

1.	Course Title	Implementation of Free and Open Source Systems
2.	Code	F18L3W103
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 4 / winter / optional	7. ECTS credits 6
8.	Teacher	associate professor Ivan Chorbev, assistant professor Vangel Ajanovski
9.	Course enrollment prerequisites	Алгоритми и податочни структури
10.	<p>Course program goals (competencies): After completion of the course it is expected for the students to be capable of productive participation in bigger software teams working using free and open source technologies. To be capable of working with programming languages with open source, to develop web applications on those platforms. To be capable of managing software projects based on technologies with free and open source.</p>	
11.	<p>Course program content: History of the concept of systems with Free and Open Source - FOS. Software with free and open source (Free/Open Source Software - FOSS). Philosophy for development with FOS. FOS hardware. Economic analysis of systems with FOS. Business analysis. Business models. Patenting. Licencing with FOS and licence types (GNU General Public License (GPL)). Comparison of systems with closed code. Comparison with free software. Applicative software with FOS code. Operating systems with FOS code. Programming languages for development with FOS. Server software with FOS. Widely used products with FOS. Education systems with FOS. Development tools for FOSS. Systems for management of dependancies. Models for development wiht FOS. Patterns for FOS development. SOLID principles. Managing software projects with FOS. Monitoring of the development of projects, management of changes. Patterns implemented with Open Source platforms. Libraries based on platforms with FOS. Practical techniques in development of FOS web applications. Standards for coding and documentation. Safety and reliability of Open Source Software. Support for systems with FOS (communities for development of OSS). Blogs, groups, forums, social networks for FOSS. Future of FOSS.</p>	
12.	<p>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.</p>	

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		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	Allen Tucker, Ralph Morelli, Chamindra de Silva	Software Development: An Open Source Approach (Chapman & Hall/CRC Innovations in Software Engineering and Software Development Series)	CRC Press	2011
2	Karl Fogel	Producing Open Source Software	Karl Fogel, under the CreativeCommons Attribution- ShareAlike (4.0) license	2017
3	David Sklar	Learning PHP	O'Reilly Media, Inc.	2016
4	William Sanders	Learning PHP Design Patterns	O'Reilly Media, Inc.	2013
22.2. Additional course material				
No.	Author	Title	Publisher	Year