

**UČNI NAČRT PREDMETA/COURSE SYLLABUS**

Predmet:	EMBALIRANJE
Course title:	PACKAGING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
GOSPODARSKA IN TEHNIŠKA LOGISTIKA 1. stopnja		3.	5.
PROFESSIONAL HIGHER EDUCATION STUDY PROGRAMME ECONOMIC AND TECHNICAL LOGISTICS 1 <sup>st</sup> degree		3.	5.

Vrsta predmeta / Course type: IZBIRNI

Univerzitetna koda predmeta / University course code: VS

Predavanja Lectures	Seminar Seminar	vaje Tutorial	Klinične vaje Laboratory work	Druge oblike študija Field work	Samost. delo Individ. work	ECTS
24 e-P 21 a-P		24 e-V 15 a-V	6		90	6

Nosilec predmeta / Lecturer: LISEC ANDREJ

Jeziki / Predavanja / Lectures: SLOVENSKI / SLOVENE  
 Languages: Vaje / Tutorial: SLOVENSKI / SLOVENE

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: Ni pogojev. Prerequisites: None.

**Vsebina:**

- Osnovne naloge embalaže in pakiranja
- Embalaža za prehrabene izdelke
- Embalaža za tehnične izdelke
- Embalaža nevarnih snovi
- Embaliranje izdelkov s posebnimi zahtevami
- Embalaža za zaščito pred poškodbami
- Načrtovanje pakirnih enot
- Sestavljanje pakirnih enot v transportne enote
- Izkoriščanje transportnih sredstev
- Izraba skladiščnih prostorov
- Ravnanje z embaliranimi izdelki
- Označevanje, etiketiranje embalirnih enot
- Tehnološki postopki pakiranja: vakumsko pakiranje, sterilno pakiranje, pakiranje v modificirani atmosferi, aktivno pakiranje, bioembaliranje
- Odpadna embalaža. Reciklaža odpadne embalaže
- Vračljiva embalaža
- Testiranje, standardi, zakonodaja
- 3D tiskanje

**Content (Syllabus outline):**

- Basics of packaging and wrapping
- Food packaging
- Packaging for technical products
- Packaging for hazardous substances
- Packaging of products with special requirements
- Packaging as protection against damage
- Planning of packaging units
- Consolidating packaging units into transport units
- Use of transportation
- Managing packaged products
- Marking, labeling packaged units
- Technological procedures of packing: vakuum packing, sterile packing, packing in a modified atmosphere, active packing, biopackaging
- Waste and recyable packaging
- Returnable packaging
- Testing, standards, legislation
- 3D printing

#### Temeljni literatura in viri / Readings:

E-gradivo predmeta.

Lisec, A.: Embaliranje, elektronsko gradivo, 2014.

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.

Stričević, N.: Suvremena embalaža, 1982.

Pringer, O.,G.: Plastic Packaging Materials for Food, 2000.

Stehle, G.: Verpacken von Lebensmitteln, 1997.

Kattan, L.L.: Migration from Food Contact Materials, 1997.

Heiss, R.: Verpacken von Lebensmitteln, 1980.

#### Cilji in kompetence:

- osvojijo znanja s področja tehnike in tehnologije embaliranja,
- spoznajo tehnološke proces embaliranja,
- se usposobijo uporabljati teoretična znanja v praksi.

#### Objectives and competences:

- gain the knowledge of techniques and technologies of packaging,
- are familiarized with technological packaging processes,
- learn to apply theoretical knowledge to practical situations.

#### Predvideni študijski rezultati:

Seznani študente s procesi logistike posebej nabave in skladiščenja s poudarkom na embaliranju in embalaži. Študenti obvladajo procese in principe embaliranja, metodami upravljanja v dejavnosti embaliranja in funkcijami ter veliko vlogo embalaže in embaliranja v procesih logistike. Usposobiti študente za izvajanje embaliranja v praksi.

Posredovati znanja študentom o uveljavljeni mednarodni teoriji embalaže in embaliranja ter jih usposobiti za samostojno delo. Spoznajo probleme embaliranja in embalaže ter veljavno zakonodajo. Spoznajo obveznost uporabe vseh varovalnih sredstev in spoznajo konstrukcijske in tehnične rešitve ter vodijo skrb o pripravah na specifične delovne razmere.

#### Intended learning outcomes:

Students will be familiarized with logistics processes from the field of purchase and warehousing, whereby emphasis is on packaging. Students will master technological processes of packaging, methods for managing packaging and other functions as well as the role packaging plays in logistics processes. Students are further trained to apply packaging theory to practical situations.

They learn about recognized international packaging theory and trained to work individually. They are familiarized with the problems of packaging wrapping and the valid legislation. They learn about the requirements for use of all safety means and learn about the construction and technical solution and manage preparations for specific working conditions.

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

Reference nosilca / Lecturer's references:

<ol style="list-style-type: none"> <li>1. LISEC, Andrej, RIHTER, Andrej. Logistical operations in postal logistics centres. <i>Logistics and sustainable transport</i>, 05-10-07, vol. 1, iss. 2, 12 str. <a href="http://www.jlst.org/uploads/lisec_rihter.pdf">http://www.jlst.org/uploads/lisec_rihter.pdf</a>.</li> <li>2. LISEC, Andrej, BOGATAJ, Marija. The four-level distribution of parcel delivery with retention. <i>Suvremeni promet</i>, svi./kol. 2007, god. 27, br. 3/4, str. 199-202.</li> <li>3. CAMPUZANO BOLARÍN, Francisco, LISEC, Andrej, ESTEBAN, Francisco Cruz Lario. Inventory cost consequences of variability demand process within a multi-echelon supply chain. <i>Logistics and sustainable transport</i>, 15-02-08, vol. 1, iss. 3, 12 str. <a href="http://www.jlst.org/uploads/clanek_paco_lisec_koncna.pdf">http://www.jlst.org/uploads/clanek_paco_lisec_koncna.pdf</a>.</li> <li>4. LISEC, Andrej, ROSI, Bojan, KAVRAN, Zvonko. Holistic thinking approach : case study of post network in Slovenia. <i>Promet (Zagreb)</i>, 2008, vol. 20, no. 2, str. 79-86.</li> <li>5. RADINJA, Bojan, LISEC, Andrej. Optimization of delivery of postal items with the use of new postcodes. <i>Logistics and sustainable transport</i>, 06-04-09, vol. 1, iss. 4, 7 str. <a href="http://www.jlst.org/uploads/radinja_lisec.pdf">http://www.jlst.org/uploads/radinja_lisec.pdf</a>.</li> </ol>
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