1. OVERVIEW

Subject area	Exercise Physiology II and Nutrition
Degree	Bachelor's Degree in Exercise and Sport Sciences
School/Faculty	Exercise and Sport Sciences and Physiotherapy
Year	4
ECTS	6 ECTS
Type	Compulsory
Language/s	Spanish / English
Delivery mode	On campus
Semester	S7, S8
Academic year	2024/2025
Coordinating professor	Elena Santana Sosa

2. INTRODUCTION

The importance of a proper diet in maintaining general overall health is now a well-established fact. As such, this subject area aims to give a general and basic overview for students to be able to give solid nutritional guidance and advice to the general public, especially in relation to physical activity.

The second part of the programme studies the physiological aspects, responses and adaptations in different groups of healthy people and people with illnesses who do physical exercise, and it explores the assessment of functional aerobic and anaerobic capacity through a range of case studies. Many decades have passed since professors Wasserman and McIlroy coined the term threshold of anaerobic metabolism. This term refers to a complex physiological event that we will try to understand over the course of the year. This subject area explores in greater depth and expands on the knowledge developed in Physiology of Exercise I, including an in-depth study of the physiological aspects of special groups of people and their responses and adaptations to exercise. It also aims to explain the fundamental aspects of prevalent illnesses that can be prevented and treated with physical exercise, where precise knowledge of the illness is needed to adapt the exercise programme accordingly. In addition, and through the assessment of case studies, students will develop the necessary skills to understand the data that can be obtained from functional assessments and their application.

By the end of the year, students should be able to understand and recognise whether a diet is balanced in nutrients or not, understand the existing scientific evidence in relation to the best diet, understand assessment tools and know how to analyse, in the physiology of exercise laboratory, the physiological parameters for analysing performance and assessing physical fitness.

3. SKILLS AND LEARNING OUTCOMES

Basic Competencies:

- **CB1:** Students must demonstrate that they possess and understand knowledge in a field of study that builds upon general secondary education. This knowledge is typically at a level that, while supported by advanced textbooks, also includes aspects incorporating knowledge from the forefront of their field of study.
- **CB2:** Students must be able to apply their knowledge professionally to their work or vocation and possess the competencies typically demonstrated through the development and defense of arguments and problem-solving within their field of study.

- **CB3:** Students must have the ability to gather and interpret relevant data (usually within their field of study) to make judgments that include reflection on socially, scientifically, or ethically relevant issues.
- **CB4:** Students must be able to convey information, ideas, problems, and solutions to both specialized and non-specialized audiences.
- **CB5:** Students must have developed the learning skills necessary to undertake further studies with a high degree of autonomy.

Transversal Competencies:

- **CT1: Autonomous Learning** – Ability to choose the strategies, tools, and timing that are most effective for learning and independently applying acquired knowledge.
- **CT4: Analytical and Synthetic Thinking** – Ability to break down complex situations into their constituent parts and evaluate alternative perspectives to find optimal solutions. Synthesis seeks to reduce complexity to better understand and/or solve problems.
- **CT8: Information Management** – Ability to search for, select, analyze, and integrate information from diverse sources.
- **CT12: Critical Thinking** – Ability to analyze an idea, phenomenon, or situation from different perspectives and adopt a personal, well-founded stance based on rigor and objective reasoning rather than intuition.

Specific Competencies:

- **CE4:** Ability to analyze and apply physiological, biomechanical, psychological, and social principles to various fields of physical activity, sports, and recreation.
- **CE5:** Ability to identify inappropriate practices that pose health risks in order to prevent and correct them in different population groups.
- **CE6:** Ability to assess physical fitness and motor skills by prescribing and designing exercise programs aimed at health across different age groups.
- **CE7:** Ability to promote and evaluate sustainable and autonomous habits of physical activity and sports practice oriented toward health.

Learning outcomes (RA, by the acronym in Spanish):

Specific applications of the physiology of exercise. To act professionally when using equipment and following safety protocols during laboratory work. Production of essays for the study of the advanced physiology of exercise and nutrition in sport. To produce in-depth analysis and summaries based on key literature about the advanced physiology of exercise and nutrition in sport.

