

Faculty of Medicine / PHARMACY / PHISIOLOGY II

Course:	PHISIOLOGY II			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
7612	Mandatory	4	4	2+0+2
Programs	PHARMACY			
Prerequisites				
Aims	Students will learn functional relationship among organ systems, regulatory and control mechanisms that govern adaptation of human body to changes in the internal and external environment.			
Learning outcomes	After finishing the course and passing exam in Physiology 1, the student should achieve the following learning outcomes and should: 1. know the functions of organ systems, and how they interact in the organism as a whole. 2. be able to explain how physiological responses of organ systems relate to their anatomical and histological characteristics, and their biochemical status. 3. know regulatory and compensatory mechanisms that control the function of organ systems. 4. understand the logic and interpret cause and effect relationships in interactions between systems of organs. 5. know general mechanisms in the human body essential adaptation and survival. 6. master the appropriate medical terminology. 7. be able to use the acquired knowledge in relation to pharmacotherapy.			
Lecturer / Teaching assistant	Doc. dr Mihailo Vukmirović			
Methodology	This course uses Moodle as a web-based course management system. Teaching is conducted in the form of blended learning. We have face-to-face lectures, lab, seminar presentations, and consultations. They are combined with on-line and computer-mediated delivery of educational material, videos, lab simulations, and tests. Final evaluation is conducted as an oral exam.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	RBC. Blood types. Hemostasis. (Guyton, unit VI)			
I week exercises	Orientation.			
II week lectures	Immune system: innate and specific immunity. (Guyton, unit VI)			
II week exercises	Red blood cell cont. Sedimentation. Hematocrit and hematological indices. (M. Drecun et al.)			
III week lectures	Respiration: mechanics of pulmonary ventilation. Functions of respiratory passages, reflex of cough and sneeze. Pulmonary volumes and capacities. Alveolar ventilation, circulation of blood in the lung. Respiratory membrane and gas exchange. Solubility of			
III week exercises	Hemostasis. Blood types. (Đ. Sterio et al.)			
IV week lectures	Transport of oxygen from the lungs to body tissues. Dissociation of oxyhemoglobin. Transport of CO ₂ . Acid- base balance. Regulation of respiration. Respiration during the exercise, and at the high altitude. (Guyton, unit VII and VIII)			
IV week exercises	White blood cell count. White blood cell differential count. (M. Drecun et al.)			
V week lectures	Physiology and organization of cardiovascular system (CVS). Heart as a pump. Conduction system of the heart. Action potential of the cardiac muscle cell. Electrocardiogram (ECG). (Guyton, unit III)			
V week exercises	Test 3.			
VI week lectures	Heart cycle. Heart sounds. Polycardiogram. Stroke volume, cardiac output, and their regulation. Hemodynamics. Pressure, flow and resistance. Viscosity and hematocrit. (Guyton, unit III and IV)			
VI week exercises	Mechanics of pulmonary ventilation. Respiratory volumes and capacities. Spirometry. (M. Drecun et al.)			
VII week lectures	Overview of circulation. Blood pressure. Capillary pressure. Interstitial fluid. (Guyton, Unit IV)			
VII week exercises	ECG- registration and analysis. (M. Drecun et al.)			
VIII week lectures	Neural and humoral control of blood flow. Sympathetic nervous system in the control of blood distribution. Cardiac output, venous return. Rapid control of blood pressure. (Guyton, unit IV)			
VIII week exercises	Heart auscultation. Phonocardiogram. (M. Drecun et al.)			
IX week lectures	Kidney, nephron, basic principles of function. Glomerular filtration and its regulation. Tubular reabsorption. Peritubular vascular network. Henley s loop. Concentration and dilution of tubular fluid. (Guyton, unit V)			

IX week exercises	Carotidogram. Polycardiogram. (M. Drecun et al.)					
X week lectures	Role of kidneys in maintenance of extracellular fluid volume. Long term control of blood pressure. Regulation of extracellular fluid osmolarity. Acid-base regulation. (Guyton, units IV and V)					
X week exercises	Measuring blood pressure. (M. Drecun et al.)					
XI week lectures	Energetics. Formation of ATP. Metabolism. Physiology of gastrointestinal tract (GIT), structure and function. Motility and enteric plexus. (Guyton, units XII, XIII)					
XI week exercises	Test 4.					
XII week lectures	Secretion, digestion and absorption in GIT. (Guyton, unit XII)					
XII week exercises	Clearance. Metabolism of medications. (Đ. Sterio et al.)					
XIII week lectures	Endocrinology. Mechanisms of action of hormones. Regulation of hormone secretion. Pituitary hormones and their control by hypothalamus. Growth hormone. Adrenocortical hormones. Stress. Thyroid hormone. (Guyton, unit XIV)					
XIII week exercises	Review lab.					
XIV week lectures	Sex hormones. Insulin, glucagon- endocrine pancreas. Hormones in regulation of metabolism of Ca++ and phosphates. (Guyton, unit XIV)					
XIV week exercises	Test 5.					
XV week lectures	Review.					
XV week exercises	Make up tests 3, 4 and 5.					
Student workload						
Per week			Per semester			
4 credits x 40/30=5 hours and 20 minuts 2 sat(a) theoretical classes 2 sat(a) practical classes 0 excercises 1 hour(s) i 20 minuts of independent work, including consultations			Classes and final exam: 5 hour(s) i 20 minuts x 16 =85 hour(s) i 20 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 5 hour(s) i 20 minuts x 2 =10 hour(s) i 40 minuts Total workload for the subject: 4 x 30=120 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 24 hour(s) i 0 minuts Workload structure: 85 hour(s) i 20 minuts (cources), 10 hour(s) i 40 minuts (preparation), 24 hour(s) i 0 minuts (additional work)			
Student obligations			Regular attendance of face-to-face lectures, seminars and labs. Showing adequate knowledge improvement after each lab. Taking 3 tests during the semester.			
Consultations			As arranged with the instructor.			
Literature			1) Medicinska fiziologija. Guyton & Hall. Publisher : Savremena administracija, Beograd, 12th edition 2) Praktikum iz fiziologije. M. Drecun et al. Publisher: Papirus Zvornik, 2003. 3) Praktikum iz fiziologije. Đ. Sterio et al. Publisher: Medicinski fa			
Examination methods			Attendance of lectures- 7 points. Attendance of lab with verification of knowledge improvement after each lab -13 points. Three tests -30 points. Registration on Moodle -1 point. Final exam (lab + oral exam)- 50 points.			
Special remarks			None.			
Comment			None.			
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points