

Name of the course	Medical Microbiology and Parasitology			Code	MSE303
Type of study program:	Integrated university study, Medicine			Year of study:	3
Credits (ECTS):	8.0	Semester:	VI	Number of hours per semester (l+s+e)	95 (21+30+44)
Status of the course:	obligatory	Preconditions:	Passed all exams of the 2 nd year	Comparative conditions:	
Access to course	Third year students			Hours of instructions:	According to schedule
Course teacher:	professor Marija Tonkić, MD, PhD				
Consultations:	during lectures every day; by e-mail daily				
E-mail address and phone number	mtonkic@kbsplithr; +385 21 556 206				
Associate teacher:	assoc. prof. Ivana Goić Barišić, MD, PhD igoic@kbsplit.hr; +385 21 556 169				
Consultations:	during lectures every day; by e-mail daily				
Assistants:	Sanja Jakovac, MD, MSc Tanja Petrović, MD, MSc				
Consultations:	during lectures every day; by e-mail daily				
E-mail address	sanjamaljkovic@yahoo.com tnjptrvc@yahoo.co.uk				
The aims of the course:	To learn the principle biological features of microorganisms that cause human infections, their pathogenic characteristics, distribution and resistance to environmental conditions as well as the pathways of their interhuman transmission, including susceptibility to different antimicrobial agents and the mechanisms of human defence against infection. Students will also learn about the types of vaccines accompanying certain microorganisms.				
Learning outcomes (general and specific competences):	At the end of the course, the students will be able to identify the most common microorganisms, based on the microscopic appearance or other characteristics, to understand transmission pathway, as well as the principles of human defence against specific microorganisms. They will have knowledge about the basic groups of antimicrobial agents, spectrum of their activity and mechanisms of resistance, to understand the use of the microscope with immersion and microbiological processing of the most common biological materials. Also they will be able to read and interpret the antibiograms and evaluate the most common viral, fungal and parasitic infections and choose appropriate therapy. Also, students will be able to collect nose and throat swab and inoculate biological materials on microbiological media. Outcomes will be evaluated with continuous knowledge tests during lectures, seminars and exercises and also during final exercise and oral examination.				
Course content (Syllabus):	Course consists of 18 thematic units (21 lectures, 30 seminars, 44 exercises). Knowledge will be continuously checked during all forms of teaching for which the students are required to be prepared according to syllabus. During the classes 3 partial written exams will be held (from bacteriology, from virology and from parasitology and mycology) and final practical exercise. The final exam is oral.				
Format of instruction (mark in bold)	Lectures	Exercises	Seminars	Independent assignments	
	Consultations	Work with mentor	Field work	Other	
Student responsibilities	All forms of teaching are obligatory. Students are allowed to miss up to 20% of the total course hours justifiable, provided that all absences are compensated through a colloquium. Students must be prepared for seminars and practical work, according to the topics in the schedule. Active participants will be given extra pluses that will be added to the points achieved on written part of the exam (3 pluses = 1 point). Unprepared seminars and				

	<p>practicals will be punished with a minus and must be compensated through a colloquium, because these are condition for partial written exams and final exam. Minuses and all absences must be compensated through a colloquium, before gaining entry to a partial test-exam, and the entire exam.</p> <p>To work in the practice room, students need a white coat, a notebook, a pen or ballpoint pen, and wooden crayons. No food, drink, cigarettes or chewing gum should be brought into the practice room. After the practical work, students MUST wash their hands thoroughly according to the enclosed instructions and after that do not touch or take out the materials with which they were done.</p>			
Screening studentwork (mark in bold)	Class attendance	Class participations	Seminar essay	Practical training
	Oral exam	Written exam	Continuous assessment	Essay
Detailed evaluation within a <i>European system of points</i>				
STUDENTS RESPONSIBILITIES	HOURS	PROPORTIONS OF ECTS CREDITS	PROPORTIONS OF MARK	
Class attendance and participations	(21+30+44) = 95	3.2	0%	
Partial/Written exam	70	2.3	50%	
Practical exam	30	1	20%	
Oral exam	45	1,5	30%	
Total	240	8	100%	
<p>Additional explanations:</p> <p>EXAM The exam in the course Medical Microbiology and Parasitology is written, practical and oral. During the classes, three partial test exams will be organized. Only students who attend the 5th semester of this school year, and who have not missed classes or have justified their absences and made up for them with a colloquium, have the right to access the partial exam.</p> <p>PARTIAL WRITTEN EXAMS The first partial test contains questions from bacteriology (60 questions - 60 minutes). The second partial test contains questions from virology (40 questions - 40 minutes). The third partial test contains questions from mycology and parasitology (30 questions - 30 minutes). The percentage of correct answers required for a positive grade for each test exam is 60% (bacteriology - 36 points; virology - 24 points parasitology and mycology - 18 points). Passed partial exams are recognized as passed written part of the exam. Results achieved in partial exams and points collected by active participation in classes are valid only during the academic year in which they are passed.</p> <p>PRACTICAL EXAM The practical part of the exam consists of 10 tasks, as follows: 1. description of 3 microscopic preparations, one of which is parasitological 2. readings of grown cultures on the 3 media (bacteriological and / or mycological) 3. recognition and description of the phenomenon that can be recognized on 3 nutrient media 4. antibiogram readings</p> <p>ORAL EXAM The exam card for the oral part of the exam contains five questions according to the following schedule: 1. one question from general microbiology (general bacteriology, mycology, parasitology or virology) 2. one question from special bacteriology 3. one question from special parasitology 4. one question from special virology 5. one question from special mycology</p> <p>The final grade is the result of the ratio of grades achieved in written exams (50% of the grade), practical (20%) and oral part of the exam (30% of the final grade).</p>				
Required literature:	Brooks GF, Carroll KC, Butel JS, Morse SA, Mietzner TA, eds. Jawetz, Melnick and Adelbergs Medical Microbiology. 26th ed. New York: McGraw-Hill; 2013.			

