

**1. General information****Course:** SPORT BIOMECHANIC**Type:** ELECTIVE**Degree:** 399 - PODIATRY DEGREE**Center:** 16 - FACULTY OF SCIENCES OF THE HEALTH OF TALAVERA**Year:** 4**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 32530**ECTS credits:** 6**Academic year:** 2023-24**Group(s):** 60 61**Duration:** First semester**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** IVÁN BALTASAR FERNÁNDEZ - Group(s): 60 61

Building/Office	Department	Phone number	Email	Office hours
Facultad de Ciencias de la Salud/Despacho 1.11	ACTIVIDAD FÍSICA Y CIENCIAS DEL DEPORTE	926051680	Ivan.Baltasar@uclm.es	Wednesday and Thursday from 9:00 a.m. to 12:00 p.m. To request an appointment, please send an email.

2. Pre-Requisites

No prerequisites are required.

3. Justification in the curriculum, relation to other subjects and to the profession

The subject enables the acquisition of the necessary knowledge to describe body gestures and actions, as well as the interaction of individuals with the environment in different sports modalities from a biomechanical perspective. In this way, it provides an effective tool that contributes to the process of identifying the causes and preventing foot and lower limb injuries in individuals who engage in sports or physical activities regularly or sporadically. Furthermore, it contributes to the development of competencies and skills of podiatry professionals related to multidisciplinary work and communication with other professionals involved in physical preparation and physical-sport rehabilitation processes for injuries. Lastly, the subject also aims to deepen the understanding of the scientific method and problem-solving based on scientific evidence, as well as fostering reflection and critical awareness in the fields of sports biomechanics and podiatry.

4. Degree competences achieved in this course**Course competences**

Code	Description
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CE10	Acquire teamwork skills as a unit in which professionals and other personnel related to prevention, diagnostic evaluation and podiatric treatment are structured in a uni or multidisciplinary and interdisciplinary way.
CE12	Know, critically assess and know how to use biomedical information technologies and sources, to obtain, organize, interpret and communicate scientific and health information. Know the basic concepts of biostatistics and its application. Use the search and retrieval systems of biomedical information and understand and interpret scientific texts critically. Know the principles of the scientific method, biomedical research and clinical trial.
CE14	Know the fundamentals of biomechanics and kinesiology. Support theories. The human gait. Structural alterations of the foot. Postural alterations of the locomotor system with repercussion in the foot and vice versa. Instruments for biomechanical analysis.
CE20	Identify and analyze foot health problems in different environmental, biodynamic and social aspects, as well as learning about the evaluation of scientifically proven facts and the analysis of data in general, to apply Podiatry Based on Scientific Evidence.
CE21	Know and apply prevention strategies and health education in podiatry. Occupational health podiatry. Prevention of occupational risks in podiatry. Sanitation and disinfection. Podiatric health education methods. Design and evaluate health education programs. Preventive chiropody Anthropology of Health and Disease
CE22	To know and identify the foot and systemic pathological processes with podiatric repercussion, foot risk and the pathological clinical parameters of the structural and functional affections of the locomotor apparatus in decubitus, static and dynamic standing. Identify dermatological lesions and their treatment. Know and apply the specific pharmacology of podiatric use.
CE50	Develop social skills for communication and dealing with the patient and other professionals.
CE51	Establish an exchange of information with the various professionals and health authorities involved in the prevention, promotion and protection of health.
GC02	Know the structure and function of the human body, especially the lower extremity, semiology, mechanisms, causes and general manifestations of the disease and diagnostic methods of medical and pathological processes, interrelating general pathology with foot pathology.
GC04	Acquire adequate clinical experience in each of the podiatric contents, carried out in accrediting centers for the university training of Podiatry, promoting the interrelation and effective communication with patients, relatives and members of the multidisciplinary team.
GC05	Collaborate with health professionals specifically trained in the subject, in the adaptation and use of prostheses and necessary technical aids, according to the physical, psychological and social conditions of the patients.
GC07	Know, design and apply preventive programs related to podiatry and the promotion of podiatric care in the population.
GC08	Acquire work skills in educational and research environments, health care, as well as in uniprofessional and multi-professional teams. Advise in the development and implementation of care and education policies on topics related to prevention and podiatric assistance.

GC09	Critically evaluate the terminology, clinical trials and methodology used in research related to Podiatry.
GC11	Incorporate the ethical and legal principles of the profession in practice, always acting on the basis of compliance with deontological obligations, current legislation and praxis criteria, integrating social and community aspects in decision-making

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To describe the main gestures, actions, and movements that are part of different sports modalities.

To use documentation, statistics, computer science elements and general epidemiological analysis methods.

To draft reports using appropriate language and terminology to communicate with the various professionals and health authorities involved in the prevention, promotion and protection of health.

To independently use the instruments, materials and machinery used for biomechanical analysis that complements and/or forms part of the sports podiatry diagnosis and the application of physical treatments.

To relate symptoms to biomechanics alterations of the sports gesture.

Aplicar los principios biomecánicos a la práctica deportiva para mejorar la eficiencia y prevenir lesiones.

6. Units / Contents

Unit 1: INTRODUCTION TO THE SUBJECT.

