

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
Predmet:		Matematika za nadarjene				
Course title:		Mathematics for gifted students				
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		4 ali 5	prvi	
Integrated Master's study programme Pedagogical Mathematics		none		4 or 5	first	
Vrsta predmeta / Course type				obvezni		
Univerzitetna koda predmeta / University course code:				M0554		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30		30			90	5
Nosilec predmeta / Lecturer:		Damjan Kobal, prof. Peter Šemrl				
Jeziki / Languages:		Predavanja / Lectures:		slovenski/Slovene		
		Vaje / Tutorial:		slovenski/Slovene		
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Vsebina:				Content (Syllabus outline):		

<p>Predstavljeni so različni problemi in matematični izzivi, ki poglobljajo matematično razumevanje in sposobnost samostojnega reševanja problemov. Zastavljeni problemi so samostojni in neodvisni, tako da tudi delo poteka v razmeroma neodvisnih poglavjih. Obdelani so različni klasični geometrijski problemi, problemi iz področja teorije števil, dostopna poglavja linearne algebre, topologije, teorije iger in drugih. Predstavljeni so tudi klasični problemi nalog iz matematičnih tekmovanj. Pouk je zastavljen povsem problemsko.</p> <p>Delo poteka tudi praktično, ko študentje vodijo delo z nadarjenimi dijaki na šoli v obsegu 15 kontaktnih ur.</p>	<p>Different mathematical problems and challenges that emphasize understanding and independent problem solving are presented. Problems we work on are independent and consist of classical geometry problems, number theory problems, linear algebra problems, topology, game theory and other problems. We deal with classical problems from mathematical competitions. All the sessions are designed as problem solving sessions. Students also work very practically with gifted high school students for 15 school hours.</p>
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Temeljni literatura in viri / Readings:

<p>Zbirke domačih in mednarodnih tekmovanj Sprotna matematična tekmovanja</p> <p>J.H. Sylvester, Geometry: Ancient and Modern</p> <p>http://nrich.maths.org/public/index.php</p> <p>A.M.Yaglom, I.M. Yaglom, Challenging mathematical problems with elementary solutions, Dover Publications 1987.</p> <p>R.P. Burn, A. Chetwynd: A Cascade of Numbers, An Introduction to number theory, Arnold 1996.</p>
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Cilji in kompetence:

<p>Slušatelji se spoznajo z elementarnimi a zahtevnejšimi vsebinami in metodami dela, ki so primerne in potrebne za delo z nadarjenimi dijaki in za razvijanje motivacije za delo najboljših.</p>

Objectives and competences:

<p>Acquired understanding and skills to work with gifted students on demanding problems.</p>
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Predvideni študijski rezultati:

Intended learning outcomes:

Poznavanje in razumevanje zahtevnejših elementarnih vsebin.

Knowledge and understanding of advanced elementary high school mathematical contents.

Metode poučevanja in učenja:

Problemsko reševanje, predavanja, vaje, domače naloge, konzultacije, praktično delo z dijaki.

Learning and teaching methods:

Problem solving, lectures, exercise sessions, homework, consultations. Students work with high school students.

	Delež (v %) / Weight (in %)	Assessment:
Načini ocenjevanja: Način: domače naloge, projektno delo, nastopi. Ocene: 1-5 (negativno), 6-10 (pozitivno)	100 %	Type: homework, project work, class performances. Grading: 6-10 pass, 1-5 fail

Reference nosilca / Lecturer's references:

Damjan Kobal:

- 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. 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. 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]

Peter Šemrl:

- ŠEMRL, Peter. Orthogonality preserving transformations on the set of n -dimensional subspaces

of a Hilbert space. Illinois journal of mathematics, ISSN 0019-2082, 2005, vol. 48, no. 3, str. 567-573 [COBISS.SI-ID 13404249]

– ŠEMRL, Peter. Maps on matrix spaces. Linear Algebra and its Applications, ISSN 0024-3795. [Print ed.], 2006, vol. 413, no. 2-3, str. 364-393 [COBISS.SI-ID 13906009]

– Seminar "Moderni izzivi poučevanja matematike", Fakulteta za matematiko in fiziko, Ljubljana, 29. in 30. september 2006, ŠEMRL, Peter. Dve temi za matematični krožek. Ljubljana, 30. 9. 2006 [COBISS.SI-ID 17317209]

– Seminar "Moderni izzivi poučevanja matematike", Fakulteta za matematiko in fiziko, Ljubljana, 24. in 25. september 2004, ŠEMRL, Peter. Pi. Ljubljana, 24. 9. 2004 [COBISS.SI-ID 17357913]