

## 1. BASIC INFORMATION

<b>Course</b>	Designing exercise programs for cardio-metabolic diseases
<b>Degree program</b>	Bachelor in Sport Sciences
<b>School</b>	Medicine, Health and Sports
<b>Year</b>	4º
<b>ECTS</b>	6
<b>Credit type</b>	Optative
<b>Language(s)</b>	Spanish and English
<b>Delivery mode</b>	Face-to-face
<b>Semester</b>	S8
<b>Academic year</b>	2027-2028
<b>Coordinating professor</b>	Tamara Iturriaga Ramírez

## 2. PRESENTATION

The design of physical exercise programs for patients with specific medical conditions such as metabolic diseases (diabetes, obesity and cardiovascular diseases) is an area of great relevance in the field of exercise and health, due to the high prevalence of these diseases worldwide. This course aims to provide students with the knowledge, skills and competencies necessary to develop, implement and evaluate exercise programs tailored to the individual needs of these patients.

Students will study the medical characteristics of these diseases, the importance of exercise, the functional assessment of these patients and the individualization of physical exercise according to the special needs of each pathology.

The course will combine theoretical classes, practical workshops in the training laboratory and exercise physiology. Active participation of students will be encouraged through discussions, presentations and group work. In addition, technological resources and continuous evaluation tools will be used to ensure a comprehensive and updated training.

## 3. LEARNING OUTCOMES

### Knowledge

KN3. Describes geared towards prevention, adaptation and improvement of physical and sporting performance and health through physical condition and exercise.

- Identifies key aspects of physical exercise programmes for diabetes
- Identifies key aspects of physical exercise programmes for obesity
- Identifies key aspects of physical exercise programmes for cardiovascular disease

**Skills**

SK02. Designates exercise-related tasks, progress indicators and strategies to promote health and sports performance based on individual variables and environmental conditions.

- Develops physical exercise programmes for people with diabetes
- Develops physical exercise programmes for people with obesity
- Develops physical exercise programmes for people with cardiovascular diseases

**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.

CP12. Design, promote, advise on and implement appropriate and diverse physical activity, exercise and sports programmes, and conduct technical/scientific evaluations of them. These programmes must be tailored to the needs, requirements and characteristics of individuals and groups within the entire population, with a focus on senior citizens (the elderly), women, diverse populations, schoolchildren, people with disabilities and people with diseases, health problems or similar conditions (diagnosed and/or prescribed by a physician).

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.

CP42. Resilience. Adapt to adverse, unexpected situations that cause stress, whether personal or professional, overcoming them and even turning them into opportunities for positive change.

## **4. CONTENT**

Topic 1. The benefits of physical exercise programmes for diabetes

Topic 2. Physical exercise recommendations for diabetes and practical application

Topic 3. The benefits of physical exercise programmes for obesity

Topic 4. Physical exercise recommendations for obesity and practical application

Topic 5. The benefits of physical exercise programmes for cardiovascular diseases

Topic 6. Physical exercise recommendations for cardiovascular diseases and practical application

## 5. TEACHING-LEARNING METHODOLOGIES

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

- Lecture
- Case method
- Learning based project

## 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	12
Practical application classes	18
Independent work	56
Debates and colloquiums	8
Tutorials	12
In-person assessment tests	2
Cases analysis	22
Designing strategies and intervention plans	20
<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
In-person assessment tests	40-50%
Case/Problem	25-30%
Designing strategies and intervention plans	25-30%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you must 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
LA1: Functional assessment of diabetic's patients	Week 2
LA2: Design and practical application of exercise program in diabetics patients	Week 4
LA3: Functional assessment of obese patients	Week 7
LA4: Design and practical application of exercise program in obese patients	Week 9
LA5: Functional assessment of cardiovascular disease patients	Week 12
LA6: Design and practical application of exercise program in cardiovascular disease patients	Week 14

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:

- Organización Mundial de la Salud: <http://www.who.int/es/>
- American Diabetes Association (ADA): <https://diabetes.org/>
- American Heart Association (AHA): <https://professional.heart.org/en/communities/cardiometabolic-health-and-diabetes>
- Facilitating behavior change and well-being to improve health outcomes: standards of medical care in diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S60-S82. PMID: 34964866 [pubmed.ncbi.nlm.nih.gov/34964866/](https://pubmed.ncbi.nlm.nih.gov/34964866/).
- Eckel RH, Jakicic JM, Ard JD, et al. 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines. Circulation. 2014;129(25 Suppl 2):S76-S99. PMID: 24222015 [pubmed.ncbi.nlm.nih.gov/24222015/](https://pubmed.ncbi.nlm.nih.gov/24222015/).
- Lundgren JA, Kirk SE. The athlete with diabetes. In: Miller MD, Thompson SR, eds. DeLee, Drez, & Miller's Orthopaedic Sports Medicine. 5th ed. Philadelphia, PA: Elsevier; 2020:chap 18.
- Battista, F., Ermolao, A., van Baak, M. A., Beaulieu, K., Blundell, J. E., Busetto, L., ... & Oppert, J. M. (2021). Effect of exercise on cardiometabolic health of adults with overweight or obesity: Focus on blood pressure, insulin resistance, and intrahepatic fat—A systematic review and meta-analysis. Obesity Reviews, 22, e13269.
- Eurobarómetro: [http://ec.europa.eu/spain/sobre-la-ue/euro-barometro/index\\_es.htm](http://ec.europa.eu/spain/sobre-la-ue/euro-barometro/index_es.htm)
- Instituto Nacional de Estadística: <http://www.ine.es/>

Recommended scientific articles for students will be provided, in each class presentation.

## 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 student's 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 mean 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 opportunity 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.