

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Common		
<b>Type and level of studies</b>		Doctoral studies		
<b>The name of the course</b>		CDMA and OFDM Communications		
<b>Lecturer (for lectures)</b>		Nikolić B. Zorica		
<b>Lecturer/associate (for exercises)</b>				
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>	10	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>				
Getting to know the characteristics and methods of forming and OFDM and code multiplex. Introduction to the problems of synchronization of these systems and ways of overcoming them. Mastering the technique of determining capacity. Introduction to standards.				
<b>Course outcomes</b>				
Theoretical knowledge of OFDM and code multiplex. The ability to calculate system performance. Knowledge of CDMA and OFDM systems standards.				
<b>Course outline</b>				
<b>Theoretical teaching</b>				
CDMA Transmission Channel Models. Representation of CDMA signals. The discrete channel model for synchronous transmission in a frequency-flat channel. The discrete channel model for asynchronous wideband CDMA transmission. Receiver Structures for Synchronous Transmission The single-user matched filter receiver. Optimal receiver structures . Receiver Structures for MC-CDMA and Asynchronous Wideband CDMA. The RAKE receiver . Examples for CDMA Systems: Wireless LANs according to IEEE 802.11 , Global Positioning System, Overview of mobile communication systems , Wideband CDMA, Time Division CDMA, cdmaOne ,cdma2000. Implementation and Signal Processing Aspects for OFDM. Synchronization and Channel Estimation Aspects for OFDM Systems. Interleaving and Channel Diversity for OFDM Systems Modulation and Channel Coding for OFDM Systems.OFDM System Examples.				
<b>Practical teaching (exercises, OFE, study and research)</b>				
Students work independently on the project (project presentation with discussion).				
<b>Textbooks/references</b>				
1	H. Anderson: Fixed Broadband Wireless: System Design, John Wiley&Sons, LTD, 2003.			
2	T. Rappaport : Wireless Communications – Principles & Practice, Prentice Hall, 2002			
3	Z. Nikolic: Spread spectrum systems performance (in Serbian), Faculty of Electronic Engineering Niš, 2006, Edition: Monographs			
4	Z. Nikolic, N. Milosevic, B. Dimitrijevic: Multiplex signal transmission (in Serbian), Faculty of Electronic Engineering Niš, 2006, Edition: textbooks			
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>
3	0	0	0	0
<b>Teaching methods</b>				
Giving lectures. Students work independently on the project (project presentation with discussion).				
<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>			<b>Written exam</b>	
<b>Exercises</b>			<b>Oral exam</b>	50
<b>Colloquia</b>				
<b>Projects</b>		50		