

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

**Ime predmeta:** KROŽNO GOSPODARSTVO V LOGISTIKI IN VERIGAH VREDNOSTI  
**Course title:** CIRCULAR ECONOMY IN LOGISTICS AND VALUE CHAINS

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
LOGISTIKA SISTEMOV 1. stopnja		3.	6.
SYSTEM LOGISTICS 1 <sup>st</sup> degree		3.	6.

**Vrsta predmeta (obvezni ali izbirni) /  
Course type (compulsory or elective)**

OBVEZNI  
COMPULSORY

**Univerzitetna koda predmeta / University course code:**

UN

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
24 a-P 21 e-P		24 a-V 21 e-V			60	5

**Nosilec predmeta / Course coordinator:**

REBEKA KOVAČIČ LUKMAN

**Jeziki /Languages:**

**Predavanja / Lectures:** SLOVENSKI/SLOVENE  
**Vaje / Tutorial:** SLOVENSKI/SLOVENE

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

Ni pogojev.

**Prerequisites for enrolling in the course or for performing study obligations:**

None.

**Vsebina (kratek pregled učnega načrta):**

1. Uvod v krožno gospodarstvo (definicije, koncepti, politične usmeritve)
2. Strategije in usmeritve krožnega gospodarstva z navezavo na logistiko
3. Krožno gospodarstvo v Sloveniji, Evropi in svetu
4. Sistemsko in »razmišljanje v okviru celotnega življenjskega cikla« (angl. Life cycle thinking) v krožnem gospodarstvu
5. Kako meriti krožno gospodarstvo
6. Uvod v MFA, v povezavi s krožnim gospodarstvom, na primerih iz logistike in verig vrednosti
7. Pomen krožnega gospodarstva v logistiki
8. Ustvarjanje vrednosti v verigah vrednosti
9. Zaprte oskrbovalne verige t.i. zaprti krogi

**Content (syllabus outline):**

1. Introduction to the circular economy (definitions, concepts, policy orientations)
2. Strategies and directives of CE and its relations on logistics
3. Circular economy in Slovenia, Europe and the world
4. Systemic and "life cycle thinking" in a circular economy
5. How to measure the circular economy
6. Introduction to MFA, in connection with the circular economy, and cases on logistics and value chains
7. The importance of the circular economy in logistics and value chains
8. Creating the value in the value chains
9. Closed supply chains, so called closed loops

10. Primeri iz prakse (npr. krožni procesi, krožna mesta, krožni poslovni modeli v logistiki in verigah vrednost, ...)	10. Examples from practice (circular processes, circular cities, circular business models in logistics and value chains etc.)
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**Temeljni literatura in viri / Reading materials:**

<ul style="list-style-type: none"> <li>• Gradivo in e-gradivo predmeta (učbenik, skripta, zapiski predavanj, vaje, ...) – v pripravi</li> <li>• VIDERGAR, Petra, PERC, Matjaž, KOVAČIČ LUKMAN, Rebeka. A survey of the life cycle assessment of food supply chains. <i>Journal of cleaner production</i>. [Online ed.]. 1 Mar. 2021, vol. 286, str. [1]-10, ilustr. ISSN 1879-1786</li> <li>• Liu, Lerwen, Ramakrishna, Seeram (Eds.). An Introduction to Circular Economy, 2021. Springer Nature Singapore Pte Ltd..</li> <li>• Tanzer J, Rechberger H (2019). Setting the Common Ground: A Generic Framework for Material Flow Analysis of Complex Systems. <i>Recycling</i> 2019, 4, 23; doi:10.3390/recycling4020023</li> </ul>
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**Cilji in kompetence:**

