

1.	Course Title	Information security
2.	Code	F18L3W043
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	associate professor Vesna Dimitrova, assistant professor Simona Samardzhiska
9.	Course enrollment prerequisites	Оперативни системи
10.	Course program goals (competencies): Learning the concepts related to Information Security; procedures and methods for securing computer systems; methods used to increasing the level of security.	
11.	Course program content: Introduction to Information Security (Basic concepts and definitions related to Information Security) Basic Cryptographic Terms (Historical examples, Symmetric cryptography, Public key cryptography, Hash functions) Cryptographic Algorithms (Types of Cryptographic Algorithms, Diffie-Hellman Key Exchange, Authentication Encryption Schemes) Basic Authentication Terms (Authentication, Authentication methods, Passwords) Biometric Technologies (Biometrics, Basic concepts and types, Two-factor authentication) Basic Authorization Terms (Authorization, Access control matrices) Authentication models (Multilevel security models, Covert channels, Firewalls, IDS systems) Protocols (Simple protocols, Key exchange protocols with symmetric cryptography, Attacks, Kerberos) Authentication Protocols (Examples with Attacks, Otway-Rees, Needham-Schroeder, Public Key Infrastructure) Real Protocols (SSH, SSL / TLS), Open SSL, Zero-Knowledge Protocols (Fiat-Shamir Protocol) Malicious Software (Types of Malicious Software, Software Attacks) Operating Systems Security (OS Security Functions, Trusted OS)	
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	Mark Stamp	Information security – principles and practice	Wiley	2011
		2	Dietter Gollman	Computer Security	Wiley	2011
	22.2.	Additional course material				
		No.	Author	Title	Publisher	Year

