



## Information about the subject

**Degree:** Bachelor of Science Degree in Podiatry

**Faculty:** Faculty of Medicine and Health Sciences

**Code:** 470204 **Name:** Orthopodiatry II

**Credits:** 6,00 **ECTS Year:** 2 **Semester:** 2

**Module:** PODIATRIC PATHOLOGY, ORTHOPEDIC, PHYSICAL AND PHARMACOLOGICAL  
TREATMENTS

**Subject Matter:** Orthopodology **Type:** Compulsory

**Field of knowledge:** Health Sciences

**Department:** -

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

**Lecturer/-s:**

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## Module organization

### PODIATRIC PATHOLOGY, ORTHOPEDIC, PHYSICAL AND PHARMACOLOGICAL TREATMENTS

Subject Matter	ECTS	Subject	ECTS	Year/semester
Orthopodology	12,00	Orthopodiatry I	6,00	2/1
		Orthopodiatry II	6,00	2/2
Pathology	18,00	Dermatology	6,00	2/2
		General Pathology	6,00	2/1
		Podiatric Pathology	6,00	2/1
Therapeutics	12,00	Pharmacological Therapeutics	6,00	3/1
		Physical Podiatry	6,00	3/1

## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 Selects from the general medical history, the information needed to plan an orthopodologic treatment.
- R2 The student is able to design and apply an orthopedic treatment plan for each of the morphological and functional alterations of the foot.
- R3 Identifies the problems related to the application of an orthopodological treatment and its possible alternatives.
- R4 Relates and modifies the behavior of the lower limb with the application of plantar orthotics.
- R5 Integrates the knowledge acquired in the set of other areas of the curriculum.



## Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students demonstrate knowledge and understanding in an area of study that is at the core of general secondary education, and is often at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.		X		
CB3	Students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant social, scientific or ethical issues.			X	
CB4	Students convey information, ideas, problems and solutions to both specialized and non-specialized audiences.		X		
CB5	Students develop those learning skills necessary to undertake further studies with a high degree of autonomy.			X	
SPECIFIC		Weighting			
		1	2	3	4
CE46	Students know and develop the exploration techniques, to issue a diagnosis and prognosis, and to design the orthopodologic treatment plan of the lower limb pathology. Bone and ligament muscle trauma. Pathology of the forefoot and hindfoot. Congenital deformities. Neurological injuries. Amputations. Asymmetries				X
CE47	Students develop the ability and skill in the use of the instruments, material and machinery used for the preparation and application of orthopedic treatments. General concept of orthopedics. The orthopedic workshop. Technology of orthopodological therapeutic materials. Fundamentals and techniques for foot-leg moulding.				X



CE48 Students design, obtain and apply by means of different techniques and materials the plantar supports and digital orthoses, prostheses, splints. Plantar and digital orthoses. Study of footwear and shoe therapy. Prescription of orthopaedic treatments of the lower limb

X

TRANSVERSAL		Weighting			
		1	2	3	4
CT1	Analytical capabilities			X	
CT7	Problem solving			X	
CT8	Decision making			X	
CT10	Interdisciplinary teamwork		X		
CT14	Critical Reasoning			X	
CT15	Ethical commitment		X		
CT16	Autonomous learning			X	
CT17	Adaptation to new situations				X
CT18	Creativity			X	
CT21	Initiative and entrepreneurship		X		
CT22	Motivation for quality			X	



## Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5	50,00%	Tests
R1, R2, R3	15,00%	Practice (exercises, case studies, problems)
R1, R2, R3	35,00%	Practice exam- technical proficiency testing

### Observations

#### Minimum criteria to pass the subject of Orthotics II:

- Have exceeded 50% of each assessment instrument, to average.

#### Evaluation criteria:

To pass the subject it will be mandatory:

- Perform all evaluable activities on the platform.
- The pass is considered a minimum grade of 5 out of 10.
- Have passed the final and practical exam.

