SVEUČILIŠTE U MOSTARU

SYLLABI OF THE

INTEGRATED UNIVERSITY STUDY PROGRAM

MEDICAL STUDIES IN ENGLISH

FOR THE ACADEMIC YEAR 2024./2025.

Mostar, September 2024

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	III			
Course title	MEDICAL CHEMISTRY AND BIOCHEMISTRY II	Course code	MFMSE301			
ECTS	8	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			42	34	34	0
Teachers	dr. sc. Ivanka Mikulić, izv. prof.		20		6	
	dr. sc. Darija Pašalić, prof.		10		6	
	dr. sc. Vinka Mikulić, doc.		12	6	6	
	Kristina Ljubić, v. asist.			8	8	
	Ana Ćuk, v. asist.			8	8	
	Ivona Cvetković, asist.			6		
	Ante Pušić, asist.			6		

Course objectives	- To achieve students' understanding of the functioning of the organism at the molecular level, which is reflected in the normal function of the organs as well as in the pathological biochemical processes in the organism. - To achieve students' understanding of the role of natural biomolecules in the body. - To achieve students' understanding of the dynamics of synthesis and degradation of natural biomolecules: proteins, carbohydrates, lipids and nucleic acids. - To achieve students' understanding of the influence of hormones on the function of the main organ systems.		
Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Describes and presents the role of biomolecules in the human body.	IU-MFMSE301-1	IU-MSE2
	Describes and explains the mechanisms of synthesis and degradation of natural macromolecules: proteins, carbohydrates, lipids and nucleic acids.	IU-MFMSE301-2	IU-MSE3
	Explains the principles of regulation and control of cellular metabolism, using biochemical and metabolic arguments to explain physiological and pathophysiological processes.	IU-MFMSE301-3	IU-MSE3
	Draws the structure of biomolecules.	IU-MFMSE301-4	IU-MSE1
	Calculates the number of moles of ATP that are generated/consumed in the metabolism of natural macromolecules.	IU-MFMSE301-5	IU-MSE3
	Calculates the charge of a polypeptide at a given pH.	IU-MFMSE301-6	IU-MSE1
Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.		
Course content	Week / shift	Topic	
	Lectures:	(L1) The Conformation and Dynamics of Protein Structure (L2) Proteins with Special Functions: Hemoglobin, Myoglobin (L3) Proteins with Special Functions: Collagen, Elastin (L4) Proteins with Special Functions: Actin, Myosin (L5) Plasma Proteins and Immunoglobulins (L6) Vitamins: role and function (L7) Coenzyme; Bioenergetics: The role of ATP	

		(L8) Enzyme catalysis (L9) Metabolism of Nucleotides (L10) Nucleic Acid Structure & Function (L11) DNA Organization, Replication & Repair (L12) RNA Synthesis, Processing & Modification; Protein Synthesis & the Genetic Code (L13) Regulation of Gene Expression (L14) Molecular Genetics, Recombinant DNA & Genomic Technology (L15) Metabolism of Xenobiotics, Pharmacogenetics (L16) Glycolysis (L17) Glycogen: Synthesis and degradation (L18) Gluconeogenesis, Cori cycle (L19) The Pentose Phosphate Pathway, Fructose, Galactose (L20) Oxidative decarboxylation, Citric acid cycle (L21) The Respiratory Chain & Oxidative phosphorylation (L22) Lipids of Physiologic Significance; Cholesterol Synthesis, Transport & Excretion (L23) Lipid Transport & Storage (L24) Oxidation of Fatty Acids: Ketogenesis (L25) The Diversity of the Endocrine System (L26) Urea Cycle, Metabolism of Amino Acids (L27) Free Radicals & Antioxidant Nutrients (L28) Overview of Metabolism & the Provision of Metabolic Fuels
	Seminars:	At the seminars, students will solve some tasks about specific topics. They will make presentations about seminar topic given by teacher.
	Exercises:	(E1) Qualitative detection of protein (E2) Serum protein electrophoresis (E3) Ionization properties of amino acids (E4) Enzyme kinetics (E5) Monosaccharides and polysaccharides determination (E6) Lipids (E7) Acid-base and mineral status in organism (E8) Qualitative urine analysis (E9) Creatinine Clearance (E10) Human DNA isolation
Language	English	
E-learning	Classes are taken in person. If necessary, lectures, seminars and part of the exercises can take place combined (live and online) or completely online via e-learning platforms (Google Meet) up to max 20%.	
Teaching methods	Teaching, interactive and active-experiential.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	**seminar paper**	essay/report	practical/project task	other	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		110	3.7	0%
Seminar		10	0.3	0%
Midterm/Colloquium of exercises	IU-MFMSE301-1 IU-MFMSE301-6	15	0.5	0%
Pre-exam/Written exam	IU-MFMSE301-1 IU-MFMSE301-2 IU-MFMSE301-3 IU-MFMSE301-4 IU-MFMSE301-5 IU-MFMSE301-6	105	3.5	100%
In total		240	8	100%
Method of calculating the final grade				

The final grade is based on the written exam. A detailed description is provided in additional information about the case.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Harper's Illustrated Biochemistry 31st Edition; V. Rodwell, D. Bender, K. Botham, P. Kennelly, PA. Weil; 2018.		x		x			x			
	Biochemistry,9th Edition, Berg JM, Tymoczko JL, Gatto Jr. GJ,Stryer L., 2019.		x		x			x			
	Medical chemistry and biochemistry exercises handbook for medical students, I. Mikulić, N. Jelić Knezović, V. Mikulić, K. Landeka, A.Ćuk., 2014.	x			x					x	
Additional	Lehninger principles of biochemistry 8th Edition, DL. Nelson and MM. Cox, 2021.		x		x			x			
	Scientific papers for seminars,different authors		x		x					x	
	teaching materials		x		x						x

Additional course information

As it is a basic course in a specific field of biochemistry, in addition to theoretical classes, by processing selected different seminar topics and solving tasks, the student further expands his knowledge and can demonstrate the ability to think critically and recognize the essential elements of a certain educational issue.
The course in medical chemistry and biochemistry II. contains 110 hours and takes over 5 weeks, which also includes a post-class examination period (pre-exam).
Classes consist of lectures, seminars and exercises.
In order to take the exam, the student is required to fulfill all the other following obligations: attend classes regularly, prepare and present a seminar essay on the given topic, do exercises in the practical part of the class, support them with an appropriate report, and pass the final colloquium.
To pass the pre-exam/written exam (grade sufficient) and to participate in the oral exam, a student has to answer 55% of the questions correctly.
According to the Rulebook on studying at the University of Mostar, grades are assigned as follows:
0-54% insufficient (1);
55-66% sufficient (2);
67-78% good (3);
79- 90% (very good 4);
91-100% excellent (5).

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	III			
Course title	MEDICAL GENETICS	Course code	MFMSE302			
ECTS	3	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			20	5	20	0
Teachers	Professor Jurica Arapović, MD, PhD		5	0	0	
	Assoc. prof. Maja Arapović, PhD		5	0	0	
	Assist. prof. Božo Šušak, MD, PhD		5	0	12	
	Assist. prof. Una Glamočlija, PhD		5	0	0	
	Senior assist. Maja Barbarić, MD, PhD		0	3	4	
	Assist. Martina Vukoja		0	2	4	
Course objectives	The objectives of the Medical Genetics course are: - to introduce medical students with basic facts in medical genetics; - introduce students to concepts in human medical genetics and train them to understand genetics' point of view on health and disease; - describe and explain the basics of a comprehensive approach to a patient with a genetic disease or disorder, or an increased risk for specific disease.					

