

## 29201 - Human Physiology

### Información del Plan Docente

Academic Year	2016/17
Academic center	229 - Facultad de Ciencias de la Salud y del Deporte
Degree	441 - Degree in Human Nutrition and Dietetics
ECTS	9.0
Course	1
Period	Annual
Subject Type	Basic Education
Module	---

### 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

The program includes the following activities:

Participatory Lectures (60h).The theoretical program is divided in eight modules, with the following topics

## 29201 - Human Physiology

### General physiology

Concept of Physiology: Objectives and interest. Relationship with other sciences. Physiology in Nutritional studies  
Homeostasis. Transport through the cell membrane. Membrane potential. Action potential.  
Neuronal physiology: Synapse.  
Skeletal muscle physiology. Excitation-contraction coupling

### Neurophysiology

Introduction to the physiology of the nervous system.  
Sensory receptors  
Autonomic nervous system. sympathetic and parasympathetic system

### Renal physiology

Glomerular filtration. Renal clearance. Renal hemodynamics.  
Tubular function reabsorption and secretion. Concentration and dilution of urine.  
Regulation of volume and osmolarity of body fluids. Acid-base balance.

### Digestive physiology

Structure and functions of the digestive system. Enteric nervous system.  
Food intake, chewing and salivary secretion. Swallowing.  
Stomach. gastric secretion and regulation. of gastric motility  
Exocrine functions of the pancreas. Regulation of pancreatic secretion.  
Function of the liver and gallbladder  
Small intestine. Small intestinal motility. Absorption of the digestion products in the small intestine.  
Large intestine. Motility and defecation

### Physiology of blood

General characteristics and functions of blood. Plasma components  
Characteristics and functions of erythrocytes  
Types and functions of leukocytes. Immunity  
Hemostatic mechanisms. Platelets. Coagulation. Fibrinolysis

### Cardiovascular physiology

Physiology of the heart. Cardiac Electrophysiology.  
Mechanical activity of the heart. Cardiac cycle.  
Physiology of blood vessels. Systemic, capillary and lymphatic circulation.  
Control of cardiac activity and peripheral circulation. Blood pressure

### Respiratory physiology

## 29201 - Human Physiology

Respiration: pulmonary ventilation. Mechanics of breathing.  
Gas exchange in the lungs and tissues. Transport of respiratory gases.  
Regulation of breathing .Nervous and chemical control

### **Endocrine physiology**

General characteristics of the endocrine system. Mechanisms of hormonal action.  
Hypothalamic and pituitary hormones.  
Thyroid hormones.  
Hormones of calcium metabolism and phosphorus.  
Pancreatic hormones. Glycemic control  
The adrenal gland. Steroid hormones and catecholamines.  
Pineal gland or epiphysis. Melatonin ..  
Control of body temperature.  
Hormones of adipose tissue  
Control of intake: hunger-satiety  
Energy metabolism

### **Lab practices:**

The practical program of matter (32h) is divided into the following sessions throughout the course:  
Physiology laboratory and functional tests. Laboratory safety, biological hazards,  
waste control, quality control.  
Exploration of the nervous system I: sensitivity.

Exploration of the nervous system II: special senses.  
Exploration of the nervous system III: Reflexes  
Problem Based Learning (PBL) General / Nervous system  
Exploration of the renal system. Urinalysis I: osmolarity, concentration-dilution.  
Exploration of the renal system. Urinalysis II: urinary sediment.  
Exploration of the digestive system: Enzymes.  
Problem Based Learning (PBL) Renal / Digestive  
Exploration of sanguineous system: Hematocrit, Leukocyte formula and sanguineous groups

Exploration of the cardiovascular system I: normal electrocardiogram and cardiac auscultation.  
Exploration of the cardiovascular system II: Blood pressure and pulse.  
PBL: Blood / Cardiovascular  
Exploration of the respiratory system: spirometry.  
Hormonal examination: blood glucose curve.  
PBL: Respiratory / Endocrine

### **5.4.Planning and scheduling**

### **5.5.Bibliography and recommended resources**