

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 st 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.
Označevanje embalaže in GS1 standardi.
3D modeliranje in tiskanje embalaže.
Osnovni procesi razbremenilne logistike.
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.
Package labelling and GS1 standards.
3D printing.
Basic processes of Reverse logistics.
Prevention, collection, recycling, reuse of packaging and waste.

Temeljna literatura in viri / Reading materials:

E-gradivo predmeta.

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:

Cilji predmeta so:

- opredeliti funkcije in različne vrste embalaže ter njihove osnovne značilnosti in primernost uporabe, predstaviti vlogo embalaže v logistiki,
- predstaviti sodobne embalažne materiale in inovacije na področju embalaže,
- predstaviti pristope za oblikovanje in načrtovanje embalaže,
- predstaviti metode ter postopke testiranja embalaže,
- predstaviti standarde ter zakonodajo, povezano z embalažo,
- predstaviti označevanje embalaže in GS1 standarde,
- predstaviti 3D modeliranje in tiskanje embalaže,
- predstaviti proces razbremenilne logistike,
- predstaviti piramido ravnanja z odpadki in odpadno embalažo.

Kompetence, ki jih študentje osvojijo:

- so sposobni izbrati primerno embalažo glede na njen namen uporabe in procese v logistiki,
- poznajo inovacije na področju embalaže in jih znajo tudi sami poiskati,
- poznajo pristope za oblikovanje in načrtovanje embalaže,
- poznajo metode in postopke testiranja različnih vrst embalaž,
- poznajo standarde in zakonodajo s področja embalaže,
- poznajo pomembnejše embalažne oznake in poznajo pomen standardov GS1,
- poznajo proces razbremenilne logistike,
- poznajo piramido ravnanja z odpadki in odpadno embalažo in v skladu z njo tudi ravnaajo.

Objectives and competences:

The objectives of the course are:

- define the functions and different types of packaging and their basic characteristics and suitability for use, present the role of packaging in logistics,
- present modern packaging materials and innovations in the field of packaging,
- present approaches for packaging design and planning,
- present the methods and procedures for testing packaging,
- present standards and legislation related to packaging,
- present packaging labeling and GS1 standards, present
 - 3D modeling and packaging printing,
 - present the process of reverse logistics,
 - present the pyramid of waste management and packaging waste.

Competences that students acquire:

- are able to choose the appropriate packaging according to its intended use and processes in logistics,
- know the innovations in the field of packaging and know how to find them themselves,
- know the approaches for packaging design and planning,
- know the methods and procedures for testing different types of packaging,
- know the standards and legislation in the field of packaging,
- know the important packaging labels and know the meaning of GS1 standards,
- know the process of relief logistics,
- know the pyramid of waste management and packaging waste and act in accordance with it.

Predvideni študijski rezultati:

Intended learning outcomes:

Študent je ob zaključku predmeta zmožen:

- izbrati primerno embalažo glede na namen njene uporabe in procese v logistiki,
- poiskati inovacije na področju embalaže ter jo ovrednotiti,
- oblikovati in načrtovati preprosto embalažo,
- navesti in opisati metode ter postopke testiranja različnih vrst embalaž,
- pojasniti standarde in zakonodajo s področja embalaže ter jih uporabiti pri svojem delu,
- prepoznati pomembnejše embalažne oznake in uporabiti standarde GS1 pri označevanju različnih ravni embalaže,
- opredelijo posamične korake v procesu razbremenilne logistike,
- pojasniti piramido ravnanja z odpadki in v skladu z njo ravnati tako v zasebnem, kot poslovnem življenju.

Upon completion of the course, the student is able to:

- select appropriate packaging according to the purpose of use and processes in logistics,
- seek innovation in the field of packaging and evaluate it,
- design and plan simple packaging,
- state and describe the methods and procedures for testing different types of packaging,
- explain standards and legislation in the field of packaging and apply them in their work,
- identify important packaging labels and use GS1 standards when labeling different levels of packaging,
- define individual steps in the relief logistics process,
- explain the waste management pyramid and act accordingly in both private and business life.

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:	Delež (v %) / Share (in %)	Assessment methods:
<ul style="list-style-type: none"> ▪ Opravljene obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu. ▪ Pisni izpit. ▪ Seminarska naloga. 	<p>70%</p> <p>30%</p>	<ul style="list-style-type: none"> ▪ Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam. ▪ Written examination. ▪ Seminar paper.

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. [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].