Optional literature:	http://phil.cdc.gov/phil/home.asp http://microbiology.mtsinai.on.ca/mig/index.shtml http://www.microbelibrary.org/
Additional information about the course	Monitoring methods of teaching quality: - student questionnaire - quality analysis by students and teachers - exam results analysis - report of the office for teaching quality - external evaluation (visit of team for quality control)

Annex: calendar of classes

The number of teaching units	TOPICS AND LITERATURE
I.	Title: Structure of bacterial cells. Hand hygiene.
	Short description: bacterial cell structure, physiology and genetics, classification and nomenclature of bacteria; pathogenicity and virulence of bacteria; pathogenesis of bacterial infections; human microbiota; vaccines. Principles of work in the microbiological laboratory; cultivation of bacteria.
	Literature: required and optional
II.	Title: Antibacterial chemotherapeutics.
	Short description: Mechanisms of action of antimicrobial drugs, resistance of bacteria to antimicrobial drugs. Methods of preparing antibiograms.
	Literature: required and optional
III.	Title: Gram-positive cocci.
	Short description: Genus <i>Staphylococcus</i> , <i>Streptococcus</i> , <i>Enterococcus</i> .
	Literature: required and optional
IV.	Title: Gram-negative cocci and cocobacilli.
	Short description: Genus <i>Haemophilus</i> , <i>Neisseria</i> , <i>Bordetella</i> , <i>Moraxella</i> , <i>Brucella</i> .
	Literature: required and optional
V.	Title: Enterobacteria.
	Short description: Genus <i>Escherichia</i> , <i>Klebsiella</i> , <i>Serratia</i> , <i>Proteus</i> , <i>Morganella</i> , <i>Enterobacter</i> , <i>Salmonella</i> , <i>Shigella</i> , <i>Yersinia</i> .
	Literature: required and optional
VI.	Title: Gram negative nonfermentative bacteria.
	Short description: Genus <i>Pseudomonas</i> , <i>Acinetobacter</i> , <i>Stenotrophomonas</i>
	Literature: required and optional
VII.	Title: Gram-negative curved bacteria; Anaerobic bacteria.
	Short description: Genus <i>Vibrio</i> , <i>Campylobacter</i> , <i>Helicobacter</i> , <i>Clostridium</i> , <i>Actinomices</i> .
	Literature: required and optional
VIII.	Title: Gram-negative spiral bacteria; Bacteria without cell wall. Obligatory intracellular bacteria.
	Short description: family <i>Spirochaetaceae</i> ; <i>Mycoplasmataceae</i> . <i>Rickettsiaceae</i> , <i>Chlamydiaceae</i> .
	Literature: required and optional
IX.	Title: Acid-resistant bacteria.
	Short description: Genus <i>Mycobacterium</i> .
	Literature: required and optional
X.	Title: Gram- positive nonspore-forming rods.
	Short description: Genus <i>Bacillus</i> , <i>Corynebacterium</i> , <i>Listeria</i> .
	Literature: required and optional
XI.	Title: Multidrug-resistant bacteria.
	Short description : MRSA, MRAB, VRE, ESBL, KPC, MDR <i>Pseudomonas aeruginosa</i> .

	Literature: required and optional
XII.	Title: General virology
	Short description: General properties of the viruses. Classification and nomenclature of viruses; Pathogenesis of viral diseases; Antiviral drugs.
	Literature: required and optional
XIII.	Title: DNA viruses.
	Short description: <i>Parvoviridae, Papovaviridae, Adenoviridae, Poxviridae.</i>
	Literature: required and optional
XIV.	Title: RNA viruses.
	Short description: <i>Picornaviridae, Rheoviridae, Arboviruses, Paramyxoviridae, Rhabdoviridae, Togaviridae, Retroviridae, Orthomyxoviridae, Coronaviridae.</i>
	Literature: required and optional
XV.	Title: Herpesviruses and hepatitis viruses.
	Short description: <i>Herpesviridae.</i> Hepatitis B, C, D viruses.
	Literature: required and optional
XVI.	Title: Medical mycology: yeasts and molds.
	Short description: Genus <i>Candida, Cryptococcus, Aspergillus, Penicillium, Mucor;</i> dermatophytes; antifungal drugs.
	Literature: required and optional
XVII.	Title: Medical protozoology.
	Short description: Blood and tissue protists - genera: <i>Toxoplasma, Plasmodium, Leishmania;</i> Protists of the digestive and urogenital system - genera: <i>Giardia, Entamoeba, Cryptosporidium, Trichomonas.</i>
	Literature: required and optional
XVIII.	Title: Medical helminthology - roundworms and flatworms.
	Short description: <i>Platyhelminthes: Taenia, Echinococcus; Nematoda: Trichinella, Trichuris, Enterobius, Ascaris.</i>
	Literature: required and optional