

SYLLABUS

1. Course title:

MOLECULAR-BIOCHEMICAL METHODS IN PHARMACY

2. Code:**3. Cycle of study:**

1

4. ECTS credits:

2

5. Type of course: Mandatory Elective**6. Prerequisites:**

None

7. Class restrictions:

None

8. Duration / semester:

1

1

9. Weekly contact hours:

9.1. Lectures:

2

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

0

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (integrated first and second cycle of study)

12. Lecturer:

Adaleta Softić, PhD, full professor

13. Lecturer's e-mail:

adaleta.mulaomerovic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

During the course, the student should master the knowledge of modern and, at the same time, basic molecular-biochemical techniques.

16. Learning outcomes:

Based on the acquired knowledge from this course, students will be able to more easily adopt more complex material in professional courses, which, according to the curriculum, are taken in higher years of study at the Faculty of Pharmacy.

17. Course content:

Manipulation of nucleic acids: basic techniques. Restriction enzymes: tools in clinical research. DNA electrophoresis. Principles and medical applications of the Polymerase Chain Reaction (PCR) method. Southern blotting. Single Strand Conformation Polymorphism (SSCP) analysis. Quantification of mRNA using Real-Time PCR. Capillary electrophoresis of DNA. Gene expression analysis. Fluorescent in situ hybridization (FISH). cDNA microarray. Cell-free fetal DNA and non-invasive prenatal diagnostics. Isolation and purification methods of analytes from biological material. Techniques for isolating macromolecules: use of homogenization, centrifugation, isolation, isoelectric precipitation, chromatographic methods. Methods for assessing the purity of analytes: protein electrophoresis and blotting. Capillary protein electrophoresis. Protein microarray. Cell cultures - preparation, maintenance, and manipulation. Cell culture laboratory. Use of cell cultures in pharmacy. Cryopreservation.

18. Learning methods:

Lectures;

In addition, all students will jointly participate in a discussion on the presented topic.

19. Assessment methods:

From the theoretical part, students will take two tests in which they will circle the correct answer, complete sentences, or explain diagrams/images.

The minimum number of points required on both tests is 24. The maximum number of points a student can achieve on both tests is 40.

For engagement/activity in class, a student can earn a total of 10 points. The minimum number of points the student must obtain is 3.

For attendance, a student can earn a total of 10 points. The minimum number of points the student must obtain is 4.

20. Assessment components:

0–54 Five (5) – “unsatisfactory” – “F”
55–64 Six (6) – “sufficient” – “E”
65–74 Seven (7) – “good” – “D”
75–84 Eight (8) – “very good” – “C”
85–94 Nine (9) – “excellent” – “B”
95–100 Ten (10) – “outstanding” – “A”

21. Required reading list:

1. John M Walker, Ralph Rapley. (2008): Molecular Biomethods. Humana Press
2. Begić L, Berbić S, Mujagić Z, Mehikić S. "Practicum in Biochemistry with Theoretical Basics", PrintCom, Tuzla, 2004.
3. Adaleta Softić, authorized lectures

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

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.