UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	PRAKTIKUM IZ ORGANSKE KEMIJE
Course Title:	PRACTICAL COURSE IN ORGANIC CHEMISTRY

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
UŠP Kemija, 1. stopnja	**/**	**2.**	**4.**
USP Chemistry, 1st Cycle	**/**	**2nd**	**4th**

Vrsta predmeta / Course Type: obvezni / mandatory

Univerzitetna koda predmeta / University Course Code: KE115

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
15	**/**	**60 LV**	**/**	**/**	**75**	**5**

Nosilec predmeta / Lecturer: doc. dr. Kri[illegible]of Kranjc / Ass. Prof. Dr. Kristof Kranjc, Assistant Professor

Jeziki / Languages: **Predavanja / Lectures:** **slovenski / Slovenian**
Vaje / Tutorial: **slovenski / Slovenian**

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

Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.

Prerequisites:

The course has to be assigned to the student.

Vsebina:

Splošno
- Varnost pri delu. Osebna zaščitna oprema. Varovanje delovnega prostora in okolja.
- Vodenje laboratorijskega dnevnika in pisanje poročil.
- Iskanje literaturnih informacij.

Pretvorbe in eksperimenti
Vaje bodo izbrane tako, da bodo zajemale osnovne tipe reakcij v organski kemiji, osnovne eksperimentalne tehnike in osnovne tehnike izolacije, čiščenja in karakterizacije spojin.
- Pretvorba pri sobni, povišani in znižani temperaturi.
- Pretvorba v mikro količini (0.1–1 mmol).
- Pretvorba pod inertno atmosfero.
- Delo z brizgami in septami.

Content (Syllabus outline):

General
- Safety in organic laboratory. Personal protection equipment. Protection of working space and environment.
- Taking care of laboratory diary and writing reports.
- Search for literature information.

Transformations and experiments
Laboratory experiments are selected in such a way as to include the major types of reactions in organic chemistry, fundamental experimental techniques and basic techniques of isolation, purification and characterization of compounds.
- Conversions are carried out at room temperature, with heating or cooling.
- Transformations on micro scale (0.1–1 mmol).

	- Reactions under inert atmosphere. - Work with syringes and septum.

Temeljna literatura in viri / Readings:

Temeljna literatura in viri:
D. Dolenc: Praktikum iz organske kemije, UL FKKT, 2016 (ISBN: 978-961-6756-38-9).
Dodatna literatura:
1) P. B. Cranwell, L. M. Harwood, C. J. Moody: Experimental Organic Chemistry, 3. izdaja, Wiley, 2017 (ISBN: 978-1-119-95239-8).
2) J. Leonard, B. Lygo, G. Procter: Advanced Practical Organic Chemistry, 3. izdaja, CRC Press, 2013 (ISBN: 978-1-4398-6097-7).
3) J. R. Dean, A. M. Jones, D. Holmes, R. Reed, J. Weyers, A. Jones: Practical Skills in Chemistry, 2. izdaja, Prentice Hall, Harlow, 2011 (ISBN: 978-0-273-73118-4).
4) L. F. Tietze, T. Eicher, U. Diederichsen, A. Speicher: Reactions and Syntheses in the Organic Laboratory, Wiley-VCH, Weinheim, 2007 (ISBN: 978-3-527-31223-8).
5) J. W. Lehman: Operational Organic Chemistry, Prentice-Hall, 1999.

Cilji in kompetence:

Cilji predmeta:
Učna enota se tesno navezuje na predmeta Organska kemija I in II. Študent z eksperimentalnim delom praktično nadgradi osnovno teoretično znanje organske kemije in pridobi osnovne veščine, ki so potrebne za eksperimentalno delo v laboratoriju za organsko kemijo.
Predmetno specifične kompetence:
- Varno delo v laboratoriju za organsko kemijo.
- Priprava in izvedba enostavnih in nekaterih srednje zahtevnih eksperimentov v organski kemiji.
- Izvajanje standardnih sinteznih operacij.
- Izvajanje standardnih laboratorijskih tehnik za izolacijo in čiščenje organskih spojin.
- Poznavanje osnov analitike in karakterizacije organskih spojin.
- Dostopanje do literaturnih virov in njihova uporaba.

Objectives and Competences:

Objectives of the course:
The course is closely connected with courses Organic chemistry I and II. Experimental work in laboratory will enable students to enrich their fundamental theoretical knowledge of organic chemistry and to gain common laboratory skills that are necessary for experimental work in organic chemistry.
Competences specific for the course:
- Safety during the work in organic chemistry laboratory.
- To prepare and carry out simple and some intermediately demanding organic chemistry experiments.
- To carry out standard synthetic operations.
- To execute standard laboratory techniques for isolation and purification of organic compounds.
- To get acquainted with basic principles of analysis and characterization of organic compounds.
- Access to literature sources and their application.

