

## Specification for the book of courses

<b>Study program</b>		Communications and Information Technologies		
<b>Module</b>		System Engineering and Radio-Communications		
<b>Type and level of studies</b>		Master studies		
<b>The name of the course</b>		Multimedia Communication Systems		
<b>Lecturer (for lectures)</b>		Maleš-Ilić P. Nataša, Marković V. Vera		
<b>Lecturer/associate (for exercises)</b>		Joković J. Jugoslav		
<b>Lecturer/associate (for OFE)</b>		Joković J. Jugoslav		
<b>Number of ECTS</b>	4	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>	Introduction to techniques, standards and architecture of contemporary communication systems for production, processing and transmission of multimedia content.			
<b>Course outcomes</b>	Acquiring knowledge necessary for the production, transmission and analysis of multimedia content in communication systems. Acquiring the ability to optimum use of multimedia devices and services, as well as their development.			
<b>Course outline</b>				
<b>Theoretical teaching</b>	Multimedia - basic concepts, data sources, transmission media. Formats and processing of multimedia signals - audio, text, picture, video. Production and integration of multimedia content and synchronization. Compression standards for multimedia communications. Adaptation of content and scaling. Searching for multimedia content. Protection of multimedia content. Wireless multimedia communication systems. Multimedia communications over IP networks. Convergence technologies. Interactive and multimedia services based on Cloud. Multimedia IoT systems. Multimedia devices - displays, acquisitions, mobile and portable devices, human-device interaction. QoS and QoE in multimedia.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Auditory exercises-solving problems in areas that are covered by the content of the subject.			
<b>Textbooks/references</b>				
1	K.R.Rao, Zoran S. Bojkovic, Dragorad A. Milovanovic: Multimedia communication Systems, John Wiley & Sons, 2006.			
2	Yao Wang, Jörn Ostermann, Ya-Qin Zhang: Digital Video Processing and Communications, Prentice Hall, 2002.			
3	K.R.Rao, Zoran S. Bojkovic, Dragorad A. Milovanovic: Wireless Multimedia Communication:Convergence, DSP, QoS, and Security, CRC, 2009.			
4	Gonzalez and Woods, Digital Image Processing, 4nd ed., Pearson, 2017.			
5				
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
2	1	1	0	0
<b>Teaching methods</b>	Lectures, exercises, practical laboratory work, consultations			
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>	<b>Points</b>	<b>Final exam</b>		<b>Points</b>
<b>Activity during lectures</b>	10	<b>Written exam</b>		30
<b>Exercises</b>		<b>Oral exam</b>		30
<b>Colloquia</b>				
<b>Projects</b>	30			