

SYLLABUS

1. Course title:

FUNDAMENTALS OF BIOCHEMISTRY

2. Code:

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

☒ Mandatory
 ☐ Elective

6. Prerequisites:

none

7. Class restrictions:

none

8. Duration / semester:

1

4

9. Weekly contact hours:

9.1. Lectures:

2

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

1

10. Faculty:

Faculty of Technology

11. Department/study program:

Environmental Protection Engineering

12. Lecturer:

dr sc Zlata Mujagić, full professor

13. Lecturer's e-mail:

zlata.mujagic@untz.ba

14. Web site:

www.pharmacy.untz.ba

15. Course aims:

Acquiring knowledge about structure and function of biomolecules and about metabolic pathways of nutrients, endogenous substances and special substances in the human body; basic principles of cell signaling.

16. Learning outcomes:

It is expected that students accept and understand biochemical bases of function of biomolecules and metabolism of nutrients, endogenous substances and special substances in humans; basic principles of cell signaling. In biochemical laboratory, acquiring knowledge and skills about biochemical analytical methods and quality control.

17. Course content:

Introduction.

Biochemistry of structure and function of nucleic acids, proteins and enzymes.

Bioenergetics and metabolism. Tissue metabolism.

Carbohydrate metabolism: Glycolysis; Gluconeogenesis; Formation and degradation of glycogen; Pentose phosphate pathway; Biosynthesis of complex carbohydrates.

Oxidative decarboxylation of pyruvate. NADH biosynthesis and precursors biosynthesis. Citrate cycle. Respiratory chain. Oxidative phosphorylation.

Lipid metabolism: Transport of fatty acids; Catabolism of fatty acids; Ketogenesis; Biosynthesis of fatty acids; Biosynthesis of triacylglycerols; Metabolic pathways of special lipids.

Nitrogen metabolism: Fate of amino acid nitrogen; Urea cycle; Transport of nitrogen in blood; Biosynthesis and degradation of amino acids.

Basic principles of cell signaling.

18. Learning methods:

Lectures, practical (experimental work in laboratory), seminars (individual or group) and consultations. Authorized lectures will be available for students in digital form. Practical results and reports will be noted in the Practicum (Handbook) for Biochemistry.

19. Assessment methods:

Colloquial exams for practical knowledge; partial and final exam (oral or written form) for theoretical knowledge; seminars (individual or group).

Final point score is formed in a cumulative way (sum of points from all forms of knowledge checking and student activity) with the point range: 54-100 cumulative points.

If it is officially documented that a student cheated on the exam, the next exam term will be forbidden to them.

20. Assessment components:

Attendance and activity during lectures:	5 points
Attendance and activity during practical:	5 points
Colloquial I :	10 points
Colloquial II:	10 points
Test I (partial exam I):	35 points
Test II (partial exam II):	35 points

21. Required reading list:

1. Lieberman M, Marks A, Smith C. Marks' Basic Medical Biochemistry-A Clinical approach. Wolters Kluwer/ Lippincott Williams&Wilkins, Philadelphia, 2009.
2. Mujagić Z, Mujagić H. Biohemizmi stanične transdukcije signala (Biochemistry of cell signal transduction). Zlata Mujagić i Hamza Mujagić, Tuzla, 2012.
3. Lejla Begić, Selma Berbić, Zlata Mujagić, Sadik Mehikić. Praktikum iz biohemije sa teoretskim osnovama, (Practicum for Biochemistry with theoretical bases), PrintCom, Tuzla, 2004.
4. David L. Nelson, Michael M. Cox, Lehninger Principles of Biochemistry, Worth Publishers, New York, 2005.
5. Lubert Stryer, Biochemistry, W.H.Freeman and Company, New York, 2006.

22. Web sources:**23. Applicable starting from the academic year:**

2015/16

24. Adopted in the Faculty/Academy session: