

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Uvod v krožno gospodarstvo
Course title:	Introduction to Circular Economy

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Ekotehnologije, 2. stopnja		1	2
Ecotechnologies, 2 nd cycle		1	2

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code: EKO2-868

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
15	15			15	105	5

**Navedena porazdelitev ur velja, če je vpisanih vsaj 15 študentov. Drugače se obseg izvedbe kontaktnih ur sorazmerno zmanjša in prenese v samostojno delo. / This distribution of hours is valid if at least 15 students are enrolled. Otherwise the contact hours are linearly reduced and transferred to individual work.*

Nosilec predmeta / Lecturer: Prof. dr. Aleksander Zidanšek
Prof. dr. Peter Glavič
Prof. dr. Milena Horvat

Jeziki / Predavanja / Lectures: Slovenski ali angleški / Slovene or English
Languages: Seminar: Angleški / English

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

Zaključen študij prve stopnje.

Prerequisites:

Completed first level studies.

Vsebina:

Zakaj krožno gospodarstvo?

- uveljavitev trajnostnega razvoja v praksi
- razklopitev rasti od naravnih virov

Podlage

- cilji trajnostnega razvoja
- modro in delitveno gospodarstvo
- 4. industrijska revolucija
- pravno okolje EU

Ravnanje z naravnimi viri

- meje rasti
- kritični materiali
- koncepti krožnega gospodarstva
- verige vrednosti
- zakonodajno okolje EU

Content (Syllabus outline):

Why circular economy?

- Practical implementation of sustainable development
- Decoupling growth from natural resources

Foundations

- Sustainable Development Goals (SDG)
- Blue and sharing economy
- 4th industrial revolution
- EU regulatory environment

Natural resource management

- Limits to growth
- Critical materials
- Concepts of circular economy
- Value chains

<ul style="list-style-type: none"> - cilji zmanjševanja odpadkov - hierarhija ravnanja z odpadki - gospodinjski odpadki - elektronski in električni odpad - analiza življenjskega cikla - odpadki v industriji <p>Učinkovitost rabe virov</p> <ul style="list-style-type: none"> - zmanjšanje, recikliranje, ponovna uporaba - ohranitev, podaljšanje, delitev - spodbujanje učinkovitosti sistema z odkrivanjem in preoblikovanjem negativnih zunanjih učinkov - tehnološke priložnosti: IKT, bločne verige - konvergenca IKT, nano-, eko- in bio-tehnologij <p>Nove razvojne paradigme</p> <ul style="list-style-type: none"> - trajnostna družba znanja - družba 5.0
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<ul style="list-style-type: none"> - EU regulatory environment - Waste targets and hierarchy - Municipal waste - Electronic and electrical waste - Life Cycle Assessment - Industrial waste <p>Resource efficiency</p> <ul style="list-style-type: none"> - Reduce, recycle, reuse - Maintain, prolong, share - Foster system effectiveness by revealing and redesigning negative externalities - Technological opportunities: ICT, blockchain - Convergence of ICT, nano, eco and bio-technologies <p>New developmental paradigms</p> <ul style="list-style-type: none"> - Sustainable knowledge society - Society 5.0
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Temeljna literatura in viri / Readings:

Izbrani novejši članki iz znanstvenih revij s tega področja in izbrana poglavja iz / Selected recent articles from scientific journals in this field and selected chapters from:

E. von Weizsaecker: Factor 5: Transforming the Global Economy through 80% Increase in Resource Productivity, Earthscan, UK and Droemer, Germany, 2009, ISBN 978-1-84407-591-1

K. Schwab, The Fourth Industrial Revolution, World Economic Forum, 2017, ISBN 978-1524758868

K. Webster, The Circular Economy: A Wealth of Flows: 2nd Edition, Ellen MacArthur Foundation Publishing, 2016

P. Lacy & J. Rutqvist, Waste to Wealth: The Circular Economy Advantage, Palgrave Macmillan, 2015, ISBN 978-1137530684

C. Weetman, A Circular Economy Handbook for Business and Supply Chains: Repair, Remake, Redesign, Rethink, Kogan Page, 2016, ISBN 978-0749476755

Cilji in kompetence:

Pripraviti študente za reševanje kritičnih izzivov krožnega gospodarstva na lokalnem in globalnem nivoju.

Splošne kompetence:

- sposobnost za samostojno in skupinsko raziskovalno in razvojno delo,
- sposobnost uporabe znanja v praksi
- delno tudi razvoj integralnega načina mišljenja ter sposobnost za komunikacijo s strokovnjaki drugih disciplin in področij.

Predmetnospecifične kompetence:

- obvladovanje metod in tehnik znanstvenega raziskovanja s področja krožnega gospodarstva.

Objectives and competences:

To prepare the students for solving the critical challenges of circular economy both at the local and global level.

General competences:

- ability to carry out independent as well as team R&D work,
- ability to use the knowledge in practice,
- and partially also to the development of an integral way of thinking and the ability to communicate with experts from other disciplines and fields.

Course specific competences:

- mastering of methods and techniques of scientific

	research work in the field of circular economy.
Predvideni študijski rezultati:	Intended learning outcomes:
<u>Znanje in razumevanje:</u> <ul style="list-style-type: none"> Razumevanje koncepta krožnega gospodarstva <u>Vrednotenje in sinteza:</u> <ul style="list-style-type: none"> sposobnost analize projektov krožnega gospodarstva vzpostaviti sposobnost komunikacije v angleškem jeziku na področju krožnega gospodarstva 	<u>Knowledge and understanding</u> <ul style="list-style-type: none"> Understanding the concept of circular economy <u>Evaluation and synthesis:</u> <ul style="list-style-type: none"> Ability for assessment of circular economy projects Establish the ability to communicate in English in the field of circular economy
Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja, seminarji, konzultacije, individualno delo	Lectures, seminars, consultancy, individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Seminarska naloga	50 %	Seminar work
Ustni zagovor seminarske naloge	50 %	Oral defense of seminar work

Reference nosilca / Lecturer's references:

Abina, Andreja, Puc, Uroš, Jeglič, Anton, Zidanšek, Aleksander. Structural characterization of thermal building insulation materials using terahertz spectroscopy and terahertz pulsed imaging. *NDT & E International*, ISSN 0963-8695. [Print ed.], 2016, vol. 77, str. 11-18, doi: 10.1016/j.ndteint.2015.09.004

Abina, Andreja, Puc, Uroš, Jeglič, Anton, Zidanšek, Aleksander. Structural analysis of insulating polymer foams with terahertz spectroscopy and imaging. *Polymer testing*, ISSN 0142-9418. [Print ed.], 2013, vol. 32, issue 4, str. 739-747, doi: 10.1016/j.polymertesting.2013.03.004

Abina, Andreja, Puc, Uroš, Jeglič, Anton, Kemperl, Jana, Venckevičius, Rimvydas, Kašalynas, Irmantas, Valušis, Gintaras, Zidanšek, Aleksander. Qualitative and quantitative analysis of calcium-based microfillers using terahertz spectroscopy and imaging. *Talanta*, ISSN 0039-9140. [Print ed.], 2015, vol. 143, str. 169-177, doi: 10.1016/j.talanta.2015.05.027

Zidanšek, Aleksander, Šlaus, Ivo. Blockchain technology as an opportunity to increase public trust in circular economy. 12th Conference on Sustainable Development of Energy, Water and Environment Systems, 2017, Dubrovnik, Croatia, ISSN 1847-7186

Zidanšek, Aleksander, Gliha, Mitja. Electromagnetic sensing of building materials for circular economy. 12th Conference on Sustainable Development of Energy, Water and Environment Systems, 2017, Dubrovnik, Croatia, ISSN 1847-7186