

Study Program: Biology			
Type and level of studies: Bachelor studies			
Course name: General physiology with biophysics			
Lecturer: Milošević M. Slaviša			
Status: Compulsory			
ECTS: 6			
Attendance Prerequisites:			
Course aims Introducing students to the basic physiological principles, mechanisms of homeostasis preservation and processes that occur in a living organism under certain environmental conditions as well as to the mechanisms of their regulation.			
Course outcome The students have acquired the knowledge and understanding of general laws and functions that are common to all living organisms, regardless of their level of organisation.			
Course content <i>Theoretical part:</i> The subject of study of general physiology. Methods of physiological research. Neural and humoral regulation. Nervous system structures- neuron. Axoplasmic transport. Forces that enable movement of matter (diffusion, filtration, osmosis and pinocytosis). Osmotic pressure. Regulation of electrolyte concentration in ECT. Regulation of Na, K, Ca and Mg ions. Water regulation within the body. Acid-base balance. Buffer systems. Cell membrane and its structure. Diffusion through pores. Facilitated diffusion. Active transport mechanism. Resting membrane potential - microelectrode stimulation. Equilibrium potential, Goldman's and Nernst's equation. Action potential, depolarisation and repolarisation. Plateau phase of some action potentials. Amplitude and afterpotential. Classification of nerve fibers. The notion of refractoriness. Neuromuscular synapse. Synapses in the CNS. Synaptic potential. Neurotransmitters. Receptors, Receptor adaptation. Generator potential. Electrical nerve stimulation, Pfluger law. Chronaxy and rheobase. Autonomic nervous system. Effectors. Skeletal muscle structure. Actin and myosin. Types of muscle contractions. Mechanism of muscle extraction and contraction. Smooth muscles. <i>Practical Part: Exercises</i> Muscles and nerves. Sensory threshold. Individual muscle contraction, Tetanic contractions. Summation of stimuli. Muscle contraction and staircase phenomenon. Resting and action potential. Pfluger's laws. Reflex arc. Spread of stimuli in the nerve centers. Golc's view of the heart. Refractory period and extra systole. ECG.			
Literature 1. Guyton AC. Medicinska fiziologija, Медицинска физиологија, Медицинска књига, Београд 2003. 2. Ganong WF. Преглед медицинске физиологије. Савремена администрација Београд, 1975. 3. Пашић М. Физиологија нервног система. Научна књига, Београд, 1987. 4. Жикић Р.В., Штајн А. Електрични органи, емитовање светлости и промене боја код животиња, ПМФ Крагујевац, 1993. 5. Јовановић, Физиологија домаћих животиња. Медицинска књига Београд, 1997. 6. Николић Б. Основи физиологије човека Медицинска књига Београд-Загреб 1997. 7. Ковачевић Р, Костић Т, Зорић С. (2005): Општа физиологија животиња			
Number of active classes			Other classes
Lectures: 3	Practical classes:	Other forms of teaching: 2	
			Students' research work
Teaching methods Theoretical classes, practical classes, term tests.			
Assessment (maximum 100 points)			
Course assignments	points	Final exam	points
activity during lectures		written exam	20
practical classes	10	oral exam	50
Term test/s	20		
Total	30		70