Academic Year 2026/2027

MICROBIOLOGY

II year

MEDICAL MICROBIOLOGY

Department of Medical Microbiology

Poznan University of Medical Sciences

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RULES AND REGULATIONS OF MICROBIOLOGY CLASSES

For students II year of Medicine Program
Poznan University of Medical Sciences

Prerequisites: knowledge and skills in anatomy, histology, medical biology, biochemistry, physiology and immunology to understand the issues discussed in the various exercises and seminars, according to the requirements given in the program.

Preparation for classes:

I. The student is obliged to theoretically prepare for the current classes in accordance with the requirements specified in the program (knowledge of the material specified by the scope of the current class topic and issues previously discussed and debated in seminars) on the basis of the recommended mandatory literature (syllabus and class regulations).

II. The substantive preparation of the student is the necessary basis for the proper implementation of the classes by students under the guidance of the instructors.

Final Requirements:

I. Mastery of the knowledge covered in the microbiology curriculum for second-year medical students.

II. Acquisition of skills in selecting appropriate microbiological tests in the most common clinical cases (infections of the respiratory system, nervous system, gastrointestinal tract, genitourinary tract, ear, eye and skin infections), planning of basic differential diagnosis, interpretation of microbiological test results, knowledge of prophylaxis of infections and action of bactericidal and bacteriostatic agents on pathogens (antibiotics, antiviral drugs, antifungal drugs, disinfectants, sterilization).

1.Classes in Microbiology for second-year medical students include: lectures (15h), seminars (10h) and exercises (25h).

2.Attendance at exercises, seminars and lectures is mandatory and controlled.

3 Lectures will be held on the Teams platform and in the form of e-learning.

4 Students are required to be punctual to attend classes. Tardiness of more than 15 minutes will result in inability to attend classes. It is not possible to make up missed classes in an academic year.

5 If a student is late for the colloquium up to 15 min (after reading, showing ID and allowing students into the hall), there remains the possibility to join the colloquium, but at the originally scheduled time started for the other participants (the student does not receive additional extended time). Tardiness of more than 15 minutes for the colloquium will result in inability to take it and the obligation to write the aforementioned colloquium at another, the nearest date set by the Department of Microbiology.

6 Verification of theoretical knowledge will take place in the form of oral answers or written input (at each exercise and seminar) and written colloquia. Lack of theoretical preparation of the student for the current classes will result in failure to pass them.

7 Attendance at classes in microbiology is not tantamount to a passing grade, but is a component of it.

8 A student has the right to 1 (one) failure to pass an exercise or seminar, caused by absence or lack of theoretical preparation.

9 In the case of failure to pass microbiology classes 2 times, the Chair shall notify the Dean of the fact, who shall decide on the conditions for passing or failing the course. Failure to pass microbiology classes 2 times prevents the student from taking colloquia.

10 In order to obtain credit for each exercise (in addition to theoretical preparation and active participation in classes), the student is required to have, complete during the exercises and discuss the teaching materials, the so-called credit protocols, available on the website.

11 The passing of each exercise based on the above conditions (points 6-10) is confirmed by the signature of the assistant on the attendance list in the pass box.

12. each student shall be required to prepare in PowerPoint format and orally deliver 1 (one) presentation during the seminar on a topic of his/her choice (reported to the Group Head) in accordance with the designated seminar topics. All topics are made available on the website in the microbiology class regulations or on the Teams platform. The starost of each group is required to send a list of students with the selected topics, before (5 days before) the start of the microbiology seminars by email to the secretariat of the Department of Microbiology at the email address: **mikrobiologia.student@ump.edu.pl**).

13 The presentation is an integral part of the completion of the course in microbiology for second-year medical students. Each student, after presenting his/her work, is obliged to immediately upload the presentation to the group's files on the TEAMS platform in order to be evaluated by the teaching assistant of the given seminar and receive credit.

Presentation Guidelines:

a The presentation is evaluated on:

- content value and visualization, among others:
- the slides MUST NOT be written in uniform text across their entire page and in "copy/paste" text directly from, e.g., a book or website); the issues discussed should be presented in a slogan;
- knowledge of the presented topic by the presenting student:
- a student who presents a topic of his/her choice is theoretically prepared with the issues presented, he/she DOES NOT READ from slides, a book or a sheet of paper (which, of course, he/she can refer to)
- the student is familiar with the topic he has prepared and answers the instructor's questions during the seminar discussion and

to clarify the content contained in his own presentation
- other students (who do not present a given topic), as participants in the seminar, are also prepared with the material covering the topic of the current seminar, in order to actively participate in the discussion with the instructor's assistant and receive credit for the seminar
- exhaust the substantive scope of the topic selected by the student:
- the presentation should be based NOT ONLY on compulsory sources, i.e. a textbook, but be enriched, for example, with photos and current data on infections in the country and the world, as well as newly emerging threats.
- PHOTOS and other graphic forms - significantly increase the value of the presented work and facilitate the assimilation of the presented topic to other participants of the seminar;

b) Basic rules for preparing a presentation:
- The presentation should not exceed 15 minutes.
- The most important issues should be included, which can be deepened during the discussion in seminars and exercises.
- The first slide includes the selected topic to be presented, the author of the presentation, the student group and the year of study.
- Subsequent slides include:
- characteristics of the microorganism,
- if the type of microorganism is given then list the most important, from a clinical point of view, species and strains
- epidemiology - country/world
- the most important virulence factors for the pathogenicity of the microorganism, including an outline of pathogenesis (unless it is a microorganism that is considered nonpathogenic, in which case explain why)
- pathogenicity (disease entities and their major symptoms; the value of the presentation is enhanced by PHOTOS)
- microbiological diagnostics (IN SIDE), biological material for microbiological testing!
- treatment (which preparations are used in therapy)
- prophylaxis
- curiosities
- The last slide must include the sources used in the preparation of the presentation, the bibliography.

c) Criteria for passing the presentation based on:
- fulfillment of subsections a and b of item 14 of these regulations for microbiology classes
- the theoretical preparation of the student for the presentation prepared by him/her.
- It is unacceptable to present copied work, someone else's work, e.g. from another student, from the Internet, etc. on a "copy/paste" basis and lack of knowledge of the topic presented by oneself. In such a situation, the student automatically does not receive credit for the presentation.

14 Each student taking classes is required to have:
- own apron and mask
- disposable gloves - at least two pairs for each exercise
- printed teaching materials, the so-called credit report for the practical part (it is allowed to have a credit report on an electronic medium such as a tablet)
15 Students are required to respect community property (microscopes and other laboratory equipment), comply with applicable health and safety regulations and maintain cleanliness of the workplace.
16 Failure to observe health and safety regulations will result in the removal of the student from the exercise room and failure to pass the class, without the possibility of making up the class at another time and written notification of the situation to the Dean.
17 In the exercise room, the use of cell phones and other mobile devices is strictly forbidden during colloquia and to record microbiology classes.
18. consumption of beverages and food is strictly prohibited in the exercise room (due to health and safety regulations and work with infectious material).

A detailed schedule of classes and colloquium results will be available on the Department of Microbiology website: **www.mikrobiologialekarska.ump.edu.pl.**

19 Criteria for passing the course/module
19.1 There will be 3 quizzes (test SC and MC), from which the student can receive a maximum, total of 100 points. First 2 quizzes the student can get a maximum of 30 points from each quiz (20 single-choice (SC) test questions + 10 multiple-choice (MC) test question). Quizzes cover the range of material from the discussed exercises and seminars. Third quiz wull include 40 questions (30SC and 10 MC)
19.2 Credit for all practical classes (exercises and seminars) of the course Microbiology will be given after meeting the listed conditions:
a) obtaining by the student a minimum of 60 points (60%) from the quizzes
b) credit for the student's presentation (based on the criteria of item??? and only after posting the delivered presentation on the TEAMS group platform on the day of the presentation)
c) credit for current exercises and seminars (attendance, theoretical preparation and active participation)
19.3 A student who has received credit for the colloquia, but has not received credit for the presentation, will be required to re-

