



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Organska kemija 2

Course title: Organic chemistry 2

Študijski program in stopnja

Študijska smer

Letnik

Semester

Study programme and level

Study field

Academic year

Semester

Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	2.	4.
Five-year master's degree program Subject Teacher	/	2.	4.

Vrsta predmeta / Course type

Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial			Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
45		AV	LV	RV			75	6
			60					

Nosilec predmeta / Lecturer:

Peter KRAJNC

Jeziki / Predavanja / Lectures: slovenski / slovene

Languages: Vaje / Tutorial: slovenski / slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisites:

Znanje splošne in osnovne organske kemije pridobljeno v predhodnem študiju.

Izpit je opravljen, če so pozitivno opravljene vse naštetе obveznosti v načinih ocenjevanja.

Knowledge of general chemistry and bases of organic chemistry acquired at the previous study.

Each of the mentioned commitments must be assessed with a passing grade.

Vsebina (kratek pregled učnega načrta):

Organske reakcije: nukleofilne adicije na karbonilno skupino,
nukleofilne substitucije in eliminacije na karbonilni skupini,
nukleofilne substitucije in eliminacije na sp^3 C atomu,
polarne adicije.
Aromatskost; elektrofilne aromatske substitucije,
nukleofilne aromatske substitucije, vplivi substituentov na usmerjanje,
radikalne reakcije.
Biološko pomembne organske spojine: ogljikovi hidrati.
Biološko pomembne organske spojine: aminokisline in proteini.
Biološko pomembne organske spojine: lipidi.

Content (Syllabus outline):

Organic reactions: Nu additions to carbonyl group,
Nu substitutions and eliminations to carbonyl group,
Nu substitutions and eliminations to sp^3 C atom,
Polar additions.
Aromaticity; electrophilic aromatic substitutions,
nucleophilic aromatic substitutions, influence of substituents, radical (single electron transfer) reactions.
Biologically important organic compounds: carbohydrates.
Biologically important organic compounds: amino acids and proteins.

Biologically important organic compounds: lipids.

Temeljni literatura in viri / Readings:

- McMurry J. (2016). Organic Chemistry, Cengage Learning, Boston.
 - Tišler M., Organska kemija (2013), Državna založba Slovenije, Ljubljana.
- Dodatna priporočena literatura:
- Vollhardt K.P.C., Schore N.E., Organic Chemistry - Structure and Function (2018), W. H. Freeman.

Cilji in kompetence:

Spoznati vse osnovne tipe organskih reakcij.
Razumeti in poznati vplive pogojev na potek reakcij.
Znati teoretsko sintetizirati enostavne organske molekule.
Znati uporabljati osnovne metode spektroskopije za identifikacijo organskih spojin.
Poznati pomen organskih spojin za biološke sisteme.

Objectives and competences:

To know:
basic types of organic reactions,
meaning of organic compounds for biological systems.

To understand the synthetic strategies for simple organic molecules.

Predvideni študijski rezultati:**Intended learning outcomes:**

Znanje in razumevanje: Študent je sposoben: • razlikovati osnovne organske reakcije • opisati mehanizme kemijskih reakcij in vplive pogojev na potek reakcije • načrtovati sinteze preprostih organskih molekul Prenesljive/ključne spretnosti in drugi atributi:	Knowledge and understanding: Student is able to: • Distinguish basic organic reactions • describe the mechanisms of organic reactions and influences of reaction conditions • plan the synthesis of simple organic compounds. Transferable/Key Skills and other attributes:
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Metode poučevanja in učenja:**Learning and teaching methods:**

Predavanja, laboratorijsko delo.	Lectures, laboratory course.
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Načini ocenjevanja:**Delež (v%)****Assessment:**

Pisni izpit	80	Written exam Laboratory work
Laboratorijsko delo	20	

Opomba: pisni izpit se lahko opravi sprotno, če sta opravljena dva kolokvija.

Remark: written exam can be passed by two colloquia during the semester. Exam is passed after written and oral exams are passed.

Reference nosilca / Lecturer's references:

Paljevac, M., Pečar, D., Krajnc, P. (2025). Efficient β -galactosidase immobilised on glycidyl methacrylate polyHIPE. *Polymer*, vol. 325, 128264-128274, DOI: [10.1016/j.polymer.2025.128264](https://doi.org/10.1016/j.polymer.2025.128264).

Hobiger, V., Kutsch, A., Stampfl, J., Liska, R., Baudis, S., Krajnc, P. (2024). Thiol-Acrylate polyHIEs via Facile Layer-by-Layer Photopolymerization. *3D printing and additive manufacturing.*, vol. 11, no. 3, e1100–e1107. DOI: [10.1089/3dp.2022.0289](https://doi.org/10.1089/3dp.2022.0289).

Kramer, S., Slavič, N., Krajnc, P. (2024). Poly(HIPEs) from terpenoid-derived acrylates. *Colloid and polymer science*. vol. 302, no. 4, 643-650. DOI: [10.1007/s00396-023-05222-x](https://doi.org/10.1007/s00396-023-05222-x).