



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. stopnja		1.	2.
Mathematics, 1 st degree		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.

Označevalni jezik za urejanje besedil LaTeX.

(objects, methods, classes, encapsulation, inheritance, polymorphism).

Models of mathematical objects presented in the the chosen programming language.

Document markup language LaTeX.

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.

Prenosljive/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:	
<p><u>Sprotno preverjanje:</u> Pisni testi – teorija (3 do 5 pisnih testov na semester) Naloge</p> <p><u>Izpit:</u> Pisni izpit – problemi</p> <p>Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.</p> <p>Opravljene sprotne obveznosti so pogoj za pristop k izpitu.</p>	<p>Delež (v %) / Weight (in %)</p> <p>30%</p> <p>20%</p> <p>50%</p>	<p><u>Mid-term testing:</u> Written tests – theory (from 3 to 5 written tests during the semester) Coursework</p> <p><u>Exams:</u> Written exam - problems</p> <p>Each of the mentioned commitments must be assessed with a passing grade.</p> <p>Passing grades of all mid-term testings are required for taking the exam.</p>	
Reference nosilca / Lecturer's references:			
<p>1. BREŠAR, Boštjan, JAKOVAC, Marko, KATRENIČ, Ján, SEMANIŠIN, Gabriel, TARANENKO, Andrej. On the vertex k-path cover. <i>Discrete appl. math.</i>. [Print ed.], 2013, vol. 161, iss. 13/14, str. 1943-1949, doi: 10.1016/j.dam.2013.02.024. [COBISS.SI-ID 19859464]</p> <p>2. JAKOVAC, Marko, TARANENKO, Andrej. On the k-path vertex cover of some graph products. <i>Discrete math.</i>. [Print ed.], 2013, vol. 313, iss. 1, str. 94-100. http://dx.doi.org/10.1016/j.disc.2012.09.010, doi: 10.1016/j.disc.2012.09.010. [COBISS.SI-ID 19464968]</p> <p>3. TARANENKO, Andrej, VESEL, Aleksander. 1-factors and characterization of reducible faces of plane elementary bipartite graphs. <i>Discuss. Math., Graph Theory</i>, 2012, vol. 32, no. 2, str. 289-297, doi: 10.7151/dmgt.1607. [COBISS.SI-ID 19104264]</p> <p>4. TARANENKO, Andrej, ŽIGERT PLETERŠEK, Petra. Resonant sets of benzenoid graphs and hypercubes of their resonance graphs. <i>MATCH Commun. Math. Comput. Chem. (Krag.)</i>, 2012, vol. 68, no. 1, str. 65-77. http://www.pmf.kg.ac.rs/match/content68n1.htm. [COBISS.SI-ID 16051990]</p> <p>5. KLAVŽAR, Sandi, SALEM, Khaled, TARANENKO, Andrej. Maximum cardinality resonant sets and maximal alternating sets of hexagonal systems. <i>Comput. math. appl. (1987)</i>. [Print ed.], 2010, vol. 59, no. 1, str. 506-513. http://dx.doi.org/10.1016/j.camwa.2009.06.011. [COBISS.SI-ID 15383641]</p>			