

Specification for the book of courses

Study program		Communications and Information Technologies		
Module		Communications and Information Processing		
Type and level of studies		Master studies		
The name of the course		Next generation mobile systems		
Lecturer (for lectures)		Milović M. Daniela, Đorđević T. Goran, Milić N. Dejan		
Lecturer/associate (for exercises)		Panajotović S. Aleksandra		
Lecturer/associate (for OFE)				
Number of ECTS	4	Course status (obligatory/elective)	Elective	
Prerequisites				
Course				
The present course provides advanced knowledge in modern mobile systems and services.				
Course outcomes				
Students will learn to: 1) implement software models of modern mobile system channels; 2) implement software in modulation procedures; 3) analyze and plan telecommunication traffic in modern mobile systems; 4) plan the cellular structure.				
Course outline				
Theoretical teaching	Mobile systems development - historical overview. Overview and analysis of existing mobile systems. The propagation characteristics of the mobile channel. Modems for mobile systems - modulation and demodulation techniques, diversity techniques. Channel coding for mobile systems. Cellular system design including cell structure. Multiple access techniques. Principles of positioning. Telecommunication traffic and queing systems. Services of mobile systems. User Mobility and Handover. Routing of traffic. Interconnections of different networks and convergence. Dimensioning the capacity of hardware and transport routes. Requirements for new generation networks.			
Practical teaching (exercises, OFE, study and research)	Auditory and computer exercises.			
Textbooks/references				
1	A. Molisch, Wireless Communications, John Wiley & Sons, Ltd., 2005.			
2	P. M. Shankar, Introduction to Wireless Systems, John Wiley & Sons, Inc., 2002.			
3	E. Bjornson, J. Hoydis, L. Sanguinetti, Massive MIMO Networks: Spectral, Energy, and Hardware Efficiency			
4	G. L. Stuber, Principles of Mobile Communication, Springer, 2017.			
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	0	0	0
Teaching methods				
Lectures, auditory exercises, homeworks, office hours.				
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures		10	Written exam	20
Exercises			Oral exam	20
Colloquia		20		
Projects		30		