Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

| UČNI NAČRT PREDMETA / COURSE SYLLABUS | |
|---|---|
| **Predmet:** | Raziskovalni seminar 6 |
| **Course title:** | Research seminar 6 |

| Študijski program in stopnja<br>Study programme and level | Študijska smer<br>Study field | Letnik<br>Academic year | Semester<br>Semester |
|---|---|---|---|
| **Matematika, 3. stopnja** | | **4.** | **7.** |
| **Mathematics, 3rd Degree** | | **4th** | **7th** |

**Vrsta predmeta / Course type** obvezni/obligatory

**Univerzitetna koda predmeta / University course code:**

| Predavanja<br>Lectures | Seminar<br>Seminar | Vaje<br>Tutorial | Klinične vaje<br>work | Druge oblike študija | Samost. delo<br>Individ. work | ECTS |
|---|---|---|---|---|---|---|
| | 10 | | | 5 (konzultacije) | 75 | **3** |

**Nosilec predmeta / Lecturer:** Habilitirani nosilci predmetov v programu / Teachers listed in the program

| **Jeziki / Languages:** | | |
|---|---|---|
| | **Predavanja / Lectures:** | Slovenski jezik; Slovene |
| | **Vaje / Tutorial:** | Slovenski jezik; Slovene |

| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | **Prerequisits:** |
|---|---|
| Ni posebnih pogojev. | No special requirements. |

| **Vsebina:** | **Content (Syllabus outline):** |
|---|---|
| Študent usvoji zahtevnejše metode samostojnega raziskovalnega dela na svojem znanstvenem področju ter se nauči realizirati dobljene rezultate v praksi. Pridobi sposobnost prepoznati matematično vsebino konkretnega problema, izbrati ustrezno metodo za njegovo reševanje in razviti primeren matematični aparat, ki je zato potreben. | Student gets familiar with advanced methods of independent research work in his scientific area and learns how to apply the results of his research in practice. He/she must be able to recognize the mathematical contents of a concrete problem, to choose the appropriate method(s) for its solving and to develop the necessary mathematical apparatus for this purpose. |

**Temeljni literatura in viri / Readings:**


- Kandiller, L. Principles of mathematics in operations research, Berlin: Springer-Verlag 2007.
- Sethuraman, B. A. Rings, fields, and vector spaces, Berlin: Springer-Verlag
- Kreps, D. M. Game Theory and Economic Modeling, Oxford: Oxford University Press
- Atkinson, F. V. Multiparameter Eigenvalue Problems, New York: Academic Press
- M. Aigner, Discrete Mathematics, American Mathematical Society, Providence, 2007.
- R. Diestel, Graph Theory, Third Edition, Springer, Berlin, 2005.
- Zomorodian, A. J. Topology for computing, Cambridge: Cambridge University Press
- Mackiw, G. Applications of abstract algebra, New York: John Wiley & Sons


**Cilji in kompetence:**

- pripraviti študente za bodoče raziskovalno in aplikativno delo – prenos znanstvenih spoznanj v prakso in razvoj matematičnih metod, potrebnih za rešitev konkretnega problema.
- študent se usposobi za individualno in skupinsko delo pri reševanju matematičnih problemov, pridobi sposobnost sodelovanja na obsežnejšem projektu in vodenja skupine raziskovalcev.

**Objectives and competences:**

- to prepare students for their future independent research and applicative work – the transfere of scientific knowledge to practice and the development of mathematical methods, necessary to solve a concrete probleme
- students aquaintain the ability of individual and team work at solving mathematical problems and get able to participate in a larger project or rule a research team.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

Znanje in razumevanje:

- poznavanje splošnih in specifičnih metod za reševanje teoretičnih in praktičnih problemov
- formiranje specifičnega znanje ter njegovo apliciranje na konkretne probleme
- sposobnost oblikovati nove zanstvene koncepte ter metodološke pristope za reševanje različnih problemov

Prenesljive/ključne spretnosti in drugi atributi:

- strokovno zapisovanje in izražanje matematičnih vsebin
- obvladanje reševanja strokovnih problemov
- suvereno predstavljanje ključnih spoznanj in spretnost argumentiranja

**Intended learning outcomes:**

Knowledge and understanding:

Knowledge and understanding:

- the knowledge of general and specific methods for solving theoretical and practical problems
- the development of special knowledge and its application to concrete examples
- the abbility to formulate new scientific concepts and methodological approaches for solving various problems

Transferable/Key Skills and other attributes:

- expressing mathematical contents in oral and written form
- ability to solve specific mathematical problems
- clear presentation of the results of research work and efficient argumentation

**Metode poučevanja in učenja:**

- konzultacije;
- priprava seminarja;
- samostojni študij.

**Learning and teaching methods:**

- consultations;
- seminar work;
- self-study.

| **Načini ocenjevanja:** | Delež (v %) / Weight (in %) | **Assessment:** |
|---|---|---|
| Način (pisni izpit, ustno izpraševanje, naloge, projekt)<br><br>• seminarsko predavanje;<br><br>Se oceni: številska ocena (1-10). | 100 % | Type (examination, oral, coursework, project):<br><br>• seminar talk;<br><br>Evaluate: numerical rating (1-10) |

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

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| Habilitirani nosilci predmetov v programu / Teachers listed in the program |