SYLLABUS

1. Course title:

MOLECULAR-BIOCHEMICAL METHODS IN PHARMACY

2. Code:

3. Cycle of study:

1

4. ECTS credits:

3

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:

dr.sc. Adaleta Softić, 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: a tool in clinical research. Principles and medical application of the Polymerase Chain Reaction (PCR) method. DNA electrophoresis. Southern blotting as a diagnostic method. Capillary DNA electrophoresis: biomedical application. Single Strand Conformation Polymorphism (SSCP) analysis. Quantification of mRNA using Real-Time RT-PCR. Quantitative analysis of DNA sequence by PCR method. Examination (profiling) of gene expression. Comparative genomic hybridization in clinical and medical research. Fluorescence in situ hybridization (FISH). cDNA micro-set (cDNA microarray).
• Protein electrophoresis. Protein blotting. Capillary protein electrophoresis. Protein Microarray technology. Monoclonal and polyclonal antibodies. Chromatographic methods. Cell cultures. Cryopreservation: preservation of bioresources at ultra-low temperatures. Microscopic methods in the analysis of proteins and nucleic acids.

18. Learning methods:

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

19. Assessment methods:

Knowledge assessment will be conducted through **pre-exam obligations** and the **final exam**. Pre-exam obligations consist of two partial exams, activity, and lecture attendance.

The first partial exam takes place in the 9th week of classes and covers the material taught during the first eight weeks.
The second partial exam takes place in the 15th week of classes and covers the material from weeks 10 to 14.
The final exam is taken during regular exam periods and covers any partial exams not passed within the pre-exam obligations, i.e., if the student did not achieve the minimum required points.

A student who passes the partial exams (minimum 24 points per partial exam) and achieves the required points for lecture attendance and activity (minimum 3 points for each) with a total of 54–100 points in pre-exam obligations earns the right to receive a grade in the first regular exam period.

Point values for knowledge assessment (min – max):

Lecture attendance: 4–10 points
Activity in lectures: 3–10 points
First partial exam: 24–40 points
Second partial exam: 24–40 points

TOTAL: 55–100 points

20. Assessment components:

< 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:

Adaleta Softić, Aida Smajlović, Nahida Srabović. Ćelijske kulture u biohemijskim istraživanjima. OFF-SET, Tuzla, 2021, Univerzitetski udžbenik.
Adaleta Softić, autorizovana predavanja
Begić L, Berbić S, Mujagić Z, Mehikić S. „Praktikum iz biohemije sa teoretskim osnovama“, PrintCom, Tuzla, 2004.

22. Web sources:

23. Applicable starting from the academic year:

2018/19.

24. Adopted in the Faculty/Academy session:

17.11.2025.