

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Sistemi za podporo odločanju
Course title: Decision Support Systems

| Študijski program in stopnja Study programme and level | Študijska smer Study field | Letnik Academic year | Semester Semester |
|--|-------------------------------|-------------------------|----------------------|
| Poslovna Informatika, magistrski študijski program druge stopnje | - | Prvi | Prvi |
| Business Informatics, second cycle Masters Study Programme | - | First | First |

Vrsta predmeta / Course type

Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

4-PI-MAG-SPO-2022-05-27

| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Klinične vaje work | Druge oblike študija | Samost. delo Individ. work | ECTS |
|------------------------|--------------------|------------------|-----------------------|----------------------|-------------------------------|------|
| 30 | - | 20 | - | - | 100 | 5 |

Nosilec predmeta / Lecturer: izr. prof. dr. Blaž Rodič

Jeziki / Languages:

Predavanja / Lectures: slovenski, angleški / Slovene, English
Vaje / Tutorial: slovenski, angleški / Slovene, English

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

Študent/študentka mora pred pristopom k izpitu imeti pozitivno ocenjene vaje in seminarsko nalogo.

Prerequisites:

Positively evaluated exercises and seminar paper are prerequisites for exam.

Vsebina:

- Uvod v predmet; namen študija predmeta, povezanost predmeta z drugimi predmeti, vsebina študija predmeta, študijska literatura;
- Podatek, informacija, znanje, vrste podatkov, lastnosti informacije;
- Komponente odločanja, faze odločitvenega procesa, modeliranje odločanja;
- Metode odločanje v negotovosti in s tveganjem,

Content (Syllabus outline):

- Introduction to the course; the purpose of the study course, the relationship of the object with other objects, the contents of the study course, literature;
- Data, information, knowledge, data types, attributes of information;
- Decision process components, phases of the decision process, decision modelling;

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| <ul style="list-style-type: none"> • Metode odločanja: odločitvena matrika, odločitvena drevesa, diagrami vpliva; • Sistemi za podporo odločanja, strukturirani in nestrukturirani podatkovni viri za poslovno odločanje, skupinsko odločanje, funkcije koristnosti • Oris simulacijskih metodologij (DES, SD; ABM; druge metode); • Zvezna simulacija in sistemska dinamika; pregled orodij; primeri; • Diskretna ali dogodkovno orientirana simulacija; pregled orodij; primeri • Praktični primeri odločitvenih modelov. | <ul style="list-style-type: none"> • Decision making process, decision making under uncertainty and with risk, • Decision methods: decision matrix, decision trees, diagrams of influence; • Systems for decision support, structured and unstructured data sources for business decision-making, group decision making, utility functions; • Outline of simulation methodologies (DES, SD; ABM; other methods); • Continuous simulation and system dynamics; overview of tools; examples; • Discrete or event-oriented simulation; overview of tools; examples; • Decision model examples. |
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Temeljni literatura in viri / Readings:

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| <ul style="list-style-type: none"> • Howard, R. A. and A. E. Abbas. Foundations of Decision Analysis, Prentice Hall, NY, 2016. • Sharda, R., Delen, D., Turban, E., Business Intelligence and Analytics: Systems for Decision Support, 10th Edition, Pearson, 2015. • Borschchev A. (2013) The Big Book of Simulation Modeling. Multimethod Modeling with AnyLogic 6, AnyLogic North America • Bohanec, M.: <i>Odločanje in modeli</i>, DMFA Založništvo, Ljubljana 2006. • Hammond, J.S., Keeney, R.L., Raiffa, H., <i>Pametne odločitve: praktični vodnik za sprejemanje boljših odločitev</i>, Gospodarski vestnik, Ljubljana, 2004. |
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Cilji in kompetence:

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| <p>Cilji: Glavni cilj predmeta je seznaniti slušatelje s področjem uporabe odločitvenih modelov ter dogodkovne simulacije in sistemske dinamike pri reševanju odločitvenih problemov</p> <p><i>Učna enota prispeva k razvoju naslednjih splošnih in predmetno specifičnih kompetenc:</i></p> <p><i>Splošne kompetence:</i></p> <ul style="list-style-type: none"> • Sposobnost fleksibilne uporabe znanja v praksi. • Uporaba uveljavljenih metodoloških pristopov za upravljanje sodobnih poslovnih sistemov. • Sposobnost analize in pretvorbe realnega poslovnega problema v |
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Objectives and competences:

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| <p>Objectives: Courses main objective is to introduce the application of decision models and discrete simulation and system dynamics at solving of the decision problems</p> <p><i>The instructional unit contributes to the development of the following general and subject-specific competences:</i></p> <p><i>General competences:</i></p> <ul style="list-style-type: none"> • The ability of flexible usage of knowledge in practice. • Usage of established methodological approaches for managing modern business systems. • The ability to analyze and transform a real business problem into a simplified business model. |
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obliki lažje predstavljivega poslovnega modela.

- Poglobljeno razumevanje delovanja organizacijskih sistemov.

