

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

| | |
|----------------------|---------------|
| Code | 34071 |
| Name | Physiology II |
| Cycle | Grade |
| ECTS Credits | 6.0 |
| Academic year | 2019 - 2020 |

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 course (1 hour/session).



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

EVALUATION

Continuous evaluation (25% of final score).

- Multiple choice test (10% of final score), according to the official calendar, and including the theoretical content of the Units 1 and 2.
- Seminars (Teamwork) (10% of final score). An evaluation of the personal involvement of each student and the quality of the presentation.
- Practical classes (5% of the final score) will be evaluated for their achievement (personal and team work of each student). Attendance at practices is mandatory. Unjustified assistance to any of the practice sessions implies failing the course.

Final evaluation, 1st call (75% of final score)

- Theoretical Exam (60% of the final score): multiple-choice test to be held on a date according to the official school calendar, which includes theoretical contents of the entire course. This exam must reach at least 50% of the maximum score to pass the course. In this first call, students who do not attend the final exam will appear on the records as 'no presentado'.
- Practical Exam (15% of the final grade). Multiple-choice test to be held in the same session as the theoretical exam, that will include the contents of the practice sessions. It will be necessary to reach at least 50% of the maximum score to pass this practical exam and incorporate the qualification to the final score.

Final evaluation, 2nd call.

Those students who do not pass the course in the 1st call, having suspended the theoretical and/or practical exam, must attend to the 2nd call of the corresponding part. If they reach at least 50% of the maximum score in each of the theoretical and practical exams, the final score will be calculated as follows: 70% theoretical exam, 15% practical exam, 10% team seminar, and 5% continuous evaluation of practical classes.

Students who do not attend to the 2nd call, will appear in the records as "suspense", with a numerical value equal to the sum of the activities. When they do not pass the course, realization of the practical sessions and the seminar teamwork will be optionally validated in the next academic year, only if they reached at least 50% of the maximum score in the practical exam, the seminar work, and the continuous evaluation of practical classes.



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

ADDENDUM COVID-19

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

1. Contents

The contents initially included in the Teaching Guide are maintained.

2. Volume of work and temporary planning of teaching

Maintenance of the total workload and ECTS credits established in the Teaching Guide. The number of scheduled sessions of both theory and tutorials is respected. When using video conferencing, the date and duration originally assigned will be respected.

3. Teaching methodology



Tools for adaptation to non-face-to-face theoretical teaching will include spoken materials, videoconferencing via Blackboard and self-assessment forms. For the two practices not taught in person (Sensitivity and Motility) didactic material has been prepared in the Virtual Classroom for its execution and interpretation. For tutorials you will use e-mail, discussion forums in the Virtual Classroom and video conferencing.

4. Evaluation

The percentages of the continuous (25%) and final (75%) assessment are maintained as set out in the Teaching Guide, and the distribution of the subparts is modified as follows:

Continuous assessment (25% of the final grade)

- Questionnaires (20% of the final grade) with multiple choice questions from the four modules (Digestive, Renal, Nervous and Endocrine), will be done online through Virtual Classroom with limited time and without penalty of failed questions.
- Practices (5% of the final grade): the attitude and the correct execution of the practical procedures will be evaluated. In the case of internships conducted virtually, the delivery of resolution of problems or issues will be valued.

Final assessment (75% of the final grade): a single final exam that will be conducted online through the Virtual Classroom and will include multiple-choice questions with a limited completion time.

5. Bibliography

The reference reference manuals in the Teaching Guide are maintained.