



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	<b>Programiranje I</b>
<b>Course title:</b>	Programming I

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika, 1. stopnja		3.	5. ali 6.
Mathematics, 1 <sup>st</sup> degree		3.	5. or 6.

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
45		45			90	6

Nosilec predmeta / Lecturer:

Aleksander VESEL

Jeziki /  
Languages:

Predavanja /  
Lectures:

SLOVENSKO/SLOVENE

Vaje / Tutorial:

SLOVENSKO/SLOVENE

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

Jih ni.

Prerequisites:

There are none.

Vsebina:

Vsebina predmeta se prilagaja aktualnim potrebam in razvoju.

predmetno usmerjeno programiranje; navidezni računalnik; byte koda; prevajanje in zagon; elementi programskega jezika Java; operatorji in kontrolne strukture programskega jezika Java; primitivni tipi; kaj je statično; osnove definiranja in uporabe razredov; razredi, objekti, metode, konstruktor; inicializacija, finalizacija; življenjski cikel objekta; smetar; JavaDoc dokumentni

Content (Syllabus outline):

The contents of this subject is adjusted to the current needs and development.

object oriented programming; virtual machine; byte code; Java language elements; compiling and running; Java language operators and control structures; primitive types; what is static; basics of defining and using classes; classes, objects, methods, constructor; initialization, finalization; object's life cycle; garbage collector; JavaDoc documentation system

sistem

dedovanje; polimorfizem; prekrivanje metod; vmesniki; pretvorba tipov; osnovni razredi System, String, StringBuffer, Math, itd.; ovojni razredi; polja; razumevanje paketov; omejevanje dostopnosti (private, public, protected, friendly); strukture za zbirke objektov (Vector, List, Set, HashMap, Map,...); lokalizacija, kodiranje teksta

inheritance; polymorphism; method overloading; interfaces; type casting; basic classes System, String, StringBuffer, Math, etc.; wrapper classes; arrays; understanding packages; limiting access (private, public, protected, friendly); structures for objects collections (Vector, List, Set, HashMap, Map,...); localization, text encoding

### Temeljni literatura in viri / Readings:

U. Mesojedec, B. Fabjan, Java 2, temelji programiranja, ISBN 961-6361-30-9, Pasadena, 2004.

B. Eckel, Thinking in Java, The Definitive Introduction to Object Oriented Programming in the Language of the World Wide Web, ISBN 013-1872-48-6, Prentice Hall, 4th ed., 2006.

J. Bloch, Effective Java: Programming Language Guide, ISBN 020-1310-05-8, Addison-Wesley, 2001.

### Cilji in kompetence:

Spoznati osnove in naprednejše pristope objektno orientiranega programiranja.

Spoznati jezikovno sintakso Jave, strukturo in platformo.

Spoznati orodja za razvoj aplikacij.

### Objectives and competences:

Know basics and advanced approaches to object oriented programming.

Know Java language syntax, structure and platform.

Know tools for application development.

### Predvideni študijski rezultati:

Znanje in razumevanje:

- spoznati pojme, koncepte, mehanizme platforme Java
- znati uporabljati orodja za razvoj aplikacij

Prenosljive/ključne spretnosti in drugi atributi:

- uporaba matematičnih pojmov v programskih aplikacijah
- uporaba ustreznih podatkovnih struktur pri implementaciji matematičnih algoritmov
- pridobljena znanja se prenašajo na druge z računalništvom povezane predmete

### Intended learning outcomes:

Knowledge and Understanding:

- to know basic notions, concepts, mechanisms of Java platform
- operative knowledge with tools for application development

Transferable/Key Skills and other attributes:

- the usage of mathematical notions in applications
- the usage of appropriate data structures while implementing mathematical algorithms
- the obtained knowledge is transferable to the other computer science oriented subjects

<b>Metode poučevanja in učenja:</b>		<b>Learning and teaching methods:</b>	
<ul style="list-style-type: none"> <li>• Predavanja</li> <li>• Praktične vaje</li> </ul>		<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Practical exercises</li> </ul>	
<b>Načini ocenjevanja:</b>		<b>Assessment:</b>	
<p><u>Sprotno preverjanje:</u> Pisni testi – teorija (3 do 5 pisnih testov na semester)</p> <p><u>Izpit:</u> Pisni izpit – praktični del</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>50%</p> <p>50%</p>	<p><u>Mid-term testing:</u> Written tests – theory (from 3 to 5 written tests during the semester)</p> <p><u>Exams:</u> Written exam – practical part</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>	
<b>Reference nosilca / Lecturer's references:</b>			
<p>1. SHAO, Zehui, VESEL, Aleksander, XU, Jin. The k-distance independence number and 2-distance chromatic number of Cartesian products of cycles. Bulletin of the Malaysian Mathematical Society, ISSN 0126-6705, 2016, str. 1-15, doi: <a href="https://doi.org/10.1007/s40840-016-0397-0">10.1007/s40840-016-0397-0</a>.</p> <p>2. SHAO, Zehui, VESEL, Aleksander, XU, Jin. Frequency assignment problem in networks with limited spectrum. Central European Journal of Operations Research, ISSN 1435-246X, 2016, 1-15 str., doi: <a href="https://doi.org/10.1007/s10100-016-0462-7">10.1007/s10100-016-0462-7</a>.</p> <p>3. VESEL, Aleksander. Regular coronoids and 4-tilings. Discrete applied mathematics, ISSN 0166-218X. [Print ed.], 2016, str. 1-11, doi: <a href="https://doi.org/10.1016/j.dam.2016.07.022">10.1016/j.dam.2016.07.022</a>.</p> <p>4. RHO, Yoomi, VESEL, Aleksander. Linear recognition of generalized Fibonacci cubes <math>Q_h</math> (111). Discrete mathematics and theoretical computer science, ISSN 1365-8050, 2016, vol. 17, no. 3, str. 349-362. <a href="https://www.dmtcs.org/dmtcs-ojs/index.php/dmtcs/article/view/2756/4766.html">https://www.dmtcs.org/dmtcs-ojs/index.php/dmtcs/article/view/2756/4766.html</a>.</p> <p>5. VESEL, Aleksander. Linear recognition and embedding of Fibonacci cubes. Algorithmica, ISSN 0178-4617, 2015, vol. 71, no. 4, str. 1021-1034, doi: <a href="https://doi.org/10.1007/s00453-013-9839-3">10.1007/s00453-013-9839-3</a>.</p>			