



<b>Course Code</b> BIOL-112	<b>Course Title</b> Human Physiology / Φυσιολογία του Ανθρώπου	<b>Credits (ECTS)</b> 6
<b>Department</b> Life & Health Sciences	<b>Semester</b> Spring	<b>Prerequisites</b> None
<b>Type of Course</b> Required	<b>Field</b> Pharmacy	<b>Language of Instruction</b> Greek/English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 1 <sup>st</sup> year	<b>Lecturer</b> Christoforos Giannaki
<b>Mode of Delivery</b> face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

#### **Objectives of the Course:**

The aims of the course are to emphasize interrelationships of the human body systems, homeostasis and complementarily of structure and function. In particular, this course aims to outline the principles of human/mammalian physiology; general properties of the living cell and internal environment; neural, muscular, cardiovascular, respiratory, gastro-intestinal, renal and endocrine system; metabolism, reproduction and homeostasis. Further experience is gained through hands on experiments during laboratory sessions.

#### **Learning Outcomes:**

The primary goal of this course is to offer an in-depth presentation of the function of the major organs and organ systems of the human body. The course is designed to expand physiological concepts presented in prerequisite courses.

It is expected that the student will be able to:

- Understand the unique role of each organ and organ system in maintaining health.
- to describe the functions of the distinctive cells that comprise each major organ and when appropriate define the role of physiological functional units.
- to work on case studies in order to enhance the integration of material presented in class.
- to know the following areas of bodily function:
- Integration of the organ systems to maintain constancy of the internal environment
- Regulation of homeostasis by neuronal, endocrine, and local chemical messengers

- Role of the Autonomic Nervous System in regulating organ function
- Adaptive physiological responses to stress, infectious organisms, and toxins
- Changes in bodily function through the life span

**Course Contents:**

Organic compounds in physiology and their diversity; enzymes, cell organelles and their known functions.

- The cell membrane and its transport mechanisms; demonstration of selected passive and active transport processes.
- Blood components, cell types, immune system, autoimmunity, and allergy.
- Nerves, concepts in neural transmission, selected neural transmitters and their receptors.
- Central Nervous System – general overview of functions. Autonomic Nervous System.
- Skeletal muscle physiology; muscle contraction, fiber types, energy sources of muscle.
- Endocrine system: pituitary hormones, and secretions from selected glands.
- Cardiology: characteristics of cardiac muscle, intrinsic rhythm, regulation of heart, electrocardiogram.
- Hemodynamics of circulation: blood flow and pressure, capillary pressures and edema, homeostasis mechanisms.
- Pulmonary physiology: ventilation, gas exchange, hypoxia, lungs role in acid-base balance.
- Digestion: nutrient absorption, control of digestive tract, glands and their secretions.
- Basic metabolism of carbohydrates, fats, and protein, hormones affecting metabolism, diabetes.
- Renal physiology and fluid balance, kidney's role in maintaining a number of homeostatic functions.
- Reproductive physiology: ovarian cycle, selected male and female hormones controlling reproduction.

Laboratory work:

*Exercise 1:* Neuromuscular junction

*Exercise 2:* Assessment of Cardiorespiratory function

*Exercise 3:* Blood and blood cells

**Learning Activities and Teaching Methods:**

Lectures, class discussion, assignments, laboratory and laboratory reports

**Assessment Methods:**

Final Examination, Course work

**Required Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Tortora, G.J, &GrabowskiS.R.	Φυσιολογία του ανθρώπινου σώματος (τόμος 1 & 2)	ΕΛΛΗΝ	2007	97896028 69836

**Recommended Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Frederic H. Martini,Edwin F. Bartholomew	Essentials Of Anatomy & Physiology	Benjamin Cummings	2008	032157007 3
Netter F Susan E. Mulroney, Adam K. Myers	Βασικές Αρχές Φυσιολογίας του Ανθρώπου	Εκδόσεις Π.Χ. Πασχαλίδης	2010	978960489 0699
McDowell, Julie	Encyclopedia of Human Body Systems (Volume 1 & 2) <b>E-book</b>	Santa Barbara: Greenwood	2011	978031339 1750
<b>E-book- URL</b> <a href="http://search.ebscohost.com/login.aspx?direct=true&amp;db=nlebk&amp;AN=348630&amp;site=ehost-live">http://search.ebscohost.com/login.aspx?direct=true&amp;db=nlebk&amp;AN=348630&amp;site=ehost-live</a>				