



ФАРМАЦЕВТИЧЕН ФАКУЛТЕТ МЕДИЦИНСКИ УНИВЕРСИТЕТ - СОФИЯ

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Approved from the Faculty Council with Protocol № 3/20.04.2023

DEAN:

/Prof. Alexander Zlatkov, DSc/

DEPARTMENT OF CHEMISTRY

SYLLABUS

of Physical Chemistry

INCLUDED IN “PHARMACY” EDUCATIONAL CURRICULUM

DEGREE OF EDUCATION: “MASTER”

CREDITS (ECTS): 7

ANNOTATION

This course explores the application of the main principles and topics of the physical chemistry in the field of pharmacy. The main topics of the course are: Thermodynamics, Interfacial Phenomena, Colloids and Coarse Dispersions, Phase Equilibria, Solutions of Non-electrolytes and Electrolytes, Solubility and Distribution, Chemical Kinetics and Catalysis.

Students completing the course of Physical Chemistry will understand:

- the main principles of thermodynamics and how they work in drug-macromolecule interactions;
- the thermodynamic and kinetic processes in different dispersion systems (solutions, colloids and coarse dispersions) and how they affect their stability;
- the physicochemical properties of drugs and how they control the biopharmaceutical and pharmacokinetic behaviour;
- the kinetics of reactions and the factors affecting the reaction rate.

Type of control and evaluation: routine control – regular tests, four colloquiums, two per semester, and final exam – written and oral.

English language training

SYLLABUS

1. Intermolecular interactions.
2. The states of matter.
3. Thermodynamics
4. Chemical equilibrium
5. Thermodynamics of the interaction drug – macromolecule
6. Solutions
7. Henderson – Hasselbach equation
8. Water solubility
9. Lipid solubility
10. Drug design
11. Pharmaceutical bioinformatics
12. Interfacial phenomena
13. Colloids
14. Coarse dispersions
15. Chemical kinetics
16. Catalysis
17. Physicochemical incompatibilities

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Program author:

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Head of the Department of Chemistry:

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