

## 26766 - Physiology III

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	104 - Facultad de Medicina 229 - Facultad de Ciencias de la Salud y del Deporte
<b>Degree</b>	304 - Degree in Medicine 305 - Degree in Medicine
<b>ECTS</b>	6.0
<b>Course</b>	2
<b>Period</b>	First semester
<b>Subject Type</b>	Compulsory
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

#### **5.2.Learning activities**

#### **5.3.Program**

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### 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 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. Functional structure of the respiratory system. Functions of the pleura and pleural fluid.
15. Respiratory cycle. Respiratory types. Lung volumes and airflow. Alveolar ventilation.
16. Respiratory mechanics. Respiratory muscles. Thoracic pressures.

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

18. Pulmonary circulation. Ventilation-perfusion ratio

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

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 and pulmonary auscultation. Arterial pressure and pulse rate

2. Registration and basic interpretation of the electrocardiogram

3. Physiological basis of cardiopulmonary resuscitation

4. Cardiac ultrasound

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5. Cardiovascular and respiratory adaptations to exercise

6. Cardiovascular simulation

7. Spirometry

8. Acid-base balance

9. Supervised work

**5.4.Planning and scheduling**

**5.5.Bibliography and recommended resources**