

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
<b>Predmet:</b>		Algebra 3				
<b>Course title:</b>		Algebra 3				
<b>Študijski program in stopnja</b> Study programme and level		<b>Študijska smer</b> Study field		<b>Letnik</b> Academic year	<b>Semester</b> Semester	
Enoviti magistrski študijski program Pedagoška matematika		ni smeri		3 ali 4	prvi ali drugi	
Integrated Master's study programme Pedagogical Mathematics		none		3 or 4	first or second	
<b>Vrsta predmeta / Course type</b>				izbirni		
<b>Univerzitetna koda predmeta / University course code:</b>				M0581		
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike študija</b>	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
30		30			90	5
<b>Nosilec predmeta / Lecturer:</b>		prof. Primož Moravec				
<b>Jeziki / Languages:</b>		<b>Predavanja / Lectures:</b>		slovenski/Slovene		
		<b>Vaje / Tutorial:</b>		slovenski/Slovene		
<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>				<b>Prerequisites:</b>		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		

<p>Grupe: končne grupe, proste grupe, prezentacije z generatorji in relacijami.</p> <p>Kategorije: kategorija in funktor, naravne transformacije, univerzalne konstrukcije.</p> <p>Moduli: podmoduli, kvocientni moduli, homomorfizmi, eksaktnost, prosti in projektivni moduli, tenzorski produkt modulov.</p> <p>Mreže: osnovne lastnosti in primeri, posebni razredi mrež.</p> <p>Teorija komutativnih obsegov: Galoiseva grupa, Galoiseva korespondenca, rešljivost polinomskih enačb z radikali, osnovni izrek algebre.</p>	<p>Groups: finite groups, free groups, presentations with generators and relations.</p> <p>Categories: category and functor, natural transformations, universal constructions.</p> <p>Modules: submodules, quotient modules, homomorphisms, exactness, free and projective modules, tensor product of modules.</p> <p>Lattices: basic properties and examples, special classes of lattices.</p> <p>Fields: Galois group, Galois correspondence, solvability of polynomial equations by radicals, fundamental theorem of algebra.</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>P. M. Cohn: Algebra, 2nd edition, John Wiley &amp; Sons, New York, 1997.</p> <p>T. W. Hungerford: Algebra, Springer, New York-Berlin, 2003.</p> <p>J. Rotman: Galois Theory, 2nd edition, Springer, New York, 2001.</p>
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### Cilji in kompetence:

<p>Študent spozna osnovne pojme iz algebre, ki jih potrebuje pri nadaljnjem 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>Basic notions in algebra are introduced, which are needed for the subsequent study. Abstract thinking and mathematical rigour are enhanced. Practical, working knowledge is obtained during exercise classes.</p>
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### Predvideni študijski rezultati:

<p>Znanje in razumevanje: Poznavanje in razumevanje osnovnih algebraičnih pojmov. Uporaba: Uporaba teorije pri reševanju problemov.</p> <p>Refleksija: Razumevanje teorije na podlagi</p>
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### Intended learning outcomes:

<p>Knowledge and understanding: Knowledge and understanding of basic algebraic concepts. Application: Application of the theory in solving problems.</p> <p>Reflection: Understanding of the theory from</p>
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primerov in uporabe.  Prenosljive spretnosti – niso vezane le na en predmet: Spretnost prenosa teorije v prakso.	the applications.  Transferable skills: Ability to transfer the theory into practice.

**Metode poučevanja in učenja:**

Predavanja, vaje, konzultacije

**Learning and teaching methods:**

Lectures, exercises, consultations

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt): 2 kolokvija namesto izpita iz vaj, izpit iz vaj, izpit iz teorije  ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL)	50%  50%	Type (examination, oral, coursework, project): 2 midterm exams instead of written exam, written exam  oral exam  grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)
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**Reference nosilca / Lecturer's references:**

Primož Moravec:

- MORAVEC, Primož. Groups of order  $p \geq 5$  and their unramified Brauer groups. Journal of algebra, ISSN 0021-8693, 2012, vol. 372, str. 420-427 [COBISS.SI-ID 16521049]
- MORAVEC, Primož. Unramified Brauer groups of finite and infinite groups. American journal of mathematics, ISSN 0002-9327, 2012, vol. 134, no. 6, str. 1679-1704 [COBISS.SI-ID 16521305]
- DELIZIA, Constantino, MORAVEC, Primož, NICOTERA, Chiara. Groups with all centralizers subnormal of defect at most two. Journal of algebra, ISSN 0021-8693, 2013, vol. 374, str. 132-140 [COBISS.SI-ID 16556889]

