

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
Predmet:		Urejenostne algebrske strukture				
Course title:		Ordered algebraic structures				
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:				M2217		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		30			105	6
Nosilec predmeta / Lecturer:		prof. Boris Lavrič, prof. Jakob Cimprič, prof. Karin Cvetko Vah				
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):		
Delno urejene množice. Modulske mreže. Distributivne mreže in njihove upodobitve. Booleove algebre in njihove upodobitve.				Partially ordered sets. Modular lattices. Distributive lattices and their representations. Boolean algebras and their representations.		

<p>Delno urejene grupe in vektorski prostori. Konveksne podgrupe. Homomorfizmi. Arhimedske in Dedekindovo polne grupe. Linearno urejene grupe. Delno urejeni kolobarji. Ureditve polja ulomkov. Formalno realna polja. Realno zaprta polja. Arhimedske ureditve. Ureditve in valuacije.</p>	<p>Partially ordered groups and vector spaces. Convex subgroups. Homomorphisms. Archimedean and Dedekind complete groups. Linearly ordered groups. Partially ordered rings. Orderings on the field of fractions. Formally real fields. Real closed fields. Archimedean orderings. Orderings and valuations.</p>
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Temeljni literatura in viri / Readings:

<p>G. Birkhoff: Lattice Theory, 3rd edition, AMS, Providence, 2006. T.S. Blyth: Lattices and Ordered Algebraic Structures, Springer, 2005. L. Fuchs: Partially Ordered Algebraic Systems, Pergamon Press, London, 1963. A. M. W. Glass: Partially Ordered Groups, World Scientific, River Edge, 1999. B. Lavrič: Delno urejene grupe in delno urejeni kolobarji, DMFA-založništvo, Ljubljana, 1993. B. Lavrič: Delno urejeni vektorski prostori, DMFA-založništvo, Ljubljana, 1995.</p>
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Cilji in kompetence:

<p>Študent spozna osnovne pojme teorije urejenostnih algebrskih struktur.</p>

Objectives and competences:

<p>The student learns the basics of the theory of ordered algebraic structures.</p>

Predvideni študijski rezultati:

<p>Znanje in razumevanje: Razumevanje osnovnih pojmov in izrekov teorije urejenostnih algebrskih struktur ter njihove vloge na nekaterih drugih področjih.</p> <p>Uporaba: V drugih vejah matematike.</p> <p>Refleksija: Razumevanje teorije na podlagi primerov in uporabe.</p> <p>Prenosljive spretnosti – niso vezane le na en predmet:</p>
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Intended learning outcomes:

<p>Knowledge and understanding: Understanding of basic concepts and theorems of the theory of ordered algebraic structures, and their role in some other areas.</p> <p>Application: In other mathematical areas.</p> <p>Reflection: Understanding the theory on the basis of examples and applications.</p>
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Formulacija in reševanje problemov z abstraktnimi metodami.

Transferable skills:
Formulation and solution of problems using abstract methods.

Metode poučevanja in učenja:

Predavanja, vaje, domače naloge, konzultacije.

Learning and teaching methods:

Lectures, exercises, homeworks, consultations.

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt): domače naloge		Type (examination, oral, coursework, project): homework assignment
ustni izpit		oral exam
Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)	50% 50%	Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

Jakob Cimprič:

- CIMPRIČ, Jaka. Free skew fields have many [ast]-orderings. Journal of algebra, ISSN 0021-8693, 2004, vol. 280, no. 1, str. 20-28 [COBISS.SI-ID 13210201]
- CIMPRIČ, Jaka, KLEP, Igor. Generalized orderings and rings of fractions. Algebra universalis, ISSN 0002-5240, 2006, vol. 55, no. 1, str. 93-109 [COBISS.SI-ID 13966937]
- CIMPRIČ, Jaka. A representation theorem for archimedean quadratic modules on [star]-rings. Canadian mathematical bulletin, ISSN 0008-4395, 2009, vol. 52, št. 1, str. 39-52 [COBISS.SI-ID 15084633]

Karin Cvetko Vah:

- CVETKO-VAH, Karin. Internal decompositions of skew lattices. Communications in algebra, ISSN

0092-7872, 2007, vol. 35, no. 1, str. 243-247 [COBISS.SI-ID 14223193]

– CVETKO-VAH, Karin. On strongly symmetric skew lattices. *Algebra universalis*, ISSN 0002-5240, 2011, vol. 66, no. 1-2, str. 99-113 [COBISS.SI-ID 16219993]

– BAUER, Andrej, CVETKO-VAH, Karin. Stone duality for skew Boolean algebras with intersections. *Houston journal of mathematics*, ISSN 0362-1588, 2013, vol. 39, no. 1, str. 73-109 [COBISS.SI-ID 16620377]

Boris Lavrič:

– LAVRIČ, Boris. Coherent Archimedean f-rings. *Communications in algebra*, ISSN 0092-7872, 2000, let. 28, št. 2, str. 1091-1096 [COBISS.SI-ID 9502041]

– LAVRIČ, Boris. Delno urejene grupe in delno urejeni kolobarji, (Podiplomski seminar iz matematike, 21). Ljubljana: Inštitut za matematiko, fiziko in mehaniko: Fakulteta za naravoslovje in tehnologijo: Društvo matematikov, fizikov in astronomov Slovenije, 1993. 134 str. ISBN 961-212-010-2 [COBISS.SI-ID 36205056]

– LAVRIČ, Boris. Delno urejeni vektorski prostori, (Podiplomski seminar iz matematike, 22). Ljubljana: Društvo matematikov, fizikov in astronomov Slovenije, 1995. 152 str. ISBN 961-212-049-8 [COBISS.SI-ID 53745152]