<p>Cilj predmeta:</p> <ul style="list-style-type: none"> <li>• Pridobiti, izboljšati in poglobiti znanja iz področja razumevanja konceptov krožnega gospodarstva in nacionalnih, evropskih ter globalnih političnih usmeritev in strategij</li> <li>• Pridobiti nova znanja, spretnosti in veščine iz področja systemskega in t.i. »life cycle thinking«, kot osnova za razumevanje krožnega gospodarstva</li> <li>• Pridobiti nova znanja iz področja razumevanja, uporabe kazalcev za merjenje krožnega gospodarstva, kot tudi razumevanje metodologij merjenja in vrednotenja krožnega gospodarstva, s poudarkom na večjih sistemih in njihovih oskrbovalnih verigah (npr. Krožna mesta)</li> <li>• Pridobiti nova znanja iz področja MFA v povezavi s krožnim gospodarstvom v logistiki in vrednostnih verigah</li> <li>• Izboljšati razumevanje krožnega gospodarstva v povezavi z verigami vrednosti, logistiko</li> <li>• Izboljšati razumevanje, znanja iz področja zaprtih oskrbovalnih verig t.i. zaprti krogi</li> <li>• Pridobiti nova znanja, spretnosti in veščine iz področja praktične uporabe načel in konceptov krožnega gospodarstva v logistiki in verigah vrednosti</li> </ul> <p>Kompetence, ki jih študentke/študenti osvojijo</p> <ul style="list-style-type: none"> <li>• Študent/ka zna razpoznati, utemeljiti in uporabiti različne koncepte krožnega</li> </ul>	<p>Course objective:</p> <ul style="list-style-type: none"> <li>• Acquire, improve and deepen the knowledge in the field of understanding the concepts of the circular economy and national, European and global policy orientations and strategies</li> <li>• Acquire new knowledge, skills and capabilities in the field of systems and t.i. "Life cycle thinking" as a basis for understanding the circular economy</li> <li>• Acquire new knowledge in the field of understanding, use of indicators for measuring the circular economy, as well as understanding of methodologies for measuring and evaluating the circular economy, with emphasis on larger systems and their supply chains (eg circular cities)</li> <li>• Acquire new knowledge in the field of MFA in connection with the circular economy, logistics, and value chains</li> <li>• Improve understanding of the circular economy in relation to value chains, logistics</li> <li>• Improve understanding, knowledge in the field of closed supply chains t.i. closed circles</li> <li>• Acquire new knowledge, skills and capabilities in the field of practical application of the principles and concepts of the circular economy in logistics, value chains</li> </ul> <p>Competences that students acquire</p> <ul style="list-style-type: none"> <li>• The student is able to recognize, justify and use different concepts of circular economy in</li> </ul>
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<p>gospodarstva na področju logistike in verig vrednosti, ob upoštevanju zaprtih krogov</p> <ul style="list-style-type: none"> <li>• Študent/ka razume obstoječe strateške in politične dokumente krožnega gospodarstva ter zna oblikovati izboljšana priporočila</li> <li>• Študent/ka razume sistemsko razmišljanje in t.i »life cycle thinking« ter je sposobna ta znanja vključevati v procese in sisteme tudi poslovne modele in izvesti modifikacije.</li> <li>• Študent/ka je sposobna ovrednotiti krožne sisteme na osnovi kazalcev</li> <li>• Študent/ka je sposobna zmodelirati enostaven logistični proces, z uporabo programskih orodij za npr. MFA</li> <li>• Študent/ka zna voditi in organizirati timsko delo</li> </ul>
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<p>the field of logistics and value chains, taking into account closed circles</p> <ul style="list-style-type: none"> <li>• The student understands the existing strategic and political documents of the circular economy and knows how to formulate improved recommendations</li> <li>• The student understands systems thinking and so-called "life cycle thinking" and is able to include this knowledge in processes and systems as well as business models and make modifications.</li> <li>• The student is able to evaluate circular systems based on indicators</li> <li>• The student is able to model a simple logistics process, using software tools for e.g. MFA</li> <li>• The student knows how to lead and organize team work</li> </ul>
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**Predvideni študijski rezultati:**

<p>Študentka/študent bo:</p> <ul style="list-style-type: none"> <li>- Primerjal in argumentirano pojasnil različne koncepte krožnega gospodarstva</li> <li>- kritično vrednotil obstoječe strateške in politične dokumente krožnega gospodarstva ter oblikovati izboljšana priporočila</li> <li>- integriral sistemsko razmišljanje in t.i »life cycle thinking« v procese in sisteme tudi poslovne modele ter jih bo znal modificirati v krožne.</li> <li>- kritično vrednotil krožne sisteme na osnovi kazalcev v primerjavi z linearnimi sistemi/procesi</li> <li>- znal ter načrtovati nove kazalce</li> <li>- modeliral enostaven logistični proces, z uporabo programskih orodij za npr. MFA</li> <li>- pojasnil in utemeljil integracijo načel in konceptov krožnega gospodarstva v logistične procese in verige vrednosti, ob upoštevanju zaprtih krogov.</li> <li>- vodil in organiziral timsko delo</li> <li>- uporabljal različna programska orodja, v povezavi s procesi krožnega gospodarstva</li> </ul>
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**Intended learning outcomes:**

<p>The student will:</p> <ul style="list-style-type: none"> <li>- Compare and explain various concepts of the circular economy</li> <li>- critically evaluate existing strategic and policy documents for the circular economy and formulate improved recommendations</li> <li>- integrate systems thinking and so-called "life cycle thinking" into processes and systems as well as business models and modify them into circular ones.</li> <li>- critically evaluate circular systems based on indicators in comparison with linear systems / processes</li> <li>- plan new indicators</li> <li>- model a simple logistics process, using software tools for e.g. MFA</li> <li>- explain and justify the integration of the principles and concepts of the circular economy into logistics processes and value chains, taking into account closed circles.</li> <li>- lead and organized team work</li> <li>- use various software tools in connection with circular economy processes</li> </ul>
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**Metode poučevanja in učenja:**

<p>Predavanja: Prednost bomo dali inovativnim načinom učenja in poučevanja ter novim didaktičnim pristopom. Predavanja bodo temeljila na t.i. sodelovalnem učenju, saj bi radi v okviru</p>
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**Learning and teaching methods:**

<p>Lectures: We will give a priority to innovative ways of learning and teaching and new didactic approaches. Lectures will be based on so called: collaborative learning, as we would like to achieve the highest</p>
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predmeta dosegli najvišjo kognitivno raven razumevanja (načrtovanje, kreiranje, inoviranje).  
Vaje: vaje bodo temeljile na skupinskem in individualnem delu. Študenti se bodo naučili uporabe različnih programskih orodij.

cognitive level of understanding (planning, creation, innovation) within the subject.  
Exercises: Exercises will be based on group and individual work. Students will learn to use a variety of software tools.

