

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

**Ime predmeta:** NAČRTOVANJE EMBALAŽE IN RAZBREMENILNE LOGISTIKE  
**Course title:** PLANNING OF PACKAGING AND REVERSE LOGISTICS

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
LOGISTIKA SISTEMOV 1. stopnja		3.	5.
SYSTEM LOGISTICS 1 <sup>st</sup> degree		3.	5.

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

IZBIRNI  
ELECTIVE

**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 e-P 21 a-P		a-V	e-V	LV			90	6
		15	24	6				

**Nosilec predmeta / Course coordinator:**

ANDREJ LISEC

**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):**

Funkcije in vrste embalaže.  
Sodobni embalažni materiali in oblike.  
Oblikovanje in načrtovanje embalaže.  
Testiranje embalaže, standardi, zakonodaja.  
Osnovni procesi razbremenilne logistike.  
3D modeliranje in tiskanje embalaže.  
Preprečevanje, zbiranje, recikliranje, ponovna uporaba embalaže in odpadkov.

**Content (syllabus outline):**

Functions and types of packaging.  
Modern packaging materials and designs.  
Design and packaging design.  
Testing of packaging standards legislation.  
Basic processes of Reverse logistics.  
3D printing.  
Prevention, collection, recycling, reuse of packaging and waste.

**Temeljni literatura in viri / Reading materials:**

E-gradivo predmeta.

Lisec, A.: Embalaža in razbremenilna logistika, elektronsko gradivo, 2014.

Ambrož, G., et. al: Razvoj embalaže v krožnem gospodarstvu, Fit media, 2019.

Radonjič, G.: Embalaža in varstvo okolja, Založba Pivec, 2008, COBISS.SI-ID: 60031745.

Paine, F.,A.: Handbook of food packaging, London, Blackie Academic & Professional, 1992, ISBN: 0-216-93210-6, COBISS.SI-ID: 13417733.

Holman, J.: Food: processing, packaging & distribution : science in society project, COBISS.SI-ID: 226652.  
 Coles, R.: Food packaging technology, Oxford, Blackwell, Boca Raton, CRC Press, 2003, ISBN: 1-84127-221-3, COBISS.SI-ID : 2829432.  
 Denison, E.: Packaging prototypes, Crans-Pres-Céligny, RotoVision, 1999, ISBN: 2-88046-389-0, COBISS.SI-ID: 13682322.  
 Pringer, O.,G.: Plastic Packaging Materials for Food, 2000.  
 Stehle, G.: Verpacken von Lebensmitteln, 1997.  
 Kattan, L.L.: Migration from Food Contact Materials, 1997.

**Cilji in kompetence:**

Osvojijo znanja s področja embalaže in razbremenilne logistike. Spoznajo tehnološke proces embaliranja se usposobijo uporabljati teoretična znanja v praksi.

**Objectives and competences:**

Learn different packaging and reverse logistics. Learn about technological packaging processes. Learn to apply theory in praxis.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

- poznavanje in razumevanje tehnik embaliranja,
- poznavanje embalažnih materialov,
- obvladanje načrtovanja in oblikovanja procesov embaliranja,
- sposobnost obvladljivosti procesov embaliranja,
- poznavanje osnovnih dejstev o embalaži in razbremenilni logistiki,
- spoznati probleme embaliranja in embalaže ter veljavno zakonodajo ter usposobiti študente za uporabo teoretičnega znanja v praktičnih primerih.

**Intended learning outcomes:**

Knowledge and understanding:

- learn about different packaging techniques,
- learn about packing materials,
- be familiarized with technological processes of packaging,
- be able to manage packaging processes,
- learn about recognized international packaging theory and reverse logistics,
- be familiarized with the problems of packaging and the valid legislation and to enable students to apply theoretical knowledge to case studies.

**Metode poučevanja in učenja:**

Predavanja: pri predavanjih študent spozna teoretične vsebine predmeta. Del predavanj se izvaja na klasični način v predavalnici, del pa v obliki e-predavanj (epredavanja se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

Vaje: pri vajah študent utrdi teoretično znanje in spozna aplikativne možnosti. Del vaj se izvaja na klasični način v predavalnici, del pa v obliki e-vaj (e-vaje se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

**Learning and teaching methods:**

Lectures: students understand the theoretical frameworks of the course. Part of the lecture course is in a classroom while the rest is in the form of e-learning (e-lectures may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

Tutorials: Students enhance their theoretical knowledge and are able to apply it. Part of the seminar is in a classroom while the rest is in the form of e-learning (e-tutorials may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

**Načini ocenjevanja:**

▪ Opravljene obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu.

