

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
<b>Predmet:</b>		Proseminar A				
<b>Course title:</b>		Introductory seminar A				
<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
Univerzitetni študijski program Matematika		ni smeri		1		prvi in drugi
First cycle academic study programme Mathematics		none		1		first and second
<b>Vrsta predmeta / Course type</b>				izbirni / elective		
<b>Univerzitetna koda predmeta / University course code:</b>				M0206		
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike</b> študija	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
30		60			30	4
<b>Nosilec predmeta / Lecturer:</b>				prof. dr. Jakob Cimprič, prof. dr. Peter Šemrl		
<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>		
Vpis v letnik študija.				Enrolment in the programme.		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		

<p>Elementarne funkcije: pregled (polinomi, racionalne, algebraične, eksponentne in logaritemske, kotne in krožne, hiperbolične in area funkcije), lastnosti, računanje, risanje grafov, reševanje enačb in neenačb.</p> <p>Analitična geometrija v ravnini: premice, stožnice, medsebojne lege, polarne koordinate.</p> <p>Linearna algebra: vektorji v ravnini in prostoru, računske operacije, majhni sistemi enačb in neenačb.</p> <p>Kompleksna števila: računanje, reševanje enačb in sistemov enačb, polarni zapis.</p> <p>Algebra polinomov: računanje s polinomi, realna in kompleksna faktorizacija, parcialni ulomki.</p>	<p>Elementary functions: an overview (polynomials, rational, algebraic, exponential and logarithmic, trigonometric and inverse trigonometric, hyperbolic and inverse hyperbolic functions), properties, computation, graphing, solving equations and inequalities.</p> <p>Analytic geometry in the plane: a straight line, conic sections, mutual position, polar coordinates.</p> <p>Linear algebra: vectors in plane and space, computational operations, small systems of linear equations and inequalities.</p> <p>Complex numbers: arithmetic, solving equations and systems of equations, polar form.</p> <p>Algebra of polynomials: computation with polynomials, real and complex factorization, partial fractions.</p>
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#### Temeljna literatura in viri / Readings:

<p>Srednješolski učbeniki matematike.</p> <p>A. Cedilnik: Matematični priročnik, 2. izdaja, Didakta, Radovljica, 1997.</p>
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#### Cilji in kompetence:

<p>Študent ponovi in osvoji vsebine iz srednješolske matematike, ki so potrebne za normalno sodelovanje pri drugih predmetih 1. letnika.</p>
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#### Objectives and competences:

<p>Student revises and consolidates the contents of high school mathematics, which are necessary for following the courses in the first year.</p>
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#### Predvideni študijski rezultati:

<p>Znanje in razumevanje: Študent temeljito obvlada računanje z elementarnimi funkcijami, reševanje enačb in neenačb, računanje s kompleksnimi števili in osnove ravninske</p>
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#### Intended learning outcomes:

<p>Knowledge and understanding: A thorough knowledge of calculus of elementary functions, solving equations and inequalities, calculating with complex numbers, and basic knowledge of</p>
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<p>geometrije.</p> <p>Uporaba: Predmet je predpriprava za Analizo 1 in Algebro 1.</p> <p>Refleksija: Razumevanje pojmov elementarne matematike, ki so nujni za nadaljnji študij.</p> <p>Prenosljive spretnosti – niso vezane le na en predmet: Študent se nauči prebrati in razumeti matematično trditev, razločiti predpostavke od posledic in razumeti utemeljitev oziroma dokaz.</p>	<p>plane geometry.</p> <p>Application: This is preparatory course for Analysis 1 and Algebra 1.</p> <p>Reflection: Understanding of basic mathematical concepts that are necessary for further studies.</p> <p>Transferable skills: Student learns to read and understand a mathematical statement, distinguish assumptions from conclusions, and understand the deduction or proof.</p>
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**Metode poučevanja in učenja:**

Predavanja, skupinsko in seminarsko delo
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**Learning and teaching methods:**

Lectures, group and seminar work
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**Načini ocenjevanja:**

Delež (v %) /

Weight (in %)

**Assessment:**

<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <p>Končno preverjanje (izpit)</p> <p>Ocene: 6-10 pozitivno, 1-5 negativno (v skladu s Statutom UL)</p>	<p>100%</p>	<p>Type (examination, oral, coursework, project):</p> <p>Final (exam)</p> <p>Grading: 6-10 pass, 1-5 fail (according to the Statute of UL)</p>
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**Reference nosilca / Lecturer's references:**

<p>Jaka Cimprič:</p> <p>CIMPRIČ, Jaka. Real algebraic geometry for matrices over commutative rings. Journal of algebra, ISSN 0021-8693, 2012, vol. 359, str. 89-103. [COBISS.SI-ID 16315993]</p> <p>CIMPRIČ, Jaka, MARSHALL, Murray, NETZER, Tim. Closures of quadratic modules. Israel journal of mathematics, ISSN 0021-2172, 2011, vol. 183, no. 1, str. 445-474. [COBISS.SI-ID 15998041]</p>
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CIMPRIČ, Jaka. Archimedean operator-theoretic Positivstellensätze. Journal of functional analysis, ISSN 0022-1236, 2011, vol. 260, iss. 10, str. 3132-3145. [COBISS.SI-ID 15997529]

Peter Šemrl:

ŠEMRL, Peter. A characterization of normed spaces among metric spaces. Rocky Mountain journal of mathematics, ISSN 0035-7596, 2011, vol. 41, no. 1, str. 293-298. [COBISS.SI-ID 15865177]

ŠEMRL, Peter. Applying projective geometry to transformations on rank one idempotents. Journal of functional analysis, ISSN 0022-1236, 2004, vol. 210, no. , str. 248-257. [COBISS.SI-ID 13012825]

ŠEMRL, Peter. Comparability preserving maps on bounded observables. Integral equations and operator theory, ISSN 0378-620X, 2008, vol. 62, no. 3, str. 441-454. [COBISS.SI-ID 15005273]