#### Theoretical evaluation (50%)

It will be carried out at the end of the course, through a final exam consisting of 50 objective multiple-answer questions (type test).

- The wrong answers penalize according to the formula:  $\text{Successes} - (\text{Errors} / \text{Answer No.} - 1) = X / (\text{No. of questions} / 10)$

The duration of the exam will be 75 minutes.

It is essential to have passed the exam in order to average with all the evaluation instruments.



The minimum grade to pass the written test will be 5 out of 10. If the written test is not passed, the note about 10 will appear on the intranet.

## Practical examination (35%)

It will be carried out at the end of the course, through a final exam that will consist of the completion of an element made during the internship. The exam will be evaluated according to rubric.

- Performing a complete plantar orthosis appropriate to the type of pathology that arises in the exam

The duration of the exam will be 60 minutes.

## Laboratory practices and directed cooperative work (15%)

- It will be compulsory to attend and pass the practical workshops carried out throughout the course. The workshops will be evaluated according to rubric.

- It will consist of carrying out a biomechanical examination of a patient, reaching a diagnostic judgment and an orthopedic treatment plan. Mold taking and plantar orthosis will be performed.

The grade of the exceeded parts will be saved for the second call of the same registration, whatever the grade obtained in the first call. In successive enrollments no partial notes of any evaluation element are kept.

## MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:



- M1 Theoretical classes (TC). Training activity preferably oriented to the acquisition of knowledge skills. It is characterised by the fact that students are spoken to. Also called master class or expository class, it refers to the oral exposition made by the teacher, (with the support of a blackboard, computer and cannon for the exposition of texts, graphics, etc.).
- M2 Seminars (S). Training activity preferably oriented to obtain knowledge application and research competences. Knowledge is built through interaction and activity. Consisting of supervised monographic sessions with shared participation (Teachers, students, experts). The size of the group is variable, from a large group to small groups, no less than 6 students for interaction. The evaluation will be made by means of follow-up records by the teacher. Participation and development of problem-solving skills should be taken into account.
- M3 Problems practice (CPP). Training activity oriented to group work for problem solving under the supervision of a teacher. The size of the group is variable, in a range of 10-20 students, to avoid confusion with a master class.
- M6 Laboratory Practice (CPL). Training activity of work in groups that is developed in the Laboratory. It includes the sessions where students actively and autonomously develop, supervised by the teacher, laboratory experiments. The size of the group is variable, in a range of 10-20 students.
- M7 Tutorials (T). Set of activities carried out by the teacher with personalised attention to the student or in small groups with the aim of reviewing and discussing the materials and topics presented in the classes, seminars, readings, completion of assignments, etc. The aim is to ensure that education is truly a comprehensive training of the student and is not reduced to a transfer of information. It is, therefore, a personalized relationship of help in which the teacher-tutor attends, facilitates and guides one or more students in the formative process.
- M8 Evaluation (Ev). It is the set of processes that try to evaluate the learning results obtained by the students and expressed in terms of acquired knowledge, capacities, developed skills or abilities and manifested attitudes. It covers a wide range of activities that can be developed for students to demonstrate their training (e.g. written, oral and practical tests, projects or assignments,). It also includes Official Calls.
- M10 Estudio del alumno: Preparación individual de lecturas, ensayos, resolución de problemas, seminarios



## IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons M1	R1, R2, R3, R4, R5	36,00	1,44
Practice lessons M3, M6	R2	21,00	0,84
Office Hours M7	R1, R2, R3	13,00	0,52
Evaluation M8	R1, R2, R3, R4, R5	5,00	0,20
<b>TOTAL</b>		<b>75,00</b>	<b>3,00</b>

## LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Autonomous work M10	R1, R2, R3, R4, R5	50,00	2,00
Group work M10	R1, R2, R3, R4, R5	25,00	1,00
<b>TOTAL</b>		<b>75,00</b>	<b>3,00</b>





## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

Content block	Contents
DIDACTIC UNIT I: Prosthesis	<ol style="list-style-type: none"><li>1.Lower limb prosthesis: history and classification.</li><li>2.Components and design of the prosthesis.</li></ol>
DIDACTIC UNIT II: Leg splints	<ol style="list-style-type: none"><li>1.Introduction to the lower limb splints.</li><li>2.Taking measures for the manufacture of lower limb orthoses.</li><li>3.Different types of ankle braces.</li><li>4.Walking aids</li></ol>
DIDACTIC UNIT III: Orthopedic treatments in pronation pathologies.	<ol style="list-style-type: none"><li>1.Pathologies with excess moments of pronating force</li><li>2.Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in pronation pathologies.</li></ol>
DIDACTIC UNIT IV: Orthopedic treatment of medium support deficit and supination pathologies.	<ol style="list-style-type: none"><li>1.Pathologies with excess moments of supinator force.</li><li>2.Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in pathologies of the middle support and supination.</li></ol>
DIDACTIC UNIT V: Treatment orthopedics of digital pathology and digitometatarsal	<ol style="list-style-type: none"><li>1.Digital and digitometatarsal pathology.</li><li>2.Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in digital and digitometatarsal pathologies.</li></ol>
DIDACTIC UNIT VI: Treatment orthopedic in plantar and posterior heel pain	<ol style="list-style-type: none"><li>1.Plantar and posterior heels</li><li>2.Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in plantar and posterior heel pain.</li></ol>



DIDACTIC UNIT VII: Treatment orthopedic foot risk

1. Risk foot. Rheumatoid arthritis, gouty foot and diabetic foot.

2. Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in foot risk. Substitute orthopodology.

DIDACTIC UNIT VIII: Treatment orthopodological of asymmetries.

1. Lower Limb discrepancy.

2. Analysis of the different techniques for making plantar supports, description of the biomechanical elements and materials used in Lower Limb discrepancy.

DIDACTIC UNIT IX: Resolution of clinical cases

1. Planning, design and performance of orthopedic treatment in a series of clinical cases.



## Temporary organization of learning:

Block of content	Number of sessions	Hours
DIDACTIC UNIT I: Prosthesis	2,00	4,00
DIDACTIC UNIT II: Leg splints	5,50	11,00
DIDACTIC UNIT III: Orthopedic treatments in pronation pathologies.	4,00	8,00
DIDACTIC UNIT IV: Orthopedic treatment of medium support deficit and supination pathologies.	4,00	8,00
DIDACTIC UNIT V: Treatment orthopedics of digital pathology and digitometatarsal	4,00	8,00
DIDACTIC UNIT VI: Treatment orthopedic in plantar and posterior heel pain	4,00	8,00
DIDACTIC UNIT VII: Treatment orthopedic foot risk	4,00	8,00
DIDACTIC UNIT VIII: Treatment orthopodological of asymmetries.	4,00	8,00
DIDACTIC UNIT IX: Resolution of clinical cases	6,00	12,00



