1. OVERVIEW

Subject Area	Pathophysiology
Degree	Bachelor's Degree in Human Nutrition and Dietetics
School/Faculty	Faculty of Biomedical Sciences
Year	2nd year
ECTS	6 ECTS (150 h)
Type	Compulsory
Language(s)	Spanish
Delivery Mode	On-campus/blended
Semester	4th semester
Coordinating professor	Dr Raquel Frías García

2. INTRODUCTION

'Pathophysiology' (6 ECTS credits) is a compulsory subject area that in Module 4 of Nutrition, Dietetics and Health Sciences (36 ECTS credits) within the Bachelor's Degree in Human Nutrition and Dietetics at Universidad Europea de Madrid (UEM).

It is delivered in the **2nd year** in the **4th semester** of the whole degree and has the following objectives:

- Be familiar with the concepts of health and illness.
- Study of the different ways a person can become ill. Understand how the body's general functioning is affected in response to an internal or external attack, regardless of the type of causal agent.
- Understand the aetiology and pathogenesis of the main syndromes affecting humans and the most prevalent pathological processes. Study in depth the aetiopathogenic mechanisms involved in the development of diseases that affect different body systems and apparatuses.
- Understand the pathophysiology of the main organs and body systems. Identify the body's compensatory mechanisms to support the functioning of the different apparatuses and systems in the event of illness.
- Examine diagnostic tests and physiology records. Know the main techniques of functional assessment and the clinical semiotics of the body's various apparatuses and systems.
- Be able to understand and take a clinical history: anamnesis, physical examination, additional examinations, clinical judgement and treatment.

- Determine the importance of the pathophysiological mechanisms underlying the development of different diseases, as a basis for the development of specific nutritional strategies that help towards to their treatment.

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by the acronym in Spanish):

- **CB2:** Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- **CB3:** Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.
- **CB4:** Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
- **CB5:** Students have developed the learning skills necessary to undertake further study in a much more independent manner.

General skills (CG, by the acronym in Spanish):

- **CG13**: Understand and assess the relationship between food and nutrition in situations of health and situations of illness.
- **CG15:** Design and implement protocols for assessing nutritional status, identifying nutritional risk factors.
- **CG16:** Interpret a nutritional diagnosis, assess the nutritional aspects of a patient's medical record and implement a diet plan.

Cross-curricular skills (CT, by the acronym in Spanish):

- **CT1:** Communication. Ability to engage in active listening, ask questions and respond in a clear and concise way, as well as to effectively express ideas and concepts. This includes concise and clear written communication.
- **CT2:** Leadership. Ability to offer ideas, approaches and interpretations through strategies which offer solutions to real-life problems.
- **CT3:** Teamwork. Ability to integrate and collaborate actively with other people, areas and organisations to reach common goals, evaluate and integrate contributions from the rest of the group members and create a good working environment.
- **CT6:** Problem solving. Ability to resolve an unclear or complex issue or situation which has no established solution and requires skill to reach a conclusion.
- **CT7:** Decision making. Ability to choose between different options or methods to effectively solve different problems or situations.
- **CT9:** Ability to put knowledge into practice, using the skills acquired in the classroom to mock situations based on real life experiences that occur in the relevant profession.

Specific skills (CE, by the acronym in Spanish):

- **CE107:** Be familiar with the concept of health and illness, as well as the aetiology and pathogenesis of the main disorders that affect humans. Common pathological processes.
- **CE108:** Understand the pathophysiology of the main organs and body systems, as well as the main diagnostic tests.
- **CE109:** Understand the importance of and know how to take a clinical history: anamnesis, physical examination, additional examinations, clinical judgement and treatment.

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

- **RA1:** Know how to apply physiological knowledge in order to understand functional abnormalities.
- **RA2:** Learn about the pathophysiology of human organs and body systems, as well as the pathophysiological factors of nutrition-related diseases.
- **RA3:** Acquire basic knowledge in order to understand the mechanisms that give rise to major diseases, recognising and identifying the main clinical manifestations, with human nutrition in mind.
- **RA4:** Know how to read a clinical history using the correct terminology.

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

Skills	Learning outcomes
• **CB2, CB3, CB4, CB5** • **CG13, CG15, CG16** • **CT1, CT2, CT3, CT6, CT7, CT9,** • **CE107**	**RA1:** Know how to apply physiological knowledge in order to understand functional abnormalities.
• **CB2, CB3, CB4, CB5** • **CG13, CG15, CG16** • **CT1, CT2, CT3, CT6, CT7, CT9,** • **CE108**	**RA2:** Learn about the pathophysiology of human organs and body systems, as well as the pathophysiological factors of nutrition-related diseases.
• **CB2, CB3, CB4, CB5** • **CG13, CG15, CG16** • **CT1, CT2, CT3, CT6, CT7, CT9,** • **CE108**	**RA3:** Acquire basic knowledge in order to understand the mechanisms that give rise to major diseases, recognising and identifying the main clinical manifestations, with human nutrition in mind.
• **CB2, CB3, CB4, CB5** • **CG13, CG15, CG16** • **CT1, CT2, CT3, CT6, CT7, CT9,** • **CE109**	**RA4:** Know how to read a clinical history using the correct terminology.

