

International School of Medicine / Medicine (English)

2023 - 2024 Academic Year

MEDICAL MICROBIOLOGY

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MEDICAL MICROBIOLOGY	ISM1014673	Yearly	28+12	0	3
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Committee Course				
Course Coordinator	Prof.Dr. Süleyman YILDIRIM				
Name of Lecturer(s)	Prof.Dr. Süleyman YILDIRIM, Assist.Prof. Özlem GÜVEN				
Assistant(s)	Dr. Öğr. Üyesi Özlem Güven, Dr. Hatice Akay, Asistanlar				
Aim	The course provides the conceptual basis for understanding microbial ecology in general, and structures, growth, and control of microbial cells and viruses in some details. We will cover bacteria, fungi, viruses, and protozoa, and discuss current topics including antibiotic resistance and public health threats.				
Course Content	This course contains; Introduction, historical perspective, and human microbiome, Taxonomic classification of microorganisms, Bacterial morphology and cell arrangement, Bacterial cell types and structures, Bacterial multiplication and growth kinetics, The control of microbial growth, sanitation, and sterilization, Bacterial genetics, evolution, mechanisms, and spread of antibiotic resistance, Eukaryotic microbes (Fungi), Eukaryotic microbes (Protozoa and helminthes), Structures and taxonomy of viruses, and viral diseases, Semester 1 / 2nd board: MOLECULE TO CELL: MEDICAL MICROBIOLOGY: 1.LAB: Principles of working in microbiology laboratory, microbiological samples, laboratory procedures - 1 hour 2.LAB: Bacteriology laboratory I (culture and microscopy) - 1 hour 3. LAB: Bacteriology laboratory II (culture interpretation / identification of characteristics such as colony morphology, hemolysis, fermentation, etc.) - 2 hours 4. LAB: Bacteriology laboratory III (staining methods, microscopic examination / Simple stains, interpretation of Gram and EZN stains) - 2 hours Semester 1 / 3rd session: CELL STRUCTURE: MEDICAL MICROBIOLOGY 1. LAB 5. Mycology and parasitology laboratory (culture and microscopy) - 3 hours 2. LAB 6. Virology laboratory (culture, serology, molecular biology methods) - 3 hours.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1. Develop an understanding of microbial world and how microbes may impact human biology and may cause infectious diseases.			16, 17, 37, 4, 9	A, D	
2. Understand the biological differences between bacteria, viruses, fungi, protozoa, and helminthes and how these organisms can cause human diseases.			16, 17, 19, 4, 9	A, G	
3. Develop a knowledge base of principles of microbial taxonomy, structure, and metabolism.			16	A, G	
4. Explain resistance mechanisms of antibiotics, evolution of microbial genes and genomes leading to resistance to antibiotics			16, 4	A, G	
5. Learn practical methods used to detect, identify and visualize microorganisms under microscope.			10, 16, 5, 8, 9	A, D	
6. Defines the media used for the culture of microorganisms in the laboratory environment. Defines the concepts related to sanitation and sterilization of microorganisms.			18	A, D, G	
Teaching Methods	10: Discussion Method, 16: Question - Answer Technique, 17: Experimental Technique, 18: Micro Teaching Technique, 19: Brainstorming Technique, 37: Computer-Internet Supported Instruction, 4: Inquiry-Based Learning, 5: Cooperative Learning, 8: Flipped Classroom Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam, D: Oral Exam, G: Quiz				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Introduction, historical perspective, and human microbiome				
2	Taxonomic classification of microorganisms, Bacterial morphology and cell arrangement				
3	Bacterial cell types and structures				
4	Bacterial multiplication and growth kinetics				
5	The control of microbial growth, sanitation, and sterilization				
6	Bacterial genetics, evolution, mechanisms, and spread of antibiotic resistance				
7	Eukaryotic microbes (Fungi)				
8	Eukaryotic microbes (Protozoa and helminthes)				
9	Structures and taxonomy of viruses, and viral diseases				
10	Semester 1 / 2nd board: MOLECULE TO CELL: MEDICAL MICROBIOLOGY: 1.LAB: Principles of working in microbiology laboratory, microbiological samples, laboratory procedures - 1 hour 2.LAB: Bacteriology laboratory I (culture and microscopy) - 1 hour 3. LAB: Bacteriology laboratory II (culture interpretation / identification of characteristics such as colony morphology, hemolysis, fermentation, etc.) - 2 hours 4. LAB: Bacteriology laboratory III (staining methods, microscopic examination / Simple stains, interpretation of Gram and EZN stains) - 2 hours Semester 1 / 3rd session: CELL STRUCTURE: MEDICAL MICROBIOLOGY 1. LAB 5. Mycology and parasitology laboratory (culture and microscopy) - 3 hours 2. LAB 6. Virology laboratory (culture, serology, molecular biology methods) - 3 hours				
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources
1. Microbiology: An Introduction (11th Edition), Gerard J. Tortora et al. 2. Medical Microbiology (7th Edition), Patrick Murray et al. 3. Literature review