[Medicinski fakultet u Rijeci]

Curriculum
2022/2023

[Za kolegij]

Medical Microbiology and Parasitology

Study program:	**Medical Studies in English (R)** [Sveučilišni integrirani prijediplomski i diplomski studij]
Department:	**[Zavod za mikrobiologiju i parazitologiju]**
Course coordinator:	**prof. dr. sc. Abram Maja, dr. med.**
Year of study:	**3**
ECTS:	**8**
Incentive ECTS:	**0 (0.00%)**
Foreign language:	**Possibility of teaching in a foreign language**

Course information:

Course of **Medical Microbiology and Parasitology** is a compulsory course in the 3rd year of the Integrated Undergraduate and Graduate University Study of Medicine, which is carried out through 30 hours of lectures, 30 hours of seminars and 30 hours of laboratory exercises, in total of 90 hours (8 ECTS). Lectures and seminars are held in the lecture halls and practical laboratory work at the Institute of Microbiology and Parasitology at the Faculty of Medicine in Rijeka.
The aim of the course is to provide students with the basic biological characteristics of microorganisms (bacteria, viruses, fungi and parasites) that cause human infections, their virulence factors, environmental resistance, their route of transmission, and the basis for human infection protection. Students will learn about different types of vaccines available for certain microbial infections. One of the goals is to teach basic groups of antimicrobial drugs, their spectrum of action, mechanism of action on the bacterial cell, and mechanisms of bacterial resistance to antimicrobial drugs. The aim is to introduce students with the possibilities of treating fungal, parasitic and viral infections. The students will also gain insight into the basic procedures of microbiological diagnostics, with particular emphasis on microbiological analysis of the most common clinical samples.
Course content:
General Medical Bacteriology: Micromorphology of bacteria, microscopy, microbiological stainings. Bacteria cell structure. Metabolism and genetics, growth and reproduction, nutrition and physical conditions of bacterial growth. Cell metabolism, energy production, and gene expression in the bacterial cell. Classification and nomenclature of bacteria. Bacterial antigens and vaccines. Immune response to
infections. Resistance of bacteria to physical and chemical factors. Sterilization procedures and sterilization control. Disinfectants and disinfections. Antimicrobial drugs: Mechanism and spectrum of antibiotic activity, bacterial resistance to antimicrobial agents. Pathogenesis of bacterial infections: bacterial pathogenicity and virulence. Laboratory Diagnosis of Bacterial Infections.
Special Medical Bacteriology: Normal human microbiota. Medical significant Gram-positive and gram negative bacteria. Atypical bacteria. Microbiological diagnosis of bacterial infections.
General Medical Mycology: Morphology, structure, reproduction, and Metabolism of clinically relevant fungi. Pathogenesis of fungal diseases. Factors of fungal virulence. Fungal diseases and laboratory diagnostics. Antifungal drugs.
Special Medical Mycology: Yeasts and molds of medical significance. Opportunistic and dimorphic fungi.
General Medical Parasitology: Parasitism as an ecological and medical concept. Laboratory diagnostics of parasitosis.
Special Medical Parasitology: Medically relevant parasites.
General Virology: General characteristics, classification, virus replication. Viral vaccines and antiviral drugs. Pathogenesis and laboratory diagnostics of viral diseases.
Special Virology: Medical Significant RNA and DNA Viruses. Prions.
Teaching:
Teaching is performed in the form of lectures, seminars and laboratory exercises, during 15 weeks. During the exercises, the teacher demonstrates and supervises the active participation of the students in performing the laboratory tests. During the course there will be compulsory midterm written exams, and a final laboratory exercise. At the end of the course a written part, and an oral part of the final exam will be held. By completing all teaching activities, and passing the final examination, the student acquires 8 ECTS credits.

List of assigned reading:

1. Jawetz, Melnick i Adelberg "Medical Microbiology”, 27th ed. New York: McGraw-Hill; 2016. (http://med-mu.com/wp-content/uploads/2018/06/Jawetz-Melnick-Adelbergs-Medical-Microbiology-27-edition.pdf)
2. Laboratory Excercises in Medical Microbiology – Practical Handbook for Medical Students, Institute of Microbiology and Parasitology, 2022-23.

