UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18)			
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 / compulsory
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:	doc. dr. Damjan Kobal, prof. dr. Peter Šemrl

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):**

Predstavljeni so različni problemi in matematični izzivi, ki poglabljajo 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. Delo poteka tudi praktično, ko študentje vodijo delo z nadarjenimi dijaki na šoli v obsegu 15 kontaktnih ur.	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 sesions are designed as problem solving sessions. Students also work very practically with gifted high school students for 15 school hours.

Temeljni literatura in viri / Readings:

Zbirke domačih in mednarodnih tekmovanj

Sprotna matematična tekmovanja

J.H. Silvester, Geometry: Ancient and Modern

http://nrich.maths.org/public/index.php

A.M.Yaglom, I.M. Yaglom, Challenging mathematical problems with elementary solutions, Dover Publications 1987.

R.P. Burn, A. Chetwynd: A Cascade of Numbers, An Introduction to number theory, Arnold 1996.

Cilji in kompetence:

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.

Objectives and competences:

Acquired understanding and skills to work with gifted students on demanding problems.

Predvideni študijski rezultati:

Poznavanje in razumevanje zahtevnejših elementarnih vsebin.

Intended learning outcomes:

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 sesions, homework, consultations. Students work with high school students.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
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:

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]

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]

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]

KOBAL, Damjan. Technology and simple math ideas inspire teaching. V: ICME - 12 : the 12th International Congress on Mathematical Education, July 8-15, 2012, COEX, Seul, 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. 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]