



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Algebra II
Course title:	Algebra II

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika		3.	6.
Mathematics		3.	6.

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
30		15			75	4

Nosilec predmeta / Lecturer:

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

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

Jih ni.

Prerequisites:

There are none.

Vsebina:

Kolobarji: definicija, osnovne lastnosti in primeri.
Homomorfizmi kolobarjev. Polje ulomkov. Ideali in kvocientni kolobarji.
Kolobarji polinomov. Deljivost v komutativnih kolobarjih. Evklidski kolobarji.
Komutativni obsegi (polja): algebraični in transcendentni elementi, končne razširitve, konstrukcije z ravnilom in šestilom, razpadna polja in algebraično zaprta polja, končna polja.

Content (Syllabus outline):

Rings: definition, basic properties and examples.
Ring homomorphisms. Field of fractions. Ideals and quotient rings.
Polynomial rings. Divisibility in commutative rings. Euclidian rings.
Fields: algebraic and transcendental elements, finite extensions, straightedge and compass constructions, splitting fields and algebraically closed fields, finite fields.

Temeljni literatura in viri / Readings:

I. Vidav: Algebra, DMFA-založništvo, Ljubljana, 2003.

D. S. Dummit, R. M. Foote, Abstract Algebra, Prentice-Hall International, Inc., 1991.

J. Gallian: Contemporary Abstract Algebra, Brooks/Cole, 2013.

I. N. Herstein: Abstract Algebra, John Wiley & Sons, 1999.

S. Lang: Undergraduate Algebra, Springer, 2005.

L. H. Rowen: Algebra. Groups, rings, and fields. A K Peters, 1994.

Cilji in kompetence:

Spoznati temeljne algebraine pojme in abstraktni način razmišljanja.

Objectives and competences:

Learning fundamental algebraic concepts and abstract way of thinking.

Predvideni študijski rezultati:

Znanje in razumevanje:

- Razumevanje osnovnih algebrainih principov
- Poznavanje osnov teorije kolobarjev in polj

Prenesljive/ključne spretnosti in drugi atributi:

- Pridobljena znanja so podlaga za več predmetov na drugi stopnji.

Intended learning outcomes:

Knowledge and Understanding:

- Understanding fundamental principles in algebra.
- Knowledge of basic theory of rings and fields

Transferable/Key Skills and other attributes:

The obtained knowledge is a basis for various courses at the second cycle level.

Metode poučevanja in učenja:

- Predavanja
- Teoretične vaje

Learning and teaching methods:

- Lectures
- Theoretical exercises

Načini ocenjevanja:

Assessment:

Izpit:

Pisni izpit – problemi,
Ustni izpit – teorija.

Delež (v %) /
Weight (in %)

50%

50%

Exams:

Written exam – problems,
Oral exam – theory.

Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.

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

Opravljen pisni izpit – problemi je pogoj za pristop k ustnemu izpitu – teorija.		Passing grade of written exam – problems is required to take the oral exam – theory.
Reference nosilca / Lecturer's references:		
<p>1. BREŠAR, Matej. Derivations of tensor products of nonassociative algebras. Linear Algebra and its Applications, ISSN 0024-3795. [Print ed.], 2017, vol. 530, str. 244-252. http://doi.org/10.1016/j.laa.2017.05.022, doi: 10.1016/j.laa.2017.05.022.</p> <p>2. BREŠAR, Matej. Functional identities and rings of quotients. Algebras and representation theory, ISSN 1386-923X, 2016, vol. 19, iss. 6, str. 1437-1450. http://dx.doi.org/10.1007/s10468-016-9625-4.</p> <p>3. BREŠAR, Matej. Finite dimensional zero product determined algebras are generated by idempotents. Expositiones mathematicae, ISSN 0723-0869, 2016, vol. 34, iss. 1, str. 130-143. http://dx.doi.org/10.1016/j.exmath.2015.07.002.</p> <p>4. BREŠAR, Matej. Functional identities on tensor products of algebras. Journal of algebra, ISSN 0021-8693, 2016, vol. 455, str. 108-136. http://dx.doi.org/10.1016/j.jalgebra.2016.02.012.</p> <p>5. BREŠAR, Matej. Jordan $\{g,h\}$-derivations on tensor products of algebras. Linear and Multilinear Algebra, ISSN 0308-1087, 2016, vol. 64, no. 11, str. 2199-2207. http://dx.doi.org/10.1080/03081087.2016.1145184.</p>		