

2024/2025. ACADEMIC YEAR							
PROGRAM OF STUDY (FOR STUDENTS OF 3RD YEAR)							
<b>Full (Hun) name of the subject:</b> Gyógyszerészi mikrobiológia							
<b>Program:</b> Undivided program (pharmaceutical)							
<b>Schedule:</b> full-time							
<b>Short name of the subject:</b>							
<b>English name of the subject:</b> Pharmaceutical Microbiology							
<b>German name of the subject:</b> Mikrobiologie für Pharmazeuten							
<b>Type of registration:</b> obligatory/obligatory elective/elective/criteria requirement							
<b>Neptun code of the subject:</b> GYKMIK280E1A							
<b>Responsible Department:</b> Semmelweis University, Institute of Medical Microbiology							
<b>Responsible tutor</b> Dr. Agoston Ghidan				<b>Title, academic degree:</b>  <b>Master teacher, PhD</b>			
<b>Contact information:</b> - phone: 06208259715 - email: ghidan.agoston@semmelweis.hu							
<b>Name of the persons responsible for the teaching of the subject:</b>  Dr. Szabó Dóra Dr. Dobay Orsolya Dr. Ghidán Ágoston Dr. Andrea Horváth				<b>Title, academic degree:</b>  full professor, DSc associate professor, PhD master teacher, PhD professor's assistant			
<b>Class per week:</b> 3 hours lectures 2 hours practices				<b>Credit point(s):</b> 4 credits lectures 0 credits practices			
<b>Professional content, intent of acquirement and it's function in order to implement the goals of the program:</b>  The importance of microbiology in the medical curriculum, including the education of students of Faculty of Pharmacy is permanently growing. The knowledge about new types of microbial agents - beside the well known old ones -, new diseases caused by microbes, the more and more frequent nosocomial infections and the epidemics believed overcome, but recently emerging is necessary for the pharmacist, too. They have to be familiar with the continuously growing possibilities of methods used in diagnostic work, prevention and therapy of infectious diseases caused by microbes. The goal of the training course is that the students of Faculty of Pharmacy learn about the nature of the most important human pathogenic agents, their appearance, the ways of their transmission, the possibilities of killing them inside as well as outside the human body. In addition to the basic knowledge of microbiology an increasing emphasis is placed on the topics connected with the utilization of microbes in pharmacy, in pharmacological research and industry.							
<b>Short description of the subject:</b> The students learn about the physiological and pathological effects of microbes in the organism, i.e. in the human body. Beside the general characterization of the most important pathogens (bacteria, viruses, fungi, and parasites), the students learn about the possibilities of sterilization and disinfections, mode of actions of antimicrobial agents, control of infectious diseases as well as the basic methods of laboratory diagnosis of infectious diseases. Because microorganisms have special importance in pharmaceutical industry, the most important new results, methods (i.e. recombinant technologies) are also summarized.							
<b>Course data</b>							
<b>Recommend ed term</b>	<b>Contact hours (lecture)</b>	<b>Contact hours (practice)</b>	<b>Contact hours (seminar)</b>	<b>Individual lectures</b>	<b>Total number of contact hours/semester</b>	<b>Normal course offer</b>	<b>Consult ations</b>
5th semester	42	28	0	0	70	Autumn semester* Spring semester Both semesters (* Please underline)	

**Program of semester\*\***

**Topics of theoretical classes (pro week):**

Week 1. Brief history, subject and aim of Microbiology. Occurrence and importance of microbes in nature. General microbiology. Morphology, reproduction and physiology of bacteria. Microbial genetics.  
Week 2. Disinfection. Principles and practice of sterilization. Introduction to antimicrobial chemotherapy.  
Week 3. Mode of action of the antibiotics. Resistance to antibiotics.  
Week 4. Principles of microbial pathogenicity. Immunity to microbes. Active and passive immunization.  
Week 5. Cocci causing purulent diseases (Staphylococcus, Streptococcus, Neisseria)  
Week 6. Normal flora of the intestinal tract and the importance of it. Bacteria causing enteral diseases.  
Week 7. Causative agents of respiratory tract infections.  
Week 8. Endospore forming bacteria. Parasitology (protozoa and helminths).  
Week 9. Causative agents of human mycosis and their therapy.  
Week 10. General virology. Antiviral chemotherapy. DNA viruses.  
Week 11. Enteral viruses and diseases caused by them. Hepatitis viruses.  
Week 12. Respiratory pathogenic viruses. Arbo- and reoviruses, Rhabdoviruses.  
Week 13. Retroviruses. AIDS. Tumor viruses. The role of viruses in carcinogenesis.  
Week 14. Production of therapeutic substances by recombinant DNA technology. Microorganisms in pharmaceutical sciences. Nosocomial infections