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Describes and explains types of genetic disorders as causes of diseases and medical conditions.	IU- MFMSE302-1	IU-MSE1
	Describes and explains the types and outcomes of genetic testing according to groups of indications and elaborates the advantages and limitations of genetic tests and the methods used.	IU- MFMSE302-2	IU-MSE3
	Distinguishes the effects of genetic variability on the therapeutic outcome, and selects the appropriate method of genetic testing according to the indication and the genetic cause of the disease, interprets the basic elements of genetic testing findings.	IU- MFMSE302-3	IU-MSE6 IU-MSE8
	Applies basic communication skills in explaining genetic information.	IU- MFMSE302-4	IU-MSE9
	Searches diagnostic and educational databases of genetic diseases.	IU- MFMSE302-5	IU-MSE7

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar	
Course content	Week / shift	Topic
	Lectures	(L1) Introduction to Medical genetics (L2) Functional genomics and proteomics (L3) Genomics and the Human Genome Project (L4) Pharmacogenomics (L5) RNA genes and RNAi (L6) Mutations and aberrations (L7) DNA analysis (L8) Mitochondrial inheritance and human development (L9) Gene therapy. Genetically modified organisms (GMO) (L10) Epigenetics
	Seminars	(S1) Chromosomes. DNA analysis techniques.

		(S2) Inheritance patterns (Mendelian and Non-Mendelian) and genetic counselling (S3) Applications to public health - screening and identification of populations at risk (S4) Carcinogenesis and common genetic factors (S5) Genes and molecular mechanisms underlying human disease (S6) Genetic background of congenital anomalies (S7) Gene ethics
	Exercises	(E1) Introduction to Cytogenetics laboratory (E2) Primer design for genetic testing (E3) Bioinformatics (database search and OMIM) (E4) Cloning, transgenic animals, gene therapy (E5) Odds, probabilities, Bayes' theorem.
Language	English	
E-learning	Classes are conducted in person. If necessary, lectures, seminars and part of the practicals can be combined (in person and online) or completely online via e-learning platforms (Google Meet) up to a maximum 20%.	
Teaching methods	Teaching, interactive and active-experiential.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/ report	**practical/project task**	other	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Class attendance		45	1.5	
Project task	IU-MFMSE302-4 IU-MFMSE302-5	15	0.5	20%
Pre-exam/Written exam	IU-MFMSE302-1 IU-MFMSE302-2 IU-MFMSE302-3	30	1.0	80%
In total		90	3	100%

Method of calculating the final grade

Evaluation criteria for the written exam:
Final written exam
27-33 = (2);
33-39= (3);
40-45 = (4);
46-50 = (5);

The student can receive a total of 20 points for the project assignment (10 points for the written part and 10 points for the presentation), and the range of grades is defined as follows:
1-10 – (1)
11-13 – (2)
14-16- (3)
17-18 – (4)
19-20 – (5)

The final grade is obtained as a weighting of the grades from the project assignment (20% of the grade) and the written exam (80% of the grade).

The grade is calculated as follows: grade on the written test x 0.8 + grade from the project assignment x 0.2.
A grade below 0.5 is a grade below and a grade below 0.5 is a grade above.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other

Compulsory	Emery's Elements of Medical Genetics – Peter D Turnpenny, Sian Ellard, 14th edition, Elsevier, 2012		x		x			x			
Additional	Essential Medical genetics – Tobias E.S, Connor M, Ferguson-Smith M, 6th edition, Wiley-Blackwell, 2011		x		x			x			
Additional course information											

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	III			
Course title	HISTOLOGY AND EMBRYOLOGY	Course code	MFMSE303			
ECTS	10	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			50	41	44	0
Teachers	Dr.sc.Katarina Vukojević,red.prof		16			
	Dr.sc.Snježana Mardešić,izv..prof		12	10	10	
	Dr.sc.Sandra Kostoć,izv.prof		12	6	10	
	Anita Kolobarić,v.asist.		5	6	9	
	Maja Barbarić,,v.asist.		5	6	9	
	Danijela Marojević Glibo, asist.			7	2	
	Leonora Bedeković, asist			6	4	
Course objectives	The objectives of this course are to provide information's about morphology of human organs and development of human being, to synthesize the knowledge about the microscopic structure and function of human tissues that build organs and tissues in the human body.					

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Distinguishes the basics of microscopic structure of human body through the microscopic analysis of human tissue and organs preparations.	IU-MFMSE303-1	IU-MSE1
	Applies the skills in microscopic analysis and recognition of important histological structures of tissues and organs.	IU-MFMSE303-2	IU-MSE2
	Distinguishes and describes details on general and specific embryology	IU-MFMSE303-3	IU-MSE3
	Distinguishes the normal body structure and applies the principles on which pathology and pathophysiology are based.	IU-MFMSE303-4	IU-MSE4
	Distinguishes and applies knowledge in human embryology (recognizing, treating and preventing developmental disorders).	IU-MFMSE303-5	IU-MSE5

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.	
Course content	Week / shift	Topic
	Lectures	(L1) Gametogenesis, the first and second week of development (L2) Embryonic period, foetal period and congenital malformations (L3) Epithelial and connective tissue (L4) Formation of blood cells (L5) Development of the skeletal system (L6) Development and structure of muscle tissue (L7) Development and structure of the nervous tissue (L8) Development and structure of the heart and blood vessels (L9) Development and structure of the lymphatic system (L10) Development and structure of the neuroendocrine system (L11) Development and structure of the respiratory system, skin system (L12) Development of head and neck (L13) Development of oral cavity (L14) Development of body cavities and structure of alimentary canal

		(L15) Development and structure of the gastrointestinal tract (L16) Development and structure of the glands of the gastrointestinal tract (L17) Development and structure of the urinary tract (L18) Development and structure of the female reproductive system (L19) Development and structure of the male reproductive system (L20) Development and structure of the ear (L21) Development and structure of the eye
	Seminars	(S1) Menstrual, ovarian cycle and fertilization (S2) The placenta and placental membranes (S3) Covering and glandular epithelium, cells and intercellular substance of connective tissue (S4) Blood cells and anomalies (S5) Supportive tissue-cartilage, adipose tissue and bone ossification. (S6) Morphological based contractility (S7) The histological structure of the nervous tissue (S8) Structure of the heart and blood vessels, placenta (S9) The lymphatic organs, regional lymph nodes and lymph vessels (S10) The organization of the endocrine glands (S11) Respiratory membranes and skin (S12) Development and anomalies of the organs of the head and neck (S13) Structure of the mouth (S14) General structure of the alimentary canal - oesophagus and stomach (S15) Structure of the digestive system - small and large intestine, appendix (S16) Glands of the gastrointestinal tract (S17) Structure of the urinary tract (S18) Structure of the female reproductive system (S19) Structure of the male reproductive system (S20) Structure of the ear (S21) Structure of the eye
	Exercises	(E1) Preparing preparations for histology (E2) The placenta and umbilical cord (E3) Lining epithelium, unformed connective tissue, tendons (E4) Smear of bone marrow and blood smear (E5) Hyaline, elastic and connective cartilage, decalcificated bone, a bone specimen, enchondral and desmal ossification (E6) The skeletal, smooth and cardiac muscle (E7) Spinal cord, cerebrum, cerebellum, peripheral nerve ganglia (E8) Heart valves, arteries and veins (E9) Thymus, lymph nodes, spleen and palatine tonsil (E10) The pituitary gland, thyroid gland, adrenal gland, epithelial corpuscle (E11) The lungs and trachea, skin, mammary gland (E12) Lip, tip of the tongue, salivary and papilla vallata (E13) Palate, teeth and tooth development (E14) The oesophagus and stomach (E15) Small and large intestine, appendix (E16) Liver and pancreas (E17) Kidney, bladder and urethra (E18) Ovary, fallopian tube, uterus, vagina (E19) Testis, vas deferens, prostate, seminal vesicle and penis (E20) Ear (E21) Eye
Language	English	
E-learning	Up to 10%.	
Teaching methods	Teaching, interactive and active-experiential.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	**seminar paper**	essay/ report	practical/project task	other	**written exam**	**oral exam**	**practical**

