

1.	Course Title	Web Programming		
2.	Code	F18L3W024		
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 3 / winter / optional	7. ECTS credits 6		
8.	Teacher	full professor Dimitar Trajanov, assistant professor Sasho Gramatikov, assistant professor Milosh Jovanovikj		
9.	Course enrollment prerequisites	Алгоритми и податочни структури		
10.	Course program goals (competencies): Web application development, using the MVC pattern. The students will learn to develop web applications and web services, to connect to and use databases. They will learn to develop security mechanisms for web applications, and test the developed web applications.			
11.	Course program content: (1) Web application development trends (1) Introduction to web application development (protocols, client-server, generating HTML) (2) Server side development for web applications (2) Front-end development for web applications (1) State management for web applications and services (1) MVC development pattern for web applications (2) Working with data (persistence, object-relational mapping) (1) Web application security (1) Web application testing (1) Microservices			
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 + 45 + 15 + 15 + 75 = 180 hours		
15.	Teaching activity forms	15.1.	Lectures – theoretical teaching	30 hours
		15.2.	Exercises (laboratory, auditory), seminar papers, teamwork	45 hours

16.	Other activity forms		16.1.	Project Tasks	15 hours	
			16.2.	Independent Learning Tasks	15 hours	
			16.3.	Home learning	75 hours	
17.	Assessment methodology					
	17.1.	Tests			0 points	
	17.2.	Seminar paper/project (presentation: written and oral)			20 points	
	17.3.	Activity and learning			15 points	
	17.4.	Final exam			65 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	Craig Walls	Spring in Action Fifth Edition	Manning Publishing	2017
		2	Soni, R. K	Full Stack AngularJS for Java Developers	Apress	2017
		3	Layka, Vishal	Modern Java Web Development	Apress	2014
	22.2.	Additional course material				
		No.	Author	Title	Publisher	Year

