

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
Predmet:		Izbrana poglavja iz teorije iger				
Course title:		Topics in game theory				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Magistrski študijski program Matematika		ni smeri		1 ali 2	prvi ali drugi	
Master's study programme Mathematics		none		1 or 2	first or second	
Vrsta predmeta / Course type				izbirni		
Univerzitetna koda predmeta / University course code:				M2523		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15	30			105	6
Nosilec predmeta / Lecturer:		prof. Matjaž Konvalinka, prof. Sergio Cabello Justo				
Jeziki / Languages:		Predavanja / Lectures: slovenski/Slovene, angleški/English				
		Vaje / Tutorial: slovenski/Slovene, angleški/English				
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Vsebina:				Content (Syllabus outline):		
Predavatelj izbere nekatere pomembne teme s področja teorije iger, kot so na primer: Bimatrične igre. Število ravnovesij, njihovo				The lecturer choose some important topics in game theory, for example: Bimatrix games. Number of equilibria, efficient methods for finding equilibria, stability.		

<p>učinkovito odkrivanje, stabilnost.</p> <p>Kombinatorne igre. Igre na grafih.</p> <p>Igre s ponavljanji.</p> <p>Pogajanja, dražbe.</p> <p>Uporabe teorije iger v družboslovju.</p> <p>Teorija odločanja. Teorija socialne izbire.</p> <p>Evolucijska teorija iger.</p> <p>Eksperimentalna teorija iger.</p> <p>Diferencialne igre.</p>	<p>Combinatorial games. Games on graphs.</p> <p>Repeated games.</p> <p>Bargaining, auctions.</p> <p>Applications of game theory in social sciences.</p> <p>Decision theory. Social choice theory.</p> <p>Evolutionary game theory.</p> <p>Experimental game theory.</p> <p>Differential games.</p>
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Temeljni literatura in viri / Readings:

<p>A. Fraenkel: Combinatorial Games, Electron. J. Combinatorics, DS2, zadnja dopolnitev, 2006.</p> <p>D. Fudenberg, J. Tirole: Game Theory, MIT Press, Cambridge MA, 1991.</p> <p>P. Morris: Introduction to Game Theory, Springer, New York, 1994.</p> <p>M. J. Osborne: An Introduction to Game Theory, Oxford University Press, Oxford, 2004.</p> <p>M. J. Osborne, A. Rubinstein: A Course in Game Theory, 10. natis, MIT Press, Cambridge MA, 2004.</p>

Cilji in kompetence:

<p>Študent podrobneje spozna eno ali več pomembnejših področij teorije iger. Pri tem spozna nekatere najnovejše rezultate z obravnavanega področja.</p>

Objectives and competences:

<p>The student gains a deeper knowledge of some areas of game theory, including recent results.</p>

Predvideni študijski rezultati:

<p>Znanje in razumevanje: Slušatelj natančneje spozna izbrano področje teorije iger. Seznan se z najnovejšimi rezultati tega področja in z njegovimi uporabami v praksi.</p>

Intended learning outcomes:

<p>Knowledge and understanding: The student gains a deeper understanding of the chosen area of game theory. He or she learns the newest results in the field and their applications.</p>

Uporaba: Modeliranje vsaj potencialno konfliktnih situacij in njihovo razreševanje s pomočjo formalnih metod.

Refleksija: Uporabe in pomanjkljivosti opisovanja in raziskovanja pojavov iz vsakdanjega življenja s pomočjo formalnih modelov.

Prenosljive spretnosti – niso vezane le na en predmet: Sposobnost natančnega matematičnega opisa in zavedanje njegovih pomanjkljivosti. Sposobnost samostojnega študija sodobne strokovne in izbrane znanstvene literature.

Application:

Modelling in situations with a potential for conflict, finding the solution using formal methods.

Reflection:

Applications and shortcomings of descriptions and study of everyday life with the help of formal models.

Transferable skills:

Ability to set up a rigorous mathematical framework and understand its shortcomings. Ability to study modern scientific papers and monographs independently.

Metode poučevanja in učenja:

predavanja, uporaba metod študija na daljavo, vaje, domače naloge, konzultacije, seminarske naloge

Learning and teaching methods:

Lectures, usage of distance learning techniques, exercises, homeworks, consultations, seminars

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):
samostojna seminarska naloga

pisni ali ustni izpit

Ocene: 5 (negativno), 6-10 (pozitivno) (po Statutu UL)

Delež (v %) /
Weight (in %)

50%
50%

Assessment:

Type (examination, oral, coursework, project):
seminar work

written or oral exam

Grading: 5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

Matjaž Konvalinka:

KONVALINKA, Matjaž, PAK, Igor. Geometry and complexity of O'Hara's algorithm. *Advances in applied mathematics*, ISSN 0196-8858, 2009, vol. 42, iss. 2, str. 157-175. [COBISS.SI-ID 15545945]

KONVALINKA, Matjaž, PAK, Igor. Triangulations of Cayley and Tutte polytopes. *Advances in mathematics*, ISSN 0001-8708, 2013, vol. 245, str. 1-33. [COBISS.SI-ID 16706905]

DOLŽAN, David, KONVALINKA, Matjaž, OBLAK, Polona. Diameters of connected components of commuting graphs. *The electronic journal of linear algebra*, ISSN 1081-3810, 2013, vol. 26, str. 433-445. [COBISS.SI-ID 16707161]

Sergio Cabello:

CABELLO, Sergio, DÍAZ-BÁÑEZ, José Miguel, LANGERMAN, Stefan, SEARA, Carlos, VENTURA, Inma. Facility location problems in the plane based on reverse nearest neighbor queries. *European journal of operational research*, ISSN 0377-2217. [Print ed.], 2010, vol. 202, iss. 1, str. 99-106. [COBISS.SI-ID 15160921]

CABELLO, Sergio, JAKOVAC, Marko. On the b-chromatic number of regular graphs. *Discrete applied mathematics*, ISSN 0166-218X. [Print ed.], 2011, vol. 159, iss. 13, str. 1303-1310. [COBISS.SI-ID 15914329]

CABELLO, Sergio, MOHAR, Bojan. Crossing number and weighted crossing number of near-planar graphs. *Algorithmica*, ISSN 0178-4617, 2011, vol. 60, no. 3, str. 484-504. [COBISS.SI-ID 15261785]