prepare it and present it orally on the date set by the Department of Microbiology
19.4 A student who has received credit for current practical classes (exercises and seminars) in Microbiology, but obtained less than 60% of the points (47.9 points and less) from the quizzes, in accordance with the study regulations, has the right to twice take the reteake quizzes (test – 50 questions) of the entire exercise and seminar material. In order to pass the Revision quiz in the subject of Microbiology, a minimum of 60% of the points must be obtained. In the case of failure to obtain credit from the Correction quiz, in accordance with the rules of study, the student has the right to appeal to the Dean and to take a commission credit, the result of which is final.
19.5 In order to be admitted to the examination in the course of Microbiology, parasitology and basic immunology it is necessary to obtain credit from exercises and seminars, as well as attendance at lectures, replaying e-learning lectures and solving self-tests.
19.6 The exam regulations are established by NBME office.
19.7 The Exam from modul Microbiology, parasitology and basic immunology will be prepared by NBME (National Board Medical Examination). 1st reteake also will be prepared by NBME. 2nd reteake will preparaed by Department odfMedical Microbiology (internal exam)
19.8 To pass the exam, a minimum of equally 60% of the points must be scored. Percentages will not be rounded up.
20. Consultation: Office hours - Consultation for students are available by appointmentwith course coordinator. Please contact via email or teams to arrange a meeting.

References:

1. Murray P.R., Rosenthal K.S., Pfaller M.A. Microbiology., 2022.

2. STRAUSS J.H., STRAUSS E.G. **VIRUSES AND HUMAN DISEASE** , ELSEVIER, 2008.

Lectures: online – 13h

1. 28.09.2026 (18.00-20.30)
Essential of microbiology diagnostics. Disinfection and sterilization.

2. 29.09.2026 (18.00-20.30)
Principles of taxonomy. Structures of bacterial cell. Metabolism of bacterial cells (aerobic and anaerobic growth). Multiplication. Pathogenicity of bacteria. Sporulation process. Colonization. Genetics of bacteria.

3. 30.09.2026 (18.00-20.30)
Antibiotics and chemotherapy in the treatment of infections.

4. 01.10.2026 (18.00-20.15)
Hospital infections. Alarm pathogens.

Lectures: e-learning – 4h

1. Hospital infections. Alarm pathogens. Antimicrobial immunity. Vaccines.

2. Taxonomy of viruses. Viruses: GI-viruses: RVA, RVB, RVC, Norwalk virus, Adenovirus. Hepatitis viruses. STI: HPV, HIV. Yellow fever, Hanta virus, Ebola virus, Denga virus, West Nil.

3. Viruses: RTI viruses: Influenza virus, RSV, HPV-B19, Coxackie viruses, Adenovirus, Rubella virus. Nervous system viral infections: ECHOV, RABV, HSV.

4. Viruses: Yellow fever, Hanta virus, Ebola virus, Denga virus, West Nil virus

SEM (14 h)/Labs(25h)–Winter semester

1. SEM 1. Students' presentations:

1. Organization of Microbiology course.

2. Characteristics of selected Gram-positive cocci essential in the work of a medical doctor:

a) Staphylococcus sp. (*S.aureus, S.epidermidis, S.saprophyticus)*

b) *Streptococcus sp.* (*Groups: A, B, C, G; S.pneumoniae, Group Viridans*) + *Enterococcus sp. (E.faecalis, E.faecium)*

3. Selected Gram-negative cocci essential in the work of a medical doctor:

a) *Neisseria sp. (N.meningitidis, N.gonorrhoeae)*

b) *Moraxella catarrhalis*

4. Characteristics of selected Gram-negative rods:

a) *Haemophilus sp. (H.influenzae, H.aegyptius (H.aegypticus), H.parainfluenzae, H.ducreyi),*

b) *Bordetella pertussis*

c) *Pseudomonas aeruginosa, Acinetobacter baumannii, Stenotrophomonas maltophilia*

05.10.2026 18.00 - 21.00 - (gr.S1+S2)
06.10.2026 18.00 - 21.00 - (gr.S3+S4)
07.10.2026 18.00 - 21.00 - (grS5+S6)
08.10.2026 18.00 - 21.00 - (grS7)

2. SEM 2. Students' presentations:

1. Characteristics of selected Gram-positive rods:

a) *Listeria monocytogenes, Lactobacillus sp. + Bifidobacterium sp.*

2. Characteristics of Enterobacterales:

a) *Escherichia coli, Proteus sp. (Proteus mirabilis, Proteus vulgaris*), *Klebsiella sp. (K.pneumoniae, K.oxytoca, K.rhinoscleromatis, K.granulomatis)*,

b) *Salmonella sp. (S.typhi, S.paratyphi, S.enteritidis, S.cholerasuis),Shigella sp. (S.dysenteriae, S.flexneri, S.sonnei, S.boydi)*, *Serratia sp.*, *Enterobacter sp., Citrobacter sp.*

