

UČNI NAČRT PREDMETA / COURSE SYLLABUS

| | |
|---------------|---|
| 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 | | 2. | 3. |
| PROFESSIONAL HIGHER EDUCATION STUDY PROGRAMME ECONOMIC AND TECHNICAL LOGISTICS 1. degree | | | |

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:

Prerequisites:

Ni pogojev

None

Vsebina:

Content (Syllabus outline):

- 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

- Revision of basics of matrix and interest calculations
- Basics of interest calculation types
- Systems of linear equations and inequations: revision (solving linear equations using Gauss elimination method and matrix equations)
- Solving linear inequations 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.

Temeljna literatura in viri / Readings:

Kramberger, T, M, Kvantitativne 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 s pomočjo 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 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 reševanju 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 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

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 logistiki v prvem letniku...

Transferable/Key Skills and other attributes:

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:

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:

Pisni izpit,
seminarska naloga.

70%
30%

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.
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.