



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.

(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.

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:		
<ol style="list-style-type: none"> 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-ID19859464] 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-ID19464968] 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] 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] 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] 		