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		135	4.5	0%
Pre-exam/Written exam	IU- MFMSE303-3 IU- MFMSE303-4 IU- MFMSE303-5	90	3	50%
Oral exam	IU- MFMSE303-3 IU- MFMSE303-4 IU- MFMSE303-5	30	1	20%
Practical exam	IU- MFMSE303-1 IU- MFMSE303-2	45	1.5	30%
In total		300	10	100%

Method of calculating the final grade
The final score is the sum of = complete written (50%) + practical (20%) + oral (30%) exam. A detailed description is given in the additional information about the subject.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Junqueira's Basic Histology: Text and Atlas, 12th Edition		X		X						X
	Langman's Medical Embryology. 12th edition by Sadler, T. W. (2011)		X		X			X			
Additional	VMS image collection: Histology Atlas, 2008.	X					X				X

Additional course information

Students are obliged to regularly attend and actively participate in all forms of classes.
During the course there will be two partial tests (H1 and H2). The first partial test (H1) includes General Embryology and development of the skeletal, muscular, circulatory, respiratory, nervous system and skin (Special embryology). Histological threads in the first partial test consists of epithelial, connective, fat, cartilage, bone, nerve and muscle tissue and vascular system, blood cells and formation of blood cells, immune, respiratory, neuroendocrine system and skin. The first partial test consists of 60 questions (30 questions from Embryology and 30 questions from Histology).
The second partial test (H2) includes the development of body cavities, digestive and urogenital system, the development of head and neck, ear and eye (Special embryology). Histological threads in the second partial test consists of the digestive system, liver, pancreas, urinary system, male and female reproductive system and sensory organs. The second partial test consists of 50 questions (20 questions from Embryology and 30 questions from Histology).
The total percentage of correct answers needed for a positive assessment, 60% of the written tests. For a positive evaluation is also necessary to achieve 50% correct answers from the first and second group of questions from Embryology and from the first and second group of questions from Histology.
For students who didn't pass partial tests, written exam makes a single unit of 110 questions and cannot be taken separately.
Positive mark of preliminary tests is recognized during the current academic year.
All students who weren't absent from school have the right to take partial tests. Also, those who pass additional exam from lectures during which they were not in class or on which they didn't show sufficient knowledge can approach to test.

H1-first partial test
36-41=(2);
42-48=(3);
49-54=(4);
55-60=(5);

H2-second partial test
30-35=(2);
36-40=(3);
41-45=(4);
46-50=(5);

Final written exam
66-76=(2);
77-88=(3);
89-99=(4);
100-110=(5);

Practical and oral exam are available to students who have passed the first and second part of the test in Histology and Embryology.
Practical exam (20% of the final grade)
The practical exam consists of 7 histological samples. Students must at least identify 5 out of 7 samples under the microscope, and then must identify microscopic details on them. The recognition of the samples is scored (maximum 7 points), showing the required structure on the samples (maximum 7 points), and finding the required structure to the samples (maximum 7 points).
13-14 = (2);
15-17 = (3);
18-19 = (4);
20-21 = (5);

Oral examination (30% of the final grade) The oral exam consists of 4 questions (1 general embryology, 1 special embryology, 1 general histology, 1 special histology). Students draw cards with certain issues.

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	III			
Course title	BASIC NEUROSCIENCE	Course code	MFMSE304			
ECTS	8	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			20	24	56	0
Teachers	Prof. Zoran Đogaš, MD, PhD		7	2	6	
	Prof. Renata Pecotić, MD, PhD		4	2	5	
	Prof. Maja Valić, MD, PhD		4	2	5	
	Assoc. prof. Ivana Pavlinac Dodig, MD, PhD		3	5	13	
	Assist. prof. Nikolina Pravdić, MD, PhD		2	5	12	
	Assist. prof. Josip Lesko, MD, PhD			2	2	
	Assistant Sijana Demirović, MD			6	13	

Course objectives	Course objectives are: - to provide the student with knowledge about the normal function of our nervous system by applying the acquired knowledge of physics, chemistry, biochemistry, biology, anatomy, histology and physiology - to provide the student with knowledge about morphology of the brain in general - external and internal structure of the brain, cellular and molecular neuroscience, synaptic transmission, sensory and motor systems, general and control function of the brain, higher brain functions.		
Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	- names, recognizes and describes the morphological features of the central nervous system, midbrain, end brain, peripheral nervous system as well as spinal cord and explains their function.	IU-MFMSE304-1	IU-MSE1 IU-MSE2
	- describes the fundamental electrophysiological features of neurons, explains the generation of resting transmembrane potential, action potentials and postsynaptic potentials.	IU-MFMSE304-2	IU-MSE1 IU-MSE2 IU-M3
	- describes and explains the way information is transmitted between neurons, classifies and explains the basic properties and mechanism of action of neurotransmitters, describes the structure of receptors and discusses their role in information transmission.	IU-MFMSE304-3	IU-MSE1 IU-MSE2 IU-MSE3
	- describes, explains and outlines the organization of sensory systems and applies knowledge in solving examples from clinical practice.	IU-MFMSE304-4	IU-MSE1 IU-MSE2 IU-MSE3 IU-MSE4 IU-MSE5 IU-MSE6
	- describes, explains and sketches the organization of motor systems and applies knowledge in solving examples from clinical practice.	IU-MFMSE304-5	IU-MSE1 IU-MSE2 IU-MSE3 IU-MSE5 IU-MSE6
	- describes and interprets the structure and neurophysiological	IU-	IU-MSE1

	features of higher brain functions: learning and memory, emotions, sexuality, wakefulness and sleep, and the neural control of breathing and heartbeat.	MFMSE304-6	IU-MSE2 IU-MSE3
	- applies knowledge from theoretical classes and demonstrates skills in solving electrophysiological problems on the computer.	IU-MFMSE304-7	IU-MSE1 IU-MSE21
	- applies knowledge from theoretical classes and demonstrates the skills of recording bioelectric (EEG, EMG, EOG) potentials from the human body.	IU-MFMSE304-8	IU-MSE1 IU-MSE21

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.	
Course content	Week / shift	Topic
	Lectures	(L1) Introductory lecture (L2) Neuron is a basic structural-functional unit of the CNS (L3) CNS research methods. Development of the CNS and processes of development reorganization and plasticity (L4) Biophysical basics of excitability (L5) Neurotransmitters in health and disease (L6) Serotonin (L7) General organization of the sensory systems. Taste and smell (L8) Physiology of the eye and phototransduction (L9) General structure of the motor systems (L10) Motor cortex and voluntary movements (L11) Brain lateralization (L12)Control of breathing during wakefulness and during sleep. Sleep medicine. (L13) General brain function
	Seminars	(S1) The structure of gray and white matter of the spinal cord (S2) The structure of gray and white matter of the brainstem and (S3) The structure of gray and white matter of the diencephalon (S4) Telencephalon (S5)Neuroanatomy, summary (S6) Cell membrane, ion channels, passive and active neuron properties (S7) Structure and function of the synapse and the cellular basis of behavior (neuron sequences, pathways, circles, networks, systems) (S8) Neurotransmitters, neuropeptides and their receptor (S9) Electrophysiology of neurons, summary (S10) Pain, heat and cold – anterolateral sensory system Touch, pressure, and kinesthesia - the dorsal column system (S11) Ear - organ of hearing and balance. Auditory and vestibular system (S12) Organization of the retina, primary visual pathway and primary visual cortex (S13) Eye movement and the organization of associative visual fields (S14) Sensory system, summary (S15) Spinal motor mechanisms and reflexes. Role of the descending pathways from the brainstem in maintaining posture and muscle tone; spinal shock šok (S16) Motor functions of the cerebellum and the basal ganglia (S17) Motor system, summary (S18) Organization and structure functions of the limbic system (S19) Neurobiology of emotion and sexuality (S20) Anatomy and psychology of learning and memory (S21) Hypothalamus; autonomic and endocrine control (S22) Clinical seminar

