

UČNI NAČRT PREDMETA / COURSE SYLLABUS						
<b>Predmet:</b>		Izbrana poglavja iz diskretne matematike 2				
<b>Course title:</b>		Topics in discrete mathematics 2				
<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	
Magistrski študijski program Matematika		ni smeri		1 ali 2	prvi ali drugi	
Master's study programme Mathematics		none		1 or 2	first or second	
<b>Vrsta predmeta / Course type</b>				izbirni		
<b>Univerzitetna koda predmeta / University course code:</b>				M2220		
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike študija</b>	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
30	15	30			105	6
<b>Nosilec predmeta / Lecturer:</b>				prof. Primož Potočnik, prof. Riste Škrekovski, prof. Sandi Klavžar		
<b>Jeziki / Languages:</b>		<b>Predavanja / Lectures:</b> slovenski/Slovene, angleški/English				
		<b>Vaje / Tutorial:</b> slovenski/Slovene, angleški/English				
<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>				<b>Prerequisites:</b>		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		

<p>Predavatelj ob vsakokratnem izvajanju izbere nekaj relevantnih tem iz diskretne matematike, pri čemer je pozoren na prekrivanje z drugimi predmeti iz programa Matematika (prekrivanje naj bo minimalno) in zahtevano predznanje (predznanje naj bo omejeno na obvezne predmete programa Matematika).</p>	<p>The lecturer chooses a few relevant topics in discrete mathematics, while paying attention to a possible overlap with other courses in the program Mathematics (the overlap should be minimal) and prerequisites (those should be bound to obligatory courses of the programme Mathematics).</p>
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**Temeljni literatura in viri / Readings:**

N. L. Biggs, A. T. White: Permutation Groups and Combinatorial Structures, Cambridge University Press, Cambridge, 1979.

C. Godsil, G. Royle: Algebraic Graph Theory. Springer, New York, 2001.

Jack H. van Lint, Robin J. Wilson: A Course in Combinatorics, Cambridge University Press, Cambridge, 2001.

Laszlo Lovasz, Jozsef Pelikan, Katalin Vesztergombi: Discrete Mathematics, Springer, Berlin-Heidelberg-New York, 2003.

Richard P. Stanley: Enumerative Combinatorics, Vol. 2, Cambridge University Press, New York-Cambridge, 1999.

**Cilji in kompetence:**

Slušatelj spozna predstavljene teme.

**Objectives and competences:**

Students becomes acquainted with the presented topics.

**Predvideni študijski rezultati:**

Znanje in razumevanje: Študent bo razumel predstavljene koncepte in rezultate.  
Uporaba: Študent bo znal pridobljeno znanje uporabiti v različnih matematičnih in drugih kontekstih.

Refleksija: Pridobljeno znanje bo študent znal kritično reflektirati.

Prenosljive spretnosti – niso vezane le na en predmet: Veščina kritičnega mišljenja,

**Intended learning outcomes:**

Knowledge and understanding: Student will understand the presented topics and results.  
Application: Student will know how to use the new knowledge in different mathematical and other contexts.

Reflection: Student will be able to critically reflect the topic.

Transferable skills: Skill of critical thought, identification of discrete structures in nature

prepoznavanje diskretnih struktur v naravi in družbi.

and society.

**Metode poučevanja in učenja:**

predavanja, vaje, domače naloge, konzultacije

**Learning and teaching methods:**

Lectures, exercises, homeworks, consultations

**Načini ocenjevanja:**

Delež (v %) /  
Weight (in %)

**Assessment:**

Način (domače naloge, pisni izpit, ustno izpraševanje, naloge, projekt):  
domače naloge ali projekt

pisni izpit

ustni izpit

Ocene: 1-5 (negativno), 6-10 (pozitivno)  
(po Statutu UL)

20%  
40%

40%

Type (homeworks, examination, oral, coursework, project):  
homeworks or project

written exam

oral exam

Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL)

**Reference nosilca / Lecturer's references:**

Sandi Klavžar:

– HAMMACK, Richard H., IMRICH, Wilfried, KLAVŽAR, Sandi. Handbook of product graphs, (Discrete mathematics and its applications). Boca Raton, London, New York: CRC Press, cop. 2011. XVIII, 518 str., ilustr. ISBN 978-1-4398-1304-1 [COBISS.SI-ID 15916121]

– KLAVŽAR, Sandi, SHPECTOROV, Sergey. Convex excess in partial cubes. Journal of graph theory, ISSN 0364-9024, 2012, vol. 69, no. 4, str. 356-369 [COBISS.SI-ID 16243033]

– KLAVŽAR, Sandi. Structure of Fibonacci cubes: a survey. Journal of combinatorial optimization, ISSN 1382-6905, 2013, vol. 25, iss. 4, str. 505-522 [COBISS.SI-ID 16603737]

Primož Potočnik:

– POTOČNIK, Primož. Edge-colourings of cubic graphs admitting a solvable vertex-transitive group of automorphisms. *Journal of combinatorial theory. Series B*, ISSN 0095-8956, 2004, vol. 91, no. 2, str. 289-300 [COBISS.SI-ID 13087321]

– POTOČNIK, Primož, SPIGA, Pablo, VERRET, Gabriel. Cubic vertex-transitive graphs on up to 1280 vertices. *Journal of symbolic computation*, ISSN 0747-7171, 2013, vol. 50, str. 465-477 [COBISS.SI-ID 16520537]

– POTOČNIK, Primož. Tetravalent arc-transitive locally-Klein graphs with long consistent cycles. *European journal of combinatorics*, ISSN 0195-6698, 2014, vol. 36, str. 270-281 [COBISS.SI-ID 16862041]

Riste Škrekovski:

– KAISER, Tomáš, STEHLÍK, Matěj, ŠKREKOVSKI, Riste. On the 2-resonance of fullerenes. *SIAM journal on discrete mathematics*, ISSN 0895-4801, 2011, vol. 25, no. 4, str. 1737-1745 [COBISS.SI-ID 16244569]

– GOVORČIN, Jelena, KNOR, Martin, ŠKREKOVSKI, Riste. Line graph operation and small worlds. *Information processing letters*, ISSN 0020-0190. [Print ed.], 2013, vol. 113, iss. 5-6, str. 196-200 [COBISS.SI-ID 16561497]

– DVOŘÁK, Zdeněk, LIDICKÝ, Bernard, ŠKREKOVSKI, Riste. Randić index and the diameter of a graph. *European journal of combinatorics*, ISSN 0195-6698, 2011, vol. 32, iss. 3, str. 434-442 [COBISS.SI-ID 17410905]