COURSE DATA

Data Subject	
Code	34070
Name	Physiology I
Cycle	Grade
ECTS Credits	6.0
Academic year	2018 - 2019

Study (s)

Degree	Center	Acad. year	Period
1201 - Degree in Pharmacy	Faculty of Pharmacy and Food Sciences	2	First term
1211 - D.D. in Pharmacy-Human Nutrition and Dietetics	Faculty of Pharmacy and Food Sciences	2	First term

Subject-matter

Degree	Subject-matter	Character
1201 - Degree in Pharmacy	18 - Physiology	Basic Training
1211 - D.D. in Pharmacy-Human Nutrition and Dietetics	1 - Asignaturas obligatorias del PDG Farmacia-Nutrición Humana y Dietética	Obligatory

Coordination

Name	Department
CARRETERO ASUNCION, JULIAN	190 - Physiology

SUMMARY

Physiology I is a four-month core-subject course in the Pharmacy Degree Program. It is taught in the first four-month period of the second year of study. It consists of 6 ECTS credits and has both theoretical and experimental components.

The overall objectives of this course are:

- To gain an understanding of normal human body functions which will provide a basis for the comprehension of other subjects (Pathophysiology, Biological and Diagnostic Laboratory Analysis, Pharmacology, etc.) Also to understand the effect of medications at the cellular, organ and organ-system levels.
- To train students in basic laboratory techniques and instrument skills, especially those that allow them to explore organ functions and interpret experimental data.

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 of Biology and Anatomy.

OUTCOMES

1201 - Degree in Pharmacy

- To possess and to understand the knowledge in the different areas of study included in the formation of the pharmacist.
- To apply this knowledge to the professional world, contributing to the development of Human Rights, democratic principles, principles of equality between women and men, solidarity, protection of the environment and promotion of a culture of peace with Gender perspective.
- To know how interpret, value and communicate relevant data in the different aspects of pharmaceutical activity, making use of information and communication technologies.
- Skill to communicate ideas, analyze problems and solve them with a critical mind, achieving team-working abilities and assuming leadership whenever required.
- Development of skills to update their knowledge and undertake further studies, including pharmaceutical specialization, scientific research and technological development, and teaching.
- To recognize personal limitations and the need to keep up to date professional competence, paying particular attention to the self-learning of new knowledge based on available scientific evidences.
- Skills for oral and written presentations.
- To develop habits of excellence and quality in the professional career.
- To know and understand the basic principles and laws that govern the function of our cells, organs, apparatus and systems.
- To know and understand the basic physiology of the human body, from the molecular level to the whole organism, in the different stages of life.

- To know and interpret how each organ participates in the maintenance of a constant internal environment.
- To know the mechanisms of regulation that control the different functions and the mutual interactions of the different corporal systems.
- To learn how to understand the organism as a whole.
- To use of the scientific bibliography of the subject.

LEARNING OUTCOMES

Acquisition of the capabilities described in the previous section.

DESCRIPTION OF CONTENTS

1. General and cellular Physiology

Introduction to the study of Physiology. General and cellular Physiology. Functional organization of the human body. Internal environment. Homeostasis. Body fluid compartments. Functions of cell membranes. Excitability. Action potential. Nerve impulse conduction. Synaptic transmission. Effectors. Excitation and contraction of skeletal, smooth and cardiac muscles. Functional organization of the nervous system. Autonomic nervous system.

2. Blood Physiology

Properties and functions of the blood. Erythrocytes. Regulation of erythropoiesis. Iron metabolism. Leukocytes. Blood group system. Hemostasis and blood coagulation.

3. Cardiovascular physiology

Functions of the cardiovascular system. Electrical and mechanical activity of the heart. Cardiac output. Regulation of cardiac function. Hemodynamics. Systemic circulation. Blood pressure. Capillary, venous and lymphatic circulation. Integration of cardiovascular function. Regulation of blood pressure. Pulmonary circulation. Circulation Through Special Regions.

4. Respiratory Physiology

Functions of the respiratory system. Mechanics of pulmonary ventilation. Pulmonary ventilation and alveolar ventilation. Gas exchange. Transport of gases in blood. Regulation of ventilation.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	38,00	100
Laboratory practices	14,00	100
Seminars	2,00	100
Tutorials	2,00	100
Development of group work	10,00	0
Development of individual work	2,00	0
Study and independent work	18,00	0
Preparation of evaluation activities	25,00	0
Preparing lectures	30,00	0
Preparation of practical classes and problem	5,00	0
TOTAL	**146,00**	

TEACHING METHODOLOGY

Development of the course:

- 38 Lectures of theoretical contents, 1 hour / lecture.

  - Lesson 1, General and cellular Physiology: 17 lectures.
  - Lesson 2, Blood Physiology: 6 lectures
  - Lesson 3, Cardiovascular physiology: 10 lectures.
  - Lesson 4, Respiratory Physiology: 5 lectures

- 4 practical classes of laboratory experiments:

  - 1: Osmotic phenomena in living organisms, 4 hours.
  - 2: Haematology, 4 hours.
  - 3: Blood pressure, electrocardiogram and auscultation, 4 hours.
  - 4: Spirometry, 2 hours.

- 2 in-class tutorial sessions throughout the course (1 hour/session).

- 2 seminars throughout the course (1 hour).

- Teamwork: a written report submitted in an electronic file.

- Lab reports submitted within one week of completing each practice.

EVALUATION

Continuous assessment (30% of final grade).

- 1 objective test: multiple choice test (15% of final score), according to the official school calendar and including the theoretical content of the unit 1.
- Teamwork (10% of final score). An evaluation of the personal involvement of each student and the quality of work presented.
- Practical classes (5% of the final score) will be evaluated for their achievement (personal and team work of each student) and by the lab reports that will be submitted after the completion of each practice for evaluation. Attendance at practices is mandatory.

Acquisition of knowledge. Exam (70% of the final score): final exam (according to the official school calendar), which includes content of the entire course. This exam must reach at least 50% of the maximum score to pass the course. In this first attempt, students who are not present for the final exam will appear on record as ‘no presentado’. Students who do not pass the first call have to do an exam of all contents in the second call. Assessment of this second call will consider teamwork (10% of final grade) and the evaluation of lab reports (5% of final grade). The student who does not present for the second attempt exam, will be given a grade of ‘suspenso’, with a numerical score equal to the sum of the scores of the section on teamwork plus the practical section.

REFERENCES

Basic

- Berne y Levy. Fisiología. Ed. Elsevier.
- Conti. Fisiología Médica. Ed Mc Graw Hill.
- Costanzo. Fisiología. Ed. Elsevier.
- Fox. Fisiología Humana. Ed. McGraw-Hill Interamericana.
- Ganong. Fisiología Médica. Ed Mc Graw Hill.
- Guyton. Tratado de Fisiología Médica. Ed. Elsevier.
- Mulroney y Myers. Netter. Fundamentos de Fisiología. Ed Elsevier.
- Pocock y Richards. Fisiología Humana. La base de la Medicina. Ed. Masson.
- Rhoades y Tanner. Fisiología Médica. Ed. Masson.

- Silverthon. Fisiología Humana. Un enfoque integrado. Ed. Panamerica.
- Thibodeau y Patton. Estructura y función del cuerpo humano. Ed. Elsevier.
- Tortora y Derrickson. Principios de Anatomía y Fisiología. Ed. Panamericana.

Additional

- Putz y Pabst. Atlas de Anatomía Humana Sobbota. Ed Panamericana
- Yong y Heath. Wheaters Histología Funcional. Ed Harcourt
- Berg, Tymoczko y Stryer. Bioquímica. Ed. Reverté