Predvideni študijski rezultati:

Intended Learning Outcomes:

Znanje in razumevanje:	Knowledge and understanding:
Znanje: - Varno delo v laboratoriju za organsko kemijo. - Priprava in izvedba pretvorb in eksperimentov v organski kemiji. - Izolacija, čiščenje in karakterizacija organskih spojin. - Dostopanje do literaturnih virov in njihova uporaba. **Razumevanje:** - Osnovne in srednje zahtevne eksperimentalne postopke in pretvorbe v organski kemiji. - Teoretske osnove postopkov za izolacijo, čiščenje in karakterizacijo organskih spojin. - Osnovna pravila varnega dela v laboratoriju.	**Knowledge:** - Safe work in organic chemistry laboratory. - To plan and carry out transformations and experiments in organic chemistry. - Isolation, purification and characterization of organic compounds. - Access to literature sources and their application. **Comprehension:** - Simple and intermediately demanding experimental procedures and transformations in organic chemistry. - Theoretical background necessary to comprehend isolation, purification and characterization procedures of organic compounds. - General rules of safe conduct in a laboratory.
Uporaba: Osnovno praktično znanje organske kemije je temeljno znanje, ki se uporablja v nadaljnjem študiju kemije hkrati pa je nujno potrebno vsakemu kemiku pri njegovem kasnejšem delu v praksi.	Application: Basic practical knowledge of organic chemistry is a fundamental skill, that will be necessary during further studies of chemistry; concomitantly it is also a necessity for every chemist at his or her future work in praxis.
Refleksija: Študent bo na osnovi pridobljenega znanja sposoben izvesti enostavne in srednje zahtevne eksperimente in pretvorbe v organski kemiji. S tem je sposoben preveriti hipoteze v praksi oziroma kritično ovrednotiti rezultate eksperimenta glede na skladnost s teoretičnimi načeli. Študent je načeloma sposoben samostojno poiskati relevantne literaturne vire ter sintetizirati, izolirati, očistiti in okarakterizirati organske spojine.	Reflection: With the knowledge gained, the student will be able to carry out simple and intermediately demanding experiments and transformations in organic chemistry. This will enable him or her to practically test the hypothesis set beforehand and to critically evaluate the results of an experiment in comparison with theoretical principles. Students are generally able to independently find relevant literature sources, to synthesize, isolate, purify and characterize organic compounds.
Prenosljive spretnosti: - Dostopanje do literaturnih virov. - Zbiranje, interpretacija in kritično vrednotenje podatkov. - Identifikacija in reševanje problemov. - Poročanje. - Kritična analiza, sinteza.	Skill-transference Ability: - Access to literature sources. - Gathering, interpreting and critically evaluating data. - Identifying and solving problems. - Preparing reports. - Critically analysing data; synthesis of data.

Metode poučevanja in učenja:	**Learning and Teaching Methods:**

Predavanja, laboratorijske in seminarske vaje.	Lectures, laboratory exercises, seminar.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Opravljen seminar (literaturni preparat) in končni pisni izpit. pozitivna ocena 6-10, negativna ocena 5.		Completed seminar (literature preparation) and final written exam. Pass grade 6-10, fail grade 5.

Reference nosilca / Lecturer's references:

1. Krištof KRANJC, Franc PERDIH, Marijan KOČEVAR: Effect of ring size on the *exo*/*endo* selectivity of a thermal double cycloaddition of fused pyran-2-ones. *Journal of Organic Chemistry*, ISSN 0022-3263, **2009**, vol. 74, no. 16, str. 6303–6306, doi: 10.1021/jo9011199. [COBISS.SI-ID 30678277]
2. Krištof KRANJC, Marijan KOČEVAR: Ethyl vinyl ether as a synthetic equivalent of acetylene in a DABCO-catalyzed microwave-assisted Diels–Alder-elimination reaction sequence starting from 2*H*-pyran-2-ones. *Synlett*, ISSN 0936-5214, **2008**, no. 17, str. 2613–2616, graf. prikazi. http://www.thieme-connect.com/ejournals/abstract/synlett/doi/10.1055/s-0028-1083515, doi: 10.1088/s-0028-1083515. [COBISS.SI-ID 29447685]
3. Krištof KRANJC, Marijan KOČEVAR: An expedient route to indoles *via* cycloaddition/cyclization sequence from (*Z*)-1-methoxybut-1-en-3-yne and 2*H*-pyran-2-ones. *Tetrahedron*, ISSN 0040-4020. [Print ed.], **2008**, vol. 64, no. 1, str. 45–52, doi: 10.1016/j.tct.2007.10.099. [COBISS.SI-ID 29109765]