

1	Subject	<b>PHYSIOLOGY 1</b>			
2	Code	DFZ110			
3	Study Program	Study Program of Integrated studies in dental medicine			
4	Organizing Institution (Unit, Institute, Chair, Department)	UKIM-Faculty of Medicine Institute of physiology and anthropology			
5	Educational degree (first or second cycle)	Integrated study			
6	Study year/semester	1/2	7	Number of credits	8
8	Teacher	Prof. Sanja Mancevska, MD, PhD			
9	Preconditions	/			
10	<p>Teaching goals: To ensure that the students understand how the human body works. The student should be able to:</p> <ul style="list-style-type: none"> <li>• Define homeostasis and explain how homeostatic mechanisms normally maintain a constant internal environment.</li> <li>• State the functions of each organ system of the body, explain the mechanisms by which each functions, and relate the functions and the anatomy and histology of each organ system.</li> <li>• Understand and demonstrate the interrelations between the organ systems.</li> <li>• Predict and explain the integrated responses of the organ systems of the body to physiological stress.</li> <li>• To perform certain practical procedures.</li> </ul>				
11	<b>Brief content</b>				
	<b>Theoretical course</b>				<b>Class</b>
	Introduction to human physiology and homeostasis				2
	Physiology of blood, blood elements: red blood cells, white blood cells and platelets; blood groups, blood hemostasis and coagulation.				8
	Physiology of skeletal and smooth muscles: physiological organization, characteristics, excitation and contraction; differences between skeletal and smooth muscles.				2
	Physiology of heart, cardiac cycle, heart tones, heart rate; system for generation and conduction of action potential impulses in the heart; bioelectrical activity of the heart, normal electrocardiogram. Physiology of circulation, arterial and venous system. Physiology of microcirculation and lymphatic system, mechanisms of regulation of circulation, regulation of blood pressure.				10
	Physiology of the respiratory system, pulmonary ventilation, breathing mechanics, pulmonary circulation, diffusion and transport of oxygen and carbon dioxide; regulation of respiration.				8
	Physiology of the gastrointestinal system, motor activity, motility and secretion, digestion of food and absorption of nutrients, regulation of the functions of the gastrointestinal system.				7
	Physiology of the liver and the metabolism, metabolic processes of carbohydrates, fats and proteins, physiological regulation of energy balance, basal metabolism, food intake. Physiological functions of the liver.				6
	Skin physiology, thermoregulation, body temperature.				2
	<b>Total</b>				<b>45</b>
	<b>Practical lessons:</b>				<b>Class</b>
	Laboratory animals, methods and instruments, physiological solutions, narcosis and vivisection. Computerized tutorials.				3
	Examination of blood and blood components (red blood cells, white blood cells and platelets), capillary blood extraction, venipuncture, plasma and serum extraction, hematocrit, hemostasis (bleeding time and coagulation time)				12
	Examination of skeletal muscle activity (muscle contraction, fatigue, dynamometry, muscle tonus, electromyography of masticatory muscles.				3

	Physiology of cardiovascular system: testing of the activity of the heart muscle in experimental animals and the influence of various factors on the heart. Examination of bioelectrical currents in humans and electrocardiography. Analysis of normal electrocardiogram.		12
	Examination of respiratory function (functional testing).		6
	Examination of the function of the gastrointestinal system (determination of acidity of gastric juice and the action of digestive enzymes).		6
	Thermoregulation: body temperature, daily energy needs, body mass index		3
	Total		45
12	Methods of studying: class room oriented lectures, interactive lectures, group work, practical training, seminar paper		
13	Total available time	240 classes	
14	Organization of the course	45 classes - theoretical course, 45 classes- practical course, 150 classes - home individual learning and other activities	
15	Forms of teaching activities	15.1.	Theoretical course 45 classes
		15.2.	Practical course, seminars 45 classes
16	Other forms of activities	16.1.	Project tasks
		16.2.	Individual tasks 30 classes
		16.3.	Individual (home) learning 120 classes
17	Method of assessment	17.1.	Tests Points 36-60
		17.2.	Active participation, seminar paper/project (oral/written presentation) Points 10-20
		17.3.	Final (oral) exam Points 14-20
18	Grading criteria (points / grade)	Up to 59 points 5 (five) (F)	
		from 60 to 67 points 6 (six) (E)	
		from 68 to 75 points 7 (seven) (D)	
		from 76 to 84 points 8 (eight) (C)	
		from 85 to 93 points 9 (nine) (B)	
		from 94 to 100 points 10 (ten) (A)	
19	Requirement for signature and taking the final exam	The student is required to actively follow all of the planned activities. Conditional criteria for assessment of knowledge: In order to get a signature, the student should obtain minimum points in both theoretical and practical courses; In order to take the final exam, the student should obtain the minimum points from activity and test.	
20	Language of the course	English	
21	Method for evaluation of the quality of education	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities	
22	<b>Literature</b>		
	22.1.	<b>Mandatory textbooks</b>	

		No.	Author	Title	Publisher	Year
		1	Guyton AC, Hall JE.	Textbook of Medical Physiology 12 th edition.	Elsevier, London,	2011
	22.2.	<b>Additional literature</b>				
		No.	Author	Title	Publisher	Year
		1	Widmaier E, Raff H, Strang K.	Vander's Human Physiology: The Mechanisms of Body Function.	McGraw Education -Hill	2013