

26766 - Physiology III

Información del Plan Docente

Academic Year	2018/19
Subject	26766 - Physiology III
Faculty / School	104 - Facultad de Medicina 229 - Facultad de Ciencias de la Salud y del Deporte
Degree	304 - Degree in Medicine 305 - Degree in Medicine
ECTS	6.0
Year	2
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the acquisition of knowledge related to Physiology. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, and assignments.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course

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syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

4.2. Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (1,6 ECTS): 40 hours.
- Practice sessions (0,72 ECTS): 18 hours.
- Assignments (0,32 ECTS): 8 hours.
- Autonomous work (3,28 ECTS): 82 hours.
- Evaluation (0.08 ECTS): 2 hours.

4.3. Syllabus

Theoretical program:

The cardiovascular system

1. Functional properties of the myocardium. Electrical activity of the heart.
2. Cardiac cycle: periods. Atrial, ventricular, and arterial pressures. Heart sounds.
3. Physiological basis of the electrocardiogram. Waves, vectors and complexes. Normal values, and more frequent abnormalities.
4. Cardiac output. Extrinsic and intrinsic cardiac activity control.
5. General functions of the circulatory system.
6. Biophysics Circulation: Hemodynamics: volume, flow, pressure and resistance in the circulatory system. Reynolds number. Distensibility and vascular capacitance.
7. Biophysics of Circulation: Circulation in arteries and arterioles. Hemodynamics. Hagen-Poiseuille Law. Blood

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pressures. Periodic phenomena: Pulse wave. Blood viscosity.

8. Microcirculation: capillary-interstitial-lymphoid nodes. Exchange capillary dynamics. Lymphatic circulation. Edema.

9. Circulation in the venous system. Venous return. Central venous pressure.

10. Regulation of blood flow. Nervous and humoral mechanisms. Role of nitric oxide in the control of blood flow.

11. Regulation of blood pressure. Baroreceptors and chemoreceptors. Humoral regulation. Renal regulation.

12. Coronary circulation.

13. Splanchnic circulation. Muscular circulation.

Respiration

14. Pulmonary circulation.

15. Functional structure of the respiratory system. Functions of the pleura and pleural fluid.

16. Respiratory cycle. Respiratory types. Lung volumes and airflow. Alveolar ventilation. Ventilation-perfusion ratio

17. Respiratory mechanics. Respiratory muscles. Thoracic pressures.

18. Static and dynamic resistances of the respiratory system. Surfactant.

19. Gas exchange through the respiratory membrane

20. Blood gas transport

21. Control of breathing

The gastrointestinal system

22. Estructural features of the gastrointestinal system and its accessory structures

23. Neural and hormonal mechanisms in the gastrointestinal system

24. Motility in the gastrointestinal system

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25. Salivary secretion and digestion
26. Gastric secretion and digestion
27. Exocrine pancreatic secretion and digestion
28. Biliary secretion
29. Intestinal secretion and digestión
30. Intestinal absorption. Faeces

Laboratory practice program

1. Cardiac auscultation
2. Registration and basic interpretation of the electrocardiogram
3. Physiological basis of cardiopulmonary resuscitation
4. Cardiac ultrasound
5. Cardiovascular simulation
6. Pulmonary auscultation.
7. Arterial pressure and pulse rate
8. Spirometry
9. ABP: Acid-base balance
10. ABP: Abdominal pain
11. Cardiovascular adaptations to exercise
12. Respiratory adaptations to exercise

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13. Cardiovascular, respiratory and digestive aging

14. Supervised work

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the "Facultad de Medicina" website and the Degree website (<http://medicina.unizar.es>, <http://moodle2.unizar.es>).

Zaragoza

1st Call January 31, 2019

2nd Call September 10, 2019

[Huesca](#)

<https://fccsyd.unizar.es/horarios-y-calendarios-medicina>

4.5. Bibliography and recommended resources

<http://psfunizar7.unizar.es/br13/eBuscar.php?tipo=a>