SYLLABUS

1. Course title:

Drug design and modelling

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 6

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 study I and II cycle)

12. Lecturer:

Dr.sc. Amra Džambić, assistant professor

13. Lecturer's e-mail:

amra.dzambic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

Students are introduced to the basics and importance of the relationship between the structure of drugs and their properties or activities (QSAR).
Special attention is paid to the determination and prediction of physicochemical properties as parameters in the development of new drugs. Students are introduced to the advantages and disadvantages of methods in the research of new drugs, identification of pharmacophores, simulation of ligand binding to the receptor, etc.

16. Learning outcomes:

Students are introduced to the methods and techniques used to obtain drugs with improved physicochemical properties and enhanced activity.

17. Course content:

Drug development - yesterday, today, tomorrow, Traditional drugs, Accidental discoveries, Drug development and market, Drug receptor binding, Development of new compounds in drug development, Synthesis reactions, Composition and structure confirmation, Molecular modeling, Ligand-based drug design.
Basic principles of QSPR; QSAR research, Graph theory, Molecular descriptors, Physical chemical properties of compounds, s with special reference to the partition coefficient, statistical data processing, identification of pharmacophores and auxophores, Bioisosteres, Receptors, mechanism of drug action at the receptor level.

18. Learning methods:

Lectures -theoretical teaching,
-Seminar papers on a given topic

19. Assessment methods:

Knowledge assessment consists of Activities, lecture attendance and two tests during the semester
Activity: 6 - 10 points;
Seminar paper: 7-10 points
Test I: Drug development - yesterday, today, tomorrow, Traditional drugs, Accidental discoveries, Drug development and the market, Drug binding to the receptor, Development of new compounds in drug development, Synthesis reactions, Confirmation of composition and structure, Molecular modeling, Drug design based on ligands. 21-40 points
Test II: Basic principles of QSPR; QSAR research, Graph theory, Molecular descriptors, Physicochemical properties of compounds, with special reference to the partition coefficient, Statistical data processing, identification of pharmacophores and auxophores, Bioisosteres, Receptors, mechanism of drug action at the receptor level, . 21-40 points
Test I and Test II will be conducted during the lecture, and the final exam will be held after the end of the semester.

20. Assessment components:

The final grade consists of attendance and active participation in classes (lectures and exercises), a seminar paper and a test.
Total:
10 (A) - 95-100 points,
9 (B) - 85-94 points,
8 (C) - 75-84 points,
7 (D) - 65-74 points;
6 (E) - 55-64 points,
5 (F) - less than 55 points.

21. Required reading list:

Silverman R B, The Organic Chemistry of Drug Design and Drug Action, second edition, Elsevier 2004; Carloni P, Alber F. Quantum Medical Chemistry, Wiley-VCH Verlag Gmbh & Co. KgaA Weinheim, 2003;

22. Web sources:

23. Applicable starting from the academic year:

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.