

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

**Ime predmeta:** ZELENE TEHNOLOGIJE V LOGISTIČNIH PROCESIH  
**Course title:** GREEN TECHNOLOGIES IN LOGISTICS PROCESSES

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	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 (obvezni ali izbirni) /  
Course type (compulsory or elective)**

IZBIRNI  
ELECTIVE

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

VS

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
21 e-P 24 a-P		21 e-V 24 a-V			90	6

**Nosilec predmeta / Course  
coordinator:**

MATJAŽ KNEZ

**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):**

- Logistični procesi in zelene tehnologije.
- Vloga države pri promociji zelenih tehnologij in obnovljivih virov energije.
- Zelene tehnologije in obnovljivi viri energije.
- Uvajanje in uporaba zelenih tehnologij in obnovljivih virov energije v logistične pod sisteme.
- Ekonomičnost integracije alternativnih goriv v logistične procese.
- Tehnološke inovacije in priložnosti.
- Energetsko upravljanje v logističnih organizacijah in novi tehnološki koncepti.

**Content (syllabus outline):**

- Logistical processes and green technologies.
- The role of government in promoting of green technologies and renewable energy sources.
- Green technologies and renewable energy sources.
- Introduction and use of green technologies and renewable energy sources in the logistics subsystems
- Economics of alternative fuels integration in to logistics processes.
- Technological innovations and opportunities.
- Energy management in logistics organizations and new technological concepts.

- Študije praktičnih primerov uvedbe/integracije zelenih tehnologij in zelenih virov energije.

- Case studies of the implementation of green technologies and green energy sources.

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

E-gradivo predmeta.

Knez M., (2013) Zelene tehnologije v logističnih procesih E-gradivo – v pripravi. Univerza v Mariboru, Fakulteta za logistiko.

Muneer, Tariq, Kolhe, Mohan, Doyle Aisling. Electric Vehicles: Prospects and Challenges, 1st Edition, 2017. ISBN: 9780128030400.

McKinnon A., Browne M., Whiteing A. (2012) Green Logistics, Improving the Environmental Sustainability of Logistics.

Muneer T. (2012) Solar Radiation and Daylight Models. Routledge.

Makower J., 2009. Strategies for the Green Economy. McGraw Hill, New York.

MacKinnon D., Shaw J., Docherty I. (2008) Diverging Mobilities? Devolution, Transport and policy Innovation. Elsevier.

Esty D.C., Winston A.S. (2009) Green to Gold. How smart companies use environmental strategy to innovate, create value, and build competitive advantage. John Wiley&Sons, Inc. Hoboken New Jersey.

Trainer T. (2007) Renewable Energy Cannot Sustain a Consumer Society. Springer.

Dodatna literatura: Izbrani članki ter nova izdana literatura s področja predmeta.

#### **Cilji in kompetence:**

Cilj tega predmeta je:

- poznavanje in razumevanje zelenih tehnologij in okolju prijaznih obnovljivih virov energije,
- spoznati uveljavljene ter nove načine uporabe zelenih tehnologij in obnovljivih virov energije,
- razumevanje in pomen vzpostavitve energetskega managementa v podjetju,
- razumevanje in pomen izgradnje zelene poslovne ideje ter njene preverbe skozi poslovni načrt.

#### **Objectives and competences:**

The objective of the course is to:

- knowledge and understanding of green technologies and environmentally friendly renewable energy sources,
- recognize the established and new ways of usage of the green technologies and renewable energy sources,
- understanding the importance of establishing the energy management in the company
- understanding and importance of building a green business idea and its verification through a business plan.

#### **Predvideni študijski rezultati:**

Znanje in razumevanje:

- razumevanje poslovanja logističnih in nelogističnih podjetij v moderni in trajnostno naravnani družbi,
- poznavanje zelenih tehnologij, njihovih prednosti ter možnih integracij v logistične procese,
- razumevanje pomena uvajanja novih tehnoloških rešitev v logistične procese,
- razumevanje pomena vzpostavitve energetskega managementa v podjetju ter oskrbovalnih verigah,
- razumevanje pomena merjenja ogljičnega odtisa in načinov zmanjševanja z novimi tehnologijami.

#### **Intended learning outcomes:**

Knowledge and understanding:

- understanding operations of logistics and "nonlogistics companies in modern and sustainable society,
- knowledge of green technologies and their advantages and possible integration of logistics processes,
- understand the importance of the introduction of new technological solutions in logistics processes,
- understanding the importance of establishing energy management in the enterprise and supply chains,
- understand the importance of measuring the carbon footprint and ways of reducing with new technologies.