3. Zoonotic infections:

a) *Yersinia sp. (Y.pestis, Y.enterocolitica), Brucella sp. (B.abortus, B.melitensis, B.suis), Francisella tularensis, Pasteurella multocida*

12.10.2026 18.00 – 20.30 - (gr.S1+S2)
13.10.2026 18.00 - 20.30 - (gr.S3+S4)
14.10.2026 18.00 - 20.30 - (grS5+S6)
15.10.2026 18.00 - 20.30 - (grS7)

3. SEM 3. Students' presentations:

1. Anaerobes (spore forming and non-spore forming bacteria):

a) *Clostridium tetani, Clostridium perfringens*
b) *Clostridium difficile, Clostridium botulinum*
c) *Bacteroides fragilis group, Fusobacterium sp., Cutibacterium sp. (Propionibacterium sp.)*

2. Aerobic spore forming bacteria:

a) *Bacillus sp. (Bacillus anthracis, Bacillus cereus)*

3. Spiral bacteria:

a) *Treponema pallidum, Borrelia sp. (B.burgdorferi, B.garinii, B.afzelii, B.recurrentis), Ricketsia sp. (R.prowazeki, R.rickettsii), Leptospira interrogans*
b) *Vibrio sp. (V.cholerae, V.parahaemolyticus, V.vulnificus), Campylobacter sp. (C.jejuni, C.fetus) Helicobacter pylori*

19.10.2026 18.00 – 20.30 - (gr.S1+S2)
20.10.2026 18.00 - 20.30 - (gr.S3+S4)
21.10.2026 18.00 - 20.30 - (grS5+S6)
22.10.2026 18.00 - 20.30 - (grS7)

4. SEM 4. Students' presentations:

1. *Mycobacterium sp. (M.tuberculosis complex, M.leprae, MOTT: M.avium complex, M.marinum, M.kansasii)+ Nocardia sp. (N.brasiliensis, N.asteroides)*

2. *Actinomyces sp. (A.naeslundii, A.israelii), Corynebacterium sp. (C.diphteriae, C.urealyticum, C.jeikeium), Legionella pneumophila*

3. *Chlamydia pneumoniae, Chlamydia trachomatis*

4. *Mycoplasma pneumoniae, Mycoplasma hominis, Mycoplsama genitalium, Ureaplasma urealyticuym*

5. *Fungi: Candida (C.albicans, C.glabrata, C.krusei, C.parapsilosis)*, *Cryptococcus neoformans*

6. *Aspergillus sp. (A.fumigatus, A.niger, A.flavus)*, *Mucor sp.*, *Fusarium sp.*

7. *Dermatophytes (Epidermophyton sp., Microsporum sp., Trichophyton sp.)*

26.10.2026 18.00 – 20.30 - (gr.S1+S2)
27.10.2026 18.00 - 20.30 - (gr.S3+S4)
28.10.2026 18.00 - 20.30 - (grS5+S6)
29.10.2026 18.00 - 20.30 - (grS7)

5. LAB 1.

Essentials of microbiological diagnostics. Methods of bacterial drug sensitivitytesting.
The genera: Staphylococcus, Streptococcus, Enterococcus.

09.10.2026
07.15 – 09.15 – MD-6-2 rok (gr.1.1+1.2) (gr.2.1+2.2)
09.15 – 11.15 – MD-6-2 rok (gr.1.3+2.3) (gr.3.1+3.2)
11.15 – 13.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3)
15.15 – 17.15 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

6. LAB 2.
The genera: Neisseria sp. *(N.meningitidis, N.gonorrhoeae)*, *Moraxella catarrhalis*, Haemophilus, Bordetella, Legionella.

16.10.2026

07.15 – 09.15 – MD-6-2 rok (gr.1.1+1.2) (gr.2.1+2.2)
09.15 – 11.15 – MD-6-2 rok (gr.1.3+2.3) (gr.3.1+3.2)
11.15 – 13.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3)
15.15 – 17.15 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

7. LAB 3.
The genera: Escherichia, Salmonella, Shigella, Klebsiella, Enterobacter, Proteus, Serratia, Citrobacter, Yersinia.

