

1.	Course Title	Advanced programming		
2.	Code	F18L2W140		
3.	Study program	Software engineering and information systems		
4.	Study Program Organizer	Faculty of Computer Science and Engineering		
5.	Degree (first, second, third cycle)	first cycle		
6.	Academic year / semester 2 / winter / mandatory	7. ECTS credits 6		
8.	Teacher	full professor Dejan Gjorgjevikj, associate professor Gjorgji Madzharov, assistant professor Ivan Kitanovski		
9.	Course enrollment prerequisites	Објектно-ориентирано програмирање		
10.	Course program goals (competencies): The student will attain knowledge of generic programming, abstract data types, creation of template classes and functions. After completing the course, the students will be capable for using generic data collections, maps, iterators and basic design patterns for rapid object oriented software development.			
11.	Course program content: Generic programming, abstract data types, generic functions, generic classes, data collections with direct and linear access, maps, refactoring, basic concepts of software design patterns, multithreading and concurrency concepts, integrated development environments.			
12.	Learning methods: Lectures using presentations, interactive lectures, exercises (using equipment and software packages), teamwork, case studies, invited guest lecturers, independent preparation and defense of a project assignment and seminar work.			
13.	Total available time	6 ECTS x 30 hours = 180 hours		
14.	Distribution of the available time	30 + 60 + 15 + 15 + 60 = 180 hours		
15.	Teaching activity forms	15.1.	Lectures – theoretical teaching	30 hours
		15.2.	Exercises (laboratory, auditory), seminar papers, teamwork	60 hours
16.	Other activity forms	16.1.	Project Tasks	15 hours

		16.2.	Independent Learning Tasks	15 hours
		16.3.	Home learning	60 hours
17.	Assessment methodology			
	17.1.	Tests		10 points
	17.2.	Seminar paper/project (presentation: written and oral)		10 points
	17.3.	Activity and learning		10 points
	17.4.	Final exam		70 points
18.	Assessment criteria (points/grade)		up to 50 points	5 (five) (F)
			51 to 60 points	6 (six) (E)
			61 to 70 points	7 (seven) (D)
			71 to 80 points	8 (eight) (C)
			81 to 90 points	9 (nine) (B)
			91 to 100 points	10 (ten) (A)
19.	Course completion and final exam requirements		Realized activities 15.1 and 15.2	
20.	Teaching Language		Macedonian and English	
21.	Teaching quality evaluation method		Internal evaluation mechanisms and questionnaires	
22.	Course Material			
	22.1.	Mandatory course material		
		No	Author	Title
			Publisher	Year
		1	Savitch, Walter J	Absolute Java
			Addison Wesley	2012
		2	Naftalinand Philip Wadler	JAVA Generics and Collections
			O'Reilly	2006
		3	Alan Mycroft, Mario Fusco	Java 8 in Action: Lambdas, Streams, and Functional-style Programming
			Manning Publication	2015
	22.2.	Additional course material		
		No.	Author	Title
			Publisher	Year