Delež (v %) /  
Share (in %)

**Assessment methods:**

▪ Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam.

<ul style="list-style-type: none"> <li>▪ Pisni izpit.</li> <li>▪ Seminarska naloga.</li> </ul>	<p>70%</p> <p>30%</p>	<ul style="list-style-type: none"> <li>▪ Written examination.</li> <li>▪ Seminar paper.</li> </ul>
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**Reference nosilca / Course coordinator's references:**

1. OBRECHT, Matevž, KNEZ, Matjaž, LISEC, Andrej, WRZALIK, Aleksandra, KOVAČIČ LUKMAN, Rebeka. Sustainable consumption and segmentation of potential low emission vehicle buyers. *System safety : human - technical facility - environment*, ISSN 2657-5450. [Spletna izd.], 2019, vol. 1, iss. 1, str. 425-430, ilustr. <https://doi.org/10.2478/czoto-2019-0055>, doi: [10.2478/czoto-2019-0055](https://doi.org/10.2478/czoto-2019-0055). [COBISS.SI-ID [512987197](#)].

2. PEJIĆ, Vaska, CEDILNIK, Marko, LISEC, Andrej. Impact on the environment of industrial packaging waste transport. *Environmental engineering and management journal*, ISSN 1843-3707. [Online ed.], 2017, vol. 16, no. 5, str. 1155-1160. <http://www.ecozone.ro/reviste.php?revista=21&volum=61&numar=191&RID=27311>. [COBISS.SI-ID [512892221](#)], [JCR, SNIP, WoS do 16. 2. 2018: št. citatov (TC): 0, čistih citatov (CI): 0].

3. ĐORĐEVIĆ, Lena, ANTIĆ, Slobodan, ČANGALOVIĆ, Mirjana, LISEC, Andrej. A metaheuristic approach to solving a multiproduct EOQ-based inventory problem with storage space constraints. *Optimization letters*, ISSN 1862-4480, Aug. 2017, vol. 11, iss. 6, str. 1137-1154, tabele. <https://link.springer.com/content/pdf/10.1007%2Fs11590-016-1009-5.pdf>, doi: [10.1007/s11590-016-1009-5](https://doi.org/10.1007/s11590-016-1009-5). [COBISS.SI-ID [512755517](#)], [JCR, SNIP, WoS do 14. 4. 2019: št. citatov (TC): 1, čistih citatov (CI): 1, Scopus do 29. 4. 2019: št. citatov (TC): 1, čistih citatov (CI): 1].

4. OBRECHT, Matevž, KNEZ, Matjaž, SZEGEDI, Zoltan, NICK, Gabor, LISEC, Andrej. Review of Industry 4.0 and forecasting its future within trends in logistics and development of legislation. *Tér gazdaság ember*, ISSN 2064-1176, 2017, vol. 5, no. 4, str. 59-70, ilustr. [http://kgk.sze.hu/images/dokumentumok/folyoirat/TGE\\_V\\_evf04\\_ok.pdf](http://kgk.sze.hu/images/dokumentumok/folyoirat/TGE_V_evf04_ok.pdf). [COBISS.SI-ID [512926781](#)].

5. LISEC, Andrej, ANTIĆ, Slobodan, CAMPUZANO BOLARÍN, Francisco, PEJIĆ, Vaska. An approach to packaging waste reverse logistics : case of Slovenia. *Transport*, ISSN 1648-3480. [Online ed.], 2017, str. [1-9]. <http://www.tandfonline.com/doi/abs/10.3846/16484142.2017.1326404>, doi: [10.3846/16484142.2017.1326404](https://doi.org/10.3846/16484142.2017.1326404). [COBISS.SI-ID [512892477](#)], [JCR, SNIP, WoS do 4. 1. 2019: št. citatov (TC): 0, čistih citatov (CI): 0, Scopus do 16. 2. 2018: št. citatov (TC): 0, čistih citatov (CI): 0].