SYLLABUS

1. Course title:

Basics of pharmaceutical chemistry

2. Code:

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course:

Mandatory

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester(s):

1 | 3

9. Weekly contact hours and student workload:

	Semester (1)	Semester (2)	(for two-semester courses)	Workload: (hours)
9.1. Lectures	3		Classes:	67,50
9.2. Seminars	0		Individual work:	112,67
9.3. Laboratory / Practice classes	3		In total:	180,17

10. Faculty:

Faculty of pharmacy

11. Department/study program:

Cosmetology

12. Lecturer:

dr. sci. Amra Džambić, Professor Assistant

13. Course aims:

Students will acquire knowledge of the Basics of Pharmaceutical Chemistry, which they will apply to mastering other professional subjects.
Students will acquire basic knowledge in the physicochemical properties of pharmacologically active molecules, the

reactivity of their functional groups, mechanisms of action, structure-activity relationships QSAR, Phase I and II metabolic reactions (in vivo and in vitro).

14. Learning outcomes:

- acquiring knowledge about the physical and chemical properties of active molecules,
- acquiring knowledge about the reactivity of functional groups, degradation reactions and chemical stability of molecules
- ability to analyze the relationship between chemical structure and properties, effects and selectivity of substances for use in cosmetology
- understanding of chemical aspects of drug metabolism
- understanding and analysis of the basic mechanisms of drug action

15. Course content:

Introduction to basics of pharmaceutical chemistry, Functional groups and their acid-base properties, pKa and factors affecting pKa value, Solubility and solubility optimization, Ionization, Lipophilicity log P and log D; Chemical stability. Stereochemistry and biological activity, Isosteres and bioisosteres, Pro drug goals and importance of design. Characteristic metabolic reactions in preparations for dermal application, Phase I reactions of metabolism, Oxidation, Reduction and hydrolysis; Phase II reactions of metabolism, Conjugation reactions, Routes of application of preparations in cosmetology, Antiseptics, Disinfectants, Preservatives, Anticoagulants for parenteral and local application. Water-soluble and liposoluble vitamins and coenzymes.

16. Learning methods:

Oral lectures
Interactive teaching - active participation in lectures, repetition of material, solving specific problems and cases, simulation of the exam.
Computer exercises - calculation of physical and chemical parameters of substances for use in cosmetology.
Experimental exercises - reactions to functional groups
Seminar papers on a given topic

17. Assessment methods:

Laboratory exercises (I and II colloquium; Activity) - 12-20 points;
-Auditory exercises: physical and chemical properties of functional groups, Heterocycles, Metabolism and metabolic stability of drugs, Bioisosteres, Pro drug, Lipophilicity
Practical exercises: Reagents and preparation, Evidence reactions on functional groups, Lipophilicity, theoretical and practical calculation of Log P.
Test - Written and/or oral exam
I partial exam: checking knowledge of functional groups and their acid-base properties, pKa, Stability and degradation reactions, Solubility, Ionization, Lipophilicity log P and log D; Chemical stability. Stereochemistry and biological activity, Isosteres and bioisosteres, Pro drug. I partial exam: 18-35 points
II partial exam: checking knowledge of teaching units: Metabolism, Reactions of the first phase of metabolism, Oxidation, Reduction and hydrolysis; Reactions of phase II metabolism, Conjugation reactions, Ways of application of preparations in cosmetology, Antiseptics, Disinfectants, Preservatives, Anticoagulants for parenteral and local use. Vitamins and coenzymes. II partial 18-35 points
Seminar work: 4-6 points
Activity during the lecture: 2-4 points

18. Assessment components:

The exam grade is based on the total number of points that the student has earned by fulfilling the pre-exam requirements and taking the exam, it contains a maximum of 100 points, and is determined according to the following scoring scale: Seminar paper: 4-6; Laboratory exercises (activity and tests): 12-20; Lecture activity 2-4; Test I: 18-35; Test II: 18-35 Total:
10 (A) - 95-100 points,
9 (B) - 85-94 points,
8 (C) - 75-84 points,
7 (D) - 65-74 points;
6 (E) - 54-64 points,
5 (F) - less than 54 points.

19. Mandatory reading list:

Farmaceutska kemija 1 – D. Završnik, S. Muratović, S. Špiritović- Halilović, E. Veljović, A. Osmanović, M. Bojić, M. Medić-Šarić;
Uvod u hemiju lijekova – Z. Vujić, M. Smajić, J. Brborić, N. Mulavdić. Vujić Z.: Odabrana poglavlja farmaceutske hemije, Vladimirov S., Živanov-Stakić D. Farmaceutska hemija I i II deo, Farmaceutski fakultet Beograd 2006.

20. Additional reading list:

William Foye, Thomas Lemke, David Williams; Principles of Medicinal Chemistry;
Willams & Wilkins, Baltimore, USA Textbook of Organic medicinal chemistry

21. Web sources:

22. Applicable from the academic year:

23. Adopted in the Faculty/Academy session: