COURSE DATA

DATA SUBJECT

Code: 34338
Name: Biomechanics and podiatric pathomechanics
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1208 - Degree in Podiatry	Facultat d'Infermeria i Podologia	2	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1208 - Degree in Podiatry	Biomechanics and pathomechanics of the lower limb	COMPULSORY

COORDINATION

BLASCO GARCIA CARLOS

SUMMARY

The subject \" Biomecánica and patomecànica podiatric **(cod 34338)** \" belongs to the module the IInd of the study plan of the degree in Chiropody, which is given in the first semester of the second course of the same one. The importance of this subject takes root in the fact that it has as aim value both the human march and the biped static position of the person, which implies that first they must be known and to identify the mechanisms that make the person possible to remain in position raised, that is to say, the anatomy to know muscle skeletal and how the action sinérgica of the muscular chains they do that the person could remain in foot and to walk, and in second, as fundamental element of the march, the characteristics must be known of the mobility of the joints involved in the above mentioned process, since they are the vertebral column in his set and the pelvis as central element of gravitation of the person, and finally the implication of the joints of the low extremities, which are the persons in charge of the horizontal despazamiento of the person: the joints of the hip, knee and ankle, as well as the rest of joints that compose the foot, last element this one directly responsible for the contact with the soil.

The importance of this set of described knowledge, it takes root directly in the later boarding of problems of support and biomecánicos on the part of the students as future professionals of the Chiropody. And it is that if the knowledge moves to the clinical area first, with the accomplishment of practices in the subject of Podiatric Integrated Clinic, and to the professional in second, when the students are already graduated, in Chiropody, most of the work comes given by the consultations on alterations in the supports of the foot,

which generate first clinical symptoms - the pain that demonstrate those who the bosses suffer it-, and in I do again clinical signs - principally queratósicos-. The chiropodists and chiropodists, must be capable of giving solution to these problems of an effective and efficient way.

This subject, with an educational load of 6 credits ECTS (**150 hours of teaching) o**f obligatory character, claims and must authorize to the student body the acquisition of the necessary knowledge, both theoretical and practical, for the holistic boarding of the human body as static element and dinámicco. For it, not only it is important to know to the perfection the anatomy of the foot, but in addition it is necessary to to relate the foot to the rest of the kinetic chain, that is to say, there has to be known the knee, the hip and the back, since a good functioning of all these anatomical structures makes possible that the human being is standing up and moves correctly. And analogous, an evil functioning of anyone of these components reverberates directly in the opposite. For all this, the Biomecánica and Patomecánica Podológica it is necessary to to study taking the foot as an integral part of the body, relating his functioning to that of the rest of the body.

Under this theoretical frame, the study of this subject will make the detection possible from the foot, from the rest of the low extremity and from the hip and back, of any problem that interyields in the balance of the body.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is useful that, during the course, the knowledge acquired in "Anatomy of the Lower Limbs II" is integrated.

COMPETENCES / LEARNING OUTCOMES

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Aplicar los conocimientos de exploración a casos reales, diferenciando los valores clínicos normales en bipedestación, decúbito, estática y dinámica con los patológicos

Desarrollar la habilidad de realizar estudios de la marcha humana, baropodometría electrónica y otros instrumentos de análisis, estableciendo valores de normalidad. Conocer la biomecánica así como los instrumentos de análisis aplicados en investigación.

Know the basics of biomechanics and kinesiology. Support theories. Human gait. Structural alterations of the foot. Postural alterations of the locomotive system with an impact on the foot and vice versa. Instruments for biomechanical analysis. Gender perspective in the biomechanical analysis of walking.

DESCRIPTION OF CONTENTS

0. Unit 0. Introduction to the subject

INTRODUCTION TO THE SUBJECT (TOPIC 1)

It consists of a single session (2h) aimed at informing and explaining the teaching plan of the course to students.

