



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 cycle		1.	2.

Vrsta predmeta / Course type

obvezni / compulsory

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:

Vaje / Tutorial:

SLOVENSKO/SLOVENE

SLOVENSKO/SLOVENE

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

Pozitivne ocene pri kolokvijih, sprotnih nalogah in projektu so pogoj za pristop k pisnemu izpitu.

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.

Prerequisites:

Passing grades for midterm exams, coursework and the project are required for taking the written exam.

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.

Osnove objektnega programiranja (objekti, metode, razredi, enkapsulacija, dedovanje, polimorfizem).

Modeli matematičnih objektov predstavljeni v izbranem programskem jeziku.

Principles of object-oriented programming (objects, methods, classes, encapsulation, inheritance, polymorphism).

Models of mathematical objects presented in the chosen programming language.

Temeljni literatura in viri / Readings:

Deloma odvisni od izbranega programskega jezika:

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

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.

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 to other fields (mathematics, chemistry, biology, optimization, ...).

Metode poučevanja in učenja:		Learning and teaching methods:	
• Predavanja • Računalniške vaje		• Lectures • Computer exercises	
Načini ocenjevanja:		Assessment:	
	Delež (v %) / Weight (in %)		
<u>kolokvij</u>	20 %	<u>midterm exam</u>	
<u>sprotne naloge</u>	30 %	<u>coursework</u>	
<u>projekt</u>	25 %	<u>project</u>	
<u>pisni izpit</u>	25 %	<u>written exam</u>	

Reference nosilca / Lecturer's references:
1. BANIČ, Iztok, TARANENKO, Andrej. <i>Span of a graph : keeping the safety distance</i>. 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. <i>Daisy Hamming graphs</i>. 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. <i>Daisy cubes: a characterization and a generalization</i>. 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. <i>On graphs with the maximum edge metric dimension</i>. 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] PETERIN, Iztok, SCHREYER, Jens, FECKOVÁ ŠKRABUL'ÁKOVÁ, Erika, TARANENKO, Andrej. <i>A note on the Thue chromatic number of lexicographic produts of graphs</i>. 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]