SYLLABUS

1. Course title:

Pharmaceutical biotechnology

2. Code:

3. Cycle of study:

3

4. ECTS credits:

15

5. Type of course:

○ Mandatory ● Elective

6. Prerequisites:

none

7. Class restrictions:

8. Duration / semester:

1 3

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:

Pharmaceutical sciences (3rd cycle)

12. Lecturer:

Ph.D. Aida Smajlović, full professor

13. Lecturer's e-mail:

aida.smajlovic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

Acquisition of general knowledge in the field of protein engineering and the application of protein engineering in the design of biopharmaceuticals and protein research; knowledge related to biotechnological production of recombinant proteins; special knowledge about carrier systems for the targeted delivery of recombinant proteins of biological drugs and perspectives of nanotechnology in therapy and diagnosis of diseases; on experimental methods of spectrofluorimetry application in protein stability tests and electrophoretic methods of protein characterization.

16. Learning outcomes:

Competences for work and research in the field of pharmaceutical biotechnology.

17. Course content:

Protein engineering in the research of function, folding, stability of proteins and creation of biopharmaceuticals. Production of recombinant proteins in cell cultures. Investigations of protein folding and stability on a model protein. Biological drugs and carrier systems for the delivery of biologically active components. Perspectives of nanotechnology in the therapy and diagnosis of diseases (cancer, rheumatoid arthritis,...). Biomimetic sensors for the detection of microorganisms. Vaccines: design and modern vaccine technologies.

18. Learning methods:

Teaching is conducted in the form of lectures and seminars. The student's seminar work is mandatory. Active participation of the student during lectures and independent search of relevant scientific literature in accordance with the set goals of the course.

19. Assessment methods:

Knowledge is checked through pre-examination tasks and the final exam.

Pre-examination obligations include:
- Seminar paper 40 points
- Activity 10 points
- Final exam 50 points

The final exam refers to a written test of knowledge in the form of a test from theoretical classes.

TOTAL 54 - 100 points

20. Assessment components:

< 54	5 (F, FX) -	does not meet the minimum criteria
54-64	6 (E) -	meets the minimum criteria
65-74	7 (D) -	generally good, but with significant shortcomings
75-84	8 (C) -	average, with noticeable errors
85-94	9 (B) -	above the average, with some errors
95-100	10 (A) -	outstanding performance without errors or with minor errors

21. Required reading list:

1. Smajlovic A, Eksperimentalna biohemija, Off-set, Tuzla, 2015
2. Softić A, Smajlović A, Srabović N Ćelijske kulture u biohemijskim istraživanjima, Tuzla, 2021.
3. Crommelin D, Sindelar R, Pharmaceutical Biotechnology, Harwood Academic Pub., 2008.

22. Web sources:

https://pubmed.ncbi.nlm.nih.gov/

23. Applicable starting from the academic year:

2012/13.

24. Adopted in the Faculty/Academy session:

10.05.2024.