ACADEMIC YEAR 2023/2024

UNIVERSITY OF MEDICAL SCIENCES IN POZNAŃ, POLAND
MEDICAL FACULTY II

Chair and Department of Medical Microbiology

Course in Oral Microbiology with Elements of General Microbiology for English Language Students

Guide for Students

The Second Year
(winter semester)

5-year program of stomatology studies

Chief: Professor Tomasz M. Karpiński, MD., PhD.

The teaching staff includes the following instructors and class supervisors:
Prof. Tomasz Karpiński, MD., PhD.
Izabela Chudzicka-Strugała, MD., PhD., MBA - coordinator
Agnieszka Zeidler, M.Sc., PhD.
Barbara Zwoździak, M.Sc., PhD.
Zuzanna Babalska, M.Sc.
Marek Kwaśniewski, M.Sc.

Consultations:
Dr Izabela Chudzicka-Strugała *e-mail: mikrobiologia.student@ump.edu.pl*

ACADEMIC YEAR 2023/2024
REGULATIONS FOR CLASSES IN ORAL MICROBIOLOGY WITH ELEMENTS OF GENERAL MICROBIOLOGY
FOR 2nd YEAR DENTAL STUDENTS

1. AIMS AND OBJECTIVES

Welcome to the Department of Medical Microbiology of the Medical University of Poznan. Medical microbiology, dealing with microorganisms pathogenic to humans, is a specific branch of medicine. It studies the aetiopathogenesis of many diseases and is also involved in problems of diagnosis, prevention and therapy. The course covers selected issues from the fields of bacteriology, virology and mycology, taking into account the biological properties, epidemiology and pathogenicity of microorganisms, based on the aetiopathogenesis of selected bacterial, viral and fungal diseases in close connection with practical clinical medicine, diagnosis, therapy and prevention. Microbiology is therefore a practical science, which is why, in addition to lectures and seminars, laboratory classes form the basis of the training. Recognition of pathogenic microorganisms during the exercises provides an understanding of microbiological procedures for the causal diagnosis of infections.

2. COURSE DELIVERY

2.1 Preparation for the course:

I. The student is obliged to theoretically prepare for the current classes in accordance with the requirements given in the programme (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 obligatory literature (indicated in the class regulations and syllabus).

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

2.2 Final requirements:

I. Mastering the knowledge covered in the curriculum of oral microbiology with elements of general microbiology for students of the second year of medical and dental faculties.

II. Acquisition of the skills of selecting appropriate microbiological examinations in the most frequent clinical cases in dentistry on the basis of biological properties and epidemiology of microorganisms pathogenic for humans, planning basic differential diagnostics with the knowledge of principles of selecting biological material for microbiological examinations also with the use of molecular diagnostic methods, practical knowledge of the correct interpretation of microbiological results, knowledge of the principles of prevention of infectious diseases and of the action of bactericidal and bacteriostatic agents on pathogens (antibiotics, antivirals, antifungals, disinfectants, sterilisation) and microbiological principles of rational antibiotic therapy, methods of disinfection and sterilisation.

(1) Classes in Oral Microbiology with elements of general microbiology for students of the second year of medical and dental studies include: lectures (20 hours), seminars (10 hours) and exercises (20 hours).

(2) Attendance at exercises, seminars and lectures is compulsory and controlled.

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

(4) Students are required to be on time for classes. Arriving more than 15 minutes late will result in not being able to attend class. It is not possible to make up missed classes in an academic year.

(5) If a student is late for a colloquium for up to 15 minutes (after being read out, showing identification and allowing students to enter the room), he/she is still allowed to take the colloquium, however, at the originally scheduled starting time for the other participants (the student does not receive additional, extended time). If a student is more than 15 minutes late for the colloquium, he/she is not allowed to take it and is obliged to write the above-mentioned colloquium at another, closest date set by the Department of Microbiology.

(6) Theoretical knowledge will be tested in the form of oral answers, written tests (at each exercise and seminar) and written colloquia based on the questions asked. Lack of theoretical preparation of the student for current classes will result in failing them.

