UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Računalniški praktikum
Course title:	Programming practicum

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

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30			30		120	6

Nosilec predmeta / Lecturer: Andrej Taranenko

Jeziki / Languages:	**Predavanja / Lectures:**	slovenski Slovenian
	Vaje / Tutorial:	slovenski/Slovenian

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

Jih ni.	None.

Vsebina:	Content (Syllabus outline):
Sistemska programska oprema: operacijski sistem (zgradba OS, vrste in primeri OS), prevajalnik, povezovalnik, nalagalnik, testni program. Programsko okolje: priprava programa, prevajanje, testiranje in izvajanje. Značilnosti sodobnih programskih jezikov. Osnove objektnega programiranja (objekti, metode, razredi, enkapsulacija, dedovanje, polimorfizem). Modeli matematičnih objektov predstavljeni v izbranem programskem jeziku.	System software: operating system (functions of OS, structure of OS, varieties of OS, examples of common OS), compiler, linker, loader, debbuger. Programming environment: program coding, compiling, testing and executing. Characteristics of the state-of-the-art programming languages. Principles of object-oriented programming (objects, methods, classes, encapsulation, inheritance, polymorphism). Models of mathematical objects presented in the the chosen programming language.

Temeljni literatura in viri / Readings:

Deloma odvisni od izbranega programskega jezika (npr.):

- K. Watson, Beginning Microsoft Visual C# 2008, Wiley Publishing, 2008.
- D. M. Capper, Introducing C++ for scientists, engineers, and mathematicians, Springer, 2001.
- J. G. Brookshear, Computer science : an overview, Addison-Wesley, 2005.

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: - Razumevanje zahtevnejših principov računalništva. - Spoznati vrste sistemske programske opreme.	Knowledge and Understanding: - Be able to understand more demanding principals of computer science. - To know a variety of system software programs.

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

Metode poučevanja in učenja: | **Learning and teaching methods:**

Predavanja	Lectures
Računalniške vaje	Computer exercises

Delež (v %) /

Načini ocenjevanja: Weight (in %)   **Assessment:**

Sprotno preverjanje:		Mid-term testing:
Pisni testi – teorija (3 do 5 pisnih testov na semester)	30%	Written tests – theory (from 3 to 5 written tests during the semester)
Naloge	20%	Coursework
Izpit:		Exams:
Pisni izpit – problemi	50%	Written exam - problems
Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.		Each of the mentioned commitments must be assessed with a passing grade.
Opravljene sprotne obveznosti so pogoj za pristop k izpitu.		Passing grades of all mid-term testings are required for taking the exam.

Reference nosilca / Lecturer's references:

1. BANIČ, Iztok, TARANENKO, Andrej. Measuring closeness of graphs - the Hausdorff distance. *Bulletin of the Malaysian Mathematical Society*, ISSN 0126-6705, 2015, 21 str., doi: 10.1007/s40840-015-0259-1. [COBISS.SI-ID 21722376], [JCR, SNIP]

2. KELENC, Aleksander, TARANENKO, Andrej. On the Hausdorff distance between some families of chemical graph. *MATCH Communications in Mathematical and in Computer Chemistry*, ISSN 0340-6253, 2015, vol. 74, no. 2, str. 223-246.http://match.pmf.kg.ac.rs/electronic_versions/Match74/n2/match74n2_223-246.pdf. [COBISS.SI-ID 21391368], [JCR, SNIP, Scopus do 13. 10. 2015: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]

3. YERO, Ismael G., JAKOVAC, Marko, KUZIAK, Dorota, TARANENKO, Andrej. The partition dimension of strong product graphs and Cartesian product graphs. *Discrete Mathematics*, ISSN 0012-365X. [Print ed.], 2014, vol. 331, str. 43-52. http://dx.doi.org/10.1016/j.disc.2014.04.026. [COBISS.SI-ID20548104], [JCR, SNIP, WoS do 25. 8. 2014: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC):

0, Scopus do 3. 6. 2014: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]

4. BREŠAR, Boštjan, JAKOVAC, Marko, KATRENIČ, Ján, SEMANIŠIN, Gabriel, TARANENKO, Andrej. On the vertex k-path cover. *Discrete applied mathematics*, ISSN 0166-218X. [Print ed.], 2013, vol. 161, iss. 13/14, str. 1943-1949. http://dx.doi.org/10.1016/j.dam.2013.02.024. [COBISS.SI-ID 19859464], [JCR, SNIP, WoS do 3. 6. 2015: št. citatov (TC): 6, čistih citatov (CI): 4, normirano št. čistih citatov (NC): 4, Scopus do 4. 2. 2016: št. citatov (TC): 9, čistih citatov (CI): 7, normirano št. čistih citatov (NC): 8]

5. TARANENKO, Andrej. A new characterization and a recognition algorithm of Lucas cubes. *Discrete mathematics and theoretical computer science*, ISSN 1365-8050, 2013, vol. 15, no. 3, str. 31-39. http://www.dmtcs.org/dmtcs-ojs/index.php/dmtcs/article/view/2192/4357. [COBISS.SI-ID 20090376], [JCR,SNIP, WoS do 3. 5. 2015: št. citatov (TC): 1, čistih citatov (CI): 1, normirano št. čistih citatov (NC): 1, Scopus do 3. 4. 2015: št. citatov (TC): 1, čistih citatov (CI): 1, normirano št. čistih citatov (NC): 1]