Subject name: Theoretical organic chemistry

Professor or professors: Ivan Gutman

Subject status: Optional

Number of ECTS points**:** 10

Condition: Enrolled in the semester

Purpose of the subject

The purpose of the subject «Theoretical organic chemistry» is the theoretical education of the students in order for them to successfully understand the complexity of the structure of the given organic molecule.

Outcome of learning the subject

Mastering the materials of the subject «Theoretical organic chemistry».

Course content

Molecular structure of organic compounds. The chemical bond. The structure of atoms. Types of chemical bonds. The nature of the covalent bond. Aromatic systems. Bonding and antibonding molecular orbitals. Electronic effects in organic molecules. Inductive effects. Resonance. Hyperconjugations. Aromaticity. Stereochemistry. Racemic modifications. Asymmetric sythesis. Conformation of acyclic compounds. Stereochemistry of cyclic compounds. Intermolecular forces. Acid-base systems in organic chemistry. Tautomerism.

Recommended reading:

1. I. Gutman, Uvod u hemijsku teoriju grafova, PMF Kragujevac, Kragujevac, 2003.
2. S. Fujita, Diagrammatical Approach to Molecular Symmetry and Enumeration of Stereoisomers, Univ. Kragujevac, Kragujevac, 2007.
3. M. V. Diudea, Nanomolecules and Nanostructures, Univ. Kragujevac, Kragujevac, 2010.
4. S. B. Elk, The Structure-Nomenclature Cycle of Chemistry, Univ. Kragujevac, Kragujevac, 2011.
5. M. V. Putz, Chemical Orthogonal Spaces, Univ. Kragujevac, Kragujevac, 2012.

Active teaching	Lectures: 5	Research work: /

Teaching methods: Lectures, term papers.

Grading (the maximum number of points is 100)

Preexam obligations	points	**Final exam**	points
Class activity	10	Written exam	30
Practical teaching	-	Oral exam	20
Colloquium/s	-	.....	
Term paper/s	40		