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

(8) A student has the right to 1 (one) failure in an exercise or seminar due to absence or lack of theoretical preparation.
(9) In the case of a failure to pass a microbiology course on 2 occasions the Department Chair notifies the Dean, who makes a decision on the conditions for passing or failing the course. Failure to pass microbiology classes 2 times makes it impossible for a student to sit for colloquia.
(10) In order to obtain a credit for each exercise (apart from theoretical preparation and active participation in classes) a student is obliged to have, fill in during the exercises and discuss the didactic materials, so called credit protocols, made available on the website.
(11) The completion of each exercise based on the above conditions (points 6-10) is confirmed by the signature of an assistant on the attendance register in the pass field.
(12) Each student is obliged to prepare in PowerPoint format and orally deliver 1 (one) presentation during the seminar on the topic of his/her choice (notified to the Group Leader) in accordance with the assigned seminar topics. All topics are made available on the website in the class regulations for Oral Microbiology with elements of General Microbiology or on the Teams platform.
(13) The head of each group is obliged to send a list of students with selected topics before (5 days before) the beginning of the seminars in oral microbiology with elements of general microbiology by e-mail to the secretariat of the Department of Microbiology at the following e-mail address: mikrobiologia.student@ump.edu.pl). ATTENTION: IN CASE OF A LESSER GROUP OF STUDENTS, THE TOPICS SHOULD BE CONNECTED SO THAT ALL OF THEM ARE PRESENTED IN THE GROUP during the seminars.
(14) The presentation is an integral part of the completion of the course in oral microbiology with elements of general microbiology for second year dental students. Each student, after presenting his/her work, is obliged to immediately upload the presentation to the group files on the TEAMS platform in order to be evaluated by the assistant conducting the given seminar and to receive credit.

(15) Presentation - guidelines:
(a) The presentation is evaluated on:
- content value and visuals, among others:
    - the slides MUST NOT be written in uniform text across their entire page and as 'copy/paste' text directly from e.g. a book or a website; the issues discussed should be presented in slogans;
- knowledge of the topic presented by the presenting student:
    - a student who presents a topic of his/her choice is theoretically prepared on 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 knows the topic prepared by him/herself and responds to questions of the instructor during the seminar discussion and to clarify the content of his/her presentation
    - other students (who do not present the given topic), as participants of the seminar, are also prepared in the scope of the material covering the topic of the current seminar, in order to actively participate in the discussion with the instructor and other students, and to obtain credit for the seminar
- exhaustive coverage of the topic chosen by the student:
    - the presentation should be based NOT ONLY on compulsory sources, i.e. the textbook, but should be enriched e.g. with photos and current data on national and international infections and newly emerging threats
- PHOTOS and other graphic forms - significantly increase the value of the presented work and facilitate the assimilation of the presented topic by other participants of the seminar.
(b) Basic rules for preparing a presentation:
- The presentation should not exceed 20 minutes.
- The most important topics should be included, which can be deepened during the discussion in seminars and exercises.
- The first slide includes the chosen topic to be presented, the author of the presentation, the student group and the year of study.
- Subsequent slides include:
    - the characteristics of the micro-organism,
- if the type of micro-organism is given, 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 micro-organism, including an outline of the pathogenesis (unless the micro-organism is considered as non pathogenic, in which case it should be explained why)
    - pathogenicity (disease entities and their most important symptoms; the presentation is enhanced by PICTURES)
    - microbiological diagnostics (IN OCCUPATION), biological material for microbiological tests!
    - treatment (which preparations are used in therapy on the basis of the recommended literature in these regulations)
    - prophylaxis
    - curiosities

The last slide must include the sources used in the preparation of the presentation, the so-called bibliography.

(c) Criteria for passing the presentation based on:
- fulfilment of subsections a and b of section 15 of these regulations for microbiology classes
- theoretical preparation of the student for the presentation he/she has prepared.
- It is unacceptable to present work copied, someone else's, e.g. from another student, from the Internet, etc., on the basis of "copy/paste" and lack of knowledge of the topic presented. In such a situation, the student will automatically fail the presentation.

(16) Each student taking a class is required to have:
- own apron and mask
- disposable gloves - at least two pairs for each exercise
- printed teaching materials, so called credit report for the practical part (it is acceptable to have a credit report on an electronic medium such as a tablet) and writing instruments (pencil, crayons, pen; in the case of an electronic medium - a stylus for tablets).

(17) Students are required to respect community property (microscopes and other laboratory equipment), comply with current health and safety regulations and keep the work area clean. Due to work with infectious material, hand hygiene is obligatory in the exercise room (includes: hand washing, use of antiseptic preparations, protective gloves and wearing fingernails no longer than 0.5 cm without ornaments so as not to impede effective disinfection).

