

Study programme	MEDICAL STUDIES IN ENGLISH				
Cycle	INTEGRATED	Type	UNIVERSITY		
Study track	-	Module	-		
Year of study	1	Semester	I		
Course title	MEDICAL BIOLOGY	Course code	MFMSE102		
ECTS	9.5	Status	OBLIGATORY		
Teaching hours		Lectures	Exercises	Seminars	Practice
		45	30	35	0
Teachers	dr.sc. Katarina Vukojević, prof.	13	0	7	0
	dr. sc. Sandra Kostić, prof.	12	0	7	0
	dr. sc. Snježana Mardešić, prof	10	0	7	0
	dr. sc. Violeta Šoljić, prof	10	0	7	0
	dr. Maja Barbarić, viši asistent	0	15	7	0
	Martina Vukoja, asistent	0	15	0	0
Course objectives	The objectives of the Medical Biology course are making an introduction for students to the basic principles of modern biological science which is of high importance for the diagnosis and therapy of human diseases, and the future of medicine. During this course, students should acquire terminology necessary for understanding of modern biomedical literature. The students will learn basic cell biology, molecular biology, developmental biology with an emphasis on human biology. They will be actively involved in problem-orientated work, organized in the form of blended lectures, seminars and exercises in order to develop practical communication skills and understanding of fundamental biological processes, as well as critical thinking based on acquired knowledge in modern biological science.				
Course learning outcomes	Learning outcome (LO) Student:		Course learning outcome code	LO code at the study program level	
	Describes and explains the basic structure and function of cells (macromolecules, cytoskeleton, transport of macromolecules, organelles, mitochondria and energy production, cell cycle, cell signaling and tumor biology)		IU-MFMSE102-1	IU-MSE1	
	Describes and explains the basics of molecular cell biology (cell genome, replication and repair of DNA, transcription and RNA species, regulation of transcription, RNA modification, translation, regulation of translation, synthesis and modification of proteins, transport and function of proteins)		IU-MFMSE102-2	IU-MSE2 IU-MSE21	
	Distinguishes the principles of the basics of developmental biology (fertilization, meiosis, mitosis, stem cells and the molecular mechanisms of cell differentiation)		IU-MFMSE102-3	IU-MSE3	
	Distinguishes the medical human genetics (basic principles of genetic inheritance, sexual and autosomal inheritance, chromosome aberrations, genetic counseling)		IU-MFMSE102-4	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			
	Lectures	L1 – Cell -evolution prokaryotes vs. eukaryotes, cell compartments, inner membrane, cytoplasm L2 - cell structure, the cell chemistry, macromolecules, enzymes L3 - Cell membrane L4 - Nucleic Acids, gens, eukaryotic organisms, DNA L5 - Nucleus, transport, organization, nucleolus L6 – cytoskelet - microfilaments, intermediar filaments, microtubules L7 - extracellular matrix and organization, cell surface, cellular interactions L8 - Cell research methods and microscopy L9 - Introduction to molecular biology - DNA replication and telomeres			

		L10 - maintenance and DNA recombination, DNA repair L11 - synthesis and RNA transcription, transcription factors L12 - synthesis and RNA transcription, RNA trafficking L13 - genomic DNA, recombination L14 - synthesis of proteins, translation, protein sorting and transport L15 - Bioenergetics and metabolism, mitochondria and peroxisomes L16 - transport and protein sorting - ER, Golgi apparatus L17 - protein transport - vesicular transport, lysosome L18 - Cell signaling - signal molecules and action of cell surface receptors L19 - Cell signaling - intracellular signal transduction, cytoskelet and signaling network L20 - cell cycle - cell cycle checkpoints, cell cycle regulation, mitosis and meiosis L21 - Meiosis L22 - Programed cell death L23 - Stem cells L24 - Cancer - development and causes, tumor viruses, oncogenes					
	Seminars	S1 - cell structure, the cell chemistry, macromolecules, enzymes S2 - cell membrane - micro and macro molecules transport S3 - Nucleus, DNA S4 - extracellular matrix and cytoskeleton S5 - DNA analysis S6 - protein analysis S7 - cell genome, DNA replication S8 - transcription, transcription regulation, transport and processing of RNA S9 - translation and translational regulation S10 - ER and Golgi apparatus S11 - Bioenergetics and metabolism, mitochondria and peroxisomes S12 - Cell signaling S13 - cell cycle S14 - Stem cells and programed cell death S15 - Cancer S16 - repetition and knowledge testing					
	Tutorials	E1 (10 hours) - DNA analysis E2 (4 hours) - Methods of cell investigation. Microscope and microscopy 1 E3 (4 hours) - Methods of cell investigation. Microscope and microscopy 1 E4 (2 hours) - Repetition. Microscope and microscopy E5 (10 hours) - Protein analysis					
Language	English						
E-learning	Up to 20% (lectures).						
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			110	3,6			
Seminar paper and work		IU- MFMSE102-1 IU- MFMSE102-2 IU- MFMSE102-3 IU- MFMSE102-4	45	1,5	20%		
Pre-exam/Written exam		IU- MFMSE102-1 IU- MFMSE102-2 IU- MFMSE102-3 IU- MFMSE102-4	130	4,4	80%		
In total			285	9,5	100%		
Method of calculating the final grade							

The final grade is obtained as a weighting of the grades from the seminar assignment (20% of the grade) and the written exam (80% of the grade). A detailed description is given in the additional course information.

Literature (indicate)	Title (title, author, year)	Edition		Language				Type of literature			
		own	other	croatian	english	other	multilingual	book	article	script	other
Compulsory	Cooper GM, Hausman RE. The Cell, a Molecular Approach. 8th ed. Washington DC, Sunderland (Massachussets): ASM Press, Sinauer Associate		x		x			x			
	Cox TM, Sinclair J. Molecular biology in medicine. Blackwell Science, 1997. Oxford, UK (5th and 17th chapter)										
Additional	Alberts B et. all. Essential Cell Biology, New York, Garland Science,3/e, 2009		x		x			x			
	Turnpenny P, Ellard S. Emery's Elements of Medical Genetics. 14th edition, Elsevier Churchill Livingstone, Edinburgh 2011.										

Additional course information

Further explanation: The course of Medical biology is performed during the first semester in the form of lectures (45 hours), seminars (35 hours) and exercises (30 hours). All forms of education are obligatory, and the participation of students will be monitored regularly.

The teacher evaluates the student's participation in the seminar (demonstrated knowledge, understanding, ability to define problems and reasoning).

Seminars consist of seminar work and quizzes. For seminar work each student will get their own topic and presentation will be graded from 1-5. This mark will be evaluated as 10% of grade. All 16 seminars will finish with quiz (10 question per seminar). Maximal number of points can be 160 (16 seminars). These points will be evaluated as 10% of final grade according to the key: 91 – 110 – pass; 111 – 120 – good; 121 – 140 – very good; 141 - 160 – excellent.

Written test consists of 80 questions; 55 percent is necessary to pass (44 points). Written test will be evaluated as 80% of final grade.

44-52 – sufficient

53-62 – good

63-71 – very good

72-80 – excellent

Final mark: seminar work (10% of grade) + seminar quizzes (10% of grade) + written exam (80 % of grade).