**Prenesljive/ključne spretnosti in drugi atributi:**

- študenti se usposobijo za uporabo teoretičnega znanja v praktičnih primerih,
- sposobni kritične presoje različnih situacij,
- se usposobijo za generiranje in podajanje celovitih predlogov na področju tehnoloških konceptov ter rešitev.

**Transferable/Key skills and other attributes:**

- the ability to apply theoretical knowledge to professional practice,
- be able to critically evaluate different situations, the ability for generating and delivering comprehensive proposals in the field of technological concepts and solutions.

**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).

<b>Načini ocenjevanja:</b>	<b>Delež (v %) / Share (in %)</b>	<b>Assessment methods:</b>
Opravljenosti obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu.		Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam.
• Seminarska naloga in domače naloge.	30%	• Coursework and home work.
• Pisni izpit.	70%	• Written examination.

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

KNEZ, Matjaž, ROSI, Bojan, MULEJ, Matjaž, LIPIČNIK, Martin. Competitiveness by requisitely holistic and innovative logistic management. *Promet*, ISSN 0353-5320, 2010, vol. 22, no. 3, str. 229-237. [COBISS.SI-ID 10305052].

KNEZ, Matjaž, PREDIN, Andrej, ROSI, Bojan. 'Forklift to grid' - how to synergise the electricity and logistics sectors = 'Viličar na omrežje' - kako sinergijsko povezati električno omrežje z logističnim sektorjem. *Journal of energy technology*, May 2012, vol. 5, iss. 2, str. 13-27. [http://www.fe.uni-mb.si/images/stories/jet/e-jet/jet\\_5-2.pdf](http://www.fe.uni-mb.si/images/stories/jet/e-jet/jet_5-2.pdf). [COBISS.SI-ID 1024091228].

KNEZ, Matjaž, PREDIN, Andrej, ROSI, Bojan. Poslovni model OVE/F2G V.1 za učinkovitejši energetski menedžment logističnih podjetij. *Proj. mreža Slov.*, apr. 2012, letn. 15, št. 1, str. 10-17, 43, ilustr. [COBISS.SI-ID 1024084572].

STERNAD, Marjan, KNEZ, Matjaž, ROSI, Bojan. Improving city transport with the objective to reduce CO<sub>2</sub> emissions. *Transport problems*, 2010, vol. 5, iss. 4, str. 95-103. [http://transportproblems.polsl.pl/pl/Archiwum/2010/zeszyt4/2010t5z4\\_12.pdf](http://transportproblems.polsl.pl/pl/Archiwum/2010/zeszyt4/2010t5z4_12.pdf). [COBISS.SI-ID 512283197]

STERNAD, Marjan, TOPOLŠEK, Darja, KNEZ, Matjaž. The case of Slovenian international comparative advantage in logistics services. *Strategic management*, ISSN 1821-3448, 2012, vol. 17, no. 2, str. 22-30, ilustr., tabela. [COBISS.SI-ID 512434237].

KNEZ, Matjaž. Integracija okolju prijaznih obnovljivih virov energije s sodobnimi tehnologijami v energetske management logističnih procesov : doktorska disertacija. Celje: [M. Knez], 2011. 145, 4 f., ilustr. [COBISS.SI-ID 261029888].

KNEZ, Matjaž, MUNEER, Tariq, JEREB, Borut, CULLINANE, Kevin. The estimation of a driving cycle for Celje and a comparison to other European cities. *Sustainable cities and society*, ISSN 2210-6715. [Spletna izd.], Feb. 2014, vol. 11, str. 56-60, doi: 10.1016/j.scs.2013.11.010. [COBISS.SI-ID 512556349].

KNEZ, Matjaž, JEREB, Borut, OBRECHT, Matevž. Factors influencing the purchasing decisions of low emission cars : a study of Slovenia. *Transportation research. Part D, Transport and environment*, ISSN 1361-9209. [Print ed.], July 2014, vol. 30, str. 53-61. <http://www.sciencedirect.com/science/article/pii/S1361920914000339>, doi: 10.1016/j.trd.2014.05.007. [COBISS.SI-ID 512566077].