List of optional reading:

1. Josephine A. Morello JA, Granato PA, Eckel Mizer H. Laboratory Manual and Workbook in Microbiology, 7th ed. http://site.iugaza.edu.ps/mwhindi/files/Laboratory_Manual_And_Workbook_In_Microbiology.pdf
2. Todar's Online Textbook of Bacteriology http://textbookofbacteriology.net/
3. Microbiology and Immunology On-Line (https://www.microbiologybook.org/)

Curriculum:

Student obligations:

All forms of teaching, lectures, seminars and laboratory exercises are compulsory. Each student is expected to attend all teaching units, actively participate in discussions and laboratory exercises. A student may be absent from a total of 30% of teaching solely for health reasons, which justifies with a medical certificate. If a student justifiably or unjustifiably misses more than 30% of teaching he/she
cannot continue to follow the course and loses the opportunity to attend the final exam. In doing so, he earned 0 ECTS credits and was rated with mark F.
To work in a microbiology lab, students must wear a protective coat and have a handbook which they can buy at the Faculty of Medicine Rijeka. The handbook homepage lists the rules for safe work in the lab. Students are required to regularly perform hand hygiene (hand wash or hand rub) according to the instructions given in the introductory exercise, and are also indicated in the handbook and reported in the form of posters in the laboratory. When entering the laboratory for the first time, students are required to read all the rules and confirm with their signature that they will abide by them.
A record on attendance and activity in the classroom will be kept for each student. Knowledge will be continually evaluated and the students should prepare for the classes according to the syllabus. There will be 2 midterm written tests, and a final practical exercise. The final exam consists of a written and oral parts.
By completing all teaching activities, taking the obligatory midterms, practical excersice and passing the both parts of the final exam, the student earns 8 ECTS credits.

Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

ECTS grading system:
Student assessment is carried out in accordance with the current regulations of the University of Rijeka, adopted by the Faculty Council of the Faculty of Medicine in Rijeka.

Students' performance will be evaluated during the course and at the final exam. Out of a total of 100 credits, a **student can earn 50 credits during the course, and 50 credits at the final exam** . Students are assessed using ECTS (A-D) and the numerical system (1-5).

The maximum of 50 credit points can be earned during the course. The students must earn at least 50% (25 credit points) in order to take the final exam. Students who earn 0-49.9% (0-24.9 credit points) during the course, earn an F (fail) grade, no ECTS credits, and must re-enroll in the course.

During the course, the **student can earn a maximum of 50 credit point** by actively participating in classes, completing all assignments, attending midterm exams, and final laboratory excercise as follows:

I. During the course, the following are evaluated:
a) **Midterm test I** covers knowledge acquired by the date of the midterm test (general and part of special bacteriology). The mid-term test consists of 50 multiple-choice questions with five answers offered. The passing threshold is 27 correct answers (54%). If the threshold is reached, each correct answer carries half a point. It is possible to get up to 25 points on the test.

b) **Midterm / Colloquium II** includes a part of special bacteriology, virology, mycology and parasitology. The mid-term test consists of 50 multiple-choice questions with five answers offered. The passing threshold is 27 correct answers (54%). If the threshold is reached, each correct answer carries half a point. It is possible to get up to 25 points on the test.

The student must pass both midterms tests. Each midterm has one exam-repair for students who, for justifiable reasons, did not enter the midterm, either did not collect the minimum number of credit points or were not satisfied with the number of credit points collected (then their previous result is deleted).

Final Exam (50 credit points in total)
Who MAY take the final exam: Students who have scored 25 or more credits during the course will take the final exam, where they can additionally earn a maximum of 50 credits.
Who MAY NOT take the final exam: Students who have earned less than 24.9 points during the course are not eligible for the final exam (they re-enroll in the following academic year).

Other important information regarding to the course:
The final exam consists of a written and an oral part. The student in the final exam must pass at least 55% of the written test and be positively evaluated in the oral part of the exam. The **scoring method** for the final exam is shown in **Table 2.**

Table 2. Assessment method at final written (55% pass threshold) and oral examination
Written test
55%-impassable sufficient = 15 - 18
55 – 59,99% = 10
60 – 64,99% = 11
65 – 69,99% = 12
70 – 74,99% = 13
75 – 79,99% = 14
80 – 84,99% = 15
85 – 89,99% = 16
90 – 94,99% = 18
95 – 100% = 20

Oral exam
sufficient = 15 - 18

good = 19 - 22
very good = 23 - 26
excellent = 27 - 30

Assessment in the ECTS system is done by absolute distribution, ie on the basis of final achievement (credit points earned during the course are added to the points from the final exam):
A = 90 - 100%
B = 75 - 89,9%
C = 60 - 74,9%
D = 50 - 59,9%
F = 0 - 49,9%

The grades in the ECTS system are translated into the numerical system as follows:
A = escellent (5)
B = very good (4)
C = good (3)
D = sufficient (2)
F = insufficient (1)

Other notes (related to the course) important for students:

The course contents and all course related information as well as the midterm, and final exams terms are available on the web pages of the Faculty of Medicine, University of Rijeka and the Department of Microbiology and Parasitology.

COURSE HOURS 2022/2023

Medical Microbiology and Parasitology

List of lectures, seminars and practicals:

EXAM DATES (final exam):