1. Thematic Unit I. Introduction to biomechanics, theoretical models and foot pathomechanics

Topic 1 (4h): Planes, axes of movement and functional joints of the foot

Topic 2 (4h): The physiological foot and the concept of load according to Root's Model

Topic 3 (4h): Pronated and supinated foot, rotational balance model and tissue stress model

Topic 4 (6h): Pathomechanics of the first ray and sagittal plane facilitation model

2. Thematic Unit II. Anamnesis, biomechanical and pathomechanical assessment, and complementary tests using innovative technologies

Topic 5 (6h): Assessment in non-weight-bearing, semi-weight-bearing, and weight-bearing positions

Topic 6 (8h): Gait analysis as a complementary test

Topic 7 (4h): Postural and dynamic assessment using a pressure platform and specialized software

Topic 8 (4h): Anamnesis in podiatric biomechanics and pathomechanics

Topic 9 (2h): Pediatric podiatric assessment

3. Thematic Unit III. Anamnesis and assessment in biomechanics and pathomechanics

Topic 9 (2h): Anamnesis in biomechanics and pathomechanics

Topic 10 (4h): Assessment in non-weight-bearing, semi-weight-bearing, and weight-bearing positions

Topic 11 (6h): Gait analysis as a complementary test

Topic 12 (6h): Postural and dynamic assessment using a pressure platform and software

4. Laboratory Practical Sessions

Practice 1: Articular and muscular assessment of the lower limb and spine (I) (2h)

Practice 2: Articular and muscular assessment of the lower limb and spine (II) (2h)

Practice 3: Non-weight-bearing and weight-bearing assessment (I) (2h)

Practice 4: Non-weight-bearing and weight-bearing assessment (II) (2h)

Practice 5: Specific assessment tests (I) (2h)

Practice 6: Specific assessment tests (II) (2h)

Practice 7: Gait assessment and pressure study (I) (2h)

Practice 8: Gait assessment and pressure study (II) (2h)

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	2,00
Theory	42,00
Laboratory	16,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	40,00
Independent study and work	20,00
Preparation of lessons	15,00
Preparation for assessment activities	12,50
Resolution of case studies	2,50
Total hours	**90,00**

TEACHING METHODOLOGY

The content will be delivered through participative lectures, group work via focus groups, and individual assignments.

EVALUATION

Assessment of the subject:

a. Theoretical content:

Worth 50% (5 points). Students may choose to answer the questions either orally or in writing. In both cases, a minimum score of 2.5 points is required to pass. Assessment will be based on a rubric made available in advance. Failure to reach the minimum will require retaking the exam in the second sitting, with a transcript mark of 4 points. If still not passed, the exam must be retaken the following year, and the grade will remain 4 points. Scores above 2.5 points will be kept for one academic year.

b. Laboratory practical content:

Worth 30% (3 points). Students must perform one of the practiced exercises. A minimum of 1.5 points is required to pass. If not achieved, the practical must be repeated in the second call, and a grade of 4 will be recorded. If the minimum is not achieved in the second call, both the exam and the practices must be repeated in the following academic year. Scores above 1.5 points will be valid for one academic year, and the student will not have to repeat the practical sessions.

c. Continuous personal work:

Five self-assessments will be carried out during the semester as the syllabus progresses. Each self-

assessment will be worth 1 point if at least 80% of the questions are answered correctly. Achieving 5 points will exempt the student from taking the theoretical exam. Only applies to the first call.

Scientific text analysis via focus groups:

Worth 20% (2 points). Students must submit a summary with the conclusions drawn from the focus group discussions in which they participated. This score cannot be recovered in the second call and will not be carried over to the next academic year. A minimum of 1 point is required in the first call. Assessment will be based on a rubric shared beforehand.

REFERENCES

- Michaud, T. C. Foot Orthoses and Other Forms of Conservative Foot Care. Newton Massachusetts. 1997.
- Valmassy, R. L. Biomechanics of the lower extremity. Mosby. 1996.
- Munuera, P. V. El primer radio: biomecánica y ortopodología. Santander: Exa Editores. 2009.
- Root, Menton L. Función normal y anormal del pie. Barcelona: Base. 2012.
- Kirby, K. Biomecánica del Pie y la Extremidad Inferior IV: Artículos de Precision Intricast, 2009-2013.
- Whitney, A.Taxonomía Triplanar de las Deformidades del Pie y de la Extremidad Inferior.
- Revista 1 Journal of American Podriatric Medical Association (JAPMA). www.japmaonline.org Revista 2: Journal of the American College of Orthopedics Foot & Ankle Orthopaedic & Medicine (The Foot). https://www.journals.elsevier.com/the-foot Revista 3: Podiatry Today www. podiatrytoday.com Revista 4: Revista Española de Podología https://www.revesppod.com