Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

| UČNI NAČRT PREDMETA / COURSE SYLLABUS | |
|---|---|
| **Predmet:** | Računalniški praktikum |
| **Course title:** | Programming Practicum |

| **Študijski program in stopnja**<br>**Study programme and level** | **Študijska smer**<br>**Study field** | **Letnik**<br>**Academic year** | **Semester**<br>**Semester** |
|---|---|---|---|
| **Enovit magistrski študijski program druge stopnje Predmetni učitelj** | **/** | **5.** | **9.** |
| **Five-year master's degree program Subject Teacher** | **/** | | |

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| **Vrsta predmeta / Course type** | Izbirni / Elective |
| **Univerzitetna koda predmeta / University course code:** | |

| **Predavanja**<br>**Lectures** | **Seminar**<br>**Seminar** | **Sem. vaje**<br>**Tutorial** | **Lab. vaje**<br>**Laboratory work** | **Teren. vaje**<br>**Field work** | **Samost. delo**<br>**Individ. work** | **ECTS** |
|---|---|---|---|---|---|---|
| **30** | | | **30** | | **120** | **6** |

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| **Nosilec predmeta / Lecturer:** | Andrej Taranenko |

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| **Jeziki / Languages:** | **Predavanja / Lectures:** | slovenski<br>Slovenian |
| | **Vaje / Tutorial:** | slovenski/Slovenian |

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| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | **Prerequisits:** |

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| Pozitivne ocene pri kolokvijih in sprotnih nalogah so pogoj za pristop k pisnemu izpitu. | Passing grades for midterm exams and coursework are required for taking the written exam. |

| **Vsebina:** | **Content (Syllabus outline):** |
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| Programsko okolje: priprava programa, prevajanje, testiranje in izvajanje.<br><br>Osnove objektnega programiranja (objekti, metode, razredi, enkapsulacija, dedovanje, polimorfizem).<br><br>Modeli matematičnih objektov predstavljeni v izbranem programskem jeziku. | Programming environment: program coding, compiling, testing and executing.<br><br>Principles of object-oriented programming (objects, methods, classes, encapsulation, inheritance, polymorphism).<br><br>Models of mathematical objects presented in the the chosen programming language. |

**Temeljni literatura in viri / Readings:**

Deloma odvisni od izbranega programskega jezika (npr.):

D. M. Capper, Introducing C++ for scientists, engineers, and mathematicians, 2nd ed. London [etc.]: Springer, 2001, str. XVI, 544.

E. R. Scheinerman, C++ for mathematicians: an introduction for students and professionals. Boca Raton: Chapman & Hall/CRC, 2006, str. XXIII, 496.

J. G. Brookshear, Computer science: an overview, 5th ed. Reading, Massachusetts [etc.]: Addison-Wesley, 1997, str. XV, 483.

F. Glassborow, C++ od začetka: uvod za programerje. Ljubljana: Pasadena, 2007, str. X, 413.

| **Cilji in kompetence:** | **Objectives and competences:** |
|---|---|
| Spoznati zahtevnejše računalniške koncepte: operacijski sistem in druge vrste sistemske programske opreme, računalniška omrežja in sodobne programske jezike. | Know more demanding concepts from computer science: operation system and the other system software programs, computer networks and state-of-the-art programming languages. |

| **Predvideni študijski rezultati:** | **Intended learning outcomes:** |
|---|---|
| Znanje in razumevanje:<br>• Razumevanje zahtevnejših principov računalništva.<br>• Spoznati vrste sistemske programske | Knowledge and Understanding:<br>• Be able to understand more demanding principals of computer science.<br>• To know a variety of system software |

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|---|---|
| opreme.<br>• Sposobnost pisanja kompleksnih programov.<br>Prenesljive/ključne spretnosti in drugi atributi:<br>• Prenos znanja računalništva na druga področja (matematika, biologija, kemija, optimizacija, ...). | programs.<br>• Be able to write a complex computer program.<br>Transferable/Key Skills and other attributes:<br>• Knowledge transfer of methods of computer science into other fields (mathematics, chemistry, biology, optimization, …). |

| **Metode poučevanja in učenja:** | **Learning and teaching methods:** |
|---|---|
| Predavanja<br>Računalniške vaje | Lectures<br>Computer exercises |

| **Načini ocenjevanja:** | Delež (v %) / Weight (in %) | **Assessment:** |
|---|---|---|
| kolokvij | 30 % | midterm exam |
| sprotne naloge | 40 % | coursework |
| pisni izpit | 30 % | written exam |

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


1. BANIČ, Iztok, TARANENKO, Andrej. *Span of a graph : keeping the safety distance*. Discrete mathematics & theoretical computer science. 2023, vol. 25, no. 1, 19 str. ISSN 1365-8050, DOI: 10.46298/dmtcs.9859, DOI: 20.500.12556/DKUM-88137. [COBISS.SI-ID 148408835]
2. DRAVEC, Tanja, TARANENKO, Andrej. *Daisy Hamming graphs.* Discussiones mathematicae. Graph theory. 2023, vol. 43, no. 2, str. 421-436. ISSN 1234-3099, DOI: 10.7151/dmgt.2373, DOI: 20.500.12556/DKUM-88118. [COBISS.SI-ID 137313795]
3. TARANENKO, Andrej. *Daisy cubes: a characterization and a generalization*. European journal of combinatorics. March 2020, vol. 85, art. 103058 [10 str.]. ISSN 0195-6698. https://doi.org/10.1016/j.ejc.2019.103058, DOI: 10.1016/j.ejc.2019.103058. [COBISS.SI-ID 18934105]
4. ZHU, Enqiang, TARANENKO, Andrej, SHAO, Zehui, XU, Jin. *On graphs with the maximum edge metric dimension*. Discrete applied mathematics. [Print ed.]. March 2019, vol. 257, str. 317-324. ISSN 0166-218X. https://doi.org/10.1016/j.dam.2018.08.031, DOI: 10.1016/j.dam.2018.08.031. [COBISS.SI-ID 18584665]
5. PETERIN, Iztok, SCHREYER, Jens, FECKOVÁ ŠKRABUL'ÁKOVÁ, Erika, TARANENKO, Andrej. *A note on the Thue chromatic number of lexicographic produts of graphs*. Discussiones mathematicae. Graph theory. 2018, vol. 38, iss. 3, str. 635-643. ISSN 1234-3099. http://www.discuss.wmie.uz.zgora.pl/php/discuss3.php?ip=&url=pdf&nIdA=25507&nIdSesji=-1, DOI: 10.7151/dmgt.2032. [COBISS.SI-ID 18373465]