

UČNI NAČRT PREDMETA/COURSE SYLLABUS

Predmet:	KVANTITATIVNO MODELIRANJE V LOGISTIKI
Course title:	QUANTITATIVE MODELING IN LOGISTICS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
LOGISTIKA SISTEMOV 1. stopnje		2.	3.
SYSTEM LOGISTICS 1 st degree		2.	3.

Vrsta predmeta / Course type: OBVEZNI

Univerzitetna koda predmeta / University course code: UN

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		9 e-V 9 a-V	12 LV		150	8

Nosilec predmeta / Lecturer: TOMAŽ KRAMBERGER

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:

- Ponovitev osnov matričnega in procentnega računa.
- 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 grafično metodo.
- Konveksne množice, določanje ekstremnih točk.
- Linearno programiranje.
- Formulacija problema.
- Reševanje na grafični način.
- Reševanje s programskim paketom LINGO.
- Analiza občutljivosti rešitve.
- Osnove teorije zalog:
opredelitev zalog in stroškov, kvantitativni modeli naročanja.

Content (Syllabus outline):

- Revision of basics of matrix and interest calculations.
- Basics of interest calculation types.
- Systems of linear equations and inequations: revision of solving linear equations using Gaus's elimination method and matrix equations, solving systems of linear inequations using the graph method.
- Convex sets, determining extreme points.
- Linear programming.
- Problem formulation.
- Solving problems using graphs.
- Solving problems using LINGO software.
- Sensitivity analysis of the solution..
- Basic inventory theories: definition of inventories and costs, quantitative order models.

Temeljna literatura in viri / Readings:

E-gradivo predmeta.
 Meško, I. Optimizacija poslovanja. Ekonomsko-poslovna fakulteta, Maribor, 1997.
 Čížman, A.: Operacijske raziskave : teorija in uporaba v organizaciji, Kranj, Moderna organizacija, 2003.
 Winston, L.W.: Operation research, Applications and Algorithms, Duxbury Press, Belmont, California, 1994.

Izročki predavanj. www.fl.uni-mb.si.

KRAMBERGER, Tomaž. *Osnove modeliranja u logistici*. Subotica: [Ekonomski fakultet], 2015. 290 str., ilustr. ISBN 978-86-84819-98-9. [COBISS.SI-ID 512672317].

Cilji in kompetence:

Študenti:

- spoznajo in se naučijo osnov upravljanja logističnih sistemov spomočjo kvantitativnih 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 familiarized 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 the linear and whole number linear model,
- develop the skills to interpret the gained results,
- learn how to improve the solution based on the choosed criteria.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študenti

- osvojijo 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 lieaenega programiranja,
- uporabijo linearno programiranje za reševanje osnovnih logističnih problemov,
- študenti se naučijo uporabe programskega paketa LINGO za reševanje linearnih programov,
- se naučijo osnov upravljanja zalog,

Prenesljive/ključne spretnosti in drugi atributi:

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 logistici v prvem letniku.

Intended learning outcomes:

Knowledge and understanding:

Students:

- learn the basics of interest calculation,
- learn how to apply the interest calculation in practical cases, learn to calculate the status of deposits on a particular date and how to work out a depreciacion plan for paying the loan,
- 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,
- learn the basics of inventory management.

Transferable/Key Skills and other attributes:

Students learn to apply theoretical knowledge to practical examples, especially processes from the following modules: Organization of the supply chain process, Economics in logistics from year 1.

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"> ▪ Opravljene obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu. ▪ Pisni izpit, ▪ seminarska naloga. 	<ul style="list-style-type: none"> ▪ 70% ▪ 30% 	<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 / Lecturer's references:

<p>1. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. Priority constrained Chinese postman problem. <i>Logistics and sustainable transport</i>, 22-05-07, vol. 1, no 1, 15 str. http://www.jlst.org/uploads/priority_constrained_chinese_postman_kramb.zer.pdf.</p>
<p>2. KRAMBERGER, Tomaž, ROSI, Bojan. Do managers have enough quality information for decision-making. <i>Organizacija (Kranj)</i>, sep.-okt. 2007, letn. 40, št. 5, str. 207-217.</p>
<p>3. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. A contribution to environmentally friendly winter road maintenance: : optimizing road de-icing. <i>Transp. res., Part D Transp. environ.</i> [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.</p>
<p>4. KRAMBERGER, Tomaž, ŠTRUBELJ, Gregor, ŽEROVNIK, Janez. Chinese postman problem with priority nodes. <i>Fund. Computing Decis. Sci.</i>, 2009, vol. 34, no. 4, str. 233-264. http://fcds.cs.put.poznan.pl/FCDS2/ArticleDetails.aspx?articleId=218.</p>
<p>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.</p>