SYLLABUS

1. Course title:

PHYSICAL CHEMISTRY I

2. Code:

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester:

1 3

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

Pharmacy (integrated academic study I and II cycle)

12. Lecturer:

dr.sc. Husejin Keran, full professor

13. Lecturer's e-mail:

husejin.keran@untz.ba

14. Web site:

www.frmf.untz.ba

15. Course aims:

The main goal of the course is for students to acquire theoretical and practical knowledge of the physico-chemical quantities needed to describe the state of the system, physico-chemical processes, their kinetics, balance, as well as to get to know the key laws that describe the direction of changes in the state of the system.

16. Learning outcomes:

Creating a clearer picture of the structure of matter and thermodynamic quantities that characterize the state of the system and changes in the state of the system, more precisely in systems, kinetics, electrochemical properties and the development of reactions in electrochemistry.
Through practical exercises designed in the form of short research experiments, students gain independence in solving practical problems.

17. Course content:

Introduction to physical chemistry. Units of measurement and dimensions. Mass. Density and specific gravity. Graphical method. Pressure.Temperature. State of matter. Intermolecular binding forces. Solid and crystalline state. State of liquid crystals. Gaseous state. Transport properties of gases. Liquid state. Viscosity. Polymorphism. Liquid crystals. Thermodynamic aspects of processes in pharmacy. First law of thermodynamics. Second law of thermodynamics. Third law of thermodynamics. Thermochemistry. Hess's law and heat of combustion. Free energy and its application. Differential and integral heat of solution. Chemical equilibrium and phase equilibrium. Equilibrium constant. Heterogeneous systems and the Gibbs phase rule. Phase diagrams. Two-component systems. Chemical kinetics. Rate of chemical reaction. First- and second-order reactions. Molecularity and order of reaction. Complex chemical reactions.

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	1 point
Entry quiz	5 points	2.5 points
Exit quiz	10 points	5 points
1st partial exam	25 points	12.5 points
2nd partial exam	25 points	12.5 points
Final exam	30 points	-

20. Assessment components:

95–100	Ten (10) A
85–94	Nine (9) B
75–84	Eight (8) C
65–74	Seven (7) D
55–64	Six (6) E
<55	Five (5) F

21. Required reading list:

1. Amra Odobašić "Fizikalna hemija", Univerzitet u Tuzli, InScan Tuzla, 2016.
2. S.Đ.Đorđević,V.J.Dražić:»Fizička hemija»,Tehnološko – Metalurški fakultet Beograd, 2006.
3. P.W.Atkins,M.J.Clugston:»Načela Fizikalne kemije», Školska knjiga

22. Web sources:

23. Applicable starting from the academic year:

2023/2024.

24. Adopted in the Faculty/Academy session:

17.11.2025.