

## 1. BASIC INFORMATION

<b>Course</b>	Osteomyoarticular Anatomy Applied to Physical Exercise
<b>Degree program</b>	Bachelor in Sport Sciences
<b>School</b>	Physical Activity and Sports Sciences and Physiotherapy
<b>Year</b>	1º
<b>ECTS</b>	6
<b>Credit type</b>	Core
<b>Language(s)</b>	Spanish and English
<b>Delivery mode</b>	Face-to-face
<b>Semester</b>	S2
<b>Academic year</b>	2024-2025
<b>Coordinating professor</b>	Silvia Burgos Postigo

## 2. PRESENTATION

The subject Osteomyoarticular Anatomy Applied to Physical Exercise in the Degree of Physical Activity and Sports Sciences is a fundamental course for understanding the structure, morphology, and functioning of the musculoskeletal system, as well as other systems involved in movement, exercise, and physical performance. This course helps students acquire competencies such as knowing and analyzing the structure of the human body, from a basic level of organization like tissues to the complex global organization of the human body (a set of systems). Additionally, it covers knowledge of the functional processes of the human body through the search and inquiry into scientific knowledge applied to physical education, physical health, and physical exercise. The subject is part of the basic courses that provide the biological, anatomical, and physiological foundations of human body movement. Specifically, this subject covers content related to anatomical terminology, contextualization of anatomical techniques to understand the human body, knowledge of the levels of organization of the body, as well as a detailed study of the structure and functionality of the musculoskeletal system. All this is applied to physical exercise (basic physical exercises, "simple," "compound," and "sequential" exercises).

In this course, students will gain an adequate theoretical and practical foundation on the anatomy of the musculoskeletal system, enabling them to understand and integrate the anatomical processes underlying movement in the human body. This will contribute to a better understanding of other basic subjects such as Biomechanics, Human Physiology, and Systematics of Movement, which are taught in the curricular development of the Degree.

### 3. LEARNING OUTCOMES

#### Knowledge

KON1. Identifies the anatomical structures and functions of the various systems of the human body and consider pathophysiology to determine its applicability and development through physical exercise.

- Identifies the anatomical structures that support and allow movement of the torso, and of the upper and lower hemispheres of the musculoskeletal system.
- Understands anatomical models of the joints and muscles associated with the functional anatomy of the musculoskeletal system.
- Identifies the anatomical structures of the joints involved in movement and in the primary sporting movements.
- Links the structure and arrangement of the skeletal muscles with the basic joint actions and with physical exercises for training physical abilities.

#### Skills

Sk01. Examines the anatomy and the functions of the various systems or structures and consider the extent to which they, along with pathophysiology, influence responses to physical exercise.

- Applies principles of the osteoarticular and muscle anatomy of the torso and extremities to both physical exercise and teaching in physical and sports education.
- Analyses variations in the anatomical and functional structures of people with physical and/or learning disabilities, and how they affect movement.

#### Competences

CP5. Develop the expertise to lead, plan and implement physical exercise and fitness programmes, and conduct technical/scientific evaluations of them, based on scientific evidence, in different fields, contexts and activities for the entire population, with a focus on particular groups such as senior citizens (the elderly), schoolchildren, people with disabilities and people with diseases, health problems or similar conditions (diagnosed and/or prescribed by a physician), taking into account gender and diversity considerations.

CP6. Develop the expertise to identify, communicate and apply anatomical, physiological and biomechanical scientific principles in order to develop and carry out appropriate procedures, strategies, initiatives, activities and guidance, as well as conduct technical/scientific evaluations of them; ultimately to prevent and/or minimise the health risks to which all groups of the population are exposed in the practice of physical activity and sport.

CP11. Analyse, identify, assess, promote, adapt and evaluate strategies, initiatives and activities that prompt the public to adopt active lifestyles and engage in the regular and healthy practice of physical activities, sports and exercises in an appropriate, effective and safe way; in a bid to improve their overall health, well-being and quality of life, and with a focus on particular groups such as senior citizens (the elderly), schoolchildren, people with disabilities and people with diseases, health problems or similar conditions (diagnosed and/or prescribed by a physician), taking into account gender and diversity considerations.

CP38. Digital competence. Use information and communication technologies to search for and analyze data, research, communicate and learn. COMP40. Teamwork. Cooperate with others in shared academic or professional objectives, participating actively, empathically and exercising active listening and respect for all members.

