UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Rieszovi prostori v matematični ekonomiji
Course title:	Riesz spaces in mathematical economics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Magistrski študijski program Finančna matematika	ni smeri	1 ali 2	prvi ali drugi
Master's study programme Financial Mathematics	none	1 or 2	first or second

Vrsta predmeta / Course type	izbirni

Univerzitetna koda predmeta / University course code:	M2529

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:	Marko Kandić, prof. Roman Drnovšek

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):

Arrow-Debreujev model za izmenjalne ekonomije s končno mnogo dobrinami in porabniki. Kakutanijev izrek o negibni točki. Walrasovo ravnovesje v neoklasični izmenjalni ekonomiji. Izreka o blagostanju. Rieszovi prostori. Linearni funkcionali in linearni operatorji. Rieszovi prostori dobrin in cen. Model izmenjalne ekonomije z neskočnorazsežnim prostorom dobrin in števno mnogo porabniki.	The Arrow-Debreu model for exchange economies with a finite number of commodities and consumers.Kakutani fixed-point theorem. A Walras equilibrium in a neoclassical exchange economy.Welfare theorems. Riesz spaces. Linear functionals and linear operators.Riesz spaces of commodities and prices.Model for exchange economy with infinitedimensional space of commodities and countably many consumers.

Temeljni literatura in viri / Readings:

C. D. Aliprantis, D. J. Brown, O. Burkinshaw: Existence and optimality of competitive equilibria, Springer-Verlag, Berlin, 1990.

C. D. Aliprantis: Problems in equilibrium theory, Springer-Verlag, Berlin, 1996.

C. D. Aliprantis, O. Burkinshaw: Locally solid Riesz spaces with applications to economics, Mathematical Surveys and Monographs 105, American Mathematical Society, Providence, RI, 2003.

Cilji in kompetence:

Objectives and competences:

Študent spozna uporabo teorije Rieszovih prostorov v matematični ekonomiji. Pri tem se seznani z nekaterimi modeli za izmenjalne ekonomije.	Students learn about the application of the theory of Riesz spaces in mathematical economics. They get acquainted with some models of exchange economies.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje: Poznavanje in razumevanje osnovnih pojmov teorije Rieszovih prostorov. Sposobnost njene uporabe v matematični ekonomiji.	Knowledge and understanding: Knowledge and understanding of the basic concepts of the theory Riesz spaces. The ability of its use in mathematical economics.

Uporaba:	Application:
Uporaba teorije Rieszovih prostorov na modelih za izmenjalne ekonomije.	Using the theory of Riesz spaces on models of exchange economies.
Refleksija:	Reflection:
Razumevanje teorije na podlagi primerov in uporabe.	Understanding of the theory and the ability to apply it to concrete examples.
Prenosljive spretnosti – niso vezane le na en predmet:	Transferable skills:
Identifikacija in reševanje problemov.	Identifying and solving problems.Formulation of nonmathematical problems in mathematical language.Ability to use domestic and foreign literature.
Formulacija nematematičnih problemov v matematičnem jeziku.	
Spretnost uporabe domače in tuje literature.	

Metode poučevanja in učenja:

Learning and teaching methods:

predavanja, vaje, domače naloge, konzultacije, seminarske naloge	Lectures, exercises, homeworks, consultations, seminars

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
domače naloge izpit		homeworks exam
Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)	20% 80%	Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

Roman Drnovšek:

– DRNOVŠEK, Roman. Triangularizing semigroups of positive operators on an atomic normed Riesz

space. Proceedings of the Edinburgh Mathematical Society, ISSN 0013-0915, 2000, let. 43, št. 1, str. 43-55 [COBISS.SI-ID 9480281]

– DRNOVŠEK, Roman. On positive unipotent operators on Banach lattices. Proceedings of the American Mathematical Society, ISSN 0002-9939, 2007, vol. 135, no. 12, str. 3833-3836 [COBISS.SI-ID 14382937]

– DRNOVŠEK, Roman. An infinite-dimensional generalization of Zenger's lemma. Journal of mathematical analysis and applications, ISSN 0022-247X. [Print ed.], 2012, vol. 388, iss. 2, str. 1233-1238 [COBISS.SI-ID 16214617]

– KANDIĆ, Marko, VAVPETIČ, Aleš. The countable sup property for lattices of continuous functions. Journal of mathematical analysis and applications. [Print ed.]. Sep. 2018, vol. 465, iss. 1, str. 588-603. ISSN 0022-247X. [COBISS.SI-ID 18406489] [COBISS.SI-ID 18406489]

– DRNOVŠEK, Roman, KANDIĆ, Marko. Positive operators as commutators of positive operators. Studia Mathematica. 2019, tom 245, str. 185-200. ISSN 0039-3223. [COBISS.SI-ID 18407769] [COBISS.SI-ID 18407769]

Marko Kandić:

– KANDIĆ, Marko. Sets of matrices with singleton spectra generated by positive matrices, Linear Algebra and its Applications. ISSN 0024-3795. - Vol. 496 (2016), str. 463-474. [COBISS.SI-ID 17602137]

– KANDIĆ, Marko, VAVPETIČ, Aleš. The countable sup property for lattices of continuous functions. Journal of mathematical analysis and applications. [Print ed.]. Sep. 2018, vol. 465, iss. 1, str. 588-603. ISSN 0022-247X. [COBISS.SI-ID 18406489] [COBISS.SI-ID 18406489]

– DRNOVŠEK, Roman, KANDIĆ, Marko. Positive operators as commutators of positive operators. Studia Mathematica. 2019, tom 245, str. 185-200. ISSN 0039-3223. [COBISS.SI-ID 18407769] [COBISS.SI-ID 18407769]