



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
2024/2025.	MEDICAL PHYSIOLOGY	ISM22MPH	Medicine in English International programme	The first	The second	IV	63	3

CURRICULUM

THEORETICAL LECTURES

Week	Lecture	Topic	Day	Date	Time	Place	Class	Professor
I	L 1	The Circulation <ul style="list-style-type: none">• Overview of the Circulation; Medical Physics of Pressure, Flow and Resistance• Functions of the Arterial and Venous Systems	Thursday	20.02.	13:00-15:15	Amphitheatre of The Faculty of Political Sciences (AMPH FPS), The Campus	3	Prof. Dr Ponorac N
	L 2	<ul style="list-style-type: none">• The Microcirculation and the Lymphatic System: Capillary Fluid Exchange, Interstitial Fluid and Lymph Flow.• Edema	Freiday	21.02.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
II	L 3	<ul style="list-style-type: none">• Local and Humoral Control of Blood Flow by the Tissues• Muscle Blood Flow and Cardiac Output During Exercise	Thursday	27.02.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N

	L 4	<ul style="list-style-type: none"> • Nervous Regulation of the Circulation, and Rapid Control of Arterial Pressure 	Freiday	28.02.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
III	L 5	<ul style="list-style-type: none"> • Dominant Role of the Kidney in Long-Term Regulation of Arterial Pressure and in Hypertension 	Thursday	06.03.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
	L 6	<ul style="list-style-type: none"> • The Integrated System for Pressure Control • Cardiac Output, Venous Return and Their Regulation 	Freiday	07.03.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
IV	L 7	<p>Blood</p> <ul style="list-style-type: none"> • Red Blood Cells, Anemia and Polycythemia <p>Resistance of the Body to Infection I</p> <ul style="list-style-type: none"> • Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation 	Thursday	13.03.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
	L 8	<p>Resistance of the Body to Infection II</p> <ul style="list-style-type: none"> • Resistance of the Body to Infection • Immunity and Allergy • Blood Types • Hemostasis and Blood Coagulation 	Freiday	14.03.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
V	L 9	<p>Respiration</p> <ul style="list-style-type: none"> • Pulmonary Ventilation • Pulmonary Circulation, Pulmonary Edema, Pleural Fluid 	Thursday	20.03.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
	L 10	<ul style="list-style-type: none"> • Physical Principles of Gas Exchange; • Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane • Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids 	Freiday	21.03	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
VI	L 11	<ul style="list-style-type: none"> • Regulation of Respiration • Aviation, Space, Deep-Sea and Diving Physiology 	Thursday	27.03	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N

	L 12	The Body Fluids and Kidneys <ul style="list-style-type: none"> • Extracellular and Intracellular Fluids; Interstitial Fluid and Edema 	Freiday	28.03	10-11:30	AMPH FPS	2	Doc. Dr Šobot T
VII	L 13	<ul style="list-style-type: none"> • Urine Formation by the Kidneys: Glomerular Filtration, Renal Blood Flow, and Their Control • Urine Formation by the Kidneys: Tubular Processing of the Glomerular Filtrate, Reabsorption and Secretion by renal Tubules 	Thursday	03.04	13:00-15:15	AMPH FPS	3	Doc. Dr Šobot T
	L 14	<ul style="list-style-type: none"> • Regulation of Extracellular Fluid Osmolarity and Sodium Concentration • Renal Regulation of Potassium, Calcium, Phosphate, and Magnesium; 	Freiday	04.04.	10-11:30	AMPH FPS	2	Doc. Dr Šobot T
VIII	L 15	<ul style="list-style-type: none"> • Integration of Renal Mechanisms for Control of Blood Volume and Extracellular Fluid Volume 	Thursday	10.04	13:00-15:15	AMPH FPS	3	Doc. Dr Šobot T
	L 16	<ul style="list-style-type: none"> • Regulation of Acid-Base Balance 	Freiday	11.04	10-11:30	AMPH FPS	2	Doc. Dr Šobot T
IX	L 17	Gastrointestinal Physiology <ul style="list-style-type: none"> • General Principles of Gastrointestinal Function—Motility, Nervous Control and Blood Circulation 	Thursday	17.04	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
	L 18	<ul style="list-style-type: none"> • Secretory Functions of the Alimentary Tract 	Freiday National Holiday	18.04.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
X	L 19	<ul style="list-style-type: none"> • Digestion and Absorption in the Gastrointestinal Tract 	Thursday	24.04.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N

	L 20	Metabolism and Temperature Regulation <ul style="list-style-type: none"> • Energetics and Metabolic Rate • Metabolism of Carbohydrates, Lipid and Protein Metabolism 	Freiday	25.04	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
		National Holiday	Thursday	01.05.				
		National Holiday	Freiday	02.05.				
XI	L 21	<ul style="list-style-type: none"> • The Liver as an Organ • Regulation of Feeding; Obesity and Starvation; Vitamins and Minerals • Body Temperature, Temperature Regulation, and Fever 	Thursday	08.05.	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
		National Holiday	Freiday	09.05.				
XII	L 22	Endocrinology and Reproduction <ul style="list-style-type: none"> • Introduction to Endocrinology • Pituitary Hormones and Their Control by the Hypothalamus 	Thursday	15.05	13:00-15:15	AMPH FPS	3	Prof. Dr Ristic S
	L 23	<ul style="list-style-type: none"> • Thyroid Metabolic Hormones Parathyroid Hormone, Calcitonin, • Calcium and Phosphate Metabolism, Vitamin D, Bone, and Teeth 	Freiday	16.05.	10-11:30	AMPH FPS	2	Prof. Dr Ristic S
XIII	L 24	<ul style="list-style-type: none"> • Adrenocortical Hormones 	Thursday	22.05	13:00-15:15	AMPH FPS	3	Prof. Dr Ristic S
	L 25	<ul style="list-style-type: none"> • Insulin 	Freiday	23.05	10-11:30	AMPH FPS	2	Prof. Dr Ristic S
XIV	L 26	<ul style="list-style-type: none"> • Glucagon and Diabetes Mellitus 	Thursday	29.05	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N
	L 27	<ul style="list-style-type: none"> • Reproductive and Hormonal Functions of the Male (and Function of the Pineal Gland) 	Freiday	30.05	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
XV	L 28	<ul style="list-style-type: none"> • Female Physiology Before Pregnancy and Female Hormones 	Thursday	05.06	13:00-15:15	AMPH FPS	3	Prof. Dr Ponorac N

