Predmet:	UPORABA OPTIMIZACIJSKIH METOD V LOGISTIKI
Course title:	APPLICATION OF OPTIMIZATION TECHNIQUES IN LOGISTICS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
GOSPODARSKA IN TEHNIŠKA LOGISTIKA 1.stopnja PROFESSIONAL HIGHER EDUCATION STUDY PROGRAMME ECONOMIC AND TECHNICAL LOGISTICS 1. degree		2.	3.

Vrsta predmeta / Course type | OBVEZNI

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
30 e-P 30 a-P		12 e-V 6 a-V	12 LV		150	8

Nosilec predmeta / Lecturer: | TOMAŽ KRAMBERGER

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisits:

Ni pogojev

None

Vsebina:

- Ponovitev osnov matričnega in procentnega računa.
- Razmerja, razdelilni račun, zmesi račun.
- Osnove obrestnega računa:
- navadni obrestni račun,
- obrestno obrestni račun,
- vloge in dvigi,
- posojila.
- Sistemi linearnih enačb in neenačb:
- Ponovitev reševanja sistemov linearnih enačb z več neznankami s pomočjo Gausove eliminacijske metode in matričnih enačb,
- reševanje sistemov linearnih neenačb z

Content (Syllabus outline):

- Revision of basics of matrix and interest calculations
- Basics of interest calculation types
- Systems of linear equations and inequasions: revision (solving linear equations using Gauss elimination method and matrix equations
- Solving linear inequasions using the graph method
- Convex sets, determining extreme points
- Linear programming:
- Problem formulation
- Solving problems using graphs
- Solving problems using LINGO software

- grafično metodo.
- Konveksne množice, določanje ekstremnih točk.
- Linearno programiranje:
- Formulacija problema,
- Reševanje na grafični način,
- Reševanje s programskim paketom LINGO.

Temeljni literatura in viri / Readings:

Kramberger, T, M, Kvantitavne metode v logistiki, Fakulteta za logistiko, Celje-Krško, 2008
Vadnal, A.: Linearno programiranje, Informator, Zagreb, 1977.
Waters. D.: Quantitative Methods for Business, Addison Wesley, Essex, 1997, ISBN: 0-201-403978,COBISS.SI-ID: 9076454.
Čižman, A.: Operacijske raziskave : teorija in uporaba v organizaciji, Kranj, Moderna organizacija, 2003,ISBN: 961-232-162-0, COBISS.SI-ID: 127813888

Cilji in kompetence:

Študenti:
Spoznajo in se naučijo osnov upravljanja logističnih sistemov spomočjo kvantitavnih metod,
- razumejo koncept operacijskih raziskav in razvijejo sposobnost reševanja problemov v logističnih sistemih z linearnim in celoštevilskim linearnim modelom,
- razvijejo sposobnost interpretacije dobljene rešitve,
- se naučijo na podlagi izbranega kriterija rešitev še izboljšati.

Objectives and competences:

Students:
- are farmiliarized with and study the basics for managing logistics systems using quantitative methods
- understand the concept of operational research and develop problem solving skills in logistics systems using linear and whole number linear models
- develop skills to interpret the gained results
learn how to improve results based on the chosen criteria

Predvideni študijski rezultati:

Znanje in razumevanje:

- študenti spoznajo vrednost uporabe razmerij pri reševanje problemov,
- študenti usvojijo osnovne pojme obrestnega računa,
- naučijo se uporabiti obrestni račun v konkretnih primerih, naučijo se izračunati satnje vlog na dan datum in naučijo se izdelati amortizacijski načrt za odplačilo posojila,
- študenti se naučijo reševati sisteme linearnih neenačb na grafični način,
- se naučijo osnov linearnega programiranja,
- uporabijo linearno programiranje za reševanje osnovnih logističnih problemov,
- študenti se naučijo uporabe programskega paketa LINGO za reševanje linearnih programov,

Intended learning outcomes:

Knowledge and understanding:
Students:
- learn about the value of relations when solving problems
- learn the basics of interest calculations
- Learn how to apply the interest calculation to practical cases and how to work out a depreciation plan
- Learn to solve systems of linear inequasions using graphs
- Learn the basics of linear programming
- Learn to use linear programming to solve basic logistics problems
- Learn to use LINGO software to solve linear programmes

Prenesljive/ključne spretnosti in drugi atributi:	Transferable/Key Skills and other attributes:
Študenti se usposobijo za uporabo teoretičnega znanja v praktičnih primerih, predvsem pri procesih, ki so jih spoznali pri predmetih Organizacija procesa oskrbne verige, Ekonomika v logistiki v prvem letniku…	Students learn to apply theoretical knowledge to practical situations, especially processes from the following modules: Organization of the Supply Chain Process, Economics in Logistics from year 1.

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).	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).
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-predavanj (e-vaje se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).	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-seminars 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:
Pisni izpit,	70%	Written examination
seminarska naloga.	30%	Seminar paper

Reference nosilca / Lecturer's references:

1. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. Priority constrained Chinese postman problem. *Logistics and sustainable transport*, 22-05-07, vol. 1, no 1, 15 str.
http://www.jlst.org/uploads/priority_constrained_chinese_postman_kramb.zer.pdf.

2. KRAMBERGER, Tomaž, ROSI, Bojan. Do managers have enough quality information for decision-making. *Organizacija (Kranj)*, sep.-okt. 2007, letn. 40, št. 5, str. 207-217.

3. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. A contribution to environmentally friendly winter road maintenance: : optimizing road de-icing. *Transp. res., Part D Transp. environ.*. [Print ed.], July 2008, vol. 13, iss. 5, str. 340-346. http://dx.doi.org/10.1016/j.trd.2008.03.007, doi: 10.1016/j.trd.2008.03.007.

4. KRAMBERGER, Tomaž, ŠTRUBELJ, Gregor, ŽEROVNIK, Janez. Chinese postman problem with priority nodes. *Fund. Computing Decis. Sci.*, 2009, vol. 34, no. 4, str. 233-264. http://fcds.cs.put.poznan.pl/FCDS2/ArticleDetails.aspx?articleId=218.

5. FOŠNER, Maja, KRAMBERGER, Tomaž. Logistics as a part of leisure and tourism industry. V: 15th Annual Conference European Council for Business Education, May 28-30, 2010, Lausanne, Switzerland. *"Co-operation and competition - in the leisure and service industries" : proceedings of the 15th Annual Conference European Council for Business Education, May 28-30, 2010, Lausanne, Switzerland*, (ECBE proceedings of the Annual Conference, 2010). Lausanne: European Council for Business Education: = ECBE, 2010, str. 70-78.