SYLLABUS

1. Course title:

BIOCHEMISTRY

2. Code:

3. Cycle of study:

1

4. ECTS credits:

8

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:	5
9.2. Seminars:	0
9.3. Laboratory/Practice classes:	3

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (integrated 1st and 2nd cycle)

12. Lecturer:

dr. sc. Nahida Srabović, associate professor

13. Lecturer's e-mail:

nahida.srabovic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

Understanding the basic principles of the molecular logic of biochemical processes in living organisms, the dynamics of synthesis and degradation of natural macromolecules, proteins, carbohydrates, lipids, and nucleic acids.
Understanding the factors that influence the dynamics of cellular metabolism, the principles of regulation, and control mechanisms.
The acquired knowledge provides a foundation for understanding the following courses: Proteomics, Immunochemistry with Fundamentals of Immunology, Biochemistry of Drugs, and Clinical Biochemistry.

16. Learning outcomes:

* Application of acquired knowledge and skills in solving problems in biochemical systems;
* Understanding the relationship between the structure and function of biological molecules;
* Identification of key metabolic pathways, enzyme systems, and regulatory mechanisms of healthy metabolism;
* Independently designing and conducting biochemical experiments.

17. Course content:

Amino acids;
Proteins and structural-functional relationships in proteins;
Hemoglobin and myoglobin;
Proteins of the extracellular matrix;
Enzymes and coenzymes;
Enzyme kinetics;
Nucleic acids;
Storage of metabolic energy;
Glucose metabolism - glycolysis and gluconeogenesis, glycogenolysis and glycogen synthesis;
Pentose phosphate pathway;
Citric acid cycle, oxidative phosphorylation; B
Biosynthesis and oxidation of fatty acids, lipoprotein metabolism, cholesterol, ketone bodies;
Ethanol metabolism;
Purine and pyrimidine metabolism;
Amino acid metabolism and the urea cycle;
Integration of metabolism

18. Learning methods:

The most important learning methods in the course include:
- Lectures with the use of multimedia tools, active learning techniques and with active participation and discussions of students;
- Laboratory exercises;
- Consultations.

The working material from the lectures will be available to students.

19. Assessment methods:

Student knowledge assessment is performed through pre-exam obligations and the final exam. Within the pre-exam obligations, students can earn points from activities in lectures and exercises/practicals, mid-term exam I (colloquim I) and test I, which students take in the 7th or 8th week (covering material from weeks I - VII), and mid-term exam II (colloquium II) and test II, which students take in the 15th week of the semester (covering material from weeks VIII - XIV). If students achieve at least 55 points during the pre-exam obligations, they gain the right to take the final exam for a grade during the regular examination periods. Students at the final and retake exams only take the parts of the exam for which they did not achieve the minimum required points during previous knowledge assessments.The point value of the pre-exam obligations/knowledge assessment is:

	min - max
- activity in exercises/practicals	3 - 5 points
- activity in lectures	3 - 5 points
- test I	16 - 30 points
- mid-term exam I (colloquim I)	6 - 10 points
- test II	21 - 40 points
- mid-term exam II (colloquim II)	6 - 10 points
TOTAL	55 - 100 points

20. Assessment components:

10 (A) -95-100- outstanding performance without errors or with minor errors
9 (B) - 85-94-above the average, with some errors
8 (C) - 75-84- average, with noticeable errors
7 (D) - 65-74 generally good, but with significant shortcomings
6 (E) - 55-64- meets the minimum criteria
5 (F, FX) <55- does not meet the minimum criteria

21. Required reading list:

- Lieberman M, Marks AD, Smith C. Marks' Basic Medical Biochemistry - A Clinical Approach. Belgrade 2008.
- Srabović N, Softić A, Smajlović A. Biochemical Basis of Hereditary Metabolic Disorders. Tuzla 2020.
- Srabović N, Dautović E Smajlović A, Softić A. Carbohydrates and Fats as Metabolic Fuels in Health and Disease. Tuzla 2025.

22. Web sources:

23. Applicable starting from the academic year:

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.