Načini ocenjevanja:	Delež (v %) / Share (in %)	Assessment methods:
Pogoj za pristop k izpitu so opravljene obveznosti v okviru e-predavanj in e-vaj		Successful completion of obligations (e-lectures and e-tutorials) is a prerequisite for entering the exam.
Pisni izpit	60 %	Written exam
Ustni izpit	10 %	Oral exam
Vaje	30 %	Exercises

#### Reference nosilca / Course coordinator's references:

1. OMAHNE, Vasja, KRAJNC, Damjan, KOVAČIČ LUKMAN, Rebeka. A critical overview of scientific publications on life cycle assessment in transport-related topics. *Clean technologies and environmental policy*. [Online ed.]. Apr. 2021, vol. 23, iss. 3, str. 711-730, ilustr. ISSN 1618-9558. <https://doi.org/10.1007/s10098-020-01954-4>, DOI: [10.1007/s10098-020-01954-4](https://doi.org/10.1007/s10098-020-01954-4). [COBISS.SI-ID [61009667](https://doi.org/10.1007/s10098-020-01954-4)], [JCR, SNIP, WoS, Scopus]
2. VIDERGAR, Petra, PERC, Matjaž, KOVAČIČ LUKMAN, Rebeka. A survey of the life cycle assessment of food supply chains. *Journal of cleaner production*. [Online ed.]. 1 Mar. 2021, vol. 286, str. [1]-10, ilustr. ISSN 1879-1786. <https://doi.org/10.1016/j.jclepro.2020.125506>, DOI: [10.1016/j.jclepro.2020.125506](https://doi.org/10.1016/j.jclepro.2020.125506). [COBISS.SI-ID [61020419](https://doi.org/10.1016/j.jclepro.2020.125506)], [JCR, SNIP, WoS do 14. 8. 2021: št. citatov (TC): 3, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0,67, Scopus do 1. 9. 2021: št. citatov (TC): 3, čistih citatov (CI): 2, čistih citatov na avtorja (CIAu): 0,67]
3. KOVAČIČ LUKMAN, Rebeka, OMAHNE, Vasja, TAG EL SHEIKH, Lobna, GLAVIČ, Peter. Integrating sustainability into logistics oriented education in Europe. *Sustainability*. Feb. 2021, vol. 13, iss. 4, str. [1]-24, ilustr. ISSN 2071-1050. <https://doi.org/10.3390/su13041667>, DOI: [10.3390/su13041667](https://doi.org/10.3390/su13041667). [COBISS.SI-ID [61031939](https://doi.org/10.3390/su13041667)], [JCR, SNIP, WoS, Scopus]
4. KOVAČIČ LUKMAN, Rebeka, OMAHNE, Vasja, KRAJNC, Damjan. Sustainability assessment with integrated circular economy principles : a toy case study. *Sustainability*. Apr. 2021, vol. 13, iss. 7, str. [1]-22, ilustr. ISSN 2071-1050. <https://doi.org/10.3390/su13073856>, DOI: [10.3390/su13073856](https://doi.org/10.3390/su13073856). [COBISS.SI-ID [61037827](https://doi.org/10.3390/su13073856)], [JCR, SNIP, WoS do 9. 8. 2021: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0,33, Scopus do 1. 9. 2021: št. citatov (TC): 1, čistih citatov (CI): 1, čistih citatov na avtorja (CIAu): 0,33]
5. KOVAČIČ LUKMAN, Rebeka, GLAVIČ, Peter, CARPENTER, Angela, VIRTIC, Peter, et al. Sustainable consumption and production : research, experience, and development : the Europe we want. *Journal of cleaner production*. [Print ed.]. 2016, vol. 138, str. 139-147. ISSN 0959-6526. DOI: [10.1016/j.jclepro.2016.08.049](https://doi.org/10.1016/j.jclepro.2016.08.049). [COBISS.SI-ID [1024244572](https://doi.org/10.1016/j.jclepro.2016.08.049)], [JCR, SNIP, WoS do 19. 8. 2021: št. citatov (TC): 39, čistih citatov (CI): 38, čistih citatov na avtorja (CIAu): 9,50, Scopus do 12. 8. 2021: št. citatov (TC): 51, čistih citatov (CI): 50, čistih citatov na avtorja (CIAu): 12,50]