VIDZEMES AUGSTSKOLA

FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Course Title:	**Programming (Java) I**				
Course code (LAIS):	**DatZ1004**				
Study programme:	Information Technologies				
Level of Study programme:	☐ 1st level professional higher education				
	☒ Professional Bachelor				
	☐ Professional Master				
	☐ Academic Master				
	☐ PhD level				
Type of Study programme:	☒ Compulsory course (Part A)				
	☐ Professional specialization courses (Part B, compulsory)				
	☐ Professional specialization optional courses (Part B, optional)				
	☐ Elective courses (Part C)				
Course Workload:	**Credits**	**ECTS**	**Academic hours**	**Contact hours**	**Independent work hours**
	4	6	160	48	112
Course Author/ Tutor:	**Miķelis Baltruks**				
	Lecturer, Mg.sc.comp.				
	e-mail: mikelis.baltruks@gmail.com				
	Consultation: according to the schedule for each semester				
Study Form:	Full time studies				
Study year, semester:	First year, first semester				
Language:	Latvian				
Prerequisites for the Course:	-				
Course Summary:	Goal of the course is to introduce students with main steps for resolving development design on computer, algorithm output technique and programming language Java. To prepare for self-dependent headwork in programming, to furnish deepest understanding in special subject, to introduce with object oriented programming principles and technologies				
Assessment:	Exam				
Requirements for Credits:	1. Compulsory manual training attendance and discharge of all unassisted tasks and tests about all themes. Not attended manual trainings are possible to work off in pursuance of addition individual tasks. Estimation of accomplished manual trainings will reduce by any missed manual trainings thereby average rating will be less than 4. 2. Course paper will give and present in time. 3. Students will take supplementary point for all manual trainings, control works and course paper. Final examination: exam Final assessment consists of: 1. Individual estimation of practical work – 30% 2. Assessment of the course paper– 30% 3. Exam – 40%.				
Abiding by the Academic Ethics	Students must abide by the academic and research ethics, Vidzeme University of Applied Sciences Ethics Regulations, incl.: – study papers must be independently developed; – the study work should reference all statements, ideas and data used that have been authored by someone else; – appropriate data acquisition methods should be used in the acquisition of data, the research ethics must be respected, empirical data must be collected independently and cannot be distorted or falsified; – the examination must be carried out by the student independently, without the use of supporting materials and/or consultations with other students, unless the lecturer states otherwise.				

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	In the event of non-compliance with the academic and research ethics, punishment is imposed in accordance with the ViA Ethics Regulations and the study course must be re-taken, unless the punishment is extramarital.	
Learning Outcomes; the evaluation methods and criteria	**Learning Outcomes**	**The evaluation methods and criteria**
	Knowledge	
	Knowledge of the programming language Java	Lectures, practical work
	Knowledge of algorithm design techniques	Lectures, practical work
	Knowledge of the main terms of project development stages on the computer	Lectures, practical work
	Knowledge of object-oriented programming principles and technologies	Lectures, practical work
	Skills	
	To be able to independently develop Java programs	Lectures, practical work
	Be able to use Java operations appropriate for your application	Lectures, practical work
	Competency	
	To draw up the algorithm block diagram for resolving different character tasks in Java development kit	Lectures, practical work
	To compile and to run Java programs	Lectures, practical work
	To create self-dependently classes for objects and to operate practically with real objects in object oriented environment	Lectures, practical work
	To create self-dependently interfaces for methods and to operate practically with interfaces in object oriented environment, ·to program parallel threads and to handle exceptions	Lectures, practical work
Course Compulsory literature:	1.The Java Tutorial (http://java.sun.com/docs/books/tutorial/) 2. Herbert Schildt, Java A Beginner's Guide Sixth Edition 3.A.Balode, Programmēšanas pamati, Zvaigzne ABC, 2009. 4.O.Bāliņš, Lecture materials in electronic form	
Course additional literature:	1.Cay Horstmann. Computing Concepts with JAWA 2 Essentials. 2.Craig Larman. Applying UML und Patterns. 3.Deitel & Deitel How to program, Prentice hall, Upper Sadle River, New Jersey, 1997/1998. 4.Ivar Horton, Beginning Java 2 – JDK 1.3 Edition, Wrok Press Ltd. 5.Patrik Naughton, Herbert Schildt. Java 2: The Complete Reference. 6.Айвор Хортон, Java 2, I и II том. 7.Кей С.Хорстман, Гарл Корнелл Java 2, том I, Основы 8.Крег Ларман. Применение UML и шаблонов проектирования. 9.O.Bāliņš, G.Grundštoks. Vispārējie metodiskie norādījumi par studiju darba izpildi, VA,2002	
Course confirmation date:	22.05.2018	
Date of course description update:		