		(S23) General brain functions; EEG (S24) Stages of wakefulness and alertness; sleep (S25) Neurobiology of attention and associative functions of the prefrontal and posterior parietal cortex (S26) Cellular mechanisms of learning and memory
	Exercises	(E1) Appearance and distribution of gray and white matter of the spinal cord (E2) Appearance and distribution of gray and white matter of the brainstem (E3) Clinical-anatomic syndromes of the spinal cord (E4) Resting potential (E5) Action potential (E6) Synaptic potential (E7) Signalization (E8) Reflexes and reaction time (E9) Physiology of sensation (E10) Muscle and electromyography (E11) EEG and evoked potential (E12) *SleepLab* Polysomnography
Language	English	
E-learning	Classes are conducted in person. If necessary, lectures, seminars and part of the exercises can be combined (in person and online) via e-learning platforms (GoogleMeet) – up to 20% of classes can be performed online.	
Teaching methods	Teaching, interactive and active-experiential.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/report	practical/project task	**other**	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		100	3.3	0%
Activity during seminars	IU-MFMSE304-1,2,3,4,5,6,7,8	40	1.3	0%
Pre-exam/Written exam	IU-MFMSE304-1,2,3,4,5,6,7,8	100	3.4	100%
In total		240	8	100%

Method of calculating the final grade

The final grade is based on the result achieved on the written exam.
According to the Rulebook on the Integrated Studies at the School of Medicine University of Mostar, grades are assigned as following:
0-54% insufficient (1);
55-66% sufficient (2);
67-78% good (3);
79- 90% (very good 4);
91-100% excellent (5).

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Siegel, A. and Sapru, H.: ESSENTIAL NEUROSCIENCE, 4th Edition, Wolters Kluwer/ Lippincott Williams & Wilkins		x		x			x			
	John Huguenard and David A. McCormick: Electrophysiology of the		x		x			x			

	Neuron,Windows Version, A Companion to *Neurobiology* by Gordon Shepard										
Additional	Purves et al Neuroscience 5th edition published by Sinauer Associates		x	x				x			
	Kandel, E.R., Schwartz, J.H. and Jessel, T.M.: PRINCIPLES OF NEURAL SCIENCE, 4th edition, McGraw-Hill; New York, SAD, 2000.		x	x				x			
	Guyton, A.C. and Hall: MEDICAL PHYSIOLOGY, 11th edition. 2006.		x	x				x			

Additional course information

The Basic neuroscience course is performed with a total duration of 100 hours, divided into five teaching units (Neuroanatomy, Basics of neuron electrophysiology, Sensory systems, Motor systems, General brain functions). Topics that are covered through lectures, seminars and practical lessons are announced on the beginning of the course, including an indication of the prescribed literature.

Attendance of all forms of instruction is obligatory (except the attendance of individual consultations), and all students are obligated to study the prescribed material IN ADVANCE for seminars and practical lessons, using the main textbook and/or the additional literature.

Activity at the seminars is rewarded with pluses, whilst not being prepared will be marked as a minus. All absences and minuses have to be compensated through a colloquium at least 2 days before the exam. Students not taking the exam in the pre-exam period have to take a colloquium in a 10 days period after the end of the Basic neuroscience course, in order to compensate their absences and minuses.

Neuroscience is tested in the form of written exam that consists of 100 multiple answer questions with only one answer being correct. Each correct answer carries one point. In order to pass the exam (grade sufficient), the student must answer 55% of the questions correctly.

The final grade is based on the result achieved on the written exam.

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	III			
Course title	CROATIAN LANGUAGE II	Course code	MFMSE305			
ECTS	1	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			0	0	25	0
Teachers	Dr. sc. Ivona Baković, doc.		0	0	25	0

Course objectives	- to apply grammatical structures in the Croatian language and vocabulary for acquiring language competence at the A1 and A2 levels (according to the *Common European Framework of Reference for Languages*) - to recognize cultural features of the Croatian speaking area

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Applies the basics of phonology, morphology and syntax of the CL related to the content of the course	IU-MFMSE305-1	IU-MSE14 IU-MSE19
	Demonstrates basic conversational skills	IU-MFMSE305-2	IU-MSE14 IU-MSE19
	Demonstrates reading and writing of simple texts	IU-MFMSE305-3	IU-MSE14 IU-MSE19
	Applies topic-related vocabulary	IU-MFMSE305-4	IU-MSE14 IU-MSE19
	Recognizes cultural features of the Croatian speaking area	IU-MFMSE305-5	IU-MSE14 IU-MSE19

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar

Course content	Week / shift	Topic
	1.	Present tense of the modal verbs: *morati, trebati.*
	2.	Present tense of the modal verbs: *smjeti, moći, htjeti.*
	3.	Present tense (*-ovati/-ivati > -ujem*).
	4.	Locative case.
	5.	Past tense of the verb *biti*.
	6.	Past tense of the verbs ending in *-ati, -iti, -ovati, -ivati*. Reflexive verbs.
	7.	Past tense of the verbs ending in *-sti, -ći.*
	8.	Omitting the personal pronouns in the nominative case.
	9.	Future tense.
	10.	Dative case.
	11.	Instrumental case.
	12.	Genitive case.
	13.	The use of a number in front of a noun.
	14.	The concept of possession
	15.	The conditional.

Language	English
E-learning	In accordance with study regulations (up to max 20%).
Teaching methods	- Teaching methods - Interactive methods

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/report	practical/project task	**other**	**written exam**	**oral exam**	practical

Allocation of ECTS credits and share in the grade

Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes and preparing for the exam	-	25	0,8	20 %
Pre-exam/final exam	IU-MFMSE305-1, 2, 3, 4, 5	5	0,2	80 %
In total		30	1	100%

Method of calculating the final grade

Attending classes and preparing for the exam:
- irregular arrivals = 0% of the final grade
- regular arrivals without activities = 11% of the final grade
- activity only at the teacher's instigation = 14% of the final grade
- self-initiated activity = 17% of the final grade
- self-initiated activity with quality discussion = 20% of the final grade

Pre exam or final written/oral exam:
less than 55% correct answers = 0% of the final grade
55% - 66% correct answers = 44% of the final grade
67% - 78% correct answers =56% of the final grade
79% - 90% correct answers = 68% of the final grade
91% - 100% correct answers = 80% of the final grade

According to the Study Regulations, the final grade is obtained as follows:
0 – 54% insufficient (1)
55 – 66% sufficient (2)
67 – 78% good (3)
79 – 90% very good (4)
91 – 100% excellent (5)

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Čilaš Mikulić, M. – Gulešić Machata, M. – Udier, S. L., *Razgovarajte s nama!*, udžbenik hrvatskoga jezika za razine A1 -A2, Hrvatska sveučilišna naklada, Zagreb, 2021.		x	x				x			
	Čilaš Mikulić, M. – Gulešić Machata, M. – Udier, S. L., *Razgovarajte s nama!*, vježbenica hrvatskoga jezika za razine A1 -A2, Hrvatska sveučilišna naklada, Zagreb, 2021.		x	x				x			
Additional	Krešić, K. – Budmir, I., *Hrvatski za vas*, udžbenik hrvatskoga jezika za početnike A1 I A2, PRESSUM, Mostar, 2021.	x		x				x			

Additional course information

- The student is obliged to regularly attend lectures.
- Unexcused absences must be justified with our student doctor and with a request to the course instructor.

