

SYLLABUS

1. Course title:

PHYSICAL CHEMISTRY II

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:

2

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (integrated academic study I and II cycle)

12. Lecturer:

dr.sc. Amra Odošić, full professor

13. Lecturer's e-mail:

amra.odobasic@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

Familiarization with the properties of solutions (electrolytic and non-electrolytic), the crystallization process, surface phenomena, colloidal systems and their importance in drug formulation, as well as the role of water in tableting and its influence on the stability of various pharmaceutical dosage forms through the study of phase diagrams.

16. Learning outcomes:

At the end of the semester/course, successful students, who continuously performed their duties during the entire teaching period, will be able to:

- Create a clearer picture of the role of surface phenomena in drug formulation
- Students get to know and gain independence in solving practical problems, through practical, experimental exercises.

17. Course content:

Introduction to Physical Chemistry II. Solutions. Solutions and expression of concentrations. Dissolution of solid dosage forms. Solutions of nonelectrolytes. Dissolution and dissolution rate. Colligative properties. Electrolyte solutions. Thermodynamic properties of drugs. Activity and chemical potential. Ionization of drugs in solution. Activity of ionized drugs. Transport processes. Drug dispersion in solution. Drug dispersion in polymeric drug carriers. Diffusion during matrix swelling. Crystallization process in drug production. Crystallization and factors affecting crystal form. Nucleation and crystal growth. Methods of performing crystallization. Modification of crystal form. Chemical degradation and stability of drugs. Forced degradation of drugs. Pathways of drug degradation. Stabilization of medicinal substances. Surface tension. Spreading and wetting. Adsorption. Surface activity of drugs at interfaces. Pharmaceutical applications of adsorption. Micellization. Colloid chemistry. Emulsions, suspensions, and colloidal stability.

18. Learning methods:

Interactive lectures
Laboratory exercises
Consultations

19. Assessment methods:

During the semester, the student will have two tests and a final exam. Students may take the final exam if they have earned at least 25 points from pre-exam obligations.
The remaining points are earned through the entry and exit quizzes, as well as through attendance and activity in classes.

	Maximum	Minimum
Regular attendance in class	5 points	2.5 points
Entry quiz	5 points	3 points
Exit quiz	10 points	5,5 points
1st partial exam	25 points	13,5 points
2nd partial exam	25 points	13,5 points
Final exam	30 points	17 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:

1. Amra Odošić: Interna skripta iz Fizikalne farmacije, 2017 godina
2. P.W. Atkins : Physical Chemistry, Oxford University, 2007.god.

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

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.