation of the Impacts of Different Insoles in the Activity Patterns of the Lower Limb Muscles during Sport Motorcycling: A Cross-Over Trial. *Sensors (Basel)*. 2019 May 15;19(10). pii: E2249
 - Sánchez-Gómez R, Bengoa-Vallejo RB, Losa-Iglesias ME, Calvo-Lobo C, Romero-Morales C, Martínez-Jimén (2019). Heel Height as an Etiology of Hallux Abductus Valgus Development: An electromagnetic Static and Dynamic First Metatarsophalangeal Joint Study.. *Sensors (Basel)*. 2019 Mar 16;19(6). pii: E1328
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Complementary	<ul style="list-style-type: none">- Kirby K. (1998). Foot and lower extremities biomechanics: A ten year collection of precision intricast newsletters.. Arizona: Precision Intricast Inc- Kirby K. (2003). Foot and lower extremities biomechanics II. Precision intricast newsletters, 1997-2002.. Arizona: Precision Intricast Inc- Kirby K. (2009). Foot and lower extremities biomechanics III. Precision intricast newsletters, 2002-2008.. Arizona: Precision Intricast Inc- Williams A, Nester C (2010). The pocket podiatry guide: footwear and foot orthoses.. London: Churchill Livingstone Elsevier- Kirby, K. A. (2000). Biomechanics of the normal and abnormal foot. . JAPMA, 90 (1), 30-35.
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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
General Podiatry/750G02110
Podiatric Orthopedics I/750G02115

Subjects that are recommended to be taken simultaneously

Podiatric Pathology I/750G02119
Podiatric Orthopedics II/750G02116
Diagnostic Imaging/750G02112

Subjects that continue the syllabus

Final Dissertation/750G02133
Practicum II/750G02135
Practicum III/750G02136
Practicum I/750G02134
Podiatric Pathology II/750G02120
Preventive Podiatry/750G02114
Clinical Orthopedics/750G02118
Sports Podiatry/750G02123
Diabetic Foot/750G02131

Other comments

Para o seguemento das diferentes metodoloxías na aula da materia recoméndase a utilización dun ordenador portátil que dispoña de conexión wifi. Asemade, ca finalidade de conquistar unha contorna inmediata sustentable e cumprir o obxectivo estratéxico; do Plan de Sustentabilidade Medio-ambiental Green Campus FEP, tódolos traballos documentais que se realicen nesta materia serán entregados a través de Moodle, en formato dixital, sen necesidade de imprimilos. De realizarse en papel teranse en conta as seguintes cuestións que aparecen a continuación:- Non se empregarán plásticos.- Realizaráanse impresións a dobre cara.- Empregarase papel reciclado.- Evitaranse imprimir borradores.

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