

| UČNI NAČRT PREDMETA / COURSE SYLLABUS  |                               |   |                              |                                    |                                      |             |
|--|-------------------------------|---|------------------------------|------------------------------------|--------------------------------------|-------------|
| <b>Predmet:</b>  |                               | Raziskovalno delo 2   |                              |                                    |                                      |             |
| <b>Course title:</b>   |                               | Research 2  |                              |                                    |                                      |             |
| <b>Študijski program in stopnja</b><br>Study programme and level             |                               | <b>Študijska smer</b><br>Study field                            |                              | <b>Letnik</b><br>Academic year     | <b>Semester</b><br>Semester          |             |
| 3MaFi  |                               | Matematika  |                              | 2                                  | prvi in drugi                        |             |
| 3MaFi  |                               | Mathematics   |                              | 2                                  | first and second                     |             |
| <b>Vrsta predmeta / Course type</b>  |                               |   |                              | obvezni                            |                                      |             |
| <b>Univerzitetna koda predmeta / University course code:</b>                 |                               |   |                              | M3132                              |                                      |             |
| <b>Predavanja</b><br>Lectures  | <b>Seminar</b><br>Seminar     | <b>Vaje</b><br>Tutorial   | <b>Klinične vaje</b><br>work | <b>Druge oblike študija</b>        | <b>Samost. delo</b><br>Individ. work | <b>ECTS</b> |
|  |                               |   |                              |                                    | 1080                                 | 36          |
| <b>Nosilec predmeta / Lecturer:</b>  |                               | prof. Emil Žagar, prof. Franc Forstnerič, prof. Primož Potočnik |                              |                                    |                                      |             |
| <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> |                                      |             |
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| <p>Študent se posveti jedru doktorskega študija, raziskovalnemu delu. Temeljito preuči vsebine, ki so tesno povezane z njegovim raziskovalnim delom, razišče pristope za reševanje zastavljenega problema in postavi osnovne domneve. Z raziskovanjem posebnih primerov počasi pridobiva znanje za kar se da splošno rešitev problema doktorske disertacije. Pripravi in temeljito izdela članke, v katerih predstavi rešitev problema. Članke pošlje v evalvacijo za objavo v uglednih znanstvenih revijah s področja, na katerem raziskovalno dela.</p> | <p>The student starts his research on the main topic of PhD studies. He studies the relevant literature in detail. He considers several approaches to the solution of the proposed problem and states basic conjectures. In order to obtain as general a solution of the problem as possible, he considers some special cases. Finally, he thoroughly prepares manuscripts involving solutions of the problem and submits them for evaluation to relevant international journals.</p> |
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**Temeljni literatura in viri / Readings:**

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| <p>Izbira temeljne literature je pomemben del raziskovalnega dela. Študent jo izbere sam z morebitnimi nasveti mentorja.</p> <p>How to chose relevant literature is an important part of the research work. A student should be able to chose it alone with some possible suggestions of the supervisor.</p> |
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**Cilji in kompetence:**

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| <p>Študent reši zastavljeni problem doktorske disertacije in ga pripravi v obliki, ki je primerna za objavo v znanstveni reviji.</p> |
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**Objectives and competences:**

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| <p>The student solves a proposed problem of doctoral thesis and prepares a relevant manuscript.</p> |
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**Predvideni študijski rezultati:**

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| <p>Študent je, potem ko opravi predmet, sposoben samostojno nadaljevati raziskave na področju doktorske disertacije ali širše.</p> |
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**Intended learning outcomes:**

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| <p>After the course is completed, a student is able to continue a research either on the field of doctoral thesis or wider.</p> |
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**Metode poučevanja in učenja:**

**Learning and teaching methods:**

|                                    |                                     |
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| Samostojni študij in konzultacije. | Individual study and consultations. |
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Delež (v %) /

**Načini ocenjevanja:**

Weight (in %) **Assessment:**

|                            |      |                     |
|----------------------------|------|---------------------|
| Ocene: opravil, ni opravil |      | Grades: pass, fail. |
|                            | 100% |                     |

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

Franc Forstnerič:

- ALARCÓN, Antonio, FORSTNERIČ, Franc, LÓPEZ, Francisco J. Embedded minimal surfaces in  $\mathbb{R}^n$ . *Mathematische Zeitschrift*, ISSN 0025-5874, 2016, vol. 283, iss. 1, str. 1-24. [COBISS.SI-ID 17544025]
- FORSTNERIČ, Franc. Noncritical holomorphic functions on Stein spaces. *Journal of the European Mathematical Society*, ISSN 1435-9855, 2016, vol. 18, iss. 11, str. 2511-2543. [COBISS.SI-ID 17787481]
- ANDRIST, Rafael, FORSTNERIČ, Franc, RITTER, Tyson, WOLD, Erlend Fornæss. Proper holomorphic embeddings into Stein manifolds with the density property. *Journal d'analyse mathématique*, ISSN 0021-7670, 2016, vol. 130, iss. 1, str. 135-150. [COBISS.SI-ID 17810265]

Primož Potočnik:

- POTOČNIK, Primož, WILSON, Stephen. Linking rings structures and semisymmetric graphs: Cayley constructions. *European journal of combinatorics*, ISSN 0195-6698, 2016, vol. 51, str. 84-98. [COBISS.SI-ID 17462361]
- POTOČNIK, Primož, SPIGA, Pablo, VERRET, Gabriel. Bounding the order of the vertex-stabiliser in 3-valent vertex-transitive and 4-valent arc-transitive graphs. *Journal of combinatorial theory. Series B*, ISSN 0095-8956, 2015, vol. 111, str. 148-180. [COBISS.SI-ID 1537132228]
- BERČIČ, Katja, POTOČNIK, Primož. Two-arc-transitive two-valent digraphs of certain orders. *Ars mathematica contemporanea*, ISSN 1855-3966. [Tiskana izd.], 2016, vol. 11, no. 1, str. 127-146. [COBISS.SI-ID 1538308036]

Emil Žagar:

- JAKLIČ, Gašper, KOZAK, Jernej, KRAJNC, Marjetka, VITRIH, Vito, ŽAGAR, Emil. Hermite geometric interpolation by rational Bézier spatial curves. *SIAM journal on numerical analysis*, ISSN 0036-

1429, 2012, vol. 50, no. 5, str. 2695-2715 [COBISS.SI-ID 16449369]

– JAKLIČ, Gašper, KOZAK, Jernej, KRAJNC, Marjetka, VITRIH, Vito, ŽAGAR, Emil. High order parametric polynomial approximation of conic sections. *Constructive approximation*, ISSN 0176-4276, 2013, vol. 38, iss. 1, str. 1-18 [COBISS.SI-ID 16716121]

– KOVAČ, Boštjan, ŽAGAR, Emil. Curvature approximation of circular arcs by low-degree parametric polynomials. *Journal of numerical mathematics*, ISSN 1570-2820, 2016, vol. 24, iss. 2, str. 95-104. [COBISS.SI-ID 17724505]