



FACULTY OF MEDICINE
UNIVERSITY OF BANJA LUKA
 Department of Physiology



Academic year	Subject	Subject code	Study program	Cycle study	Year of study	Semester	Number of students	Number of groups
2025/2026.	MEDICAL PHYSIOLOGY	ISM22MPH	Medicine in English International programme	The first	The second	III		3

LECTURES (TIMETABLE)

Week	Lecture	Topic	Day	Date	Time	Place	Class	Professor
I	L1	Functional Organization of the Human Body - Cells as the Living Units of the Body - Functional Organization of the Human Body and Control of the "Internal Environment - Homeostasis" "Homeostatic" Mechanisms of the Major Functional Systems	Thursday	09.10.2025	11:00-13:00	Amphitheatre of The Faculty of Political Sciences (FPS), The Campus	2	Ponorac N
	L2	Body fluid compartments	Friday	10.10.2025	12:00-14:00	Amphitheatre of FPS	4	Ponorac N
II	L3	Membrane Physiology - Transport of Substances Through the Cell Membrane - Membrane Potentials	Thursday	16.10.2025	11:00-13:00	Amphitheatre of FPS	4	Ponorac N

	L4	Action Potential • Excitation—The Process of Eliciting the Action Potential	Friday	17.10.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
III	L5	Physiology of Muscles • Contraction of Skeletal Muscle • Excitation of Skeletal Muscle: • Neuromuscular Transmission and • Excitation-Contraction Coupling	Thursday	23.10.2025	11:00-13:00	Amphitheatre of FPS	4	Ponorac N
	L6	• Contraction and Excitation of Smooth Muscle	Friday	24.10.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
IV	L7	Physiology of Nervous System • Organization of the Nervous System, • Basic Functions of Synapses and “Transmitter Substances”	Thursday	30.10.2025	11:00-13:00	Amphitheatre of FPS	2	Ponorac N
	L8	• Sensory Receptors and Neuronal Circuits for Processing Information	Friday	31.11.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
V	L9	Somatic Sensations • General Organization, the Tactile and Position Senses • Position Senses, Pain and Thermal Sensations	Thursday	06.11.2025	11:00-13:00	Amphitheatre of FPS	2	Ponorac N
	L10	The Special Senses • The Eye Sense of Vision • Optics of Vision	Friday	07.11.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
VI	L11	• Receptor and Neural Function of the Retina	Thursday	13.11.2025	11:00-13:00	Amphitheatre of FPS	2	Ponorac N

		• Central Neurophysiology of Vision						
	L12	The Special Senses • The Sense of Hearing	Friday	14.11.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
VII	L13	• The Chemical Senses Taste and Smell	Thursday	20.11.2025.	11:00-13:00	Amphitheatre of FPS	2	Ponorac N
	L14	Motor and Integrative Neurophysiology • Motor Functions of the Spinal Cord; the Cord Reflexes	Friday	21.11.2025 National holyday	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
VIII	L15	• Cortical and Brain Stem Control of Motor Function	Thursday	27.11.2025	11:00-13:00	Amphitheatre of FPS	2	Ponorac N
	L16	Motor and Integrative Neurophysiology • Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control	Friday	28.11.2025	12:00-13:30	Amphitheatre of FPS	2	Ponorac N
IX	L17	• The Autonomic Nervous System and the Adrenal Medulla	Thursday	04.12.2025	11:00-13:00	Amphitheatre of FPS	2	Ponorac N
	L 18	• Regulation of body temperature	Friday	05.12.2025.	12:00-13:30	Amphitheatre of FPS	2	Ristić S
X	L 19	Cerebral Cortex • Cerebral Cortex, Intellectual Functions of the Brain, Learning and Memory • Behavioral and Motivational Mechanisms of the Brain	Thursday	11.12.2025.	11:00-15:00	Amphitheatre of FPS	4	Ristić S

	L 20	• The Limbic System and the Hypothalamus • States of Brain Activity—Sleep and Brain Waves	Friday	12.12.2025.	12:00-13:30	Amphitheatre of FPS	2	Ristić S
XI	L 21	• Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism	Thursday	18.12.2025	11:00-13:00	Amphitheatre of FPS	2	Ristić S
XI	L 22	The Heart • Heart Muscle; The Heart as a Pump and Function of the Heart Valves	Friday	19.12.2025	12:00-13:30	Amphitheatre of FPS	2	Šobot T
XII	L 23	The Heart • The Cardiac Cycle	Thursday	25.12.2025	11:00-13:00	Amphitheatre of FPS	2	Šobot T
XII	L 24	• Rhythmical Excitation of the Heart	Friday	26.01.2025.	12:00-13:30	Amphitheatre of FPS	2	Šobot T
XIII	L 25	The Heart • The Normal Electrocardiogram	Thursday	15.01.2025	11:00-13:00	Amphitheatre of FPS	2	Šobot T
XIII	L 26	• Interpretation and Vectorial Analysis	Friday	16.01.2025	12:00-13:30	Amphitheatre of FPS	2	Šobot T
	L 27	• Compensation of Holydays		16.01.2025	13:30-	Amphitheatre of FPS		Ponorac N
15	30						60	

PRACTICAL AND THEORETICAL EXERCISES

Week	Exercise	Type of exe.	Topics
I since 20.10.2025.	E1	Practical	a) Introduction to educational plan and program and evaluation of knowledge in medical physiology b) Experiment as a method for scientific research in medicine (selection of animals, acute and chronic experiments) c) Cell transport mechanisms and permeability (Physio Ex 9.0): simulating simple diffusion, facilitated diffusion, osmotic pressure, filtration, active transport
II since 27.10.2025.	E2	Practical	a) Physiological solutions (types and application-general principles and the ways of giving injections) b) Maintaining a cell volume: - erythrocytes in iso-, hypo- and hypertonic solution - exploring the osmotic fragility of the red blood cells in the hypotonic solutions
		Theoretical	Transport of substances through the cell membrane
III since 03.11. 2025.	E3	Practical	a) Physiology of nerve impulses (Physio Ex 9.0): the resting membrane potential, receptor potential, the action potential-threshold, the action potential-importance of voltage-gated Na ⁺ channels, the action potential-measuring its absolute and relative refractory period, the action potential-coding for stimulus intensity b) Neurophysiology (Physio Ex 9.0): chemical synaptic transmission and neurotransmitter release
		Theoretical	Human body fluids: intracellular and extracellular, interstitial; Clinical consideration
IV since 10.11.2025.	E4	Practical	Skeletal muscle physiology (Physio Ex 9.0): the muscle twitch and latent period, the effects of stimulus voltage on skeletal muscle contraction, the effect of stimulus frequency on skeletal muscle contraction, tetanus in isolated skeletal muscle, fatigue in isolated skeletal muscle, the skeletal muscle length-tension relationship, isotonic contractions
		Theoretical	Membrane potentials and action potentials Clinical consideration
V since 17.11.2025	E5	Practical	a) Examination of surface and deep sensibility b) Construction of an image of an object in a simple and complex optical system c) Visual acuity testing d) Lenses e) Demonstration of the blind spot - Mariotte's experiment f) Testing of the color vision g) Examination of the ocular fundi with an ophthalmoscope

		Theoretical	Excitation and contraction of skeletal and smooth muscle Clinical consideration
VI since 24.11.2025.	E6	Practical	a) Testing of air and bone conduction of the sound b) Examination of balance (rotatory test, Romberg test) c) Analyze the sense of taste and smell: - a qualitative and quantitative analysis of smell - a qualitative analysis of taste - analyze the interdependence between the sense of taste and smell
		Theoretical	Sensory receptors, neuronal circuits for processing information Clinical consideration
VII since 01.12.2025.	E7	Practical	a) Analysis of reflex arc b) Withdrawal reflex and experimental frog model (video simulation) c) Performing of the clinically important reflexes: stretch reflexes, cutaneous reflexes, corneal and conjunctival reflexes; papillary light reflex; reflex of accommodation
		Theoretical	Motor function of the spinal cord; The spinal reflexes Clinical consideration
VIII since 08.12.2025.	E8	Practical	a) Assessment of functional capacity of the heart and circulation during physical activity in human b) Astrand's test c) Auscultation of heart sounds
		Theoretical	Hypothalamus; The Autonomic nervous system and the adrenal medulla Clinical consideration
IX since 15.12.2025.	E9	Practical	a) Investigating the refractory period of cardiac muscle (PhysioEx 9.0) b) Analysis of the heart function on the frog model (Stannius' ligature, Goltz's experiment, assessing the effect of temperature, hormones, and ions on the frog heart activity) c) Recording of ECG
		Theoretical	Cardiac cycle; Normal electrocardiogram (ECG); ECG Interpretation; Vectoral Analysis Clinical consideration
X since 22.12.2025.	E10	Practical	a) Oculocardiac reflex b) Analysis of ECG c) Performing the ergometric step-test and indirect determination of the maximal oxygen consumption
XI since 12.01.2026.	E11	Practical	a) Biological materials for diagnostic procedures in clinical practice b) Obtaining blood samples for laboratory analysis from the fingertip c) Separation of blood plasma and serum d) Identification of blood cells (blood smear) e) Hematocrit (Htc)

TIMETABLE

Group	Type of Exercise	Day	Time	Place	Number of Classes	Professor
G1	Practical	Tuesday	8:00-11:00	Laboratory for Physiology	4	Zorislava Bajić
G2	Practical	Wednesday	8:00-11:00	Laboratory for Physiology	4	Zorislava Bajić
G3	Practical	Friday	8:00-11:00	Laboratory for Physiology	4	Zorislava Bajić
G1	Theoretical	Thursday	14:30-15:45	Amphitheatre of The Faculty of Political Sciences (FPS), The Campus	2	Nenad Ponorac
G2	Theoretical	Thursday	15:45-17:00	FPS	2	Nenad Ponorac
G3	Theoretical	Friday	13:30-15:00	FPS	2	Nenad Ponorac

G1 – group 1

G2 – group 2

G3 – group 3