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	MEDICAL PHYSIOLOGY	Course code	MFMSE401			
ECTS	19	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			53	40	87	0
Teachers	dr. sc. Danijel Pravdić, red. prof.		8	0	16	
	dr. sc. Ivan Ćavar, red. prof.		4	0	13	
	dr. sc. Tomislav Kelava, izv. prof.		10	0	11	
	dr. sc. Joško Božić, izv. prof.		7	0	5	
	dr. sc. Vesna Lukinović-Škudar, izv.prof.		6	0	12	
	dr. sc. Alan Šućur, doc.		14	0	9	
	dr. sc. Antonio Markotić, doc.		4	0	18	
	dr. sc. Marko Kumrić, v. asist.		0	4	3	
	Ana Božić, v. asist.		0	6	0	
	Antea Bulum, v. asist.		0	10	0	
	Pavao Planinić, asist.		0	8	0	
	Ivo Krešić, asist.		0	8	0	
	Nikola Jurleta, asist.		0	4	0	
Course objectives	The objective of the Medical Physiology course is: - acquaint students with the normal functions of the organism that maintain homeostasis, and expand the existing knowledge about the functioning of cells, tissues and organs; - train students to be able to understand pathophysiological mechanisms and pharmacotherapeutic measures					

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Describes and explains basic functional features of neuromuscular, cardiovascular and renal systems at the level of cell, organ and the whole organism.	IU-MFMSE401-1	IU-MSE1 IU-MSE2
	Describes and explains the basic functional features of respiratory, gastrointestinal, endocrinological, reproductive and hematopoietic system at the level of cell, organ and the whole organism.	IU-MFMSE401-2	IU-MSE2
	Analyzes and associates the operation of control mechanisms including negative and positive feedback systems to controlled factors and physiological processes in the organism that are necessary for maintenance of homeostasis.	IU-MFMSE401-3	IU-MSE3
	Describes and analyzes the changes that occur in organic systems if there is a deviation of the controlled parameters and relates them with the appearance of symptoms and/or signs of the disease.	IU-MFMSE401-4	IU-MSE4
	Measures the arterial pressure value and interprets the obtained values.	IU-MFMSE401-5	IU-MSE3 IU-MSE8
	Analyzes and interprets the results of basic respiratory function measurements, stress test and glucose tolerance.	IU-MFMSE401-6	IU-MSE3 IU-MSE8
	Analyzes and interprets a normal electrocardiographic record.	IU-MFMSE401-7	IU-MSE1 IU-MSE21

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.	
	Week / shift	Topic

Course content	Lectures	(L1) Functional organization of human body; transport through cell membranes (L2) Basic physics of membrane potentials (L3) Excitation of skeletal muscle (L4) Contraction of skeletal muscle (L5) Excitation and contraction of smooth muscle (L6) Physiology of cardiac muscle (L7) Overview of the circulation: physics of pressure, flow and resistance (L8) Vascular distensibility, functions of the arterial and venous systems, the structure of microcirculation (L9) Long-term control of arterial pressure: integrated system for arterial pressure regulation (L10) Hemorrhagic shock and physiological principles of treatment (L11) Kidneys: physiological anatomy and function (L12) Micturition and diuretics (L13) Thirst, integration of renal mechanisms for control of blood volume and extracellular fluid volume (L14) Mechanics of lungs, Laplace's law, functions of the respiratory passageways (L15) Regulation od respiration (L16) Methods for studying respiratory abnormalities (L17) Physiological problems of high-altitude and deep-sea diving (L18) The autonomic nervous system and the adrenal medulla (L19) General principles of gastrointestinal function (L20) Propulsion and mixing of food in the alimentary tract (L21) Review and regulation of carbohydrate metabolism, formation of ATP (L22) Review and regulation of lipid and protein metabolism (L23) The liver as an organ (L24) Dietary balance, regulation od feeding, obesity and starvation, vitamins and minerals (L25) Body temperature regulation (L26) Introduction to endocrinology; principles of secretion, transport, action and clearance of hormones (L27) Pituitary gland-hypothalamus relation, posterior pituitary hormones (L28) Pregnancy, parturition, lactation (L29) Erythrocytes and blood types (L30) Resistance of the body to infection; leucocytes (L31) Hemostasis and blood coagulation
	Seminars	(S1) Membrane and action potentials (S2) Cardiac cycle, regulation of heart pumping (S3) Rhythmical excitation of the heart (S4) ECG (S5) Integration (general physiology, potentials, muscles and heart) (S6) Capillary fluid exchange, local control of tissue blood flow (S7) Humoral and nervous regulation of circulation, rapid control of arterial pressure (S8) Cardiac output and venous return (S9) Muscle blood flow and coronary circulation (S10) Integration (circulation) (S11) The body fluid compartments and volumes and their balance; edema (S12) Glomerular filtration, renal blood flow and their control (S13) Tubular reabsorption and secretion (S14) Regulation of reabsorption in tubules (S15) Regulation of extracellular fluid osmolarity and sodium concentration (S16) Regulation of renal potassium, calcium and magnesium excretion (S17) Acid-base regulation: respiratory and renal regulation, acidosis and alkalosis (S18) Integration (kidneys and body fluids) (S19) Pulmonary ventilation

		(S20) Pulmonary circulation, pulmonary edema and pleural fluid (S21) Physical principles of gas exchange; diffusion of gases through the respiratory membrane (S22) Transport of oxygen and carbon dioxide in blood and tissue fluids (S23) Integration (respiratory system) (S24) Secretory functions of the alimentary tract: secretion of saliva, gastric and pancreatic secretion (S25) Secretory functions of the alimentary tract: bile secretion and intestinal secretion; absorption of water and ions (S26) Energetics and metabolic rate (S27) Integration (alimentary tract and metabolism) (S28) Anterior pituitary hormones (S29) Thyroid hormones (S30) Insulin and glucagon (S31) Blood glucose regulation, diabetes mellitus (S32) Calcium and phosphate metabolism, Bone and teeth physiology (S33) Parathyroid hormone, calcitonin and vitamin D (S34) Synthesis of adrenocortical hormones, functions of mineralocorticoids (S35) Adrenocortical hormones; stress (S36) Integration (endocrinology) (S37) Reproductive and hormonal functions of the male (S38) Female physiology before pregnancy and female hormones (S39) Integration (reproduction)
	Exercises	(E1) Transport through cell membranes Basic physics of membrane potentials (E2) Recording and vectorial analysis of ECG (E3) Interactive physiology 9.0: Cardiovascular system (E4) Measuring of the arterial pressure and peripheral pulse rate, heart sounds (E5) Electrocardiogram repetition, orthostatic test (E6) Kidney problem solving, ABS cases (E7) Spirometry test (E8) The Astrand cycle test; Effect of exercise on arterial pressure (E9) OGTT- Oral Glucose Tolerance Test (E10) Blood typing (E11) Hematology (erythrocyte count, hemoglobin and hematocrit; hematological indices)
Language	English	
E-learning	Classes are taken in person. If necessary, lectures, seminars and part of the exercises can take place combined (live and online) or completely online via e-learning platforms (Google Meet) up to a maximum 20%.	
Teaching methods	Teaching, interactive and active-experiential.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/report	practical/project task	other	**written exam**	**oral exam**	**practical**

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		180	6	0%
Midterm/Colloquium of exercises - OSCE	IU- MFMSE401-5	30	1	0%
Practical exam	IU- MFMSE401-6 IU- MFMSE401-7 IU- MFMSE401-5	30	1	0%
Pre-exam/partial written exams (P1+P2)	IU- MFMSE401-1 IU- MFMSE401-2	180	6	66,6%
Final oral exam	IU- MFMSE401-3 IU- MFMSE401-4	150	5	33,4%

In total		570		19				100 %			
Method of calculating the final grade											
The final grade is obtained as the arithmetic mean of the grades from two partial exams and the oral exam (sum of grades from P1, P2 and oral exam divided by 3). A detailed description is given in the additional information about the subject.											
Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	A. C. Guyton. J. E. Hall: Medical physiology, 14th Edition. Elsevier, Philadelphia, USA, 2020		x		x			x			
	Exercises in physiology. Internal edition, Faculty of Medicine University of Mostar, 2020.	x			x					x	
Additional	Lecture notes		x		x						x
	Linda Costanzo: Physiology, 7th edition, 2021		x		x			x			

Additional course information

Physiology classes contain 180 hours and are taken over 11 weeks, which includes the post-class examination period (pre-exam). The class is divided into two approximately equal parts: Physiology I (P1) and Physiology II (P2). The teaching consists of
lectures, seminars and exercises. At the end of each week a seminar entitled "Repetition and examination of passed material" is organized. In this part of the course, the topics are repeated and consolidated based on problem solving and test questions.