(18) Failure to comply with health and safety regulations will result in the student being expelled from the classroom and failing to complete the course, without the possibility of making up the course at another time, and written notification of the situation to the Dean.
(19) The use of mobile phones and other mobile devices is strictly forbidden in the classroom during colloquia and to record microbiology classes.
Drinking and eating is strictly forbidden in the exercise room (due to health and safety regulations and working with infectious material).

A detailed timetable and quizzes results will be available on the Department of Medical Microbiology website: www.mikrobiologialekarska.ump.edu.pl.

CRITERIA FOR PASSING A COURSE IN ORAL MICROBIOLOGY WITH ELEMENTS OF GENERAL MICROBIOLOGY

It is explained that in the grading system used in the Department of Medical Microbiology, the same range of material is tested several times: at exercises, seminars and colloquia of thematic blocks, and the criterion for passing is the average of all grades, expressed in points.

1. There will be 3 quizzes (test-10MC and 20 SC), from which the student can receive a maximum, total of 90 points. From each quiz the student can get a maximum of 30 points (20 single-choice (SC) test questions + 10 multiple-choice (MC) test questions). Quizzes cover the range of material from the exercises and seminars discussed. The aforementioned quizzes can not be corrected. It is not possible to postpone, fixed in these regulations, the dates of colloquia.
2. Credit for all practical classes (exercises and seminars) of the course Microbiology and microbiology and oral cavity will be given after meeting the listed conditions:
a) obtaining by the student a minimum of 54 points (60%) from the quizzes
b) passing of the student's presentation (based on the criteria of item 15c. 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)
3. A student who has received credit for the colloquia, but has not received credit for the presentation, will be required to re-prepare the presentation and present it orally on the date set by the Department of Medical Microbiology.
4. A student who has received credit for current practical classes (exercises and seminars) in Oral Microbiology with Elements of General Microbiology, but has scored less than 60% of the points (53,9 points and less) from the quizzes, in accordance with the rules of study, has the right to twice take the retake quizzes from all materials (test-50 quiestions) of the entire exercise and seminar material on the date set by the Department of Medical Microbiology for each student group (the set dates for each group will be given on the website of the Department of Medical Microbiology).
In order to pass the reteake quiz of the course Oral Microbiology with Elements of General Microbiology, a minimum of 60% - 30pts) of the points must be obtained. In the event of failure to obtain credit from the Corrective Colloquium, in accordance

with the regulations of the course, the student has the right to appeal to the Dean and to take a commission credit, the result of which is final.
5. In order to be admitted to the examination in the course Oral Microbiology with Elements of General Microbiology, it is necessary to obtain credit from exercises and seminars, as well as attendance at lectures, replaying e-learning lectures and solving self-tests.
6. The exam consists of 75 test questions (single-choice 50 and multiple-choice-25), covering the topics of seminars, exercises and lectures. A student has the right to take a revision exam 2 times. The first date for improvement of the exam (test) can take place no earlier than 2 weeks after receiving the results of the exam. The second date of the revision exam can be held orally, provided the number of students is equal to 10 or less.
7. A minimum of equally 45 points (60%) is required to pass the exam. Percentages will not be rounded up.
8. The exam will be held: February/March 2024, and the make-up exam will be held: April/May 2024.

REFERENCES

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

2. Lakshman Samaranayake **Essential Microbiology for Dentistry** , ELSEVIER, 2018

5-year program of stomatology studies
DDS-5-2

Program of Oral Microbiology with elements of general microbiology lectures – 2023/2024

FRIDAY (08.00-09.30) – TEAMS

1) 15.09.2023 – Essential of microbiology diagnostics. Disinfection and sterilization.

2) 22.09.2023 –Structure, metabolism and genetics of bacteria.

3) 29.09.2023 – Antibiotics and chemotherapy in the treatment of infections and the most important in dentistry.

4) 06.10.2023 – Hospital infections. Alarm pathogens.

5) 13.10.2023 – Antimicrobial immunity, vaccines and treatment serum.

6) 20.10.2023 – Fungi pathogenic for humans.

7) 27.10.2023 – Microflora of oral cavity.

8) 10.11.2023 – Viruses important in dentistry.

9) 17.11.2023 – Viruses important in dentistry.

10) 24.11.2023 – Viruses of viral hepatitis; retroviruses.

