SYLLABUS

1. Course title:

MICROBIOLOGY

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester:

1 V

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 2

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (integrated 1st and 2nd cycle)

12. Lecturer:

13. Lecturer's e-mail:

14. Web site:

www.frmf.untz.ba

15. Course aims:

to familiarize students with specific areas of the stated teaching, scientific, and professional discipline;to familiarize students with the basic characteristics of bacteria, parasites, fungi, and viruses, as well as the host (human) immune response to their presence;to familiarize them with the significance of these microorganisms and parasites in nature and their impact on human health;to teach them to implement the acquired knowledge in practice;to teach them to reach problem-solving conclusions in the identification of microorganisms through individual or group work;to improve students' skills for continuous work throughout the entire year.

16. Learning outcomes:

Students carry out the organization of work and ensure the necessary conditions in the microbiology laboratory; prepare materials for sterilization and disinfection and perform these procedures; correctly collect patient samples; prepare native and stained slides; perform microscopy using dry and immersion objectives; prepare and perform quality control of bacteriological culture media; perform basic serological techniques (agglutination, precipitation, complement fixation, and ELISA); apply methods for the identification of Gram-positive and Gram-negative bacteria; apply methods for the detection of protozoa and helminths...

17. Course content:

* Introduction to bacteriology
* Susceptibility of microorganisms
* Infection and infectious disease
* Host resistance – immunology
* Gram-positive and Gram-negative coccoid and coccobacillary bacteria
* Enterobacteria
* Gram-positive aerobic and anaerobic rod-shaped bacteria
* Spiral and intracellular bacteria
* Protozoa
* Nematodes and trematodes
* Cestodes and arthropods
* Fungi causing human diseases
* General characteristics of viruses
* RNA viruses
* DNA viruses and hepatitis viruses

18. Learning methods:

The course “Microbiology” has a total of 30 hours.
The course will be conducted in the form of lectures, seminars, and practical exercises as follows:

Lectures: 2 hours per week, total of 30 hours
Practical exercises: 2 hours per week, total of 30 hours; the maximum number of students per group is 15
Seminars: active participation on an assigned topic, either individually or in groups according to students’ preference

19. Assessment methods:

Knowledge and skills are assessed continuously during the semester as well as through the final exam. Students are required to participate in all forms of knowledge assessment during the semester.

During practical exercises, continuous knowledge assessment will be conducted through **two colloquia/tests**.

* **Colloquium I** – evaluates knowledge and skills in general microbiology, immunology, and bacteriology. It consists of a test with 30 questions (open-ended questions 1.5 points; multiple-choice questions 1 point; true/false questions 0.5 points), 5 questions from practical exercises, and the examination of 5 microscopic slides with description and identification of bacteria.
* **Colloquium II** – evaluates knowledge and skills in parasitology, mycology, and virology. It consists of a test with 30 questions (open-ended questions 1.5 points; multiple-choice questions 1 point; true/false questions 0.5 points), 5 questions from practical exercises, and the examination of 5 microscopic slides with description and identification of parasite and fungal developmental stages.

Preparation and execution of individual and group seminars will be supervised by the responsible instructor and continuously assessed.

Partial Exam I covers knowledge from modules 1 to 9. It is in written form and consists of 3 essay-type questions (1 – general microbiology, 1 – immunology, 1 – bacteriology).

Final Exam covers knowledge from modules 9 to 15. It is oral and consists of 3 questions (1 – parasitology, 1 – mycology, 1 – virology).

A student who has not successfully completed all semester obligations (accumulated the minimum required points from practical exercises, seminars, and partial exams) will take a **written final exam**, which covers knowledge from modules 1–15. The exam consists of a 40-question test, 5 questions from practical exercises, and the examination of 5 microscopic slides.

A student who passes the written final exam will take the **oral final exam**, consisting of 6 questions (general microbiology, immunology, specialized bacteriology, parasitology, mycology, and virology).

Students who have not passed any of the scheduled assessments will retake them following the same procedures as during the semester. The **make-up exam** is both written and oral and follows the criteria of the final exam. All previously passed parts of the exam during the semester are credited toward the make-up exam.

20. Assessment components:

During each knowledge assessment, a student receives a certain number of points. If the highest grade corresponds to 100 points, the assessed components and the formation of the final grade are as follows:
Attendance and activity in lectures and exercises: 0–5 points. Test I and Test II: 6–10 points. Partial exam: 30 points.
Final exam: 45 points
Point scale:
< 55 points = 5 (five)
55–64 points = 6 (six)
65–74 points = 7 (seven)
75–84 points = 8 (eight)
85–94 points = 9 (nine)
95–100 points = 10 (ten)

21. Required reading list:

1. Numanović F, 2013. Medicinska mikrobiologija sa imunologijom i parazitologijom", OFF-SET Tuzla;
2. Karakašević B, 1992. Mikrobiologija i parazitologija; Medicinska knjiga Beograd-Zagreb;
3. Zvizdić Š, 2009. Opšta virusologija, Med. Fak. Sarajevo

22. Web sources:

23. Applicable starting from the academic year:

2018/19

24. Adopted in the Faculty/Academy session:

17.11.2025.