During classes from seminars and exercises, **knowledge is continuously checked**. To students who demonstrate exceptional knowledge of the learning material covered in the seminar or motivation and understanding in the exercises additional points will be awarded (bonuses), which will be added to the points on the final exam. **Weekly tests** are held at the beginning of each week, and there are 6 weekly tests in total. They contain 20 questions related to the previous week's topics. On these tests, knowledge is evaluated as follows: for a grade of 5, the student receives 2.0 points, for a grade of 4, the student receives 1.5 points, for a grade of 3, student receives 1 point, and for a grade of 2, student receives 0.5 points. The maximum number of additional points that student can earn for one partial exam is 6, and it is obtained on the basis of the sum of points from classes and the results of weekly tests.

Partial exams are held about a week after the lessons from P1 or P2. They consist of 80 test-questions with multiple choice of answers (one of the five offered answers is always correct). To pass the exam (grade sufficient), the student must answer 55% of the questions correctly, i.e., must obtain at least 44 points.
According to the Rulebook on Studying at the University of Mostar grades are assigned as follows:
00-54% (0-43 points) insufficient (1);
55-66% (44-53 points) sufficient (2);
67-78% (54-63 points) good (3);
79- 90% (64-72 points) very good (4);
91-100% (73-80 points) excellent (5).

The colloquium of the exercises refers to the skill of measuring arterial pressure. The student should demonstrate the ability to measure arterial blood pressure and interpret the measured values The exam is conducted using the Objective Structured Clinical Examination (OSCE) model. Students who do not pass the midterm exam during the course will have to pass it as a part of the practical exam.

The practical exam consists of 15 questions/tasks assessing the understanding of ECG, respiratory analysis, stress tests, OGTT, blood types, ABS and other units that were covered and taught using active-experiential methods during exercises. The exam is divided into two parts, the knowledge of ECG (5 questions/tasks) is evaluated separately, and the remaining parts separately (10 questions/tasks), due to the importance of ECG interpretation for daily practice. The minimum passing requirement is 80% correctly solved tasks for each part individually (in practice – 4 correctly solved tasks from the ECG and

8 correctly solved tasks from the other sections). Students who have not passed the colloquium/midterm of exercises, will take it as the third component of the practical exam.

The partial exams, colloquium and practical exam, when passed, are acknowledged during the academic year.

The oral exam includes the most important, integrative units of overall physiology. In the final exam, it is not details that are required, but integrative knowledge that is essential for understanding the whole subject, medical practice and others courses. The condition for taking the oral exam is that the student has passed all partial exams and the colloquium/practical exam of exercises. Students who have passed the partial exams and the colloquium/practical exam during the class will be admitted in the pre-exam term and subsequent terms (when applicable) directly to the oral exam, which is counted as taking the exam.

The final grade is calculated as the arithmetic mean of the grades obtained on the two partial exams and the grade obtained on the oral exam. That is: (P1+P2+Oral)/3.

Study programme	MEDICAL STUDIES IN ENGLISH					
CYCLE	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	MEDICAL PSYCHOLOGY	Course code	MFMSE402			
ECTS	3.5	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			20	20	20	0
Teachers	dr. sc. Dragan Babić, prof.		10	0	0	
	dr. sc. Miro Jakovljević, prof.		10	0	0	
	dr. sc. Marko Pavlović, doc.		0	7	7	
	dr. sc. Martina Krešić Ćorić, doc.		0	7	6	
	dr. sc. Romana Barbarić, v. asist.		0	6	7	
Course objectives	- To achieve students' understanding of psychological functions and to expand existing knowledge about the human soul. - To achieve students' understanding of medical psychology and psychopathology					

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Describes and explains basic psychological functions	IU-MFMSE402-1	IU-MSE1 IU-MSE2
	Describes and explains the basics of psychopathology	IU-MFMSE402-2	IU-MSE4 IU-MSE5
	Analyzes and connects various psychological functions and processes that help in better understanding of psychology	IU-MFMSE402-3	IU-MSE2 IU-MSE7
	Describes and analyzes psychopathology	IU-MFMSE402-4	IU-MSE4 IU-MSE6
	Analyzes and interprets psychological disorders that are important for a better understanding of psychological processes and overall human functioning	IU-MFMSE402-5	IU-MSE3 IU-MSE13

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.	
Course content	Week/shift	Topic
	Lectures	1. Introduction to psychology 2. Personality 3. Normality 4-6. General psychopathology 7. Stress 8. Aggressiveness 9,10. Anxiety 11. Resilience 12. Doctor-patient relationship 13. Patient's reaction to the disease 14. Psychological manifestations of serious somatic diseases 15. Communication with terminally ill patients 16. Psychotherapy 17. Group processes in psychology 18. The psychology of pain 19. Learning and learning ways 20. Doctors personality
	Seminars	1. Anxiety 2. Aggressiveness (assertiveness) 3. Defense mechanisms

		4. Personality 5. Positive emotions 6. Negative emotions 7. Thought disorders 8. Perception disorders 9. Suicidality 10. Stress in medicine 11. Spirituality and mental disorders 12. Psychotherapy 13. Resilience 14. The relationship between the sexes 15. Doctor's personality 16. Psychology and politics 17. Psychology of sport 18. Emotions disorders 19. History of psychology 20. Mourning
	Exercises	1-20. Presentation of patients with different psychopathologies
Language	English	
E-learning	Classes are taken in person. If necessary, lectures, seminars and part of the exercises can take place combined (live and online) or completely online via e-learning platforms (Google Meet) up to a maximum of 20% in accordance with the decision of the organizational unit.	
Teaching methods	Teaching methods (lectures, presentation, demonstration).	

Types of assessment (indicate-**Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	Seminar paper	Essay/report	Practical/project task	other	**written exam**	**oral exam**	practical exam

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		60	2	0
Pre-exam/written exam	IU-MFMSE402-1 IU-MFMSE402-2	22,5	0,75	50,0%
Final oral exam	IU-MFMSE402-3 IU-MFMSE402-4 IU-MFMSE402-5	22,5	0,75	50,0%
In total		105	3,5	100 %

Method of calculating the final grade

The final grade is obtained as the arithmetic mean of the grades from the written exam and the oral exam.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Babić D. & Barbaric R. Medical psychology, University of Mostar, 2021.	x			x			x			
Additional	Lecture notes										

Additional course information

The Medical Psychology course contain 60 hours and are taken over 3 weeks which includes the post-class examination period (pre-exam). The course consist of lectures, seminars and exercises.

Students' knowledge is continously checked during seminars and exercises.

Written exam is carried out in the usual way, where students are given questions to which they must give written answers.

Oral exam includes the most important, integrative units of overall medical psychology. The final exam examines detailed integrative knowledge, which is essential for understanding the whole subject, medical practice or for understanding the connection between medical psychology and other subjects.

The final grade is calculated as the arithmetic mean of the grades obtained in the written and the oral exam.

