

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

<b>Code</b>	33979
<b>Name</b>	Fisiologia General
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2020 - 2021

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1103 - Degree in Food Science and Technology	Faculty of Pharmacy and Food Sciences	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1103 - Degree in Food Science and Technology	7 - Physiology	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
MENA MOLLA, SALVADOR	190 - Physiology

**SUMMARY**

General Physiology is a basic subject in the Science and Food Technology 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

Knowledge in General Chemistry, Organic Chemistry, Biology and Physics subjects are recommended.

## OUTCOMES

### 1103 - Degree in Food Science and Technology

- Know the basic physiology of the human body from the molecular level to the full body, at the various stages of life.
- Learn to understand the body as a whole.
- Understand and interpret how each organ is involved in the maintenance of the constancy of the internal environment.
- Saber cómo plantearse problemas y utilizar los métodos adecuados para su resolución, siendo capaz de llevar a cabo un razonamiento crítico.
- Learn the fundamentals for using the scientific equipment directly related to their professional activity.
- Skills in analysis and synthesis.
- Ser capaz de trabajar en equipo y de organizar y planificar actividades.
- Ser capaz de llevar a cabo una comunicación oral o escrita.

## LEARNING OUTCOMES

Acquisition of the skills described in the previous section.

## DESCRIPTION OF CONTENTS

### 1. Introduction to the study of Physiology

Organización morfofuncional del cuerpo humano. Concepto de medio interno y 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 respiratory 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	38,00	100
Laboratory practices	10,00	100
Computer classroom practice	4,00	100
Tutorials	2,00	100
Seminars	2,00	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
<b>TOTAL</b>	<b>146,00</b>	

**TEACHING METHODOLOGY**

Development of the course:

- 38 lectures of theoretical contents, 1 hour/lecture.
- 3 practical classes of laboratory experiments,
  - 1: Osmotic phenomena in living organisms.
  - 2: Haematology.
  - 3: *in vitro* digestion.
- 1 computer lab session. Action potential will be studied through computer simulation.
- 2 in-class tutorial sessions throughout the course of mandatory attendance (1 hour/session).
- 2 seminars throughout the course of mandatory attendance (1 hour).
- Teamwork: a written report submitted in an electronic file.

Lab activities carried out through the virtual classroom.



## EVALUATION

- **Continuous assessment** (30% of final grade).
- Individual and teamwork (10% of final grade). An evaluation of the personal involvement of each student and the quality of work presented. Attendance at seminars is mandatory to be evaluated in this section.
- Practices (10% of the final grade) will be evaluated by the lab reports (virtual classroom activities). Attendance at practices is mandatory to pass the subject.
- 1 objective tests: a short multiple choice test (10% of final grade), including the theoretical content of the units 1-4. The test does not eliminate matter

**Acquisition of knowledge of the subject.** Exam (70% of final): final exam (according to the official school calendar), which includes theoretical and practical content of the subject. This exercise should reach at least 50% of the maximum score to pass the subject. Students who do not pass the first call have to do an exam of all theoretical and practical contents in the second call. Assessment of this second call will consider teamwork (10% of final grade) and the evaluation of lab reports (10% of final grade). If a student does not assist to the final exam will be marked like No Presented.

## REFERENCES

### Basic

- Fox. Fisiología Humana. (12ªEd.) Ed. McGraw-Hill Interamericana, 2011
- Ganong. Fisiología Médica. (23ªEd) Ed Mc Graw Hill, 2010
- Silverthorn. Fisiología Humana. Un enfoque integrado. (6ªEd.) Ed. Panamerica, 2014
- Tresguerres. Fisiología Humana. (4ªEd.) Ed Mc Graw Hill, 2010
- Pocock y Richards. Fisiología Humana. La base de la Medicina. (2ª Ed.) Ed. Masson, 2005
- Thibodeau y Patton. Estructura y función del cuerpo humano. (14ª Ed.) Ed. Elsevier, 2012
- Guyton. Tratado de Fisiología Médica. (12ªEd.) Ed. Elsevier, 2011
- Mulroney y Myers. Netter. Fundamentos de Fisiología. (1ªEd) Ed Elsevier, 2011
- Berne y Levy. Fisiología. (6ªEd.) Ed. Elsevier, 2009
- Rhoades y Tanner. Fisiología Médica. (1ªEd.) Ed. Masson, 1997
- Conti. Fisiología Médica. (1ª Ed.) Ed Mc Graw Hill, 2010
- Costanzo. Fisiología. (5ª Ed.) Ed. Elsevier, 2014
- Tortora y Derrickson. Principios de Anatomía y Fisiología. (11ªEd.) Ed. Panamericana, 2006





### **Additional**

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

### **ADDENDUM COVID-19**

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

#### **Volume of work and temporary planning of teaching**

The volume of work is maintained, but due to the COVID-19 pandemic, during the academic year 2020-2021 a hybrid model will be followed with classroom and non-classroom teaching, which may be modified to adapt to recommendations from health authorities and the rector's office. For this reason, the proposed activities may be replaced by videoconference sessions and activities through a virtual classroom.

Class schedules, either in person or by videoconference, will be carried out according to the course schedule.

#### **Teaching methodology**

Access to presentations and any other complementary material that the teacher considers (voiceovers, explanatory videos, etc.) will be given through the virtual classroom.

The videoconference sessions will be held at the original scheduled time for face-to-face classes using the tools available in the virtual classroom.

The theoretical classes will be taught in person or by videoconference at the assigned times according to the teachers' instructions. A priori, the face-to-face will be held during the first weeks of the course and from a certain moment by coordination recommendations of the Degree will be done by videoconference.

It is expected that the practical classes will be carried out in person with the required capacity restrictions and by carrying out support activities available in the virtual classroom.

As for the tutorials in the classroom, they will be carried out in person, as long as the sanitary conditions authorize. Otherwise, it would be replaced by activities through the virtual classroom.

Regarding the coordinated seminars, the presentations will be made by videoconference.

In addition, the virtual tutoring program is maintained through email, forum, etc.



## **Evaluation**

The mark for the course will be obtained from:  
10% coordinated seminar.

20% of multiple-choice questionnaires through a virtual classroom after having taught each of the 8 thematic blocks of the subject.

70% final exam grade. If the situation does not allow conducting face-to-face exams, the final exam will be carried out using a multiple-choice questionnaire scheduled in the virtual classroom at the time scheduled for the start of the exam.

The mark of the coordinated seminar and the questionnaires of the thematic blocks will only be considered when the grade for the final exam is equal to or greater than 50% of the maximum grade for the final exam and you have attended the rest of the course activities (practices, seminars and tutorials according to the classroom model indicated).

To pass the course, student must obtain at least 5 points.

If a person does not have the means to establish this connection and access the virtual classroom, they should contact the teaching staff by email at the time of publication of this annex to the teaching guide.