23.10.2026

07.15 – 09.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3)
09.15 – 11.15 – MD-6-2 rok (gr.1.1+1.2) (gr.2.1+2.2)
11.15 – 13.15 – MD-6-2 rok (gr.1.3+2.3) (gr.3.1+3.2+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
15.15 – 17.15 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.230

8. LAB 4.
Quiz 1. (The scope of the quiz covers seminar topics concerning topics of LAB 1, LAB 2 and LAB 3 and seminars the same subjects composed of 30 questions)

The genera: Pseudomonas, Acinetobacter, Corynebacterium, Listeria, Brucella, Franciscella, Pasteurella.

30.10.2026

07.15 – 09.15 – MD-6-2 rok (gr.1.1+1.2) (gr.2.1+2.2)
09.15 – 11.15 – MD-6-2 rok (gr.1.3+2.3) (gr.3.1+3.2)
11.15 – 13.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3)
15.15 – 17.15 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

9. LAB 5.
The genera: Lactobacillus, Mycobacterium, Actinomyces, Nocardia, Treponema, Borrelia.

13.11.2026

07.15 – 09.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3)
09.15 – 11.15 – MD-6-2 rok (gr.1.1+1.2) (gr.2.1+2.2)
11.15 – 13.15 – MD-6-2 rok (gr.3.1+3.2) (gr.6.1+6.2+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
15.15 – 17.15 – MD-6-2 rok (gr.1.3+2.3) (gr.7.1+7.2)

10. LAB 6.
The genera: Chlamydia, Mycoplasma, Rickettsia, Coxiella, Campylobacter, Vibrio, Leptospira, Helicobacter.

20.11.2026

07.15 – 09.15 – MD-6-2 rok (gr.1.3+2.1) (gr.2.2+2.3)
09.15 – 11.15 – MD-6-2 rok (gr.1.1+1.2) (gr.3.1+3.2)
11.15 – 13.15 – MD-6-2 rok (gr.3.3+4.1) (gr.4.2+4.3+7.3)
13.15 – 15.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
15.15 – 17.15 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

11. LAB 7.

Quiz 2. (The scope of the quiz covers seminar topics concerning topics of LAB 4, LAB 5 and LAB 6 and seminars the same subjects - 30 questions)

The genera: Spore-forming bacilli: Bacillus and Clostridium.
Anaerobic bacteria: Bacteroides, Cutibacterium (Propionibacterium).

27.11.2026

07.15 – 09.30 – MD-6-2 rok (gr.1.1+1.2) (gr.1.3+2.3)
09.30 – 11.45 – MD-6-2 rok (gr.2.1+2.2) (gr.3.1+3.2)
11.45 – 14.00 – MD-6-2 rok (gr. 3.3+4.1) (gr.4.2+4.3+7.3)
14.00 – 16.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
16.15 – 18.30 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

12. LAB 8.
Fungi; the genera: Aspergillus, Candida, Cryptococcus. Dermatophytes.

11.12.2026

07.15 – 09.30 – MD-6-2 rok (gr.1.1+1.2) (gr.1.3+2.3)
09.30 – 11.45 – MD-6-2 rok (gr.2.1+2.2) (gr.3.1+3.2)
11.45 – 14.00 – MD-6-2 rok (gr. 3.3+4.1) (gr.4.2+4.3+7.3)
14.00 – 16.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
16.15 – 18.30 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

13. LAB 9.
Cases study – RTI, UTI, STI and Viruses RTI, UTI STI.

18.12.2026

07.15 – 09.30 – MD-6-2 rok (gr.1.1+1.2) (gr.1.3+2.3)
09.30 – 11.45 – MD-6-2 rok (gr.2.1+2.2) (gr.3.1+3.2)
11.45 – 14.00 – MD-6-2 rok (gr. 3.3+4.1) (gr.4.2+4.3+7.3)
14.00 – 16.15 – MD-6-2 rok (gr.5.1+5.2) (gr.5.3+6.3)
16.15 – 18.30 – MD-6-2 rok (gr.6.1+6.2) (gr.7.1+7.2)

Quiz 3. (The scope of the quiz covers seminar topics concerning topics of LAB 7, LAB 8 and LAB 9 and seminars the same subjects - 40 questions)