



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Verižni ulomki
Course title:	Continued Fractions

Študijski program in stopnja	Študijska smer	Letnik	Semester
Study programme and level	Study field	Academic year	Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	3. ali/or 4.	6. ali/or 8.
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

Predavanja	Seminar	Sem. vaje	Lab. vaje	Teren. vaje	Samost. delo	ECTS
Lectures	Seminar	Tutorial	Laboratory work	Field work	Individ. work	
30		15			45	3

Nosilec predmeta / Lecturer:

Daniel EREMITA

Jeziki /

Predavanja / Lectures:

slovenski/Slovene

Languages:

Vaje / Tutorial:

slovenski/Slovene

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

Prerequisites:

Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno.

Each of the mentioned assessments must be assessed with a passing grade.

Pozitivna ocena pri pisnem izpitu je pogoj za pristop k ustnemu izpitu.

Passing grade of written exam is required to take the oral exam.

Vsebina:

- Končni verižni ulomki
- Neskončni verižni ulomki
- Periodični verižni ulomki
- Diofantska aproksimacija
- Pellova enačba
- Faktorizacija z uporabo verižnih ulomkov
- Fermatov izrek o vsotah dveh kvadratov

Content (Syllabus outline):

- Finite continued fractions
- Infinite continued fractions
- Periodic continued fractions
- Diophantine approximation
- Pell's equation
- Factoring using continued fractions
- Fermat's theorem on sums of squares

Temeljni literatura in viri / Readings:

- Burton, D. M.: *Elementary Number Theory*, 7th ed., McGraw-Hill, New York, 2011
- Rosen, K. H.: *Elementary Number Theory and its applications*, 5th ed., Pearson/Addison Wesley, Boston, 2005
- Grasselli, J.: *Diofantski približki*, DMFA, Ljubljana 1992
- Grasselli, J.: *Elementarna teorija števil*, Ljubljana: DMFA, 2009.

Dodatna literatura / Additional Readings:

- Rockett, A. M., Szűsz, P.: *Continued Fractions*, World Scientific Publishing Co. Pte. Ltd., Singapore, 1992

Cilji in kompetence:

Razumevanje osnovnih konceptov in rezultatov klasične teorije navadnih verižnih ulomkov.

Objectives and competences:

Understanding basic concepts and results of classical theory of simple continued fractions.

Predvideni študijski rezultati:

Znanje in razumevanje:

- konceptov in rezultatov klasične teorije navadnih verižnih ulomkov
- nekaterih aplikacij verižnih ulomkov

Intended learning outcomes:

Knowledge and understanding:

- concepts and results of classical theory of simple continued fractions
- some applications of continued fractions.

Prenesljive/ključne spretnosti in drugi atributi: • pridobljena znanja se dopolnjujejo z znanji iz drugih področij teorije števil in z znanji s področja algebre, kombinatorike, analize, računalništva, ...	Transferable/Key Skills and other attributes: • the obtained knowledge supplements with the knowledge of other fields of number theory and also with the knowledge of algebra, combinatorics, analysis, computer science, ...
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Metode poučevanja in učenja:

• Predavanja • Seminarske vaje • Individualno delo
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Learning and teaching methods:

• Lectures • Tutorial • Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Pisni izpit Ustni izpit		Written exam Oral exam
	50% 50%	

Opombe:

Pisni izpit se lahko nadomesti s kolokviji v enakem deležu 50%.

Comments:

Written exam can be replaced by written midterm examination in the weight of 50%.

Reference nosilca / Lecturer's references:

1. EREMITA, Daniel. Biderivations and commuting linear maps on current Lie algebras. <i>Journal of Lie theory</i> . 2021, vol. 31, no. 1, str. 119-126. ISSN 0949-5932.[COBISS.SI-ID 100444419] 2. BENKOVIČ, Dominik, EREMITA, Daniel. Generalized derivations of current Lie algebras. <i>Communications in algebra</i> . 2024, vol. 52, iss. 11, str. 4603-4611. ISSN 0092-7872. [COBISS.SI-ID 200554755] 3. EREMITA, Daniel. Dhara, B. (6-BELDC-M); Ghosh, S. (6-JDVP); Sandhu, G. S. (6-PMNC-M): On Lie ideals satisfying certain differential identities in prime rings. (English summary). - Extracta Math.

38 (2023), no. 1, 67–84. *MathSciNet : Mathematical Reviews on the Web*. [Spletna izd.]. 2024, 1 spletni vir (mr4608757). ISSN 2167-5163. [COBISS.SI-ID [200562435](#)]

4. EREMITA, Daniel. Krempa, Jan (PL-WASW-IM): On nil algebras and a problem of Passman concerning nilpotent free algebras. (English summary). - Algebra and coding theory, 197-204, Contemp. Math., 785, Amer. Math. Soc., [Providence], RI, [2023], ©2023. *MathSciNet : Mathematical Reviews on the Web*. [Spletna izd.]. 2024, 1 spletni vir (mr4586441). ISSN 2167-5163. [COBISS.SI-ID [215992579](#)]

5. EREMITA, Daniel. Tiwari, S. K. (6-IITPT-DM): Product and commuting generalized derivations in prime rings. (English summary). - Rend. Circ. Mat. Palermo (2) 72 (2023), no. 2, 1377–1397. *MathSciNet : Mathematical Reviews on the Web*. [Spletna izd.]. 2024, 1 spletni vir (mr4559105). ISSN 2167-5163. [COBISS.SI-ID [200564227](#)]