Program of Oral Microbiology with elements of general microbiology Seminars and Labs
DDS – 2023/2024 II-Year (winter semester)

THURSDAY (07.30-09.45)

I. SEM 1.

1. Organization of Oral Microbiology with elements of general microbiology course.
2. Characteristics of Gram-positive cocciessential in the work of a dentist:
   - Staphylococcus sp.,
   - Streptococcus, Peptostreptococcus,
   - Enterococcus.

14.09.2023 Group A/B

II. SEM 2. Students' presentations:

a) Characteristics of Gram-negative cocci and Gram-negative rodsessential in the work of a dentist:

1. Neisseria meningitidis, N. subflava and N. mucosa
2. Neisseria gonorrhoeae
3. Moraxella catarrhalis
4. Haemophilus influenzae, H. parainfluenzae
5. Acinetobacter baumannii
6. Pseudomonas aeruginosa,

b) Characteristics of Gram-positive rods essential in the work of a dentist:

1. Lactobacillus sp.

21.09.2023 Group A/B

III. SEM 3. Students' presentations:

a) Characteristics of Gram-negative rods essential in the work of a dentist (Enterobacterales):

1. Escherichia coli
2. Klebsiella pneumoniae, Proteus mirabilis, Serratia sp.

b) Anaerobes (spore forming and non-spore forming) essential in the work of a dentist:

1. Clostridium tetani, C. perfringens
2. Clostridium difficile
3. Bacteroides fragilis
4. Fusobacterium sp., Cutibacterium sp. (Propionibacterium sp.), Aggregatibacter sp.
5. Prevotella sp., Porphyromonas sp.

c) 1. Actinomyces sp., Nocardia sp.

28.09.2023 Group A/B

IV. SEM 4./LAB 1. Students' presentations: Selected infections of the respiratory system - essential in the work of a dentist:

1. Mycobacterium tuberculosis
2. Corynebacterium diphteriae
3. Bordetella pertussis
4. Chlamydia pneumoniae
5. Mycoplasma pneumoniae
6. Legionella pneumophila

05.10.2023 Group A/B

V. LAB 2.
Microbiology diagnosis and laboratory techniques. Gram positive cocci essential in the work of dentist (Staphylococcus sp., Streptococcus, Peptostreptococcus sp., Enterococcus sp.)

12.10.2023 Group A/B

VI. LAB 3.
Quiz 1. (The scope of the quiz covers: SEM 1. and LAB 1 and 2. composed of 20 questions)

Microbiology diagnosis and laboratory techniques. Gram negative cocci and bacilli essential in the work of dentist (Neisseria sp., Moraxella catarrhalis, Haemophilussp., Acinetobacter baumannii, Pseudomonas aeruginosa).

19.10.2023 Group A/B

VII. LAB 4.
Microbiology diagnosis and laboratory techniques. Characteristics of Gram-negative rods – Enterobacterales (Escherichia coli, Klebsiella pneumoniae, Proteus mirabilis, Serratia sp.) and anaerobes (Clostridium sp., Bacteroides fragilis, Fusobacterium sp., Cutibacterium sp. (Propionibacterium sp.) essential in the work of a dentist.

26.10.2023 Group A/B

VIII. LAB 5.
Quiz 2. (The scope of the quiz covers: SEM 1, 2 and 3 and LAB.4 and 5 composed of 30 questions)

Selected infections of the upper and lower respiratory tract infections- essential in the work of a dentist- cases study (Mycobacterium tuberculosis, Corynebacterium diphteriae, Bordetella pertussis, Chlamydia pneumoniae, Mycoplasma pneumoniae, Legionella pneumophila, Streptococcus sp., Staphylococcus sp.)

09.11.2023 Group A+B

IX. LAB 6.
1. Dental plaque.
2. Cariogenic bacteria and caries: Lactobacillus sp.
3. Selected viruses essential in the work of a dentist: HIV, HPV, EBV, CMV, HSV – cases study.

16.11.2023 Group A+B

X. LAB 7.
a) Microbiology of periodontal diseases essential in the work of a dentist: Actinomyces, Nocardia, Aggregatibacter sp., Prevotella sp., Porphyromonas sp.
b) Fungal infections essential in the work of a dentist: Candida, Aspergillus.

Quiz 3. (The scope of the quiz covers: SEM 3,4, and 5 and LAB.6 and 7 composed of 30 questions)

23.11.2023 Group A+B