1.	Course Title	Wireless mobile systems		
2.	Code	F18L2S061		
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	associate professor SoNja Filiposka, associate professor Anastas Mishev		
9.	Course enrollment prerequisites	Компјутерски мрежи или Компјутерски мрежи и безбедност		
10.	Course program goals (competencies): Using and understanding the wireless mobile communication systems			
11.	Course program content: Introduction, wireless standards, organizations, use Wireless transmission, radio frequencies, measuring, RF mathematics, modulation, polarization Medium access, antennas, MIMO, types, Fresnel zones, link budget Telecommunication systems, spread spectrum technologies, cell structure, CDMA GSM, handover, data services, UMTS, 4G LTE, EPC, OFDM Wireless local networks, topologies, Bluetooth, RFID, NFC, ZigBee Wireless networks secuirty, old solutions, robust security, segmentation, VPN Wireless networks attacks, types, monitoring, secuirty policies Site survey, network design Troubleshooting, challenges, methodologies 802.11n, 802.11ac, MIMO, HT, migration, SU MIMO BYOD, POE, MDM, guest networks, access control			
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	Jochen Schiller	Mobile Communications	Addison Wesley	2004
2	David A. Westcott, David D. Coleman	CWNA Official study guide	Sybex	2015
3	Erik Dahlman, Stefan Parkvall, Johan Skold	4G, LTE-Advanced Pro and The Road to 5G	Academic Press	2016

22.2. Additional course material

No.	Author	Title	Publisher	Year