

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Electron Devices and Microsystems		
<b>Type and level of studies</b>		Undergraduate Academic Studies		
<b>The name of the course</b>		Sensor Networks Protocols		
<b>Lecturer (for lectures)</b>		Milić N. Dejan, Milošević D. Nenad		
<b>Lecturer/associate (for exercises)</b>		Cvetković M. Aleksandra		
<b>Lecturer/associate (for OFE)</b>		Cvetković M. Aleksandra		
<b>Number of ECTS</b>	5	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>	Learning basic knowledge related to architecture and protocols of sensor networks. Creating a knowledge base for training in the analysis and design of sensor networks.			
<b>Course outcomes</b>	Knowledge about sensor networks and their properties. Understanding of basic concepts regarding sensor networks. Acquiring knowledge about most important protocols for sensor networks and their practical implementation.			
<b>Course outline</b>				
<b>Theoretical teaching</b>	Introduction. Node architecture. Hardware components. Energy consumption of sensor nodes. Overview of operating systems. Design principles of sensor networks. Network architecture. Optimization and performance measures. Concept of gateway. Physical layer. MAC protocols. Basics of wireless MAC protocols. Wake-up protocols. Time division-based protocols. IEEE 802.15.4. Data link protocols. Error control. Framing. Link control. Naming and addressing. Control of naming and addressing in sensor networks. Geographical addressing. Routing protocols. Random forwarding. Energy efficient unicast. Broadcast and multicast. Geographical routing. Mobile nodes. Data-centric and content-centric networking. Data aggregation. Data-centric information storage.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Auditory and laboratory exercises are performed in all thematic areas.			
<b>Textbooks/references</b>				
1	Holger Karl, Andreas Willig, Protocols and Architectures for Wireless Sensor Networks, Wiley, 2005			
2	Shashi Phoha, Thomas F. La Porta, Christopher Griffin, Sensor Network Operations, Wiley-IEEE Press, 2006			
3				
4				
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	2	1	0	0
<b>Teaching methods</b>	Giving lectures, auditory and laboratory exercises.			
<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>	25	
<b>Exercises</b>	40	<b>Oral exam</b>	25	
<b>Colloquia</b>				
<b>Projects</b>				