UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Ime predmeta:	TRAJNOSTNA LOGISTIKA IN ALTERNATIVNI VIRI ENERGIJE
Course title:	SUSTAINABLE LOGISTICS AND ALTERNATIVE ENERGY SOURCES

Študijski program in stopnja **Study programme and cycle**	**Študijska smer** **Study option**	**Letnik** **Year of study**	**Semester** **Semester**
LOGISTIKA SISTEMOV 2. stopnja		2.	3.
SYSTEM LOGISTICS 2nd degree		2.	3.

Vrsta predmeta (obvezni ali izbirni) / **Course type (compulsory or elective)**	IZBIRNI ELECTIVE
Univerzitetna koda predmeta / University course code:	MAG

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		19 e-V 21 a-V			65	5

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:	**Prerequisites for enrolling in the course or for performing study obligations:**
Ni pogojev.	None.

Vsebina (kratek pregled učnega načrta):	**Content (syllabus outline):**
• Trajnostna logistika ter cilji in ukrepi javne in gospodarske politike • Trajnostna potrošnja in proizvodnja • Alternativni viri in njihove prednosti • Zmanjševanje emisij z uporabo različnih alternativnih virov energije • Alternativni viri energije v logističnih procesih • Primerjava alternativnih tehnologij v logističnih procesih • Energetsko upravljanje v logistiki • Povečevanje energetske učinkovitosti logističnih procesov z uporabo alternativnih tehnologij in novih poslovnih modelov • Študije praktičnih primerov	• Sustainable logistics and public and economic policy objectives and measures • Sustainable consumption and production • Alternative resources and their benefits • Reducing emissions using a variety of alternative energy sources • Alternative energy sources in logistics processes • Comparison of alternative technologies in logistics processes • Energy Management in logistics • Increasing the energy efficiency of logistics processes using alternative technologies and new business models • Case studies

Temeljni literatura in viri / Reading materials:

E-gradivo predmeta.
Knez M., (2019) TRAJNOSTNA LOGISTIKA IN ALTERNATIVNI VIRI ENERGIJE. E-gradivo. 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.
Zbirka Zelena Slovenija (2009) Obnovljivi viri energije. Fitmedia d.o.o.
Makower J., 2009. Strategies for the Green Economy. McGrawHill, 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.
Clini C., Musu I., Lodovica Gullino M. (2008) Sustainable Development and Environmental Management. Experiences and Case Studies. Springer Science + BusinessMedia B.V.
Dodatna literatura: Izbrani članki ter nova izdana literatura s področja predmeta.

Cilji in kompetence:

Cilj tega predmeta je:

- poznavanje pomena trajnostnega delovanja in trajnostne logistike,
- poznavanje potencialnih alternativnih virov obnovljive energije in njihova integracija v logističnih procesih,
- poznavanje tehnologij, možnosti in načinov energijske pretvorbe ter rabe v logističnih procesih,
- poznavanje vplivov energetike na okolje,
- poznavanje novih poslovnih modelov in integracije alternativnih tehnologij,
- nadgraditi razumevanje postopkov in orodij za optimizacijo logističnih procesov v smislu vzpostavljanja trajnostnega razvoja,
- se usposobiti za samostojno znanstveno raziskovalno delo na tem področju,
- se usposobiti za predstavitev svojega raziskovalnega dela (članki, referati).

Objectives and competences:

The objective of the course is to:

- knowledge of the importance of sustainable operation and sustainable logistics,
- identification of potential alternative sources of renewable energy and their integration in logistics processes,
- knowledge of the technologies, possibilities and ways of energy conversion and use in logistics processes,
- knowing environmental impact of energy industry,
- knowledge of new business models and the integration of alternative technologies,
- enhance understanding of processes and tools to optimize the logistics processes in terms of creating sustainable development,
- qualify for independent scientific research work in this field,
- qualify for the presentation of their own research work (articles, papers).

