

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18)						
Predmet:		Algebra 2				
Course title:		Algebra 2				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year		Semester Semester
Univerzitetni študijski program Matematika		ni smeri		2		prvi in drugi
First cycle academic study programme Mathematics		none		2		first and second
Vrsta predmeta / Course type				obvezni / compulsory		
Univerzitetna koda predmeta / University course code:				M0263		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
60		60			180	10
Nosilec predmeta / Lecturer:		prof. dr. Matej Brešar				
Jeziki / Languages:		Predavanja / Lectures:		slovenski / Slovene		
		Vaje / Tutorial:		slovenski / Slovene		
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Vpis v letnik študija.				Enrolment in the programme.		
Opravljen predmet Algebra 1.				Completed course Algebra 1.		
Vsebina:				Content (Syllabus outline):		

<p>Grupe: dvojiške operacije, polgrupe, monoidi in grupe: osnovne lastnosti in primeri, podgrupe in odseki, homomorfizmi, edinke in kvocientne grupe, uvod v strukturno teorijo grup, končne Abelove grupe.</p> <p>Kolobarji: osnovne lastnosti in primeri, homomorfizmi, ideali in kvocientni kolobarji, polje ulomkov, glavni kolobarji, kolobarji polinomov ene in več spremenljivk.</p> <p>Komutativni obsegi (polja): končne razširitve, algebraični in transcendentni elementi ter razširitve, konstruktibilna števila, razpadna polja, algebraično zaprta polja, končna polja.</p>	<p>Groups: binary operations, semigroups, monoids, and groups: basic properties and examples, subgroups and cosets, homomorphisms, normal subgroups and quotient groups, introduction to the structure theory of groups, finite abelian groups.</p> <p>Rings: basic properties and examples, homomorphisms, ideals and quotients rings, field of fractions, principal ideal domains, rings of polynomials in one and several variables.</p> <p>Fields: finite extensions, algebraic and transcendental elements and extensions, constructible numbers, splitting fields, algebraically closed fields, finite fields.</p>
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Temeljni literatura in viri / Readings:

<p>Vidav: Algebra, DMFA-založništvo, Ljubljana, 2003.</p> <p>J. Gallian: Contemporary Abstract Algebra, Brooks/Cole, 2013.</p> <p>I. N. Herstein: Abstract Algebra, John Wiley & Sons, 1999.</p> <p>S. Lang: Undergraduate Algebra, Springer, 2005.</p> <p>L. H. Rowen: Algebra. Groups, rings, and fields. A K Peters, 1994.</p>

Cilji in kompetence:

<p>Študent spozna osnovne pojme iz algebre, ki jih potrebuje pri nadaljnem študiju matematike. Ob tem se uči abstraktnega načina razmišljanja in se spoznava s strogim matematičnim jezikom. Na vajah si pridobiva praktično, delovno znanje z obravnavanega področja.</p>
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Objectives and competences:

<p>Students learn basic concepts of algebra that are needed for further study of mathematics. At the same time they learn abstract thinking and rigorous mathematical language. In the tutorial they acquire practical, working knowledge of the area.</p>
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Predvideni študijski rezultati:

Znanje in razumevanje: Poznavanje in razumevanje osnovnih algebraičnih pojmov.

Uporaba: Uporaba teorije pri reševanju problemov.

Refleksija: Razumevanje teorije na podlagi uporabe.

Prenosljive spretnosti – niso vezane le na en predmet: Spretnost prenosa teorije v prakso.

Intended learning outcomes:

Knowledge and understanding: Knowledge and understanding of basic algebraic concepts.

Application: Application of the theory to problem solving.

Reflection: Understanding the theory through applications.

Transferable skills: Transfer of theory into practice.

Metode poučevanja in učenja:

Predavanja, vaje, konzultacije

Learning and teaching methods:

Lectures, exercises, consultations

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt): 3 kolokviji namesto izpita iz vaj, izpit iz vaj, izpit iz teorije.
Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)"

Delež (v %) /
Weight (in %)

50%

50%

Assessment:

Type (examination, oral, coursework, project): 3 midterm exams instead of written exam, written exam, oral exam.
Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

Reference nosilca / Lecturer's references:

BREŠAR, Matej. Introduction to noncommutative algebra, (Universitext). Cham [etc.]: Springer, cop. 2014. XXXVII, 199 str. ISBN 978-3-319-08692-7. ISBN 978-3-319-08693-4. [COBISS.SI-ID 17143897]

BREŠAR, Matej, ŠPENKO, Špela. Functional identities of one variable. Journal of algebra, ISSN 0021-8693, 2014, vol. 401, str. 234-244. [COBISS.SI-ID 16842329]

BREŠAR, Matej, KLEP, Igor. A local-global principle for linear dependence of noncommutative polynomials. Israel journal of mathematics, ISSN 0021-2172, 2013, vol. 193, iss. 1, str. 71-82.
[COBISS.SI-ID 16626521]