

1.	Course Title	Operating systems
2.	Code	F18L2S017
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 / summer / mandatory	7. ECTS credits 6
8.	Teacher	full professor Dimitar Trajanov, associate professor Nevena Ackovska, associate professor Igor Mishkovski, associate professor Vesna Dimitrova, associate professor Boro Jakimovski, assistant professor Hristina Mihajloska, assistant professor Sasho Gramatkov, assistant professor Milosh Jovanovikj
9.	Course enrollment prerequisites	Архитектура и организација на компјутери или Компјутерски архитектури
10.	Course program goals (competencies):	The student will be introduced into the basic building blocks of modern operating systems through their specific implementation in Windows and UNIX-like systems.
11.	Course program content:	Overview of operating systems, role, history, functionality; Definitions of operating systems; Processes and processes and threads management; Concurrency, states and state diagrams, implementation structures; Distribution of resources, principles of distribution, management and resolution of events; Deadlock; Memory management, types of memory devices, partitioning. Device management, serial and parallel connections, direct memory access, buffering strategies. File system, basic concepts, directory structure, memory mapped files, naming, search and access, protection strategies. Basic elements of security and protection, methods and devices, access and authentication, protection models, memory protection, description of a specific OS. Input output devices and communication.
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		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	Andrew S. Tanenbaum	Modern Operating Systems, 4-th edition	Prentice Hall	2014
2	William Stalings	Operating Systems, Internals and Design Principles, 8-th edition	Prentice Hall	2014
3	Abraham Silberschatz	Operating Systems Concepts, 9-th edition	Wiley	2012
22.2.	Additional course material			
No.	Author	Title	Publisher	Year