According to the Study Regulations, the final grade is obtained as follows:
0 – 54% insufficient (1)
55 – 66% sufficient (2)
67 – 78% good (3)
79 – 90% very good (4)
91 – 100% excellent (5)

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	IMMUNOLOGY	Course code	MFMSE403			
ECTS	4.0	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			30	4	16	0
Teachers	Prof. Ivan Ćavar, MD, PhD		14	0	4	
	Assoc. prof. Vesna Lukinović-Škudar, MD, PhD		10	0	4	
	Assist. prof. Katarina Cvitković, MD, PhD		6	0	0	
	Assistant Jelena Sulić, MD		0	4	8	
Course objectives	The aim of the course "Immunology" is: - to achieve students' understanding of the basic components and actions of the immune system in a state of health or illness - train students to understand basic interventions (vaccination, immunosuppression, transplantation) that change the functioning of the immune system in order to comprehend the importance of their usage in clinical medicine					

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	-defines the nomenclature, basic properties and components (genes, cells, tissues and organs) of innate and acquired immunity	IU-MFMSE403-1	IU-MSE2
	-describes the mechanisms of antigen collection and presentation to lymphocytes, as well as antigen recognition in the acquired immune response	IU-MFMSE403-2	IU-MSE3
	-describes and analyzes T cell-mediated Immunity and humoral immunity, as well as their executive mechanisms	IU-MFMSE403-3	IU-MSE3 IU-MSE5
	-explains and analyzes the mechanisms of immune tolerance, autoimmunity, hypersensitivity reactions and immune responses to tumors and tissue transplants, and relates their significance to clinical conditions and interventions	IU-MFMSE403-4	IU-MSE5 IU-MSE6 IU-MSE8 IU-MSE15
	-defines and describes congenital and acquired immunodeficiencies	IU-MFMSE403-5	IU-MSE5 IU-MSE6 IU-MSE8

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.	
Course content	Week / shift	Topic
	Lectures	(L1) Innate and acquired immunity, types of acquired immunity, characteristics of acquired immune responses (L2) Immune system cells and tissues, review of immune responses to microorganisms (L3) Basic characteristics and specificity of innate immune responses, cellular receptors for microorganisms and damaged cells (L4) Components, reactions and role of innate immunity in stimulating acquired immune responses (L5) Processing and presentation of protein antigens, other roles of APS and recognition of antigens by B lymphocytes (L6) Cytokines and chemokines

		(L7) Development of immune repertoire; Lymphocyte development, emergence of diverse antigen receptors, maturation and selection of T and B lymphocytes (L8) Phases of T lymphocyte response, antigen recognition and costimulation, biochemical pathways of T lymphocyte activation (L9) Complement system (L10) Executive mechanisms of T lymphocyte-mediated immunity (L11) The executive mechanisms of humoral immunity (L12) Tolerance mediated by lymphocytes B; Tolerance of commensal microorganisms and fetal antigens; Autoimmunity (L13) Immune responses to transplants (L14) Diseases caused by antibodies, immunocomplexes and T lymphocytes (L15) Congenital and acquired immunodeficiencies
	Seminars	(S1) Antigens recognized by T lymphocytes, the way how APC collect protein antigens, structure and function of HLA/MHC molecules (S2) Antigenic lymphocyte receptors; Antibodies and T lymphocyte receptors (S3) Functional responses of T lymphocytes to antigen and costimulation and their migration in cellular immunity responses (S4) Phases and types of humoral immune responses, stimulation of lymphocytes B by antigen (S5) Roles of helper T lymphocytes and antibodies in humoral immune responses (S6) Immunological tolerance: significance and mechanisms; Central and peripheral tolerance mediated by T lymphocytes (S7) Immune responses to tumors (S8) Types of hypersensitivity reactions; Early hypersensitivity
	Exercises	(E1) ELISA and immunofluorescence (E2) Flow cytometry
Language	English	
E-learning	Classes are held live. If necessary, lectures and seminars can take place combined (live and online) or completely online via e-learning platforms (Sumarum, Google Meet) up to a maximum of 20%.	
Teaching methods	Teaching and interactive methods.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/report	practical/project task	other	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		50	1.7	0%
Pre-exam/final written exam	IU- MFMSE403-1 – IU- MFMSE403-5	70	2.3	100%
In total		120	4.0	100%

Method of calculating the final grade

The written exam consists of 50 test-questions with multiple choice of answers (one of the five offered answers is always correct). To pass the exam (grade sufficient), the student must answer 55% of the questions correctly, i.e. must obtain at least 27 points. According to the Study Regulations, the grade is obtained as follows:
0 – 54% insufficient (1)
55 – 66% sufficient (2)
67 – 78% good (3)
79 – 90% very good (4)
91 – 100% excellent (5).

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai. Basic		x		x			x			

	Immunology: Functions and Disorders of the Immune System, Sixth edition, Elsevier (Philadelphia, USA), 2020.										
Additional	Teaching materials		x		x						x
Additional course information											
Students are obliged to regularly attend and actively participate in all forms of classes. Students must complete all classes, i.e. they can be absent up to the limit prescribed by the Regulations of the School of Medicine University of Mostar.											

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	PHYSICAL EDUCATION II	Course code	MFMSE404			
ECTS	0.5	Status	OBLIGATORY			
Teaching hours			Lectures	Exercises	Seminars	Practice
			0	25	0	0
Teachers	dr.sc.Ivan Kvesić, izv.prof.		0	25	0	0

Course objectives	The aim of the Physical Education course is: - Expand students' knowledge about the impact of kinesiology activities on the level of health. - To expand students' knowledge about the general process of exercise as well as the consequences of the effects of these processes on the human body with special reference to the preservation of health achieved through kinesiology processes. - To expand students' knowledge about ways to solve problems related to exercise processes. - Train students for independent work and expand students' knowledge about the importance of exercise in everyday life.

Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Applies warm-up exercises for a particular kinesiological activity.	IU-MFMSE404-1	IU-MSE21
	Independently analyzes and becomes aware of the importance of exercise in everyday life.	IU-MFMSE404-2	IU-MSE21 IU-MSE13
	It assesses the need and importance of daily exercise in order to preserve health and improve the quality of life.	IU-MFMSE404-3	IU-MSE13
	It creates an active break (an active break between studying and during free time).	IU-MFMSE404-4	IU-MSE13
	It presents tolerance, work habits and self-discipline.	IU-MFMSE404-5	IU-MSE13

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar.

Course content	Week / shift	Topic
	1.	Introductory meeting and familiarization of students with obligations
	2.	Structure of the Physical Education class
	3.	General preparatory exercises and their application
	4.	Football – futsal 4+1
	5.	Soccer – small soccer 5+1
	6.	Handball - jump shot, play in defense, play in attack
	7.	Volleyball – organization of the game
	8.	Volleyball - game
	9.	Basketball – basketball 3 vs 3
	10.	Basketball - game
	11.	Tennis – organization of the game in pairs
	12.	Tennis – 1 on 1 game
	13.	Walking tour - organization of outdoor excursions
	14.	Repetition and improvement of general preparatory exercises
	15.	Repetition of the learned content as chosen by the students

Language	English
E-learning	Sumarum, possibility of establishing online classes via the platform: Google meet or Zoom up to a maximum of 20%.

Teaching methods	- teaching methods - presentation - practical methods (exercises in the hall, exercises in nature or outdoors, exercises in the pool) - interactive methods (conversation and agreement about the class and exercises, dialogue, communication about the course and mutual, creative ideas about the contents of the exercises)

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	**seminar paper**	essay/ report	practical/project task	other	written exam	oral exam	**practical**

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes and preparing for the practical	IU-MFMSE404-1 IU-MFMSE404-2 IU-MFMSE404-3 IU-MFMSE404-4 IU-MFMSE404-5	25	0.5	100 %
In total		25	0.5	100 %

Method of calculating the final grade

Attending classes and preparing for the practical assignment/exam:

Class attendance and class activities:
- irregular arrivals = 0% grade
- more than 80% attendance at exercises = 100% descriptive grade

Exceptionally for students who are exempted from exercises due to health or sports (top athletes) exemptions, students are required to write a seminar paper.