MUNEER, Tariq, MILLIGAN, Ross, SMITH, Ian, DOYLE, Aisling, POZUELO, Miguel, KNEZ, Matjaž. Energetic, environmental and economic performance of electric vehicles : experimental evaluation. *Transportation research. Part D, Transport and environment*, ISSN 1361-9209. [Print ed.], 2015, vol. 35, no. [1], str. 40-61. <http://www.sciencedirect.com/science/article/pii/S1361920914001783>, doi: 10.1016/j.trd.2014.11.015. [COBISS.SI-ID 512609853].

KNEZ, Matjaž, JEREB, Borut. Solar power plants - alternative sustainable approach to greener environment: a case of Slovenia. *Sustainable cities and society*, ISSN 2210-6715. [Spletna izd.], Feb. 2013, vol. 6, str. 27-32, doi: 10.1016/j.scs.2012.07.002. [COBISS.SI-ID 512441149].

KNEZ, Matjaž, STERNAD, Marjan. Solar energised transport solution and customer preferences and opinions about alternative fuel vehicles - the case of Slovenia. *Transport problems*, ISSN 1896-0596. [Printed ed.], 2015, vol. 10, iss. 3, str. 17-28, ilustr. [http://transportproblems.polsl.pl/pl/Archiwum/2015/zeszyt3/2015t10z3\\_02.pdf](http://transportproblems.polsl.pl/pl/Archiwum/2015/zeszyt3/2015t10z3_02.pdf). [COBISS.SI-ID 512711997].

KNEZ, Matjaž, CELIK, Ali Naci, MUNEER, Tariq. A sustainable transport solution for a Slovenia town. *International journal of low carbon technologies*, ISSN 1748-1325. [Online ed.], 2014, [Vol.] 0, str. 1-7, doi: 10.1093/ijlct/ctu007. [COBISS.SI-ID 512557629].

JEREB, Borut, KNEZ, Matjaž, PODBEVŠEK, Nives. High PM10 concentrations in countries of European Union. *Crnogorski časopis za ekologiju*, ISSN 2337-0149, dec. 2014, vol. 1, no. 2, str. 23-29. [COBISS.SI-ID 512614717].

OTOREPEC, Sabina, PODBEVŠEK, Nives, JEREB, Borut, KNEZ, Matjaž. Problems with PM10 concentrations in Slovenia and other countries of European Union. *Logistyka*, 2014, vol. 2014, no. 4, str. 3619-3629. [http://czasopismologistyka.pl/index.php?option=com\\_docman&task=cat\\_view&gid=305&Itemid=79&limit\\_start=15](http://czasopismologistyka.pl/index.php?option=com_docman&task=cat_view&gid=305&Itemid=79&limit_start=15). [COBISS.SI-ID 512615229].

OBRECHT, Matevž, KNEZ, Matjaž. Opportunities for transition to sustainable energy strategy in Slovenia. *Strategic management*, ISSN 2334-6191, 2014, vol. 19, no. 3, str. 31-37. [http://www.ef.uns.ac.rs/sm/archive/SM2014\\_3.pdf](http://www.ef.uns.ac.rs/sm/archive/SM2014_3.pdf). [COBISS.SI-ID 512586557].

GAGO, E. J., MUNEER, Tariq, KNEZ, Matjaž, KÖSTER, Helmut. Natural light controls and guides in buildings : energy saving for electrical lighting, reduction of cooling load. *Renewable & sustainable energy reviews : an international journal*, ISSN 1364-0321. [Print ed.], 2015, vol. 41, str. 1-13. <http://www.sciencedirect.com/science/article/pii/S1364032114006777>, doi: 10.1016/j.rser.2014.08.002. [COBISS.SI-ID 512585021].

MUNEER, Tariq, MILLIGAN, Ross, SMITH, Ian, DOYLE, Aisling, POZUELO, Miguel, KNEZ, Matjaž. Energetic, environmental and economic performance of electric vehicles : experimental evaluation. *Transportation research. Part D, Transport and environment*, ISSN 1361-9209. [Print ed.], 2015, vol. 35, no. [1], str. 40-61. <http://www.sciencedirect.com/science/article/pii/S1361920914001783>, doi: 10.1016/j.trd.2014.11.015. [COBISS.SI-ID 512609853].

OBRECHT, Matevž, KNEZ, Matjaž. Carbon and resource savings of different cargo container designs. *Journal of cleaner production*, ISSN 1879-1786. [Online ed.], 1 Jul. 2017, vol. 155, 151-156 str. <https://doi.org/10.1016/j.jclepro.2016.11.076>, doi: 10.1016/j.jclepro.2016.11.076. [COBISS.SI-ID 512811837].