

Program of Study : General Medicine
Course : Microbiology 1
Abbreviation : MIK/VAB11
Schedule : 30 hours of lectures
 30 hours of exercises
Course Distribution : 2nd year, 4th semester
Number of Credits : 3
Course Form : Lectures, exercises

Lectures :

Teachers : prof. MUDr. Milan Kolář, Ph.D.
 doc. MUDr. Petr Hamal, Ph.D.
 Mgr. Pavel Sauer, Ph.D.
 doc. Vladislav Raclavský, Ph.D.

Study : Continuous

	Date	Subject	No. of Less.	Teacher
1	13.2.2023	Characterization of prokaryotic cells. Inner structures in bacteria.	2	prof. Kolář
2	20.2.2023	Surface structures in bacteria. Spores.	2	prof. Kolář
3	27.2.2023	Growth and reproduction of bacteria.	2	prof. Kolář
4	6.3.2023	Bacterial metabolism and enzymes.	2	doc. Raclavský
5	13.3.2023	Bacterial pathogenicity and virulence.	2	prof. Kolář
6	20.3.2023	Exotoxins and endotoxins.	2	prof. Kolář
7	27.3.2023	Antimicrobial agents – classification.	2	prof. Kolář
8	3.4.2023	Resistance of microbes to antibiotics (mechanisms and spreading).	2	prof. Kolář
9	10.4.2023	State Holiday.		
10	17.4.2023	Appropriate antibiotic therapy.	2	prof. Kolář
11	24.4.2023	Bacterial genetics. Mutation. Gene transfer. Lysogenic conversion. Plasmids. Transposons.	2	Mgr. Sauer
12	1.5.2023	State Holiday.		
13	8.5.2023	State Holiday.		
14	15.5.2023	Antigens. Active immunization. Antibodies. Passive immunization.	2	doc. Hamal
15	22.5.2023	Sterilization and disinfection.	2	doc. Hamal

Exercises :**Leading Teacher :** prof. MUDr. Milan Kolář, Ph.D.**Study :** Continuous

	Date	Subject	No. of Less.
1	16.-17.2.2023	Principles of health protection and safety rules in the microbiology laboratory. The aims of the clinical microbiology laboratory. Principal microbiological procedures. Collection, handling and transport of clinical specimen.	2
2	23.-24.2.2023	Microscopic techniques for diagnosis of infection. Native preparation. Bright field microscopy. Dark field microscopy. Motility of microbes and its observation.	2
3	2.-3.3.2023	Microscopy with an immersion objective. Monochromatic staining. Gram's staining. Form, size and arrangement of microbes.	2
4	9.-10.3.2023	Staining according to Giemsa. Microbial vaginal pictures. Laboratory diagnosis of genital tract infections. Staining of microbial capsules (according to Burri). Staining of microbial spores (according to Wirtz-Conklin).	2
5	16.-17.3.2023	Cultivation of bacteria: Identification of microorganisms growing in aerobic culture	2
6	23.-24.3.2023	Determination of bacterial resistance to antibiotics - first part. Disk susceptibility test, E-test. Determination of antibiotic activity in combinations, assay for beta-lactamases.	2
7	30.-31.3.2023	Determination of bacterial resistance to antibiotics -second part. Standard dilution micromethod – MIC method, MBC. Drug monitoring, guidelines for antibiotic use. Video: The misuse of a miracle.	2
8	6.-7.4.2023	State Holiday.	
9	13.-14.4.2023	Serology – 1 st part: Agglutination and its modifications, Widal reaction.	2
10	20.-21.4.2023	Serology – 2 nd part: ELISA (enzyme-linked immunoassay), immunofluorescence, the complement fixation test.	2
11	27.-28.4.2023	Identification of bacteria: biochemical tests, MALDI-TOF, genetics methods.	2
12	4.-5.5.2023	Identification of gram-positive microorganisms. Laboratory diagnosis of streptococci, enterococci and staphylococci. General characteristics of bacterial colonies. Collection, transport and processing of specimens from upper and lower respiratory tract.	2
13	11.-12.5.2023	Identification of gram-negative microorganisms. Laboratory diagnosis of enterobacteria, <i>Acinetobacter</i> , <i>Pseudomonas</i> and <i>Stenotrophomonas</i> species.	2

		General characteristics of bacterial colonies. Collection, transport and processing of specimens from urinary tract and stool.	
14	18.-19.5.2023	Differential microbiological diagnosis of most important bacterial species.	2
15	25.-26.5.2023	Molecular-biology methods in medical microbiology.	2

Completed by : Credit.

Requirements : Presence in practical trainings, one absence tolerated at the most, it's possible substitute up to one third of practical trainings.
Individual preparation for each practical training is obligatory.

Basic literature :

1. Medical Microbiology: with student consult access (Medical Microbiology) (Paperback 2005) by Patrick R. Murray et al. (available at www.Amazon.com)
2. Koukalová D. et al.: Microbiology I, UP v Olomouci, 2002

Alternative literature :

3. Medical Microbiology (Paperback 2004) by Cedric A. Mims (Editor), (available at www.Amazon.com)