

| UČNI NAČRT PREDMETA / COURSE SYLLABUS | | | | | | |
|--|---------------------------|---|------------------------------|--|---|-------------|
| Predmet: | | Izbrana poglavja iz diskretne matematike 2 | | | | |
| Course title: | | Topics in discrete mathematics 2 | | | | |
| Študijski program in stopnja Study programme and level | | Študijska smer Study field | | Letnik Academic year | Semester Semester | |
| Magistrski študijski program Finančna matematika | | ni smeri | | 1 ali 2 | prvi ali drugi | |
| Master's study programme Financial Mathematics | | none | | 1 or 2 | first or second | |
| Vrsta predmeta / Course type | | | | izbirni | | |
| Univerzitetna koda predmeta / University course code: | | | | M2220 | | |
| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Klinične vaje work | Druge oblike študija | Samost. delo Individ. work | ECTS |
| 30 | 15 | 30 | | | 180 | 6 |
| Nosilec predmeta / Lecturer: | | | | prof. Primož Potočnik, prof. Riste Škrekovski, prof. Sandi Klavžar | | |
| Jeziki / Languages: | | Predavanja / Lectures: slovenski/Slovene, angleški/English | | | | |
| | | Vaje / Tutorial: slovenski/Slovene, angleški/English | | | | |
| Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: | | | | Prerequisites: | | |
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| Vsebina: | | | | Content (Syllabus outline): | | |
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| <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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Temeljna 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 become 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

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| prepoznavanje diskretnih struktur v naravi in družbi. | and society. |
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Metode poučevanja in učenja:

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| predavanja, vaje, domače naloge, konzultacije |
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Learning and teaching methods:

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| Lectures, exercises, homeworks, consultations |
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Delež (v %) /
Weight (in %)

Načini ocenjevanja:

Assessment:

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| Način (domače naloge, pisni izpit, ustno izpraševanje, naloge, projekt): domače naloge ali projekt | | Type (homeworks, examination, oral, coursework, project): homeworks or project |
| pisni izpit | | written exam |
| ustni izpit | 20% | oral exam |
| Ocene: 1-5 (negativno), 6-10 (pozitivno) (po Statutu UL) | 40% | Grading: 1-5 (fail), 6-10 (pass) (according to the Statute of UL) |
| | 40% | |

Reference nosilca / Lecturer's references:

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| <p>Sandi Klavžar:</p> <ul style="list-style-type: none"> - 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] |
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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]