



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

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
Matematika		1.	2.
Mathematics		1.	2.

Vrsta predmeta / Course type

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			60		120	7

Nosilec predmeta / Lecturer: Andrej TARANENKO

Jeziki / Languages:
Predavanja / Lectures: SLOVENSKO/SLOVENE
Vaje / Tutorial: SLOVENSKO/SLOVENE

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

Osnove računalništva in informatike

Prerequisites:

Fundamentals of Computer Science and Informatics

Vsebina:

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,

Content (Syllabus outline):

System software: operating system (functions of OS, structure of OS, varieties of OS, examples of common OS), compiler, linker, loader, debugger.

Programming environment: program coding, compiling, testing and executing.

Characteristics of the state-of-the-art programming languages.

Principles of object-oriented programming

metode, razredi, enkapsulacija, dedovanje, polimorfizem).

Modeli matematičnih objektov predstavljeni v izbranem programskem jeziku.

(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. D. Marshall, Programming Microsoft Visual C# 2005 : The language, Microsoft Press, 2006.

J. G. Brookshear, Computer science: an overview, Addison-Wesley, 2005.

K. B. Bruce, Foundations of object-oriented languages, MIT Press, 2002.

M. Mernik, V. Žumer, Programski jeziki, Fakulteta za elektrotehniko, računalništvo in informatiko, 2003.

Cilji in kompetence:

Spoznati zahtevnejše računalniške koncepte: operacijski sistem in druge vrste sistemske programske opreme, računalniška omrežja in sodobne programske jezike.

Objectives and competences:

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:

Znanje in razumevanje:

- Razumevanje zahtevnejših principov računalništva.
- Spoznati vrste sistemske programske opreme.
- Sposobnost pisanja kompleksnih programov.

Prenesljive/ključne spretnosti in drugi atributi:

- Prenos znanja računalništva na druga področja (matematika, biologija, kemija, optimizacija, ...).

Intended learning outcomes:

Knowledge and Understanding:

- Be able to understand more demanding principals of computer science.
- To know a variety of system software programs.
- Be able to write a complex computer program.

Transferable/Key Skills and other attributes:

- Knowledge transfer of methods of computer science into other fields (mathematics, chemistry, biology, optimization, ...).

Metode poučevanja in učenja:		Learning and teaching methods:	
<ul style="list-style-type: none"> • Predavanja • Računalniške vaje 		<ul style="list-style-type: none"> • Lectures • Computer exercises 	
Načini ocenjevanja:		Assessment:	
	Delež (v %) / Weight (in %)		
<u>Sprotno preverjanje:</u>		<u>Mid-term testing:</u>	
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	
Projekt	20%	Project	
<u>Izpit:</u>	30%	<u>Exams:</u>	
Pisni izpit – problemi		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:			
<p>1. BANIČ, Iztok, TARANENKO, Andrej. Measuring closeness of graphs - the Hausdorff distance. Bulletin of the Malaysian Mathematical Society, ISSN 0126-6705, 2017, vol. 40, iss. 1, str. 75-95, doi: 10.1007/s40840-015-0259-1.</p> <p>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.</p> <p>3. YERO, Ismael G., JAKOVAC, Marko, KUZIAC, 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.</p> <p>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.</p>			

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>.