

Study program/study programs: Bachelor of Science in Biochemistry, Bachelor of Science in Environmental Protection		
Type and level of studies: Bachelor		
Course name: Organic chemistry I	Course code: Z103	
2nd semester		
Teacher: Assistant professor Srđan Bjedov		
Course status: Obligatory		
Number of ECTS credits: 8		
Requirement: None		
<p>Course aim</p> <p>Course Organic chemistry 1 provides a systematic study of the theories, principles, and techniques of organic chemistry. Topics include nomenclature, structure, properties, reactions, and mechanisms of the important classes of organic molecules. It is designed, when followed by Organic Chemistry 2, to fulfill the organic chemistry requisites for chemistry and biochemistry majors.</p> <p>The major aim of this course is to introduce students to the foundations of organic chemistry by focusing on the structures, properties, and chemical reactivity of the various classes of organic molecules. This course will also cover mechanisms of organic reactions, and different aspects of isomerism and introduce various analytical techniques (MS, NMR, and IR) used to determine organic structures.</p>		
<p>Course outcome</p> <p>On completion of the course, the student should be able to:</p> <ol style="list-style-type: none"> analyze the structure of organic compounds by recognizing main functional groups, naming the compounds using the I.U.P.A.C. system, and predicting their properties using the type of bonding, hybridization state, intermolecular forces, and stereochemistry; describe mechanisms of reactions: free radical, nucleophilic substitution, elimination, and electrophilic addition, and apply this knowledge to predict the major product in organic reactions; analyze the nature of a reagent: as a nucleophile, free radical, or electrophile, and use this knowledge to propose the synthesis of organic compounds; and demonstrate proficiency in organic laboratory skills as they pertain to chemical information, safe handling, use, and disposal of organic compounds; synthetic procedures, including isolation, purification, and structure elucidation of obtained products; stoichiometry and use of instrumentation; and writing of laboratory notebooks and reports by current scientific journals styles. 		
<p>Course content</p> <ol style="list-style-type: none"> Introduction to Organic Chemistry Chemical Bonding: A Review Alkanes and Cycloalkanes: Structure, Nomenclature, Properties, Sources, and Conformation Alcohols and Alkyl Halides: Structures, Nomenclature, Properties, Preparation, and Mechanisms of Reactions Alkenes: Structure, Nomenclature, Properties, Preparation, and Mechanisms of Reactions Stereochemistry: Definitions, Analysis, and Reactions of Stereogenic Compounds Nucleophilic Substitution Reactions Alkynes: Structure, Nomenclature, Properties, Preparation, and Reactions Dienes: Structure, Nomenclature, and Reactions. Polymers and Polymerization Arenes and Aromaticity: Structure, Nomenclature, and Reactions Carbonyl compounds: Structure, Nomenclature, and Reactions Carboxylic acids and derivatives: Structure, Nomenclature, Properties, Preparation, and Reactions Amines and Heterocyclic compounds: Structure, Nomenclature, Properties, and Reactions Biomolecules: Structure, Nomenclature, Properties, and Reactions Analytical techniques in organic chemistry: Mass spectrometry, Nuclear magnetic resonance spectroscopy, and Infrared spectroscopy 		
<p>Literature</p> <ol style="list-style-type: none"> K. P. C. Vollhardt, N. E. Schore: Organic chemistry 6th Edition D. Klein: Organic chemistry 3rd Edition. 		
Number of classes of active teaching		Other classes
Lectures: 4 (105)	Practice: 3 (60)	/
<p>Teaching methods</p> <p>Lectures, laboratory work, desk study projects, seminar</p>		
Assessment of knowledge (maximum of 100 points): 100		

Pre-exam obligations		Points	Final exam	Points
activity during lecture classes		5	written exam	60
practical teaching		15		
midterm exams		2×10		
Attendance policy:				
Lectures and Laboratory Practice are mandatory.				
Grading scale:				
Grade	Points	Description		
10	91–100	Outstanding participation in the course; excellent comprehension and presentation of the course content;		
9	81–90	Very good involvement in the course; good working knowledge of the learning outcomes;		
8	71–80	Good participation in the course; reasonable understanding of the course content;		
7	61–70	Satisfactory engagement in the course; working knowledge of the course material;		
6	51–60	Partial engagement in the course; performance meet minimum criteria;		
5	Under 50	Inadequate involvement in the course; fractional understanding and knowledge of the learning outcomes;		