Predvideni študijski rezultati:

Znanje in razumevanje:

- razumevanje energijske pretvorbe v naravi in njenega izkoriščanja,
- poznavanje tehnologije, naprav in opreme za izrabo alternativnih in obnovljivih virov energije,

Intended learning outcomes:

Knowledge and understanding:

- understanding the energy conversion in nature and its use,
- knowledge of technologies, devices and equipment for alternative and renewable energy use,

• razumevanje poslovanja logističnih in nelogističnih podjetij v moderni in trajnostno naravnani družbi, • razumevanje uporabe novih poslovnih modelov in integracije alternativnih tehnologij, • razumevanje pojmov s področja trajnostne logistike in trajnostnih oskrbovalnih verig, • razumevanje pomena ogljičnega odtisa ter načine za njegovo zmanjševanje. Prenesljive/ključne spretnosti in drugi atributi: • študenti se usposobijo za uporabo teoretičnega znanja v praktičnih primerih, • zmožnost generiranja novih idej, • zmožnost prilagajanja novim razmeram, • sposobnost kritične presoje različnih situacij.	• understanding operations of logistics and "nonlogistics" companies in modern and sustainable society, • understanding the use of new business models and the integration of alternative technologies, • understanding the concepts of sustainable logistics and sustainable supply chains, • understanding the importance of carbon footprint and ways of reducing. Transferable/Key skills and other attributes: • the ability to apply theoretical knowledge to professional practice, • the ability to generate new ideas, • the ability to adapt to the new situations and requirements, • the ability to critically evaluate different situations.

Metode poučevanja in učenja:	**Learning and teaching methods:**
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).	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:**
• Opravljene 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.
• Raziskovalno delo in seminarska naloga.	30%	• Research and course work.
• Delo, naloge in sodelovanje na vajah.	20%	• Work and cooperation on seminars.
• Pisni izpit.	50%	• Written examination.

Reference nosilca / Course coordinator's references:

1. 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].

2. OBRECHT, Matevž, KNEZ, Matjaž. Opportunities for transition to sustainable energy strategy in Slovenia. *Strategic management*, 2014, vol. 19, no. 3, str. 31-37. http://www.ef.uns.ac.rs/sm/archive/SM2014_3.pdf. [COBISS.SI-ID512586557].
3. 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].
4. 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. [COBISS.SI-ID 1024091228].
5. KNEZ, Matjaž, BAJOR, Péter, SEME, Sebastijan. Green logistics - a solar warehouse concept. *Logistics & sustainable transport*, ISSN 1854-3332. [Tiskana izd.], 01-03-11, vol. 2, iss. 2, 8 str.http://www.jlst.org/uploads/bajor,%20knez,%20seme_obdelano.pdf. [COBISS.SI-ID 512293181].
6. 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].
7. STERNAD, Marjan, KNEZ, Matjaž, ROSI, Bojan. Improving city transport with the objective to reduce CO[sub]2 emissions. *Transport problems*, 2010, vol. 5, iss. 4, str. 95-103. http://transportproblems.polsl.pl/pl/Archiwum/2010/zeszyt4/2010t5z4_12.pdf. [COBISS.SI-ID 512283197].
8. OBRECHT, Matevž, KNEZ, Matjaž. Policies and measures for promotion of alternative fuelled vehicles in Slovenia. V: SCHLIEPHAKE, Konrad (ur.), ROSI, Bojan (ur.), STERNAD, Marjan (ur.). *Transport research in a changing world : case studies from Slovenia and Germany = Verkehrsanalysen im wandelnden Raumbezug : Fallstudien aus Slowenien und Deutschland*, (Würzburger geographische Manuskripte, ISSN 0931-8623, 82). Würzburg: Geographisches Institut der Universität Würzburg, 2014, str. 46-56. [COBISS.SI-ID 512600893].
9. 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].
10. 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].
11. 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].