

COURSE		PROGRAMMING		
LECTURER		Assoc. Prof. Emil Ilić-Georgijević Ph.D.		
STUDY	STATUS	SEMESTER	HOURS L+P	ECTS
B – G	Compulsory	2	2+2	5
OBJECTIVES				
<ul style="list-style-type: none"> □ Application of Java programming language in solving geodesy/geoinformatics problems. 				
COURSE CONTENT				
<ul style="list-style-type: none"> □ Introduction to Java programming language. Java syntax. Unicode. Comments in code. Identifiers and reserved words. Data types. Expressions and operators. Java commands. Methods. Classes and objects. Arrays. References. Packages. Files. □ OO programming. Objects and classes. Class' attributes. Konstructing and initializing objects. Java desstructors and finalization. Subclasses and inheritance. Attribute hiding. Abstract classes and methods. Interfaces. JavaDoc. Static methods. Local and anonymous classes. □ Java organization. Java types. Numbers and Math. Arrays. Java collections. Types, reflection, dynamic access. Threads. Files. Input/output arrays. □ Graphic interface. 				
RECOMMENDED LITERATURE				
<ol style="list-style-type: none"> 1. Lecture notes 2. D. Flanagan : <i>Java in a Nutshell</i>, O'Reilly & Associates Inc., 6th ed., 2014. 				
<p>Exam: Students are collecting points during the semester in the amount of 50% of the total points. The other 50% of the points can be collected during the final exam. Points during the semester are split into 2 parts:</p> <ol style="list-style-type: none"> a) 15% for the attendance, class interaction, and homework; b) 35% for the exam in elementary programming; <p>Final exam is related to the theoretical concepts discussed during lectures and one task for the programming part.</p>				

<i>WEEK</i>	<i>LECTURES</i>	<i>PRACTICE CLASS</i>
<i>1</i>	<i>CONTENT OF THE SUBJECT AND LEARNING APPROACHES. BASIC CONCEPT OF PROCEDURAL AND OBJECT-ORIENTED (OO) PROGRAMMING.</i>	<i>INTRODUCTION TO SOFTWARE USED IN IT CENTER AND LEARNING ABOUT THE ETHICS OF THE CLASSROOM USE.</i>
<i>2</i>	<i>INTRODUCTION TO OO PROGRAMMING. SOLVING PROBLEMS USING OO APPROACH.</i>	<i>EXERCISES USING OO ANALYSIS. ACTOR DEFINITION AND ITS ATTRIBUTES.</i>
<i>3</i>	<i>PRIMITIVE TYPES, VARIABLES, RESERVED WORDS, STATEMENTS AND OPERATORS.</i>	<i>EXERCISES USING SIMPLE VARIABLE DEFINITIONS USING DIFFERENT TYPES.</i>
<i>4</i>	<i>IF STATEMENTS. LOOPS (FOR, WHILE, AND REPEAT). NESTED LOOPS.</i>	<i>EXERCISES USING IF AND LOOPS.</i>
<i>5</i>	<i>MULTIDIMENSIONAL ARRAYS. DEFINING AND USING METHODS.</i>	<i>EXERCISES USING ARRAYS AND OPERATIONS WITH MATRICES.</i>
<i>6</i>	<i>CLASS DEFINITION (ATTRIBUTES, CONSTRUCTORS, GET/SET METHODS AND toString METHOD).</i>	<i>EXERCISES USING OBJECTS AND CHANGING OBJECT VALUES.</i>
<i>7</i>	<i>DEFINING AND USING PACKAGES.</i>	<i>EXAM IN ELEMENTARY PROGRAMMING</i>
<i>8</i>	<i>DIFFERENCE BETWEEN CLASS AND OBJECT, INITIALIZING OBJECTS USING CONSTRUCTORS. DATA ABSTRACTION.</i>	<i>EXERCISES USING CLASSES AND INITIALIZATION USING MULTIPLE CONSTRUCTORS.</i>
<i>9</i>	<i>ENCAPSULATION AND DATA PROTECTIONS. INHERITANCE.</i>	<i>EXERCISES USING PRIVATE/PROTECTED/PUBLIC ATTRIBUTES AND ITS USES IN INHERITANCE.</i>
<i>10</i>	<i>EXCEPTIONS AND ITS APPLICATIONS.</i>	<i>EXERCISES USING EXCEPTIONS.</i>
<i>11</i>	<i>FILES AND OPERATIONS WITH FILES.</i>	<i>EXERCISES USING READING AND WRITING FILES.</i>
<i>12</i>	<i>SORTING ALGORITHMS (BUBBLE, MERGE, QUICKSORT).</i>	<i>EXERCISES USING BUBBLE SORT ALGORITHM.</i>
<i>13</i>	<i>FINAL PROJECT</i>	<i>DEFINING FINAL PROJECT, CONCEPTUAL DESIGN AND DESIGNING CLASS DIAGRAM.</i>
<i>14</i>	<i>IMPLEMENTATION OF FINAL PROJECT.</i>	<i>IMPLEMENTATION OF CLASS DIAGRAM FOR FINAL PROEJCT.</i>
<i>15</i>	<i>TESTING OF FINAL PROJECT AND DOCUMENTATION.</i>	<i>TESTING OF FINAL PROJECT AND WRITING DOCUMENTATION.</i>