- RA1. To understand, summarise, analyse and critique scientific articles
- RA 2. To understand scientific method
- RA3. Discussion of case studies: To know if a diet is balanced and to create a diet
- RA4. To use basic equipment in the physiology of exercise laboratory
- RA5. To interpret a laboratory test
- RA6. To know how to do up-to-date literature searches for subsequent use in professional development

The following table shows how the skills developed in the course match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CB3, CT1, CT4, CE4, CE6	RA 1. To understand fundamental concepts related to how the human body responds and adapts to well-structured and measured doses of exercise
CB2, CT1, CE5, CE6	RA 2. To act professionally when using equipment and following safety protocols for laboratory work, specifically in relation to physiology.
CB2, CB3, CB4, CT1, CT6, CT12, CE4	RA 3. To produce in-depth analysis and summaries based on searches of key literature about the fundamental aspects of human physiology.
CB2, CB4, CT1, CT4, CT6, CE4	RA 4. To carry out projects that help students to write and summarise information related to the physiology of exercise

4. CONTENTS

1.1. FUNCTIONAL ASSESSMENT: CONCEPT OF MAXIMAL OXYGEN CONSUMPTION (VO2 MAX) – Practical/theory seminars (with laboratory work)

1.2. FUNCTIONAL ASSESSMENT: CONCEPT OF MUSCLE EFFICIENCY AND OXYGEN

CONSUMPTION KINETICS IN SUBMAXIMAL EXERCISES – Practical/theory seminars (with laboratory work)

1.3. FATIGUE

1.4. CLINICAL PATHOPHYSIOLOGY OF EXERCISE. Theory and cases

5. TEACHING/LEARNING METHODS

The types of teaching-learning methods are as follows:

- Case studies.
- Problem-based learning.
- Simulation environments

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On campus:

Learning activity	Number of hours
Lectures (on campus)	15
Asynchronous lectures (on campus)	8
Debates and discussions (on campus)	5

Searching for resources and choosing sources of information (on campus)	34
Essays, text commentaries and critical text analysis (on campus)	20
Group activities (seminars, forums) (on campus)	10
Case studies/workshop activities (on campus)	25
Case studies (on campus)	25
Tutorials (on campus)	8
TOTAL	**150**

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

On campus:

Assessment system	Weighting
On – campus Knowledge test	60%
Case study/problem	20%
Assessment of reports and written work	20%

On the Virtual Campus, when you open the subject area, you'll find details of your assessment activities, including the submission dates and assessment procedures for each activity.

7.1. Ordinary exam period

To pass the subject area in the ordinary exam period you must obtain a grade higher than or equal to 5.0 out of 10.0 in the final grade (weighted average) for the subject area.

In any case, you will need a grade of at least 5.0 in the final test for it to be included in the weighting with the other activities.

7.2. Extraordinary exam period (resits)

To pass the subject area in the extraordinary exam period, you must achieve a final grade of at least 5.0 out of 10.0 (weighted average) for the subject area.
In any case, it is necessary that you obtain a grade higher than or equal to 5.0 in the final exam, so that it can be averaged with the rest of the activities.
Any activities not passed in the ordinary exam period must be submitted after receiving the relevant corrections and feedback from the teacher. Students must also submit any activities that were not submitted in the first place.

8. TIMELINE

This section presents the timeline and submission dates for the assessable tasks in this subject area.

Assessable tasks	Date
Case study: Analysis and creation of a nutrition plan	Weeks 2
Group/individual creation and presentation of a nutrition project	Weeks 4
Group/individual creation and presentation of a project on the physiology of exercise	Weeks 8
Case study: Energy expenditure	Weeks 11
Case study: Effort test	Weeks 14-16
Case study: Advanced physiology of exercise	Weeks 18
OBJECTIVE TEST	Week 20

The timeline may be subject to change for logistical reasons related to the activities. Students will be informed of any changes in due time and course.

9. BIBLIOGRAPHY

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10. DIVERSITY AWARENESS 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.

11. STUDENT SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, degree courses and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the course.

Many thanks for taking part.