

**FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION**

Course Title:	Object-oriented programming (C++)				
Course code (LAIS):					
Study programme:	Information technologies				
Level of Study programme:	<input type="checkbox"/>	1st level professional higher education			
	<input checked="" type="checkbox"/>	Professional Bachelor			
	<input type="checkbox"/>	Professional Master			
	<input type="checkbox"/>	Academic Master			
	<input type="checkbox"/>	PhD level			
Type of Study programme:	<input type="checkbox"/>	Compulsory course (Part A)			
	<input type="checkbox"/>	Professional specialization courses (Part B, compulsory)			
	<input type="checkbox"/>	Professional specialization optional courses (Part B, optional)			
	<input type="checkbox"/>	Elective courses (Part C)			
Course Workload:	Credits	ECTS	Academic hours	Contact hours	Independent work hours
FT	4	6	160	64	96
PT	4	6	160	20	140
Course Author/ Tutor:	Andris Fjodorovs				
	Lecturer, Mg.sc.comp.				
	e-mail: andris.fjodorovs@va.lv				
	Consultation: according to the schedule for each semester				
Study Form:	Full time studies, part time studies				
Study year, semester:					
Language:	English				
Prerequisites for the Course:	-				
Course Summary:	The goal of the course is to obtain basic knowledge about algorithms and the program development process, as well as to develop skills in C++ programming using structural and object-oriented programming paradigms. After the course, students will be able to develop structured programs using such programming elements as functions, pointers, data structures, binary text files, classes, templates, libraries.				
Independent work:	Laboratory works. Additional materials and laboratory work scenarios for training. Homework. Programming practical tasks and evaluating other students' code.				
Final Assessment:	Oral and written exam on the topics of the course.				
Requirements for Credits:	Tests, coursework, the exam – at least 40% must be attained in total. – Short tests after every two lectures. – Course work - software development of the chosen topic and its presentation. – Oral exam about the topics of the course. – The written exam consists of practical tasks.				
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. 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	Learning Outcomes			The evaluation methods and criteria	
	Knowledge				

criteria	Understand how to develop algorithms, about their basic principles.	Tests Final assessment
	Understanding how a program can be executed in a computer – the sequence of commands, the memory management, etc.	Practical work Homework Tests Final assessment
	Obtained basic and more deepened theoretical knowledge in C++ programming.	Tests Coursework Final assessment
	Skills	
	Capable of using software development tools and analyzing program code.	Practical work Homework Tests Coursework
	Capable of using various language constructs and benefits of object-oriented programming.	Homework Tests Coursework Final assessment
	Capable of reading, analyzing and evaluating program text of others.	Homework Coursework
	Capable of using various popular data structures and are capable of using them in the process of developing programs.	Homework Tests Coursework Final assessment
	Competency	
	Ability to organize their work, professional skills related to the work of developing programs, ability to make decisions, take responsibility for their actions, art of arguing, present and defend their opinion objectively.	Coursework Coursework presentation Final assessment
Course Compulsory literature:	<ol style="list-style-type: none"> 1. Allen B. Downey, How To Think Like A Computer Scientist: C++ Version, CreateSpace, 2009, 192p. ISBN-13: 978-1441419057 2. Scott Meyers, Effective C++, Addison-Wesley, 3rd edition, 2005, 291p. ISBN-13: 978-0321334879 3. Deitel, H.M., Deitel, P.J. C++ How to program, 4-th edition. – New Jersey: Prentice Hall, 2003. – 1321p. ISBN: 0130384747 4. Bjarne Stroustrup, The C++ Programming Language, 4th edition, 2013, 1376p. ISBN-13: 978-0321563842 5. cplusplus.com – The C++ Resources Network [online]. In internet: http://www.cplusplus.com 	
Course additional literature:	<ol style="list-style-type: none"> 1. Bjarne Stroustrup, Programming Princip & Practice Using C++, 2nd Edition, 2014, 1312p. ISBN-13: 978-0321992789 2. Stanley B. Lippman, Josée Lajoie, Barbara E. Moo, C++ Primer, 5th edition, 2012, 976p. ISBN-13: 978-0321714114 3. Scott Meyers, Effective Modern C++: 42 Specific Ways to Improve Your Use of C++11 and C++14, 2014, 334p. ISBN-13: 978-1491903995 4. Andrew Koenig, Barbara E. Moo, Accelerated C++: Practical Programming by Example, 1st Edition, 2000, 352p. ISBN-13: 978-0201703535 5. GeeksforGeeks – The C++ Programming Language [online]. In internet: https://www.geeksforgeeks.org/c-plus-plus/ 	
Course confirmation date:		
Date of course description update:		

Study Course Plan for Full Time Studies:

Date	Theme	Academic hours	Study Form/
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		Contact hours	Independent work hours	Organization of independent work of students and task description
<i>The date is specified before the implementation of the course</i>	Introduction to C++ programming	4	6	Lecture, practical work
	Arrays	4	6	Lecture, practical work, homework
	Functions	4	6	Lecture, test, practical work
	Low-level strings and array processing in functions	4	6	Lecture, practical work, homework
	Processing text files	4	6	Lecture, test, practical work
	Dynamic data structures	4	6	Lecture, practical work, homework
	Object-oriented programming	4	6	Lecture, test, practical work
	Object-oriented programming	4	6	Lecture, practical work, homework
	Processing binary files	4	6	Lecture, test, practical work
	Templates and STL library	4	6	Lecture, practical work, homework
	C++ specific features	4	6	Lecture, test, practical work
	System programming elements	4	6	Lecture, practical work
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	Coursework presentation	4	6	Seminar
	Oral end exam	4	6	Exam
	Written end exam	4	6	Exam
	<i>Stundu skaits kopā:</i>	64	96	

Study Course Plan for Part Time Studies:

Date	Theme	Academic hours		Study Form/ Organization of independent work of students and task description
		Contact hours	Independent work hours	
<i>The date is specified before the implementation of the course</i>	Introduction to C++ programming Arrays Functions Low-level strings	4	6	Lecture
	Array processing in functions Processing text files Dynamic data structures	4	6	Lecture
	Object-oriented programming Processing binary files Templates and STL library	4	6	Lecture, test
	C++ specific features System programming elements Coursework presentation	4	6	Lecture, coursework
	End exam	4	6	Exam
	Hours total:	20	140	