

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. degree			

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		12 e-V 6 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:

Prerequisites:

Ni pogojev

None

Vsebina:

Content (Syllabus outline):

- Ponovitev osnov matričnega in procentnega računa.
- Osno ve 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

- Revision of basics of matrix and interest calculations
- Basics of interest calculation types
- Systems of linear equations and inequations: revision (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
- Basic inventory theories:

LINGO.

- Analiza občutljivosti rešitve.
- Osnove teorije zalog:
- opredelitev zalog in stroškov,
- kvantitativni modeli naročanja.

- Definition of inventories and costs
- Quantitative order models

Temeljna literatura in viri / Readings:

Meško, I. Optimizacija poslovanja. Ekonomsko-poslovna fakulteta, Maribor, 1997.

Čižman, 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

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 chosen 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 linearnega 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.
- Prenosljive/ključne spretnosti in drugi atributi:

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 depreciation plan for paying the loan
- Learn to solve systems of linear inequations 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

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...

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-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).

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-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:
<ul style="list-style-type: none"> ▪ Pisni izpit, ▪ seminarska naloga. 	<ul style="list-style-type: none"> ▪ 70% ▪ 30% 	<ul style="list-style-type: none"> ▪ Written examination ▪ 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](https://doi.org/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.