NAME OF THE COURSE	Organic Chemistry					
Code	PMC222	Year of study	2nd undergraduate study			
Course teacher	Dr Renata Odžak, Associate Professor	Credits (ECTS)	6.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30	15	45	
Status of the course	obligatory	Percentage of application of e-learning	20%			
COURSE DESCRIPTION						
Course objectives	Knowledge of basic groups of organic compounds, their structure, terminology, physical properties, preparation and chemical reactions.					
Course enrolment requirements and entry competences required for the course	Completed course General and Inorganic Chemistry.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	After completing the course, the students will be able to: 1. Classify organic compounds according to functional groups. 2. Know the name of organic compounds based on the structural formula and predict the structural formula from the name of the compound. 3. Distinguish and explain different types of isomerism. 4. List and compare the main types of organic reactions. 5. Analyze the reactivity and physical properties of organic compounds with respect to their structure. 6. Distinguish and compare the reaction mechanisms of substitution, addition and elimination. 7. Explain the chemical reactions characteristic of a particular group of compounds. 8. List and explain the usual techniques for purification of organic compounds and independently perform laboratory exercises according to regulations.					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures and seminar 1. Introduction to organic chemistry; sp3, sp2 and sp hybridization; resonant structure structures; acids and bases 2. Alkanes: structural formulas, terminology, isomerism, physical properties, conformers, chemical properties. 3. Cyclic compounds: cyclopropane, cyclobutane, cyclopentane, cyclohexane, cyclohexane derivatives, conformers. 4. Alkenes, alkynes: structural formulas, terminology, isomerism, physical properties, chemical properties; electrophilic addition. 5. Stereoisomers: enantiomers, diastereoisomers, determination of relative and absolute configuration, polarimeter. 6. Haloalkanes: nucleophilic substitution SN2, elimination E2, nucleophilic substitution SN1, elimination E1. 7. Alcohols, ethers: structural formulas, terminology, physical properties, chemical properties. 8. Amines: classification, structure, nomenclature, physical and chemical properties, alkaloids. 9. Aldehydes and ketones: structural formulas, terminology, physical properties, chemical properties - nucleophilic addition. Synthesis of hemiacetals and acetals, respectively poluketals and ketals. 10. Carboxylic acids: structural formulas, terminology, physical and chemical properties. 11. Derivatives of carboxylic acids: esters, amides, anhydrides, acyl halides, nitriles - chemical structure, nomenclature, hydrolysis. Fatty acids, fats, oils. 12. Organometallic reagents, Grignard reagent, chemical properties. 13. Aromatic compounds: benzene, electrophilic aromatic substitution.					

	14. Amino acids: structural formulas, division by properties, peptide bond - synthesis and hydrolysis. Proteins. 15. Carbohydrates: monosaccharides - glucose, fructose, disaccharides, glycosidic bond, polysaccharides - starch cellulose, glycogen. Seminars follow the topics of the lecture, with a minimum of one lesson for each topic. Laboratory exercises: 1. Properties of organic compounds. 2. Purification techniques in organic chemistry (chromatography, extraction, recrystallization). 3. Characteristic reactions of functional groups. 4. Identification of organic compounds by determination of melting point. 5. Synthesis of organic compounds (oxidation and reduction reactions, esterification, substitution and elimination reactions). 6. Isolation of compounds from natural materials (caffeine, oleic acid, lactose).

Format of instruction	☒ lectures ☒ seminars and workshops ☐ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	0.5	Research		Practical training	
	Experimental work	1.5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	2	(Other)	
	Written exam	2	Project		(Other)	

Grading and evaluating student work in class and at the final exam	For the passing grade, it is necessary to solve 50% of each partial exam. Passing grade on a written exam is a condition for passing an oral part of an exam.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	J. McMurry, Osnove organske kemije, Medicinski fakultet Sveučilišta u Rijeci i Zrinski dd, 2014.	5	
	P. Y. Bruice, Essential Organic Chemistry, Pearson Education International, 2006.	1	
	Internal script for laboratory exercises (Odžak), 2020.		available

Optional literature (at the time of submission of study programme proposal)	W. H. Brown, Introduction to Organic Chemistry, 2nd Ed., Saunders College Publishing, 2000.
Quality assurance methods that ensure the	Consultations, partial exams, student survey for the evaluation of subjects and teachers, records of attendance at lectures, analysis of the success of exams.

acquisition of exit competences	
Other (as the proposer wishes to add)	