Subject:	***Microbiology 1***	***WEDNESDAY 9.45-11.15***	**P4**
Study Programme:	*GM*	**Study Period:**	*SS*
Evaluation:	*4 credits*	**Subject Type:**	*Biology 1*
Content:	**28/28**		*Total 56*

Department of Medical and Clinical Microbiology

Week	***Lecture Title***	***Practical Lessons***
1./11.2.	**Introduction to Microbiology** (history of medical microbiology, classification of microorganisms, description of the principal groups of bacteria, gliding bacteria, spirochetes, rigid bacteria, mycoplasmas, viruses, prions) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Laboratory protection of infection** *Laboratory safety rules. Laboratory equipment. Principles of laboratory diagnosis of infection.*
2./18.2.	**Bacterial Cell Structure** (prokaryotic cell structure, nucleus, cytoplasmic membrane, cell wall, protoplasts, spheroplasts, L forms, spores, capsule, glycocalyx, flagella, pili) **Ass. Prof. RNDr. Katarína Čurová, PhD.**	**Staining procedures in microbiology** *Monochromatic staining method: evaluation of morphological characteristics of bacteria*
3./25.2.	**Microbial Genetics** (genetic organization and regulation of bacterial cell, mutation, gene transfer, plasmids, transposons, bacteriophages, genetic engineering) **Ass. Prof. RNDr. Katarína Čurová, PhD.**	**Staining procedures in microbiology** *Gram staining method: preparation of slide, staining characteristics of different bacteria*
4./4.3.	**Growth and Cultivation of Bacteria** (growth, growth curve, requirements for growth, environmental factors affecting growth, agents affecting growth of bacteria-disinfection and sterilisation, metabolism, sources of metabolic energy, cultivation methods, microbial metabolism) **MVDr. Vladimír Hrabovský, PhD.**	**Staining procedures in microbiology** *Ziehl-Neelsen and Neisser staining methods: preparation and evaluation of slide*
5./11.3.	**Pathogenicity of Bacteria** (bacterial /1virulence factors, invasiveness, fimbrial and afimbrial adhesins, toxic enzymes, exotoxins and endotoxin) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Bacterial genetics** *Isolation and visualisation of plasmid DNA, Conjugal transfer of DNA*
6./18.3.	**Immune Mechanisms Against Infections** (nonspecific and specific immune mechanisms, antibacterial, antiviral, antiprotozoal and antifungal defence mechanisms, hypersensitive reactions against agents causing infectious disease) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Collection, handling, transportation and processing of clinical specimen** *Demonstration of methods for disposal of infectious material Preparation of culture media*

7./25.3.	**Antimicrobial Agents** (inhibitors of cell wall synthesis, inhibitors of protein synthesis, inhibitors of nucleic acid synthesis, miscellaneous antibacterial agents) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Culture media** *Inoculation of agar plates, condition for cultivation of aerobes and anaerobes, cultivation of bacteria in liquid and solid media*
8./1.4.	**Antimicrobial Agents** (intrinsic and acquired resistance, plasmids and transposons, combination of antimicrobial agents, side effects of antimicrobial agents) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Identification and differentiation of bacteria** *Demonstration of biochemical characteristics of bacteria. Evaluation of bacteria cultivation. Demonstration of MALDI TOF Mass Spectrometry for identification of bacteria*
9./8.4.	**Antigen-antibody reactions in microbiology** (agglutination, precipitation, complement fixation, ELISA, immunofluorescence, immunoblotting) **Ass. Prof. RNDr. Katarína Čurová, PhD.**	**Evaluation of virulence** *Determination of capsule and plasmacoagulase. Demonstration of Microarray Scanner*
10./15.4.	**Normal Microbial Flora of the Human Body. Prophylactic immunization** (passive immunization - homologous and heterologous, active immunization - types of vaccine: toxoids, inactivated vaccines, attenuated live vaccines, hazards if immunization) **MVDr. Vladimír Hrabovský, PhD.**	**Sensitivity testing of bacteria to antibiotics *Diffusion method*.** *Demonstration of BACMED 4i - analyser of inhibition zones and equivalence of MIC*
11./22.4.	***Staphylococcus*** (description of coagulase positive and negative staphylococci, pathogenesis, laboratory diagnosis, treatment, epidemiology) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Sensitivity testing of bacteria to antibiotics** *Evaluation of diffusion method from 10th practice.* ***Dilution method.*** *Demonstration of beta-lactamase enzyme production in bacterial population*
12./29.4.	***Streptococcus*** (classification of streptococci; description, pathogenesis, laboratory diagnosis, epidemiology and chemotherapy) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Serology** *Evaluation of dilution method from 11th practice* *Direct (tube) agglutination*
13./6.5.	**Credit Test** ***Pneumococcus and enterococcus*** (classification of pneumococci and enterococci, pathogenesis, laboratory diagnosis, treatment, epidemiology, control) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Serology** Slide *agglutination (identification of bacterial antigens Immunofluorescence, precipitation*
14./13.5.	**Retake of Credit Test** ***Neisseria*** (classification, description, pathogenesis, clinical infections, laboratory diagnosis, treatment, epidemiology, control) **Dr.h.c. prof. MUDr. L. Siegfried, CSc.**	**Compensation of practical lessons**

Conditions to be fulfilled for getting the credit

1. 60 % of total points a student may obtain in the credit test.
2. 60 % of 100 points a student may obtain in 10 short tests (composed of 10 questions) (1question = 1 point) in practical exercises starting from the 2nd up to the 11th week of summer term.
3. Active participation in practical exercises (demonstration of knowledge related to topic of given practical exercise).

Dr.h.c. prof. MUDr. Leonard Siegfried, Ph.D.
The Head of Institute