

**COURSE DATA****Data Subject**

Code	36359
Name	Physiology
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1212 - Degree in Gastronomic Sciences	Faculty of Pharmacy and Food Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
1212 - Degree in Gastronomic Sciences	2 - Fisiología	Basic Training

Coordination

Name	Department
PINEDA MERLO, BEGOÑA	190 - Physiology

SUMMARY

General Physiology is a basic subject in the Gastronomy Science Degree program. It is taught in the first half of first year of study. It consists of 6 ECTS credits and has both theoretical and experimental components.

This module considers the physiological function of the major mammalian organ systems. With an emphasis on the human body, the study deals with a specific order. It starts with cellular physiology to the study of the major body organs and systems. Using a combination of explanatory lectures and laboratory practical sessions, an integrated vision is offered, understanding the human body as a unit.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1212 - Degree in Gastronomic Sciences

- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Have knowledge and understanding in the field of gastronomic sciences.
- Be able to engage in new fields of gastronomy in general through independent study.
- Ser capaz de trabajar en equipo y de organizar y planificar actividades, teniendo en cuenta, siempre, una perspectiva de género.
- Elaborar y manejar los escritos, informes y procedimientos de actuación más idóneos para los problemas suscitados y utilizando un lenguaje no sexista.
- Ser capaz de realizar las aproximaciones requeridas con el objeto de reducir un problema hasta un nivel manejable.
- Conocer en el organismo humano el funcionamiento de los diferentes aparatos y sistemas de interés para las ciencias gastronómicas.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

- Understand human physiology from cellular physiology to the entire organism.
- Interpret the participation of each organ in the maintenance of the internal environment.
- Understand the organism as a unit.



DESCRIPTION OF CONTENTS

1. Introduction to the study of Physiology

Morphofunctional organization of the human body. Concept of internal environment and homeostasis.

2. Physiological basics of cell excitability

Membrane potential and action potential. Nerve impulse conduction. Synaptic transmission.

3. Physiological effectors

Concept and types of effectors. Excitation and contraction of skeletal, smooth and cardiac muscles.

4. Homeostasis and regulatory systems

Concept and types of regulatory mechanisms. Anatomic and functional organization of the nervous system. Autonomic Nervous System. Neuroendocrine integration. Hormones: definition and classification. Endocrine control of physiological functions.

5. Physiology of blood circulation

Components and general functions of the blood and the circulatory system. Regulation of cardiac function. Hemodynamics and blood pressure. Integration of cardiovascular function.

6. Respiratory physiology

General functions of the respiratory system. Diffusion and transport of gases. Regulation of ventilation.

7. Regulation of salt and water balance

Components and functions of excretory system. Filtration, reabsorption and secretion in the kidney. Integration with the cardiovascular function. Regulation of acid-base balance.

8. Digestive physiology

Anatomic and functional organization of the digestive system. Motility, secretion, digestion and absorption of the digestive system. Defecation.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	60,00	100
Development of group work	10,00	0
Development of individual work	5,00	0
Study and independent work	7,00	0
Preparation of evaluation activities	11,00	0
Preparing lectures	50,00	0
Preparation of practical classes and problem	5,00	0
Resolution of online questionnaires	2,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

The development of the subject as in class will include:

- 45 theory sessions:
- 38 sessions of master classes (1 hour/session).
- 2 tutoring sessions throughout the course (1 hour/session);
- 5 seminar sessions throughout the course, mandatory attendance (1 hour each), with the presentation of a of work carried out as a team and in computerized support.
- 3 sessions of laboratory practices:
- Practice of osmotic phenomena in cells (4 hours).
- Practice of Taste Sensation (2 hours).
- Practice of Iin vitro digestion (4 hours).
- 2 sessions of computer practices: They will be carried out with a computer. In one of the sessions the action potential (2 hours) will be studied and in the other the digestion processes (3 hours).

A memory or activities related to each of them will be requested from each practice, to be delivered within a week after each practice.

In addition, during the sessions will be indicated different examples of the applications of the contents of the subject in relation to the Sustainable Development Goals (SDGs), in addition to including them in the proposed topics for the coordinated seminars. It intend to provide students with the knowledge, skills and motivation to understand and address these SDGs.



EVALUATION

- Practices (10% of the final mark): they will be evaluated through the reports and practice activities that will be delivered after the completion of each one of them to be qualified. Attendance at practices is mandatory and necessary to pass the subject.
- Questionnaires (15% of the final mark): at the end of each unit, a brief questionnaire will be made about the theoretical content of each of them, with multiple answers and a single correct option. These tests are not eliminatory. In addition, the personal involvement of each student in the subject and the participation in activities proposed in class or through the Virtual Classroom will be taken into account.
- Teamwork (10% of the final mark): students will carry out work in teams that complements the knowledge that is acquired in class. The quality of the works and activities presented will be evaluated. Attendance at the seminars is necessary for evaluation in this section.
- Exam (65% of the final mark): The final exam will include the theoretical and practical contents of the complete subject and will be carried out according to the official calendar of the center. In this exercise a minimum of 50% of the maximum score must be achieved to pass the subject as well as in the final mark.

Students who do not achieve a passing grade in the first call will have to take an exam of all the theoretical and practical material of the course in the second call and the grade of the rest of the parts (practices, seminars, questionnaires) will be maintained.

The evaluation of this second call will be carried out in the same way as in the first call.

If a student does not complete all the practices and/or seminars, the grade will be Not Presented.

If a student does not pass the exam but passes the practical part, the grade will be saved for the following academic year.

REFERENCES

Basic

- Stuart I. Fox. Fisiología Humana. 14ª ed. Mc Graw Hill. 2017. Nueva York-
- Susan M. Barman, Heddwen I, Brooks y Jason X.-J. Yuan Kim E. Barret. Ganong. Fisiología Médica. 26ª ed. Mc Graw Hill. 2019. Nueva York.
- Dee Unglaub Silverthorn. Fisiología Humana. Un enfoque integrado. (8ª Ed.) Ed. Panamerica. 2019. Madrid.
- Fernández-Tresguerres J.A. et al. Fisiología Humana. 5ª Ed. Editorial: McGraw-Hill Interamericana. 2020.
- Pocock y Richards. Fisiología Humana. La base de la Medicina. (2ª Ed.) Ed. Masson, 2005.
- Thibodeau y Patton. Estructura y función del cuerpo humano. (15ª Ed.) Ed. Elsevier, 2017.
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- Mulroney y Myers. Netter. Fundamentos de Fisiología. (2ª Ed) Ed Elsevier, 2016



- Koeppen B.M. & Stanton B.A. (2018). Berne y Levy: Fisiología. 7ª ed. Elsevier.
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- Rhoades R.A., Bell, D.R. (2018) Fisiología médica. Fundamentos de medicina clínica. 5ª ed. Lippincott Williams.
- Conti F. Fisiología Médica. McGraw-Hill. 2010.
- Tortora y Derrickson. Principios de Anatomía y Fisiología. (13ªEd.) Ed. Panamericana, 2013.

Additional

- Referencia c1: Putz y Pabst. Atlas de Anatomía Humana Sobotta. (22ªEd.) Ed Panamericana, 2006
- Referencia c2: Yong y Heath. Wheaters Histología Funcional. (1ªEd) Ed Harcourt, 2000
- Referencia c3: Berg, Tymoczko y Stryer. Bioquímica. (2ªEd.) Ed. Reverté, 2014
- Referencia c4: Nancy Fernández. Manual de Laboratorio de Fisiología. (5ªEd) Ed Mc Graw Hill, 2011