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
2026/2027.	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	15.10.2026	11:00-12:15	Amphitheatre of The Faculty of Political Sciences (FPS), The Campus	2	Ponorac N
	L2	• **Body fluid compartments**	Friday	16.10.2025	12:00-14:00	Amphitheatre of FPS	4	Ponorac N
II	L3	**Membrane Physiology** • **Transport of Substances Through the Cell Membrane** • **Membrane Potentials**	Thursday	22.10.2025	11:00-12:15	Amphitheatre of FPS	4	Ponorac N
	L4	**Action Potential** • **Excitation—The Process of Eliciting the Action Potential**	Friday	23.10.2025	12:00-14:00	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	29.10.2025	11:00-12:15	Amphitheatre of FPS	4	Ponorac N
	L6	• **Contraction and Excitation of Smooth Muscle**	Friday	30.10.2025	12:00-14:00	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	05.11..2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
	L8	• **Sensory Receptors and Neuronal Circuits for Processing Information**	Friday	06.11.2025	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
V	L9	**Somatic Sensations** • **General Organization, the Tactile and Position Senses** • **Position Senses, Pain and Thermal Sensations**	Thursday	12.11.2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
	L10	**The Special Senses** • **The Eye Sense of Vision** • **Optics of Vision**	Friday	13.11.2025	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
VI	L11	• **Receptor and Neural Function of the Retina** • **Central Neurophysiology of Vision**	Thursday	19.11.2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
	L12	**The Special Senses** • **The Sense of Hearing**	Friday	20.11.2025	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
VII	L13	• **The Chemical Senses Taste and Smell**	Thursday	26.11.2025.	11:00-12:15	Amphitheatre of FPS	2	Ponorac N

	L14	**Motor and Integrative Neurophysiology** • **Motor Functions of the Spinal Cord; the Cord Reflexes**	Friday	27.11.2025	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
VIII	L15	• **Cortical and Brain Stem Control of Motor Function**	Thursday	03.12.2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
	L16	**Motor and Integrative Neurophysiology** • **Contributions of the Cerebellum and Basal Ganglia to Overall Motor Control**	Friday	04.12.2025	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
IX	L17	• **The Autonomic Nervous System and the Adrenal Medulla**	Thursday	10.12.2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
	L 18	• **Regulation of body temperature**	Friday	11.12.2025.	12:00-14:00	Amphitheatre of FPS	2	Ponorac N
X	L 19	**Cerebral Cortex** • **Cerebral Cortex, Intellectual Functions of the Brain, Learning and Memory** • **Behavioral and Motivational Mechanisms of the Brain**	Thursday	17.12.2025.	11:00-13:30	Amphitheatre of FPS	4	Ristić S
	L 20	• **The Limbic System and the Hypothalamus** • **States of Brain Activity—Sleep and Brain Waves**	Friday	18.12.2025.	12:00-14:00	Amphitheatre of FPS	2	Ristić S
XI	L 21	• **Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism**	Thursday	24.12.2025	11:00-12:15	Amphitheatre of FPS	2	Ponorac N
XI	L 22	**The Heart** • **Heart Muscle; The Heart as a Pump and Function of the Heart Valves**	Friday	25.12.2025	12:00-14:00	Amphitheatre of FPS	2	Šobot T

XII	L 23	• **The Cardiac Cycle**	Tuesday	05.01.2025	14:00-15:30	Faculty of Architecture	2	Šobot T
XII	L 24	• **Rhythmical Excitation of the Heart**	Tuesday	12.01.2027.	14:00-15:30	Faculty of Architecture	2	Šobot T
XIII	L 25	• **The Normal Electrocardiogram**	Thursday	14.01. 2027	11:00-13:00	Amphitheatre of FPS	2	Šobot T
XIII	L 26	• **Interpretation and Vectorial Analysis**	Friday	15.01.2027	12:00-14:00	Amphitheatre of FPS	2	Šobot T
15	30						60	