Writing a seminar paper:
- the paper is not written = 0% grade.
- The work fully meets the formal and content criteria and is grammatically and spelling correct = 100% grade

According to the Study Regulations, the final grade is obtained as follows:
0 – 54% insufficient (1)
55 – 66% sufficient (2)
67 – 78% good (3)
79 – 90% very good (4)
91 – 100% excellent (5)

An exception is the subject of Physical Education, where a descriptive grade of "passed" is included in accordance with regular attendance at exercises.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Educating the Student Body : Taking Physical Activity and Physical Education to School, Harold W. Kohl III and Heather D. Cook, 2013.		X		X			X			
Additional											

Additional course information

- The student is obliged to regularly attend exercises from the course.
- The condition for entering the final descriptive grade is met with the attendance of at least 80% of the classes held.
- Exceptional efforts at exercises will be rewarded with additional (accumulation) pluses. The maximum number of accumulation points is 2 plus in the record.
- Unexcused absences must be justified with our student doctor and with a request to the course instructor.
- Exempted students are required to write a seminar paper

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	Teratology – taking drugs during pregnancy	Course code	MFMSEI03			
ECTS	1.5	Status	ELECTIVE			
Teaching hours			Lectures	Exercises	Seminars	Practice
			8	10	7	-
Teachers	Sandra Kostić, PhD, associate professor		8	10	7	

Course objectives	The aim of the course is to understand and acquire knowledge about the influence of drugs on the development of malformations in fetus		
Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	- Describes and explains the basics of human development and development of malformations	IU-MFMSEI03-1	IU-MSE1
	- Identify and describe developmental malformations	IU-MFMSEI03-2	IU-MSE4
	- Identify and describe the most common drugs taken during the pregnancy and their mechanism of action and possible influence on development of anomalies	IU-MFMSEI03-3	IU-MSE5
	- Name and explain the supplements taken during the pregnancy and their possible influence on development of anomalies	IU-MFMSEI03-4	IU-MSE5
	- Describe the influence of illegal substances on the foetal development	IU-MFMSEI03-5	IU-MSE5

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar	
Course content	Week / shift	Topic
	Lectures	- The basics of the human development - The principles of teratology and historical examples - Taking drugs during pregnancy and lactation - Developmental anomalies – genetic, epigenetic and environmental influence
	Seminars	- Placenta – blood supply, the placental barrier - Pharmacokinetics (absorption, distribution, metabolism, secretion) - Mother diet - Supplements in diet - The influence of illegal substances on the fetal development
	Exercises	- Various drugs (narcotics, NSAIDs, anxiolytics and antidepressants, antibiotics, drugs for heart and blood vessels diseases, cytostatic, sex hormones, drugs for skin diseases): action and examples of possible anomalies due to their action - The value of the animal research of teratogens - Research of the scientific literature, short movies with teratology theme
Language	English	
E-learning	Classes are conducted in person. If necessary, lectures, seminars and exercises can be combined (in person and online) or completely online via e-learning platforms (Google-Meet).	
Teaching methods		

Types of assessment (indicate - **Bold**)	
Type of pre-examination obligation	Type of exam

midterm	**seminar paper**	essay/report	practical/project task	other	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Class attendance		25	0.8	
Seminar paper	IU- MFMSEI03-3 IU- MFMSEI03-4 IU- MFMSEI03-5	10	0.35	
Written exam	IU- MFMSEI03-1 IU- MFMSEI03-2 IU- MFMSEI03-3 IU- MFMSEI03-4 IU- MFMSEI03-5	10	0.35	
In total		45	1.5	100 %

Method of calculating the final grade

The final grade is descriptive, pass/fail. After completing the seminar work and the written exam, student will pass the course.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Embryology, teratology, causes of congenital disorders (ppt)	x			x						x
	Sadler, T. W. Langman's medical embryology. — 15th ed.		x		x			x			
	Drugs in Pregnancy: Pharmacologic and Physiologic Changes that Affect Clinical Care (Emily A. Pinheiro1,2 and Catherine S. Stika), 2020.		x		x				x		
	Nutritional Gaps and Supplementation in the First 1000 Days (Beluska-Turkan K et al.) 2019.		x		x				x		
	Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus (Marylou Behnke, Vincent C. Smith) 2013.		x		x				x		
	Macronutrient and Micronutrient Intake during Pregnancy: An Overview of Recent Evidence (Mousa A. et. Al), 2019		x		x				x		
Additional	Drugs During Pregnancy and Lactation (Third Edition), 2015 Treatment Options and Risk Assessment Edited by: Christof Schaefer, Paul W. J. Peters and Richard K. Miller		x		x						x

	ISBN: 978-0-12-408078-2										
Additional course information											

Study programme	MEDICAL STUDIES IN ENGLISH					
Cycle	INTEGRATED	Type	UNIVERSITY			
Study track	-	Module	-			
Year of study	2	Semester	IV			
Course title	HELLO KIDNEY	Course code	MFMSEI04			
ECTS	1.5	Status	ELECTIVE			
Teaching hours			Lectures	Exercises	Seminars	Practice
			8	10	7	-
Teachers	Prof. Katarina Vukojević, MD, PhD		8	10	7	

Course objectives	Objective of Hello Kidney is to teach student about normal kidney development, anatomy, physiology and congenital anomalies of genitourinary tract		
Course learning outcomes	Learning outcome (LO) Student:	Course learning outcome code	LO code at the study program level
	Identify, describe and explain the most important characteristics of genitourinary system development, anatomy, physiology and structures at the level of the tissue, organ and whole body.	IU-MFMSEI04-1	IU-MSE1
	Name and explain changes that occur in genitourinary system because of developmental anomalies.	IU-MFMSEI04-2	IU-MSE4
	Apply adopted knowledge to predict function of genitourinary system in health and diseases.	IU-MFMSEI04-3	IU-MSE4

Prerequisites for the course enrolment	In accordance with the Rulebook on the Integrated Studies at the School of Medicine University of Mostar

Course content	Week / shift	Topic
	tournament	Development of genitourinary tract
	tournament	Factors involved in normal kidney development
	tournament	Congenital anomalies of kidney and urinary tract (CAKUT)
	tournament	Genetic background of CAKUT
	tournament	Kidney anatomy and physiology
	tournament	Critical review of CAKUT literature
Language	English	
E-learning		
Teaching methods	Classes are conducted in person. If necessary, lectures, seminars and exercises can be combined (in person and online) or completely online via e-learning platforms (Google-Meet) up to max 20%.	

Types of assessment (indicate - **Bold**)							
Type of pre-examination obligation					Type of exam		
midterm	seminar paper	essay/report	practical/project task	other	**written exam**	oral exam	practical

Allocation of ECTS credits and share in the grade				
Student obligations	Learning outcome code	Hours of workload	Share in ECTS	Share in grade
Attending classes		25	0.8	
Written exam	IU-MFMSE 1-3	20	0.7	100
In total		45	1.5	100 %

Method of calculating the final grade
Evaluation is descriptive

Literature	Title	Edition	Language	Type of literature

(indicate)	(title, author, year)	own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Sadler TW. Langman's Medical Embryology, 12th Edition		x		x			x			
	Sapunar D, Saraga Babić M. Puljak L, Vukojevic K, Lovric-Kojundzić S, Carev D. Histology atlas on CD. University of Split School of Medicine, Split, Croatia		x		x						x
	Handouts	x			x					x	
Additional											
Additional course information											