

GENERAL INFORMATION		
Course name	Medical Microbiology with Parasitology	
Course director	Assoc. Prof. Ljiljana Perić, MD, PhD	
Assistants	Danijela Bejuk, PhD	
Study program	Integrated undergraduate and graduate university study program Medical Studies in German	
Course status	Mandatory	
Year	2 nd year, 4 th semester	
Credits allocated and form of instruction	ECTS student workload	7
	Number of teaching hours (L+S+E)	90 (30+20+40)
COURSE DESCRIPTION		
Course objectives		
<p>The objective of the course is for students to learn the basic biological characteristics of microorganisms that cause infections in humans, the pathogenic properties of these microorganisms, their prevalence and resistance to the environmental conditions and ways of their transmission, their susceptibility to antimicrobial drugs, as well as the basics of human defense against infection. Students will also learn about types of vaccines along with certain microorganisms. The specific objective is for students to learn about the basic groups of antimicrobial drugs from the working spectrum, the mechanism of action and the mechanism of resistance of microorganisms to antimicrobial drugs.</p>		
Course requirements		
There are no specific requirements for this course except those defined in the study program curriculum.		
Learning outcomes relevant to the study program		
1.1., 2.1., 3.1., 3.5.		
Expected learning outcomes		
Knowledge and skills		
<ol style="list-style-type: none"> 1. Independently determine the most common types of pathogenic microorganisms, according to the microscope slide or other features 2. Read the susceptibility test and determine the method of transmission as well as the method of human defense against a specific microorganism 3. Independently take a nasal, nasopharyngeal and throat swab and inoculate biological materials on microbiological media 		
Course content		
<p>Introduction to medical microbiology. General diagnostic principles in microbiology. Diagnostics and significance of clostridia. General virology. Hepatitis viruses. Retroviruses. Prions. Antimicrobial chemotherapeutics, disinfection and sterilization. Description and characteristics of genera: Staphylococcus. Streptococcus. Neisseria, Haemophilus, Bordetella, Brucella. Cultivation characteristics. The most important representatives and the infectious diseases they cause. Samples for microbiological checks and microbiological laboratory diagnostics. Susceptibility to antibiotics. Treatment, prevention and control of infections caused by species of the mentioned genera. Description and characteristics of the Enterobacteriaceae family (genera: Escherichia, Salmonella, Shigella, Klebsiella,</p>		

Proteus, Enterobacter, Yersinia, Serratia, Citrobacter, Providencia, Morganella), genus Vibrio, Campylobacter, Pseudomonas, Acinetobacter, Legionella, Corynebacterium, Listeria. Cultivation characteristics. The most important representatives and the infectious diseases they cause. Samples for microbiological checks and microbiological laboratory diagnostics. Susceptibility to antibiotics. Treatment, prevention and control of infections caused by species of the mentioned genera. Anaerobic bacteria. Genus Bacillus. Mycoplasmas. Chlamydia. Rickettsia.

Medically important yeasts and molds. Protists of the digestive and genitourinary system. Blood and tissue protists. Roundworms and flatworms. DNA viruses: family Adenoviridae, Papovaviridae, Poxviridae RNA viruses: family Orthomyxoviridae, Paramyxoviridae, Coronaviridae, Rhabdoviridae. Viruses that cause congenital infections. Herpesviridae family. Viruses that cause gastrointestinal infections. Family Picornaviridae Arboviruses. Arenaviridae. Filoviridae. Microorganisms around us and on us. Tests of bacterial susceptibility to antimicrobial chemotherapeutics. Genus Staphylococcus. Nasal, nasopharyngeal and throat swab. Genus Streptococcus and genus Enterococcus. Genus Haemophilus, genus Neisseria, genus Brucella. Identification of the most common causes of urinary infections. Family Enterobacteriaceae. Identification of the most common causes of gastrointestinal infections. Enterobacteriaceae. Vibrio. Campylobacter. Helicobacter. Identification of pseudomonas, corynebacteria, listeria, legionella and gardnerella. Biological control of sterilization. Identification of anaerobic bacteria. Sporogenic bacteria. Genus Clostridium. Genus Bacillus. Identification of asporogenic anaerobic bacteria. Mycobacteria and Nocardia. Key principles of serological reactions. Spirochetes. Mycoplasmas. Chlamydia. Rickettsia. Medically important fungi I: Cultivation and identification of yeasts. Medically important fungi II: Cultivation and identification of molds. Pneumocystis jirovecii. Blood and tissue protists I. Blood and tissue protists II. Genus Plasmodium. Microfilariae. Protists of the digestive and genitourinary system. Identification of eggs, larvae and adult roundworms. Identification of eggs, larvae and adult flatworms. Collection of clinical material and virological diagnostic methods. Hemagglutination and hemagglutination inhibition. Diagnostics of orthomyxoviruses, paramyxoviruses and coronaviruses. Serological methods in the diagnostics of viral infections. Molecular diagnostics of viruses. Hepatitis viruses. Herpesviruses. Retroviruses. Biosafety operating conditions (BSL level 2–4). Diagnostics of arenaviruses and filoviruses. Arthropods. Diagnostics of flaviviruses and bunyaviruses.

Form of instruction	<input checked="" type="checkbox"/> lectures	<input type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and Internet <input type="checkbox"/> laboratory <input type="checkbox"/> mentoring activities <input type="checkbox"/> other
	<input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> distance learning <input type="checkbox"/> field course	

Student obligations
Come to class prepared by studying the recommended literature for each unit and actively participate in all forms of instruction.

Monitoring student learning							
Attendance	x	Active participation	x	Seminar paper		Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous assessment		Paper		Practical work	x
Portfolio							

Assessment and evaluation of students during class and on the final exam

Written tests during classes in the form of exams which may be recognized as a part of the final exam or bring extra points on the final exam.

Mandatory reading (at the time of submission of study program proposal)

1. Medizinische Mikrobiologie und Infektiologie (Sebastian Suerbaum, Gerd-Dieter Burchard, Stefan H.E. Kaufmann, Thomas F. Schulz; 8; 2016)

Additional reading (at the time of submission of study program proposal)

1. Jawetz, Melnick, & Adelberg's Medical Microbiology, 25nd edition. Brooks GF, Carroll KC, Butel JS, Morse SA, Mietzner TA editors. Lange Medical Books/McGraw-Hill: New York, Chicago, San Francisco, Lisboa, London, Madrid, Mexico City, Milan, New Delhi, San Juan, Seoul, Singapore, Sydney, Toronto, 2010.

The number of copies of mandatory reading in proportion to the number of students currently taking this course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Medizinische Mikrobiologie und Infektiologie (Sebastian Suerbaum, Gerd-Dieter Burchard, Stefan H.E. Kaufmann, Thomas F. Schulz; 8; 2016)	A purchased license for online textbooks shall be used https://bfdproxy48.bfd-online.de/login.htm?back=http%3a%2f%2fpartner.bfd-online.info.bfdproxy48.bfd-online.de%2fameos%2fbfdAboGateway%3fabold%3d264117 Access will be granted to all students enrolled in the study program	

Quality monitoring methods ensuring the acquisition of knowledge upon completion, skills and competences

An anonymous, quantitative, standardized student survey on the quality of the organization and conduction of classes, the course content and the work of professors conducted by the Quality Assurance Office of the Faculty of Medicine Osijek and a unified university student survey conducted by the Quality Assurance Center of the Josip Juraj Strossmayer University of Osijek.