Course Unit Descriptor

Study Programme: Bachelor of Science in Biochemistry

Course Unit Title: Stereochemistry of biomolecules

Course Unit Code: B-601

Name of Lecturer(s): Assistant professor Ivana Kovačević

Type and Level of Studies: Bachelor of Science in Biochemistry

Course Status (compulsory/elective): Compulsory

Semester (winter/summer): Summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 6

Prerequisites:

Course Aims: Introduction to 3D structures of primary and secondary biomolecules and selected drugs as well as with the influence of the 3D structure on function, reactivity and biological activity of molecules.

Learning Outcomes: A student develops a sense of three-dimensional structure of the biomolecules and drugs. After successful completion of this course, a student is able to understand the influence of three-dimensional structure on function, reactivity and biological activity of biomolecules and drugs.

Syllabus:

Theory

Stereoisomerism. Symmetry and asymmetry. Hirality.Pseudo-chirality. Prostereoisomerism. Torsion stereoisomerism. Topoisomerism. Configuration and conformation of monosaccharides and carbohydrates, fatty acids, amino acids and proteins, nucleosides and polynucleic acids. Configuration and conformation of selected secondary biomolecules. Chiral recognition. Methods for obtaining enantiomerically pure compounds. Stereochemistry of selected drugs and their activity.

Practice

Audio-visual practicals: Solving stereochemistry problems. Application of molecular models and selected chemistry software for generating and understanding three-dimensional structure..

Required Reading:

1. I. Kovačević: Stereochemistry of biomolecules, Lecture notes, Faculty of Sciences, Novi Sad, accesible throuh Moodle platform
2. Ch. Tamm: *New comprehensive biochemistry, volume 3, Stereochemistry*, Elsevier biomedical press, 1982, Amsterdam, New York, Oxford.
3. K. Mislow: *Introduction to Stereochemistry,* Dover Publications, 2003.
4. K. Jozwiak, W. J. Lough, I. W. Wainer, *Drug Stereochemistry: Analytical Methods and Pharmacology (3rd Ed.)*, CRC Press, 2012, USA.
5. J. Kuriyan, B, Konforti, D. Wemmer, *The Molecules of Life: Physical and Chemical Principles*, Garland Science, Taylor & Francis Group, LLC, 2013, New York, London.

Weekly Contact Hours: 5	**Lectures:** 3	**Practical work:** 2

Teaching Methods: Lectures, laboratory work, desk study projects, seminar(s)

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points

Active class participation	10	written exam	70
Practical work	10	oral exam	
Seminar(s)	10		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			