PRACTICAL AND THEORETICAL EXERCISES

Week	Exrcise	Type of exe.	Topics
I since 19.10.2026.	E1	Practical	a) Ethics in biomedical research and clinical practice b) Introduction to the work of the physiology laboratory, practical exercises in physiology and the experiment c) Physiological solutions – types and application d) Basic principles and ways of giving injections
II since 26.10.2026.	E2	Practical	e) Maintaining cell volume: a. behaviour of erythrocytes in solutions of different osmolarity b. hemolysis and osmotic fragility of erythrocytes in hypotonic solutions f) Cell transport mechanisms and permeability (Physio Ex 10.0)
		Theoretical	Transport of substances through the cell membrane:**Animations**
III	E3	Practical	g) Physiology of nerve impulses (Physio Ex 10.0)

since 02.11. 2026.			h) Neurophysiology (Physio Ex 10.0)
		Theoretical	Human body fluids: intracellular and extracellular, interstitial; **Clinical consideration**
IV since 09.11.2026.	E4	Practical	i) Skeletal muscle physiology (Physio Ex 10.0)
		Theoretical	Membrane potentials and action potentials **Clinical consideration**
V since 16.11.2026	E5	Practical	j) Examination of sensibility k) Examination of balance (rotatory test, Romberg test) l) Testing of hearing with a tuning fork m) Visual acuity testing n) Lenses o) Demonstration of the blind spot – Mariotte's experiment p) Testing of color vision q) Examination of the ocular fundi with an ophthalmoscope r) Construction of an image of an object in a simple and complex optical system
		Theoretical	Excitation and contraction of skeletal and smooth muscle **Clinical consideration**
VI since 23.11.2026.	E6	Practical	s) Analysis of the sense of taste and smell: a. a qualitative and quantitative analysis of smell b. a qualitative analysis of taste c. analysis of the interdependence between the sense of taste and smell t) Analysis of reflex arc Reflex activity of the spinal cord (experimental frog model, video simulation)
		Theoretical	Sensory receptors, neuronal circuits for processing information **Clinical consideration**
VII since 30.11.2026.	E7	Practical	Clinically important reflexes in humans (stretch reflexes, cutaneous reflexes, corneal and conjunctival reflexes, pupillary light reflex, reflex of accommodation)
		Theoretical	Motor function of the spinal cord; The spinal reflexes **Clinical consideration**
VIII since 07.12.2026.	E8	Practical	a) Biological materials for diagnostic procedures and clinical practice b) Obtaining blood samples for laboratory analysis c) Separation of blood plasma and serum d) Hematocrit (Htc)

		Theoretical	Hypothalamus; The Autonomic nervous system and the adrenal medulla **Clinical consideration**
IX since 14.12.2026.	E9	Practical	a) Auscultation of heart sounds b) Oculocardiac reflex c) Investigating the refractory period of cardiac muscle (Physio Ex 10.0) d) Analysis of the heart function on the frog model: Stannius' ligatures e) Goltz's experiment f) Effect of hormones, ions and temperature on the frog heart activity
X since 21.12.2026.	E10	Practical	u) Recording of ECG v) Analysis of ECG
		Theoretical	Cardiac cycle; Normal electrocardiogram (ECG); ECG Interpretation; Vectoral Analysis **Clinical consideration**
XI since 28.12.2026.	E11	Practical	a) Assessment of functional capacity of the heart and circulation during physical activity b) Astrand's test c) Performing the step-test and indirect determination of the maximal oxygen consumption

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	Wednesday	14-15:30	Amphitheatre of The Faculty of Architecture The Campus	2	Nenad Ponorac
G2	Theoretical	Wednesday	15:30-17:00	Faculty of Architecture	2	Nenad Ponorac
G3	Theoretical	Thursday	15:00-16:30	FPS	2	Nenad Ponorac

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