



Univerza v Mariboru



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Fakulteta za naravoslovje in
matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Izbrana poglavja iz algebre
Course title:	Selected topics from algebra

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika 2. stopnja		1. ali 2.	1. ali 3.
Mathematics 2 nd degree		1. or 2.	1. or 3.

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45		30			135	7

Nosilec predmeta / Lecturer:

Jeziki / Languages:	Predavanja / Lectures:	SLOVENSKO/SLOVENE
	Vaje / Tutorial:	SLOVENSKO/SLOVENE

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

Poznavanje teorije grup.

Prerequisites:

Knowledge of group theory.

Vsebina:

Content (Syllabus outline):

Kategorije: osnovni pojmi in primeri.

Kolobarji: osnovni pojmi in primeri; glavni kolobarji, faktorizacija; posebni razredi kolobarjev.

Moduli: osnovni pojmi in primeri; posebni razredi modulov.

Polja: končne razširitve, algebraične razširitve; razpadna polja, algebraično zaprta polja; konstruktibilna števila; osnove Galoisjeve teorije.

Categories: basic concepts and examples.

Rings: basic concepts and examples; principal ideal domains, factorization; special classes of rings.

Modules: basic concepts and examples; special classes of modules.

Fields: finite extensions, algebraic extensions; splitting fields, algebraically closed fields; constructible numbers; fundamentals of Galois theory.

Temeljni literatura in viri / Readings:

W. Y. Gilbert, W. K. Nicholson, Modern algebra with applications, Chichester: Wiley, 2004.

I. N. Herstein, Topics in algebra, Xerox, 1975.

T. W. Hungerford, Algebra, Springer-Verlag, 1980.

S. Lang, Undergraduate algebra, Springer, 2005.

I. Vidav, Algebra, DMFA, 1980.

Cilji in kompetence:

Poglobiti znanje nekaterih osnovnih področij abstraktne algebre.

Objectives and competences:

Deepening the knowledge of some fundamental areas of abstract algebra..

Predvideni študijski rezultati:

Znanje in razumevanje:

- Teorije kolobarjev in modulov
- Teorije polj

Prenesljive/ključne spretnosti in drugi atributi:

- Algebraične strukture so pojavljajo na vseh matematičnih področjih, zato mora biti profesionalni matematik z njimi poglobi znanje.

Intended learning outcomes:

Knowledge and Understanding:

- Ring and module theory
- Field theory

Transferable/Key Skills and other attributes:

- Algebraic structures appear in all mathematical areas, and therefore their knowledge is necessary for every professional mathematician.

Metode poučevanja in učenja:

Learning and teaching methods:

- Predavanja
- Seminarske vaje

- Lectures
- Tutorial

Delež (v %) /

Načini ocenjevanja:

Weight (in %) **Assessment:**

Pisni izpit		Written exam
	100%	

Reference nosilca / Lecturer's references:

1. BAHTURIN, Jurij Aleksandrovič, BREŠAR, Matej, ŠPENKO, Špela. Lie superautomorphisms on associative algebras, II. *Algebr. represent. theory*, 2012, vol. 15, no 3, str. 507-525. <http://dx.doi.org/10.1007/s10468-010-9254-2>. [COBISS.SI-ID [16299353](#)]
2. BIERWIRTH, Hannes, BREŠAR, Matej, GRAŠIČ, Mateja. On maps determined by zero products. *Commun. Algebra*, 2012, vol. 40, no. 6, str. 2081-2090. <http://dx.doi.org/10.1080/00927872.2011.570833>. [COBISS.SI-ID [16315481](#)]
3. ALAMINOS, J., BREŠAR, Matej, ŠEMRL, Peter, VILLENA, A. R. A note on spectrum-preserving maps. *J. math. anal. appl.*, 2012, vol. 387, iss. 2, str. 595-603. <http://dx.doi.org/10.1016/j.jmaa.2011.09.024>. [COBISS.SI-ID [16067673](#)]
4. BREŠAR, Matej, ŠPENKO, Špela. Determining elements in Banach algebras through spectral properties. *J. math. anal. appl.*, 2012, vol. 393, iss. 1, str. 144-150. <http://dx.doi.org/10.1016/j.jmaa.2012.03.058>. [COBISS.SI-ID [16287833](#)]
5. BREŠAR, Matej. Multiplication algebra and maps determined by zero products. *Linear multilinear algebra*, str. 763-768. <http://dx.doi.org/10.1080/03081087.2011.564580>. [COBISS.SI-ID [16310105](#)]