

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

Code	34071
Name	Physiology II
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	Second term
1211 - D.D. in Pharmacy-Human Nutrition and Dietetics	Faculty of Pharmacy and Food Sciences	2	Second 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 II is a four-month core-subject course in the Pharmacy Degree Program. It is taught in the second 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. Digestive Physiology.

Functions of the digestive system. Digestive processes in the mouth, pharynx and esophagus. Motility, gastric secretion and digestion. Pancreatic and biliary secretions. Liver Physiology. Motility, secretion, digestion and absorption in the small intestine. Motility, secretion and absorption in the colon. Defecation.

2. Renal Physiology

Functions of the kidneys. Glomerular filtration. Tubular functions. Water reabsorption and regulation of urine concentration. Regulation of acid-base balance. Physiology of the urinary tract. Urination.

3. Nervous system Physiology

Functions of the Nervous System. Performance levels of the Central Nervous System. Neural circuits. Sensory physiology. Somatic sensibility. Chemical senses. Vision. Hearing and equilibrium. Control of posture and locomotion. Behavioral and motivational mechanisms of the brain. Wakefulness and sleep. Higher Functions of the nervous system.

4. Endocrine System Physiology

Introduction to Endocrinology. Neuroendocrine integration. Hypothalamic- hypophysis axis. Adenohypophysis. Neurohypophysis. Pineal gland. Thyroid. Phosphocalcic Homeostasis. Adrenal cortex and medulla. Endocrine pancreas. Reproductive system.

**5. Skin Physiology**

Physiology of the skin. Regulation of body temperature.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	34,00	100
Seminars	12,00	100
Laboratory practices	10,00	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	148,00	

TEACHING METHODOLOGY

Development of the course:

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

- Lesson 1, Digestive Physiology: 7 lectures.
- Lesson 2, Renal Physiology: 5 lectures.
- Lesson 3, Nervous System Physiology: 10 lectures.
- Lesson 4, Endocrine System Physiology: 11 lectures.
- Lesson 5, Skin Physiology: 1 lecture.

- 3 practical classes of laboratory experiments:

- 1: In vitro digestion, 4 hours.
- 2: Evaluation of the sensory system, 3 hours.
- 3: Evaluation of the motor system, 3 hours.

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



- 12 seminars throughout the (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 content of the units 1 and 2.
 - 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 'suspensó', 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.
- Silverthorn. 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 Sobotta. Ed Panamericana
- Yong y Heath. Wheaters Histología Funcional. Ed Harcourt
- Berg, Tymoczko y Stryer. Bioquímica. Ed. Reverté