**Topics of practical classes (pro week):**

Week 1. Introduction to basic microbiology, laboratory rules. Microscopic examination of microbes.  
Week 2. Cultivation of bacteria.  
Week 3. Methods for sterilization and disinfection.  
Week 4. Determination of antibiotic susceptibility of bacteria.  
Week 5. In vitro antigen-antibody reactions (serological methods).  
Week 6. Gram-positive and Gram-negative cocci (Cultures, smears, biochemical reactions, serological tests, antibiotic susceptibility, vaccines).  
Week 7. Enteral Gram-negative rods (Enterobacterales). Cultures, smears, biochemical reactions, serological tests, antibiotic susceptibility, vaccines); Vibrio, Helicobacter, Campylobacter.  
Week 8. Pseudomonas. Gram-negative coccobacilli (Cultures, smears, antibiotic susceptibility, vaccines).  
Week 9. Non-spore forming Gram-positive bacteria. Mycobacteria (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).  
Week 10. Endospore-forming Gram-positive aerobic and anaerobic bacteria (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).  
Week 11. Spirochetes. Rickettsiae, Chlamydiae, Mycoplasmas (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).  
Week 12. Medically important fungi (Cultures, smears).  
Week 13. Medical parasitology (macroscopic and microscopic preparations).  
Week 14. General virology (cultivation and morphology of viruses, cell-virus interactions, serological tests).

**Other subjects (both compulsory and optional) relating to the transversal issues of the subject. Possible overlaps between subjects:**

**Not available**

**Schedule of consultations: as demanded**

**Course requirements**

**Prerequisites:**

Basic Immunology

**Conditions of attending the classes, amount of acceptable absents, way of presentation of leave, opportunity for makeup:**

Presence on at least 75 % of the total number of practices based on the Study and examination regulations

<p><b>The grading method; the conditions for getting the signature; the number, topic(s) and date(s) of the mid-term assessments, (reports, term tests), and the process in which they contribute to the final grade; and the possibility of their retake or their upgrading retake (as provided in §§ 25-28 of the STUDY AND EXAMINATION REGULATIONS):</b></p> <p>1st Midterm on the 6<sup>th</sup> week. Topic: general microbiology (1-3 Lectures and 1-5 practices)  2nd Midterm on the 12<sup>th</sup> week. Topic: systemic bacteriology (4-12 Lectures and 6-11 practices)  Both midterm retake on the following week.</p>
<p><b>Requirements of signature (as provided for in STUDY AND EXAMINATION REGULATIONS § 29):</b></p> <p>Active participation at the lab practice, no more than 3 absences and passing successfully both midterms</p>
<p><b>Number and type of projects students have to perform independently during the semester and their deadlines:</b></p> <p>not applicable</p>
<p><b>Type of the semester-end examination:</b> signature*/practical grade*/ comprehensive examination*/final/end-term examination*</p> <p><b>Examination requirements:</b> as published by the education-research department on the MOODLE interface by the start of the academic term.</p>
<p><b>Form of the semester-end examination:</b> <u>written</u>*/oral*/combined examination/<b>practical examination/the assessment of completing project work (according to STUDY AND EXAMINATION REGULATIONS 30.§)*</b> (<i>Please underline</i>)</p> <p><b>Written test from minimum questions and if is passed successfully followed by MOODLE test. The second retake exam (third one) is an oral exam.</b></p>
<p><b>The possibility and conditions for offering grades:</b></p> <p>Not applicable</p>
<p><b>A list of the basic notes, textbooks, resources and literature that can be used to acquire the knowledge necessary to master the curriculum and to complete the assessments, <del>****</del>with exact description about which of them is required to acquire which part of the syllabus (e.g. description based on topics)), as well as the main technical and other aids and study aids that can be used:</b></p> <ol style="list-style-type: none"> <li>1. Szabó: Basics of Medical Microbiology. E-book, Semmelweis; 2022</li> <li>2. Murray, Rosenthal, Pfaller: Medical Microbiology. 9th Edition, Elsevier/Saunders 2020</li> <li>3. The handouts of the lectures uploaded to the MOODLE surface</li> <li>4. The handouts of the practices</li> </ol>
<p><b>In the case of a subject lasting more than one semester, the position of the teaching/research department on the possibility of parallel enrolment and the conditions for admission****:</b></p> <p>Not applicable</p> <p>yes*/<u>no</u>*/on and individual assesment basis* (<i>Please underline</i>)</p>

The course description was prepared by:  
Dr. Agoston Ghidan, tutor

***\*\* A tantárgy tematikáját oly módon kell meghatározni, hogy az lehetővé tegye más intézményben a kreditismerési döntéshozatalt, tartalmazza a megszerzendő ismeretek, elsajátítandó alkalmazási (rész)kézségek, (rész)kompetenciák és attitűdök leírását, reflektálva a szak képzési és kimeneti követelményeire.***