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.											