Predmetno specifične kompetence:

- Obvladovanje metod izdelave večkriterijskih odločitvenih modelov.
- Uporaba modeliranja v odločitvenih procesih.
- Sposobnost izvajanja ali podpore pri sprejemanju odločitev v okviru negotovosti.
- Obvladovanje simulacijskih metod in orodij, v domeni zveznih kakor tudi dogodkovnih modelov za podporo odločanju.

- In-depth understanding of the functioning of organizational systems.

Subject-specific competences:

- Proficiency in methods for design of multi-criteria decision models;
- Decision process modelling skills;
- Ability to make or support decision making under uncertainty;
- Management and usage of simulation methods and tools, both discrete and continuous as decision support tools.

Predvideni študijski rezultati:

Študenti bodo zmožni:

- vrednotenja elementov odločitvenega procesa
- uporabe metod razvoja odločitvenih modelov
- razčlenitve dobrih in slabih strani obstoječih metod in tehnik za podporo odločitvam
- presojanja mesta in vloge sodobnih pripomočkov za podporo odločitvenim procesom
- uporabe simulacijskih modelov kot podporo odločanju

Intended learning outcomes:

- Students will be able to: evaluate the elements of the decision-making process
- use methods for development of decision models
- breakdown the strengths and weaknesses of existing methods and techniques to support decisions
- judge the place and role of modern tools to support decision-process
- use simulation models for decision support

Metode poučevanja in učenja:

- *predavanja* z aktivno udeležbo študentov (razlaga snovi, pogovori, vprašanja, primeri, reševanje problemov)
- *laboratorijske vaje* v povezavi s prakso (večkriterijsko odločanje, podpora odločanju)
- *individualno delo*; študij znanstvene in strokovne literature in priprava empirične seminarske naloge.

Learning and teaching methods:

- Lectures with the active participation of students (presentation, discussion, questions, problems, problem solving)
- Laboratory exercises (multi-criteria modelling, decision modelling)
- individual work: study of scientific and professional literature and development of empirical seminar work.

| Načini ocenjevanja: | Delež (v %) / Weight (in %) | Assessment: |
|--|--------------------------------|---|
| Način (pisni izpit, ustno izpraševanje, naloge, projekt): <ul style="list-style-type: none"> • pisni izpit • empirična seminarska naloga, poročila laboratorijskih vaj | 50 % 50 % | Type (examination, oral, coursework, project): <ul style="list-style-type: none"> • written exam • empirical seminar work, report on laboratory exercises |

Reference nosilca / Lecturer's references:

- RODIČ, Blaž. Industry 4.0 and the new simulation modelling paradigm. Organizacija : revija za management, informatiko in kadre, ISSN 1318-5454. [Tiskana izd.], aug. 2017, vol. 50, no. 3, str. 193-207, ilustr., doi: 10.1515/orga-2017-0017
- BRELIH, Marjan, RAJKOVIČ, Uroš, RUŽIČ, Tomaž, RODIČ, Blaž, KOZELJ, Daniel. Modelling decision knowledge for the evaluation of water management investment projects. Central European Journal of Operations Research, ISSN 1435-246X, 2018, vol. , iss. , str. <https://link.springer.com/content/pdf/10.1007%2Fs10100-018-0600-5.pdf>, doi: 10.1007/s10100-018-0600-5.
- KANDUČ, Tadej, RODIČ, Blaž. Optimisation of machine layout using a force generated graph algorithm and simulated annealing. International journal of simulation modelling, ISSN 1726-4529, 2016, vol. 15, no. 2, str. 275-287.
- RODIČ, Blaž, BAGGIA, Alenka. Dynamic airport ground crew scheduling using a heuristic scheduling algorithm. International journal of applied mathematics and informatics, ISSN 2074-1278, 2013, vol. 7, iss. 4, str. 153-163.
- RODIČ, Blaž. Mobile agents for distributed decision support systems. The International Scientific Journal of Management Information Systems, ISSN 1452-774X, 2011, vol. 6, no. 1, str. 20-27.
- RODIČ, Blaž, KLJAJIĆ, Miroljub. Accessing distributed data sources with mobile agents and XML. V: JAŠKOVÁ, Mária (ur.). ECON '05 : [selected research papers], (Research works proceedings, ISSN 0862-7908, Vol. 12, 2005). Ostrava: Technical University of Ostrava, Faculty of Economics. 2005, str. 280-287.
- RODIČ, Blaž, KLJAJIĆ, Miroljub. Integracija simulacijskih orodij v e-poslovni informacijski sistem. V: GRIČAR, Jože (ur.). Izboljšanje konkurenčnosti regije z e-poslovanjem, (Organizacija, ISSN 1318-5454, Letn. 37, 2004, št. 3). Kranj: Moderna organizacija. 2004, str. 162-167.
- ŠKRABA, Andrej, BAGGIA, Alenka, RODIČ, Blaž. Application of a group decision support system in the reform of study programmes. V: DONDON, Philippe (ur.). Recent advances in education and modern educational technologies, (Educational technologies series, 9). [S. l.: s. n.]. 2013, str. 128-134.
- RODIČ, Blaž. Issues of e-collaboration and knowledge management in media industries. V: LUGMAYR, Artur (ur.), et al. Information systems and management in media and entertainment industries, (International series on computer entertainment and media technology (Online), ISSN 2364-9488). Cham: Springer. cop. 2016.