

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
Predmet:		Didaktika matematike 1				
Course title:		Didactics of mathematics 1				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Enoviti magistrski študijski program Pedagoška matematika		ni smeri		3 ali 4	drugi	
Integrated Master's study programme Pedagogical Mathematics		none		3 or 4	second	
Vrsta predmeta / Course type				obvezni / compulsory		
Univerzitetna koda predmeta / University course code:				M0583		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
60	30				90	6
Nosilec predmeta / Lecturer:		doc. dr. Damjan Kobal				
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.		
Vsebina:				Content (Syllabus outline):		

<p>Pregled srednješolske matematike.</p> <p>Osnove logike in teorije množic, Osnovne številske množice, Linearna funkcija in enačba, Geometrija v ravnini in prostoru, Potence in koreni, Kvadratna funkcija, Kompleksna števila, Eksponentna in logaritemska funkcija, Ploščine, površine in prostornine, Kotne funkcije, Polinomi, racionalne funkcije, stožnice, Kombinatorika, verjetnostni račun in statistika, Zaporedja in diferencialni račun.</p> <p>Pregled učnih načrtov in izpitnih katalogov. Analiza učbenikov.</p> <p>Izdelava učnih priprav. Ciklično študentje predstavljajo posamezne vsebine in analizirajo dobro prakso nastopov.</p>	<p>Review of high school mathematics syllabus. Foundations of logic and set theory. Basic number sets. Linear function and equation. Geometry in plane and space. Powers and roots. Quadratic function. Complex numbers. Exponent and logarithm function. Area, surface and volume. Trigonometric functions. Polynomials, rational functions, conics. Combinatorics, probability and statistics. Sequences and differential calculus.</p> <p>Review of curricula and examination catalogs. Analysis of textbooks.</p> <p>Preparation of curricula. Cyclically students present different contents and analyze good practice in performances.</p>
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Temeljna literatura in viri / Readings:

<p>Srednješolski učbeniki in programi.</p> <p>H. Freudenthal: Mathematics as an Educational Task, Springer, Berlin, 1972.</p> <p>G. Polya: Mathematics and Plausible Reasoning, Princeton Univ. Press, Princeton, 1990.</p>

Cilji in kompetence:

<p>Sluščatelji se seznanijo s srednješolskimi učnimi programi, učbeniki in katalogi zaključnih izpitov. Natančno je predelana srednješolska snov in v obliki nastopov pred vrstniki študenti spoznajo pomembne vidike pri razlagi matematičnih vsebin in se vadijo v javnem nastopanju.</p>

Objectives and competences:

<p>Students are introduced to high school teaching programs, textbooks and catalogs of final exams. High school material is studied in detail in form of performances before the peers. Students learn important aspects of interpretation of mathematical contents and practice in public speaking.</p>
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Predvideni študijski rezultati:

<p>Poglobljeno poznavanje in razumevanje srednješolske matematike s poudarki dobre razlage.</p> <p>Uporaba pri praktičnem poučevanju.</p>

Intended learning outcomes:

<p>In-depth knowledge and understanding of high school mathematics with emphasis on a good explanation.</p> <p>Application in practical teaching.</p>

Metode poučevanja in učenja:

<p>Nastopi, diskusije, analiza, konzultacije</p>
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Learning and teaching methods:

<p>Performances, discussions, analysis, consultations</p>

Načini ocenjevanja:

Delež (v %) /

Weight (in %)

Assessment:

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (domače naloge, projektno delo, nastopi, udeležba v analizi, pisni in/ali ustni izpit): Izdelane priprave in nastopi pred vrstniki, Opravljen izpit iz vaj (srednješolska snov) je pogoj za pristop k izpitu iz teorije (srednješolska snov) in zagovoru priprav. Zahtevana ustrezna	30 % 30% 40%	Type (homework, project work, performances, participation in analysis): Peer reviewed preparations and performances, written exam (high school syllabus) is a prerequisite for taking the oral exam and defense of preparations. Adequate ability of professional

sposobnost (strokovne) komunikacije v slovenskem jeziku.		communication in Slovenian is required.
ocene: 1-5 (negativno), 6-10 (pozitivno)		Grading: 6-10 pass, 1-5 fail

Reference nosilca / Lecturer's references:

KOBAL, Damjan. Technology and simple math ideas inspire teaching. V: ICME - 12 : the 12th International Congress on Mathematical Education, July 8-15, 2012, COEX, Seoul, Korea. Cheongju: Korea National University of Education, 2012, 7 str. [COBISS.SI-ID 17151577]

KOBAL, Damjan, et al. Integrating algebra and geometry with complex numbers. V: International Seminar in Mathematics Education 2011. Park City: Park City Mathematics Institute - Institute for Advanced Study, cop. 2013, 9 str. [COBISS.SI-ID 17152345]

KOBAL, Damjan. Iluzija objektivnosti ali objektivnost odgovornosti. Obzornik za matematiko in fiziko, ISSN 0473-7466, 2007, letn. 54, št. 1, str. 18-28. [COBISS.SI-ID 14302297]

KOBAL, Damjan. Inner product space and circle power. Publicationes mathematicae, ISSN 0033-3883, 2012, vol. 81, fasc. 1-2, str. 1-9. [COBISS.SI-ID 16336473]

KOBAL, Damjan. Bijections preserving invertibility of differences of matrices on H [sub] n . Acta mathematica Sinica, English series, ISSN 1439-8516, 2008, vol. 24, no. 10, str. 1651-1654. [COBISS.SI-ID 15588441]

KOBAL, Damjan. Preserving diagonalisability on upper triangular matrices. Linear and Multilinear Algebra, ISSN 0308-1087, 2006, vol. 54, no. 3, str. 189-194. [COBISS.SI-ID 13971801]