Unit 1.1 Presentation and teaching plan of the subject

Unit 2: FUNDAMENTALS OF SPORTS BIOMECHANICS

Unit 2.1 Human movement from a biomechanical perspective. Introduction, objectives, and general concepts

Unit 2.2 Mathematical and physical foundations applied to sports movement

Unit 3: MECHANICS OF MUSCLE CONTRACTION

Unit 3.1 Mechanics and structure of muscles: mechanical model and muscle fiber

Unit 3.2 Types of muscle contraction

Unit 3.3 Plyometrics: stretch-shortening cycle

Unit 4: EQUILIBRIUM

Unit 4.1 Basic principles, concepts, and classification. Center of mass, center of gravity, and center of pressure

Unit 4.2 Stability and postural adjustments in different sports situations

Unit 4.3 Rebalancing strategies

Unit 5: MOVEMENT

Unit 5.1 Basic principles of dynamics and kinematics

Unit 5.2 Linear and angular kinematics and their relationship to sports movement

Unit 5.3 Energetics of sports movement

Unit 6: BIOMECHANICS OF SPORTS TECHNIQUES

Unit 6.1 Biomechanics of running

Unit 6.2 Biomechanics of cycling

Unit 6.3 Biomechanics of jumping

Unit 6.4 Biomechanics of team sports

Unit 6.5 Biomechanics of racket sports

Unit 6.6 Biomechanics of dance, gymnastics, and acrobatics

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB02 CB03 CB04 CE10 CE12 CE14 CE20 CE21 CE22 CE50 CE51 GC02 GC04 GC05 GC07 GC08 GC09 GC11	1.2	30	Y	N	Lessons taught by the teacher. Evaluated in the final test.
Workshops or seminars [ON-SITE]	Practical or hands-on activities	CB02 CB03 CB04 CE10 CE12 CE14 CE20 CE21 CE22 CE50 CE51 GC02 GC04 GC05 GC07 GC08 GC09 GC11	1.2	30	Y	Y	Seminars, workshops, and/or group practices for problem-solving and/or case studies. Completion of reports, assignments, practice sheets, or group reports. Students are required to attend all scheduled group activities (seminars, workshops, practices, etc.). In no case can the limit of 30% of justified absences be exceeded. Evaluated in the Portfolio. Recoverable but not repeatable
Writing of reports or projects [OFF-SITE]	Self-study	CB02 CB03 CB04 CE10 CE12 CE14 CE20 CE21 CE22 CE50 CE51 GC02 GC04 GC05 GC07 GC08 GC09 GC11	2.2	55	Y	N	Preparation of reports, papers, or assignments based on the reading of scientific articles. Evaluated in Projects. Not recoverable
Analysis of articles and reviews [OFF-SITE]	Reading and Analysis of Reviews and Articles	CB02 CB03 CB04 CE10 CE12 CE14 CE20 CE21 CE22 CE50 CE51 GC02 GC04 GC05 GC07 GC08 GC09 GC11	1.4	35	Y	N	Oral presentation of a novel scientific article related to one of the topics of the subject. The presentation date will be agreed upon during the first three weeks of the semester. Evaluated in Oral Presentation.

					Recoverable
Total:			6	150	
Total credits of in-class work: 2.4			Total class time hours: 60		
Total credits of out of class work: 3.6			Total hours of out of class work: 90		

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	40.00%	40.00%	The final test will be a multiple-choice test, and the scoring formula used is as follows: Final test grade = ((Correct answers - (Errors/2)) / Total number of questions) x 10
Portfolio assessment	20.00%	20.00%	Participation in workshops and seminars, along with the successful completion of reports, assignments, practice sheets, or group reports.
Projects	20.00%	20.00%	Completion of a final group project for the subject.
Oral presentations assessment	20.00%	20.00%	Oral and individual presentation of a scientific article
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The grading system in effect at any given time will be applied; currently, the evaluation regulations of UCLM, approved on May 23, 2022.

The overall evaluation will be based on the weighted average of the evaluation systems. The student must achieve a minimum of 40% in the final exam.

Non-continuous evaluation:

The grading system in effect at any given time will be applied; currently, the evaluation regulations of UCLM, approved on May 23, 2022.

The overall evaluation will be based on the weighted average of the evaluation systems. The student must achieve a minimum of 40% in each evaluation system (Final test, Portfolio, Project, and Oral presentation).

Specifications for the resit/retake exam:

The assessment of practical activities that have been successfully completed by the student will be retained for a maximum of two academic years from the current academic year, provided that the educational activities remain unchanged.

Specifications for the second resit / retake exam:

No evaluation criteria have been introduced

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
General comments about the planning: The temporal distribution of the different educational activities throughout the course will be adapted to the needs of the students and may vary depending on their progress and the criteria of the faculty involved in teaching the subject. The official academic calendar will be followed at all times	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Pedro Pérez Soriano	Metodología y aplicación práctica de la biomecánica deportiva.	Paidotribo	Barcelona	9788499107028	2018	
Anthony Blazeovich	Biomecánica deportiva: manual para la mejora del rendimiento humano.	Paidotribo	Badalona	978-84-9910-071-5	2011	
Roberto Hernández Corvo	Morfología funcional y deportiva: sistema locomotor.	Paidotribo	Barcelona	9788486475253	1989	
Marcos Gutiérrez Dávila	Fundamentos de biomecánica deportiva.	Síntesis	Madrid	9788490771921	2015	