

Specification for the book of courses

Study program		Communications and Information Technologies		
Module		System Engineering and Radio-Communications		
Type and level of studies		Master studies		
The name of the course		Satellite systems and services		
Lecturer (for lectures)		Pronić-Rančić R. Olivera		
Lecturer/associate (for exercises)		Milijić R. Marija, Joković J. Jugoslav		
Lecturer/associate (for OFE)				
Number of ECTS	4	Course status (obligatory/elective)	Elective	
Prerequisites				
Course Introduction to architecture, functioning and basic services of modern satellite systems.				
Course outcomes Knowledge of architecture, principles of operation, and the most important services of modern satellite systems. Ability to solve practical problems in the field of satellite systems design.				
Course outline				
Theoretical teaching	Architecture of satellite communication systems. Satellite orbits and trajectories. The launch, positioning and maintaining satellites in orbit. Satellite hardware - satellite subsystems. Satellite link design. Modulation techniques. Multiple access techniques. Earth stations. Communication satellites. Satellite telephony. Satellite television. Satellite data communication services. VSAT systems. Satellite navigation systems. GPS - architecture, services, principles of operation, GPS receivers. WAAS, LAAS, EGNOS. GALILEO. Remote sensing satellites - payloads, types of images, image interpretation. Weather and military satellites.			
Practical teaching (exercises, OFE, study and research)	Auditory exercises involve solving problems in areas that are covered by the content of the subject.			
Textbooks/references				
1	T. Pratt, C. Bostian, J. Allnut, "Satellite Communications", J.Wiley & Sons, 2003.			
2	A. K. Maini, V. Agrawal, "Satellite technology – principles and applications", Second edition, J.Wiley & Sons, 2011.			
3	GPS, Essentials of Satellite Navigation, u-blox AG, 2009.			
4	G. Maral, M. Bousquet, "Satellite Communications Systems – systems, techniques and technology", fifth edition, J.Wiley & Sons, 2009.			
5	D. Minoli, "Innovations in satellite communications and satellite technology", J. Wiley & Sons, Inc., 2015			
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. Project. Consultations.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	5	Written exam	30	
Exercises		Oral exam	30	
Colloquia	20			
Projects	15			