	L 29	• Pregnancy and Lactation	Freiday	06.06.	10-11:30	AMPH FPS	2	Prof. Dr Ponorac N
	L 30	• Fetal and Neonatal Physiology	Freiday	06.06.	11:30-13:00	AMPH FPS	2	Prof. Dr Ponorac N
Total W 15	L 30						C 75	

PRACTICAL AND THEORETICAL EXERCISES

Week	Exrcise	Type of exe.	Topics
I 24-28 February 2025	E1	Theoretical	Microcirculation and the lymphatic system: capillary fluid exchange; Interstitial fluid and limph flow; Clinical consideration: Edema
II 3-7 March 2025.	E2	Practical	a) Palpation of arterial pulse oscillations on various sites of the body b) Estimation of radial artery pulse qualities in humans c) Measurement of arterial blood pressure d) Effects of hydrostatic pressure and the role of venous valves on venous blood flow
		Theoretical	Cardiac output, venous return and their regulation Clinical consideration: Ischemic heart disease and Heart Failure
III 10-14 March 2025	E3	Practical	a) Determination of red blood cell count b) Hematological (red blood cell) indices - MCV, MCH, MCHC using the former obtained values c) Blood groups (OAB, Rh system)
IV 17-21 March 2025	E4	Practical	a) Determination of erythrocyte sedimentation rate (ESR) b) Hemoglobin determination c) Platelet count d) Hemostasis; Determination of bleeding time
V 24-28 March 2025	E5	Practical	a) Determination of white blood cell count b) Preparation and staining of the blood smear by Pappenheim's method; Determination of differential white blood cell count
		Theoretical	Clinical Consideration Immune system: Hypersensitivity (Allergy and Autoimmune disorders). Red Blood cells: General Concept in Anemia, Transfusion
VI	E6	Practical	a) Spirometry: determination of the static lung volumes and capacities

31 March -4 April 2025			b) Auscultation of breathing c) Hyperventilation
VII 7-11 April 2025	E7	Practical	a) Effect of surfactant and intrapleural pressure on respiration (PhysioEx 10.0) b) Spirometry: measuring dynamic lung volumes
		Theoretical	Clinical Consideration Concepts in obstructive lung disease Asthma and COPD
VIII 14-17 April 2025	E8	Practical	a) Kidney functions in physical activity and water load b) Urinalysis c) Urine sediment d) Calculation of the clearance of inulin, creatinine, urea and para-aminohippuric (PAH) acid The effect of pressure on glomerular filtration (PhysioEx 10.0)
		Theoretical	Glomerular filtration, renal blood flow, and their control. Clinical Consideration
IX 22-25 April 2025	E9	Theoretical	Acid-base regulation and disorders
X 28-30 April 2025	E10	Practical	a) Assessing starch digestion by salivary amilase (PhysioEx 10.0) b) Assessing pepsin digestion of proteins (PhysioEx 10.0) c) Assessing lipase digestion of fat (PhysioEx 10.0)
XI 5-8 May 2025	E11	Practical	a) Calculation of the basal metabolic rate (BMR) b) Calculation of the daily energy turnover and planning daily manu c) Body composition analysis d) Use of anthropometric indexes in health risk assessment
XII 12-16 May 2025	E12	Theoretical	The liver and liver disorders
XIII 19-23 May 2025	E13	Practical	a) Assessment of the oral glucose tolerance test (OGTT) b) Metabolism and thyroide hormone (PhysioEx 10.0) c) Hormone replacement therapy (PhysioEx 10.0)
XIV 26-30 May 2025	E14	Practical	a) Early diagnosis of the pregnancy: laboratory tests b) Measuring cortisol and adrenocorticotropic hormone (PhysioEx 10.0)
		Theoretical	Reproductive and hormonal functions of the male and female. Differences in male and female HPG axis

TIMETABLE

Group	Type of Exercise	Day	Time	Place	Number of Classes	Professor
G1	Practical	Tuesday	8:00-11:00	Laboratory of Physiology	4	Zorislava Bajić
G2	Practical	Wednesday	8:00-11:00	Laboratory of Physiology	4	Zorislava Bajić
G3	Practical	Thursday	8:00-11:00	Laboratory of Physiology	4	Zorislava Bajić
G1	Theoretical	to be announced		Amphitheatre of The Faculty of Political Sciences (FPS), The Campus	2	Nenad Ponorac
G2	Theoretical	to be announced		FPS	2	Nenad Ponorac
G3	Theoretical	to be announced		FPS	2	Nenad Ponorac

G1 – group 1

G2 – group 2

G3 – group 3