Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Electron Devices and Microsystems		
Type and level of studies	Undergraduate Academic Studies		
The name of the course	Telecommunications		
Lecturer (for lectures)	Đorđević T. Goran		
Lecturer/associate (for exercises)	Cvetković M. Aleksandra		
Lecturer/associate (for OFE)	Cvetković M. Aleksandra		
Number of ECTS	6	**Course status (obligatory/elective)**	Elective
Prerequisites			
Course	Acquisition of basic knowledge in analogue and digital telecommunications		
Course outcomes	After passing the exam students will: 1) know to perform a spectral analysis of deterministic and random signals; 2) know the basic principles of analog modulation; 3) understand the process of digitizing analog signals and know the principles of digital signal transmission in the baseband and passband; 4) know the elementary methods of compression, error correction coding and cryptography.		
Course outline			
Theoretical teaching	Spectral analysis of deterministic and random signals. Signals transmission through linear and non-linear systems. Analog modulation. Signal digitizing. Impulse coded modulation and differential impulse coded modulation. Multiplexing. Digital signals transmission in baseband. Intersymbol interference. Transmission of digital signals in the passband (ASK, FSK, PSK, QAM - process of modulation and demodulation). Entropy of information sources and channel capacity. Introduction to compression, error correction coding and cryptography. Signal transmission through fiber optic and wireless media. Public mobile and satellite systems. Cable distributed systems. The importance of telecommunication techniques for Internet intelligent facilities (M2M, autonomous vehicles, smart cities).		
Practical teaching (exercises, OFE, study and research	Exercises on the board and laboratory exercises will be organized from all method units from the lectures.		
Textbooks/references			
1	M. L. Dukić, Principles of telecommunications (in Serbian), 2nd edition, Akademska misao, Belgrade, 2014.		
2	S. Haykin, M. Moher, Communication Systems, 5th edition, John Wiley & Sons, Inc., NY, USA, 2009.		
3	I. S. Stojanović, Fundamentals of Telecommunications (in Serbian), Naučna knjiga, Belgrade, 1990.		
4			
5			

Number of classes of active education per week during semester/trimester/year

Lectures	**Exercises**	**OFE**	**Study and research work**	**Other classes**
2	2	1	0	0
Teaching methods	Lectures. Exercises. Laboratory exercises. Consultations.			

Grade (maximum number of points 100)

Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	5	**Written exam**	20
Exercises	5	**Oral exam**	30
Colloquia	30		
Projects	10		