CP40. Teamwork. Cooperate with others in shared academic or professional objectives, participating actively, empathically and exercising active listening and respect for all members.

CP41. Critical analysis. Integrate analysis with critical thinking in a process of evaluating different ideas or professional possibilities and their potential for error, based on evidence and objective data that lead to effective and valid decision-making.

## 4. CONTENT

Topic 1. The osteoarticular, muscular and tendon system of the torso: practical applications to physical exercise and to teaching in physical and sports education

Topic 2. The osteoarticular, muscular and tendon system of the upper limbs: practical applications to physical exercise and to physical and sports education

Topic 3. The osteoarticular, muscular and tendon system of the lower limbs: practical applications to physical exercise and to physical and sports education

Topic 4. The neuromuscular pathways of the musculoskeletal system.

Topic 5. The operation of neuromuscular pathways of the musculoskeletal system during physical exercise.

Topic 6. Anatomical and functional analysis for people with physical and/or learning disabilities

## 5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Lecture
- Simulation
- Learning based on workshop/laboratory

## 6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

### Campus-based mode:

Learning activity	Number of hours
Lectures	10
Independent working	56
Debates and discussions	8
Tutorials	12
Practical application classes	20
Activities in workshops and/or laboratories	20
Preparation of reports and written documents	22
In-person assessment tests	2
<b>TOTAL</b>	<b>150</b>

## 7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

### Campus-based mode:

Assessment system	Weight
Workshop-laboratory practice notebook	45-50%
In-person assessment tests	40-50%
Reports and written documents	5-10%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

### 7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

### 7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

## 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
Activity 1: Osteomyoarticular anatomy of the axial skeleton, practical application.	Semana 4
Activity 2: Osteomyoarticular anatomy of the upper limb, practical application.	Semana 7
Activity 3: Osteomyoarticular anatomy of the lower limb, practical application.	Semana 10
Activity 4: Anatomical-muscular pathways of the locomotor system, practical application.	Semana 13
Activity 5: Anatomical-functional analysis, practical application.	Semana 16

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

## 9. BIBLIOGRAPHY

The main reference work for this subject is:

- Drake, R. L., Vogl, A. W., & Mitchell, A. M. (2010). Gray. Anatomía para estudiantes (2ª ed). London: Elsevier LTD. Retrieved from <https://search-ebSCOhost.com.ezproxy.universidadeuropea.es/login.aspx?direct=true&db=nlebk&AN=808906&lang=es&site=eds-live&scope=site>
- Michael, S., Schulte, E., & Schumacher, U. (2015). Prometheus: texto y atlas de anatomía (3a ed.) Madrid: Panamericana.
- Tortora, G. J. & Derrickson, B. (2014). Principios de anatomía y fisiología (13a ed., 1ª reimp.) Buenos Aires: Editorial Médica Panamericana.
- Weineck, J. (2004). La anatomía deportiva (4a ed.). Barcelona: Paidotribo

Reference multimedia work:

- <https://www.visiblebody.com/es>
- <http://www.adameducation.com/aiaonline>
- <https://www.anatontage.com/>
- Muscle&Motion: [https://www.muscleandmotion.com/log-in\\_page\\_strength\\_training/](https://www.muscleandmotion.com/log-in_page_strength_training/)
- <https://www.sciencedirect.com/book/9781483229249/atlas-of-human-anatomy#book-info>
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- <http://es.aclandanatomy.com.ezproxy.universidadeuropea.es/>
- <https://www.youtube.com/user/alsanagust>
- [http://www.felipeisidro.com/biblioteca-digital/8ingüíst-fisiología.](http://www.felipeisidro.com/biblioteca-digital/8ingüíst-fisiología)

The recommended Bibliography is:

- Tresguerres, J. Á. y López-Calderón, A (2009). Anatomía y fisiología del cuerpo humano. McGraw-Hill España, 2009. ProQuest Ebook Central, <https://ebookcentral-proquest-com.ezproxy.universidadeuropea.es/lib/laureatemhe/detail.action?docID=3195543>.
- García-Porrero, J. M. & Hurlé, J. (2012). Anatomía humana. Madrid: McGraw-Hill Interamericana

## 10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:

[orientacioneducativa@universidadeuropea.es](mailto:orientacioneducativa@universidadeuropea.es)

## **11. ONLINE SURVEYS**

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.