



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
Izobraževalna matematika – enopredmetna, 2. Stopnja		1. ali 2.	1. ali 3.
Educational mathematics - single-major, 2nd 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		105	6

Nosilec predmeta / Lecturer:

Matej BREŠAR

**Jeziki /
Languages:**

**Predavanja /
Lectures:** SLOVENSKO/SLOVENE
Vaje / Tutorial: SLOVENSKO/SLOVENE

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

Jih ni.

Prerequisites:

None.

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; tenzorski produkt modulov in algeber. 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; tensor products of modules and algebras. Fields: finite extensions, algebraic extensions; splitting fields, algebraically closed fields; constructible numbers; fundamentals of Galois theory.
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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:

- Predavanja
- Seminarske vaje

Learning and teaching methods:

- Lectures
- Tutorial

Načini ocenjevanja:

Assessment:

Pisni izpit	100%	Written exam
Reference nosilca / Lecturer's references:		
1. BAHTURIN, Jurij Aleksandrovič, BREŠAR, Matej, ŠPENKO, Špela. Lie superautomorphisms on associative algebras, II. <i>Algebr. represent. theory</i>, 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. <i>Commun. Algebra</i>, 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. <i>J. math. anal. appl.</i>, 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. <i>J. math. anal. appl.</i>, 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. <i>Linear multilinear algebra</i>, str. 763-768. http://dx.doi.org/10.1080/03081087.2011.564580. [COBISS.SI-ID 16310105]		
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