4. CONTENTS

The subject area is divided into **4 learning units (UA, by the acronym in Spanish)**, which are then each divided into 3 topics, making a total of **12 topics**.

Below are the details of the topics contained in each learning unit.

Unit 1. General Pathophysiology

- **Topic 1.** Introduction to human pathophysiology and general concepts.
- **Topic 2.** Pathophysiology of cell function, cell growth and defence systems.
- **Topic 3.** Non-specific reactions to an attack: Inflammation, fever and systemic responses to an attack.

Unit 2. Pathophysiology of the Circulatory System, Respiratory System, Blood and Haematopoietic Organs

- **Topic 4.** Pathophysiology and general pathogenesis of the circulatory system.
- **Topic 5.** Pathophysiology and general pathogenesis of the respiratory system.
- **Topic 6.** Pathophysiology and general pathogenesis of blood and haematopoietic organs.

Unit 3. Pathophysiology of Nutrition, Metabolism and Elimination.

- **Topic 7.** Pathophysiology and general pathogenesis of the digestive system, the liver and biliary tract.
- **Topic 8.** Pathophysiology and general pathogenesis of metabolism and nutrition.
- **Topic 9.** Pathophysiology and general pathogenesis of the kidneys and urinary tract.

Unit 4. Pathophysiology of the Endocrine System, Nervous System and Musculoskeletal System.

- **Topic 10.** Pathophysiology and general pathogenesis of the endocrine system.
- **Topic 11.** Pathophysiology and general pathogenesis of the nervous system.
- **Topic 12.** Pathophysiology and general pathogenesis of the musculoskeletal system.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lectures
- Collaborative learning
- Case studies
- Problem-based and project-based learning
- Learning based on workshops/labs

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	50
Independent working	40
Case studies	10
Group activities	10
Written reports and strategies	10
Workshops and/or lab work	10
Tutorials	14
Knowledge tests	6
TOTAL	**150 h**

Blended:

Learning activity	Number of hours
Reading of content	10
Online seminars	10
Independent working	70
Case studies	10
Group activities	10
Written reports and strategies	10
Workshops and/or lab work	10
Online tutorials	14
Knowledge tests	6
TOTAL	**150 h**

7. ASSESSMENT

The assessment methods, together with their respective weighting towards the final grade for the subject, are as follows:

On campus:

Assessment method	Weighting
Knowledge tests	50%
Laboratory work	20%
Submission of reports and essays	10%
Participation in debates	10%
Performance observation	10%
TOTAL	**100%**

Blended:

Assessment method	Weighting
Knowledge tests	40%
Laboratory work	20%
Submission of reports and essays	15%
Participation in debates	15%
Performance observation	10%
TOTAL	**100%**

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities, including the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The reference works for this subject area are:

- **Ball JW et al (2019)**. Guía Seidel de Exploración Física (9ª ed). *Editorial Elsevier.*
- **Bickley LS (2018)**. Bates Guía de Bolsillo de Exploración Física e Historia Clínica. *Editorial Wolters Kluwer*.
- **García-Conde Bru J, Merino Sánchez J, Macías González J (2015)**. Handbook – Semiología y Fisiopatología - CONDEpg. *Editorial Marbán*.
- **Laso FJ (2010).** Introducción a la medicina clínica. Fisiopatología y semiología (2ª ed). *Editorial Elsevier.*
- **Norris TL (2019)**. Porth Fisiopatología. Alteraciones de la salud, conceptos básicos (10ª ed). *Editorial Wolster Kluwer*.
- **Pastrana Delgado J & García de Casasola Sánchez G (2013).** Fisiopatología y Patología general Básicas para Ciencias de la Salud. *Editorial Elsevier.*

- **Pérez Arellano JL (2013).** Sisinio de Castro. Manual de patología general (7ª ed). *Editorial Elsevier-Masson.*
- **Prieto Baltueña JM (2016).** Noguer-Balcells. Exploración clínica práctica (28ª ed). *Editorial Elsevier-Masson.*
- **Riancho Moral JA (2014).** Introducción a la práctica clínica. *Editorial Elsevier.*