PRILOGA 1

UČNI NAČRT KREDITNO OVREDNOTENE OBŠTUDIJSKE DEJAVNOSTI / EXTRACURRICULAR COURSE SYLLABUS	
Ime dejavnosti/ Course title:	Matematična tekmovanja / Mathematics Competitions
Vrsta dejavnosti/ Course group:	Ustrezno obkrožite: 1. Športna dejavnost. 2. Umetnost in kultura. 3. Prostovoljstvo in dobrodelnost. 4. Socialne in družbene aktivnosti. 5. Varovanje zdravja in okolja. 6. Raziskave/znanost/projekti, ki niso del obveznih sestavin študijskih programov 7. Druga relevantna področja, na predlog KOD (kot npr. pedagoško/strokovno delo).

Ime članice / službe

Fakulteta za matematiko in fiziko

Študijski program Study programme	**Stopnja Level**	**Letnik Academic year**	**Semester Semester**
za uveljavljanje ECTS kreditnih točk v študijskih programih 1. in 2. stopnje	*Dodiplomska (prva); magistrska (druga)*	*Vsi letniki*	*V vseh semestrih*

Vrsta predmeta / Course type *Obštudijska dejavnost*

Način izvedbe dejavnosti/oblike dela – izpolnite relevantne glede na področje obštudijskih aktivnosti

Predavanja Lectures	**Seminar Seminar**	**Vaje Tutorial**	**Samost. delo Individ. work**	**ECTS**
5	10	30	45	3

Druge oblike študija (navedite)

N/A

Nosilec predmeta / Lecturer: Vesna Iršič Chenoweth, Igor Klep

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Jeziki / Languages:	
	Slovenščina
	Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Zaželena sta interes za reševanje zahtevnejših matematičnih problemov ter zelo dobro znanje srednješolske matematike. Priporočljivo je tudi poznavanje osnov matematičnega dokazovanja in osnovno znanje iz algebre, analize, geometrije, kombinatorike in teorije števil. Formalnih pogojev ni.	An interest in solving advanced mathematical problems is recommended, as well as a very good command of high-school mathematics. Familiarity with the basics of mathematical proof and basic knowledge of algebra, analysis, geometry, combinatorics, and number theory are also recommended. There are no formal prerequisites.

Vsebina:	**Content (Syllabus outline):**
Predmet je namenjen pripravi študentov na matematična tekmovanja ter usposabljanju za pomoč dijakom pri pripravah na tekmovanja. Obravnavajo se metode reševanja problemov iz algebre, analize, teorije števil, kombinatorike, geometrije, in drugih področij tekmovalne matematike, izbrane naloge s preteklih tekmovanj ter tipične olimpijske vsebine za dijake. Poseben poudarek je na pripravi nalog in gradiv za delo z dijaki ter na seriji pisnih testov, ki služijo spremljanju napredka in lahko predstavljajo eno od podlag za izbor ekipe za mednarodna univerzitetna tekmovanja.	The course is intended to prepare students for mathematical competitions and to train them to assist high-school students in preparing for such competitions. It covers methods for solving problems in algebra, analysis, number theory, combinatorics, geometry, and other areas of competition mathematics, selected problems from past competitions, and typical olympiad topics for high-school students. Particular emphasis is placed on the preparation of problems and materials for work with high-school students, as well as on a series of written tests used to monitor progress and which may serve as one of the bases for selecting the team for international university competitions.

Temeljna literatura in viri / Readings:

Gelca, Răzvan; Andreescu, Titu. *Putnam and beyond*. Vol. 63. New York: Springer, 2007.

Engel, Arthur. *Problem-solving strategies*. New York, NY: Springer New York, 1998.

Andreescu, Titu; Gelca, Răzvan. *Mathematical olympiad challenges*. Boston, MA: Birkhäuser Boston, 2009.

Željko, Matjaž. *Altius, citius, fortius: izbrana poglavja iz matematike za srednješolce*. DMFA Slovenije, 1997.

Majcen, Irena. *Smelo na Olimp*. DMFA Slovenije, 2011.

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Cilji in kompetence:

Cilj dejavnosti je razviti sposobnost reševanja zahtevnih matematičnih problemov, študente usposobiti za mentorsko delo z dijaki ter prispevati k izboru univerzitetne ekipe za mednarodna tekmovanja. Študenti pridobijo sposobnost analize in reševanja tekmovalnih nalog, jasnega matematičnega zapisovanja rešitev, priprave nalog za dijake in vodenja osnovnih priprav na tekmovanja.

Objectives and competences:

The aim of the activity is to develop the ability to solve advanced mathematical problems, to prepare students for mentoring high-school students, and to contribute to the selection of the university team for international competitions. Students acquire the ability to analyse and solve competition problems, to present mathematical solutions clearly, to prepare suitable problem sets for high-school students, and to assist in basic competition training.

Predvideni študijski rezultati:

Študent pozna glavne tipe tekmovalnih nalog in metode njihovega reševanja, zna analizirati naloge s preteklih tekmovanj, pripraviti primeren nabor nalog za dijake ter jasno predstaviti rešitve. Sposoben je pomagati pri pripravah dijakov in na pisnih testih izkazati znanje za morebitni izbor v univerzitetno ekipo. Študent spozna tudi osnove tekmovalne matematike na univerzitetnem nivoju.

Intended learning outcomes:

Students are familiar with the main types of competition problems and the principal methods used to solve them. They are able to analyse problems from past competitions, prepare suitable problem sets for high-school students, and present solutions clearly and correctly. They are also able to assist in training high-school students and to demonstrate, through written tests, a level of knowledge suitable for possible selection to the university team.

Metode dela :

• predavanja z obravnavo metod reševanja problemov;
• vodene vaje in reševanje zahtevnejših nalog;
• samostojno reševanje problemskih sklopov;
• analiza nalog s preteklih tekmovanj;
• priprava in predstavitev gradiv za dijake;
• simulacije tekmovanj in časovno omejeni pisni testi;
• konzultacije in sprotna povratna informacija.

Learning and teaching methods:

• lectures covering problem-solving methods;
• guided tutorials and the solving of challenging problems;
• independent work on sets of problems;
• analysis of problems from past competitions;
• preparation of materials for high-school students;
• competition simulations and time-limited written tests;
• consultations and continuous feedback.

Načini ocenjevanja:

Ocenjuje se z ocenama »opravil«/»ni opravil« v skladu s Statutom UL. Ocena se podeli na podlagi izkazanega teoretičnega in praktičnega znanja.	teoretični del izpita / theoretical part of the exam (50%) praktični del izpita / practical part of the exam (50%)	

Assessment:

		It is assessed with “passed” / “failed” grades in accordance with the UL Statute. The grade is awarded on the basis of demonstrated theoretical and practical knowledge.

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Reference nosilca / Lecturer's references:

Klep, Igor; Scheiderer, Claus; Volčič, Jurij. "Globally trace-positive noncommutative polynomials and the unbounded tracial moment problem." *Mathematische Annalen* 387.3 (2023): 1403-1433.

IK has experience in teaching mathematical subjects at university level and in mentoring students and secondary-school pupils in advanced mathematical topics. He has participated in the preparation of problems, teaching materials, organizing regional-level competitions, and training activities for mathematical competitions. His professional work covers areas such as algebra, analysis, geometry, combinatorics, and number theory, which form the core content of mathematical competitions.

VIC has worked with both high school and university level students, has been a lecturer for high school students preparing for the International Mathematical Olympiad, frequently reviews high school level math competition problems, and has been a member of the problem selection committee for the European Girls Mathematical Olympiad 2023. Her research intrests are within graph theory, with occasional topics that focus more on combinatorics or geometry.