Study Course Plan:

Date	Theme	Academic hours		Study Form/ Organization of independent work of students and task description
		Contact hours	Independent work hours	
11.09.2018	1.The main steps of task solving	3	4	Lectures, practical work,

	•The mathematical formulation of the task; •Choice of the solution •Drawing up the algorithm flowcharts; •Block Diagram Description; •The compilation of the object and load module acquisition •Complex program algorithm preparation			home work
18.09.2018	2.Java language and its implementation of the environmental characteristics: •Characteristics of Object oriented programming language; •Characteristics of components of the Java environment; •The first simple Java programs; •Two control operators; •Building of executable blocks; •Language syntax.	3	4	Lectures, practical work, home work
25.09.2018	3. Data types. Variables and Arrays: •Data type Description; •Primitive data types; •Integer data types; •Types of fixed-point; •The Character and Boolean types; •Literals; •Variables; •A type conversion, and application; •Automatic type of application expressions; •Arrays.	3	4	Lectures, practical work, home work
02.10.2018	4. Operations: •Arithmetic Operations; •Bitwise and Bit Shift Operations; •Relational Operations; •Logical Operations; •Assignment Operations; •Conditional Operations; •Operating procedure of execution.	3	4	Lectures, practical work, home work
09.10.2018	5.Control Flow Statements: •The if-then-else and switch Statements •The while, do-while and for Statements; •The break, continue and return Statements. •Successful choice of control flow statements	3	6	Lectures, practical work, home work
16.10.2018	6. Methods, classes and objects •Definition of methods •Types of methods and param passing •Logic behind methods •Definition of classes, constructors and object creation •Logic behind classes •Successful class structure and methods •Use of object passing and *this* keyword	3	6	Lectures, practical work, home work
23.10.2018	7. The purpose of program development •Purpose of flowcharts and source code •Problem and possible bottleneck recognition •Creation of dynamic and defensive program	3	6	Lectures, practical work, home work
30.10.2018	10.Exceptions to handle errors: •Catching and Handling Exceptions;	3	6	Lectures, practical work, home work

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	•Kinds of Exception; •Using the try and catch blocks; •The throw Statement; •Methods with Keyword throws; •The finally Block; •Specifying the Exceptions Thrown by a Method. •Creating Exception Classes			
02.11.2018	8. Inheritance. Defining an Inheritance: •Using the super Keyword; •Creating Multilevel Class Hierarchy; •To invoke Constructors; •Polymorphism; •Abstract Methods and Classes; •Using the final Keyword.	3	6	Lectures, practical work, home work
06.11.2018	11. Multithreaded programming: •Java execution model; •Main Thread; •Defining and Starting a Thread; •Multithreaded programming; •Using the Allive( ) and the join( ) methods; •Thread Priorities; •Synchronization; •Thread Interference; •Suspending and Resuming Threads; •Using of Multiple Threads.	3	6	Lectures, practical work, home work
13.11.2018	11. File processing •Principles of file reading and writing •Reading of file •Writing into a file •Possible problems and bottlenecks •Exceptions of I/O of file	3	6	Lectures, practical work, home work
20.11.2018	12. Usage of advanced elements •Data list alternatives •usage of Java in different environments •Usage of files as a database •Introduction info applets •Visual game logic and programming •Advanced algorithms and its development	3	12	Lectures, practical work, home work
27.11.2018	Course work development and defence	6	40	Practical work, oral examination
18.12.2018	Final exam	6	2	Written examination
	Hours total:	***48***	***112***	