## References

1. Becerro de Bengoa Vallejo R, Sanchez Gómez R, Losa Iglesias ME. Clinical improvement in functional hallux limitus using a cut-out orthosis. *Prosthet Orthot Int.* 2016 Apr;40(2):215-23.
2. Choi JY, Hong WH, Suh JS, Han JH, Lee DJ, Lee YJ. The long-term structural effect of orthoses for pediatric flexible flat foot: A systematic review. *Foot Ankle Surg.* 2020 Feb;26(2):181-188.
3. Choi JY, Lee DJ, Kim SJ, Suh JS. Does the long-term use of medial arch support insole induce the radiographic structural changes for pediatric flexible flat foot? - A prospective comparative study. *Foot Ankle Surg.* 2020 Jun;26(4):449-456.
4. Darwich A, Nazha H, Sliman A, Abbas W. Ankle-foot orthosis design between the tradition and the computerized perspectives. *Int J Artif Organs.* 2020 May;43(5):354-361.
5. de Paula GV, da Silva TR, de Souza JT, Luvizutto GJ, Bazan SGZ, Modolo GP, Winckler FC, de Oliveira Antunes LC, Martin LC, da Costa RDM, Bazan R. Effect of ankle-foot orthosis on functional mobility and dynamic balance of patients after stroke: Study protocol for a randomized controlled clinical trial. *Medicine (Baltimore).* 2019 Sep;98(39):e17317.
6. Evans AM. *Paediatrics (pocket podiatry)*. Mathieson I, editor. Churchill Livingstone; 2010
7. Fung J, Sherman A, Stachura S, Eckles R, Doucette J, Chusid E. Nonoperative Management of Hallux Limitus Using a Novel Forefoot Orthosis. *J Foot Ankle Surg.* 2020 Nov-Dec;59(6):1192-1196.
8. Jafarnezhadgero A, Madadi-Shad M, Alavi-Mehr SM, Granacher U. The long-term use of foot orthoses affects walking kinematics and kinetics of children with flexible flat feet: A randomized controlled trial. *PLoS One.* 2018 Oct 9;13(10):e0205187.
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12. Kirby KA. *Biomecánica del pie y la Extremidad Inferior: Colección de una década de artículos de Precision Intricast*. Payson: Precision Intricast; 1997.
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15. Kulig K, Reischl SF, Pomrantz AB, Burnfield JM, Mais-Requejo S, Thordarson DB, Smith RW. Nonsurgical management of posterior tibial tendon dysfunction with orthoses and resistive exercise: a randomized controlled trial. *Phys Ther.* 2009 Jan;89(1):26-37.
16. Lazzarini PA, Jarl G, Gooday C, Viswanathan V, Caravaggi CF, Armstrong DG, Bus SA. Effectiveness of offloading interventions to heal foot ulcers in persons with diabetes: a systematic



review. *Diabetes Metab Res Rev.* 2020 Mar;36 Suppl 1(Suppl 1):e3275.

17. Moisan G, Descarreaux M, Cantin V. Biomechanical effects of foot orthoses with and without a lateral bar in individuals with cavus feet during comfortable and fast walking. *PLoS One.* 2021 Mar 17;16(3):e0248658.

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### Web pages:

1. <http://www.podiatry-arena.com/>
2. <http://www.prolaborthotics.com/>
3. <http://www.orthoinfo.org/>
4. <http://www.podiatrytoday.com/>
5. <http://lermagazine.com/>



## Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

**Situation 1: Teaching without limited capacity** (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

**Situation 2: Teaching with limited capacity** (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

### 1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☐ Kaltura



## **Situation 3: Confinement due to a new State of Alarm.**

In this case, the following changes are made:

### **1. Educational Activities of Onsite Work:**

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☐ Kaltura

Explanation about the practical sessions:

The practical sessions will be adapted with different methodologies such as the resolution of clinical cases, bibliographic reviews on orthopedic treatments in different pathologies that endorse their use and viewing videos on the manufacture of orthotics and the writing of a memory of them.



## 2. System for Assessing the Acquisition of the competences and Assessment System

### ONSITE WORK

#### Regarding the Assessment Tools:



The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.



The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used
Examen teórico	60	Debido a la mayor profundidad en el temario que se va a impartir	Plataforma UCV
Examen práctico	20	Se le pedirá al alumno que desarrolle el plan de tratamiento ortopodológico en un caso clínico propuesto. Dicho plan deberá estar correctamente justificado	Plataforma UCV. Teams
Actividades realizadas en referencia a las prácticas y/o contenidos teóricos	20	Se propone al alumno diferentes actividades relacionadas con el temario	Plataforma UCV Teams





The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

### Comments to the Assessment System:

Due to the methodology of the subject, where carrying out practices in a specialized workshop occupies a large part of the teaching load and the impossibility of being able to adapt them, said methodology is modified so that the skills of the subject can be acquired.

The student will fulfill most of the learning outcomes proposed in the subject.