

## Specification for the book of courses

<b>Study program</b>		Computing and Informatics		
<b>Module</b>		Software Engineering		
<b>Type and level of studies</b>		Master studies		
<b>The name of the course</b>		Ubiquitous Computing		
<b>Lecturer (for lectures)</b>		Stojanović H. Dragan, Stojanović M. Natalija		
<b>Lecturer/associate (for exercises)</b>		Predić B. Bratislav, Davidović P. Nikola		
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>	4	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>	Acquiring theoretical and practical knowledge in ubiquitous computing and Internet of Things domains, as well as methods, technologies and software tools for design and implementation of mobile and ubiquitous systems, applications and services.			
<b>Course outcomes</b>	Theoretical and practical knowledge about principles, methods, technologies and software tools for development of mobile and ubiquitous systems, applications and services in Internet of Things.			
<b>Course outline</b>				
<b>Theoretical teaching</b>	Introduction to mobile and ubiquitous computing. Contemporary mobile and ubiquitous computing, communication and sensor systems and devices. Wireless and ad-hoc networks and wireless network protocols. Internet of Things (IoT) and Web of Things (WoT). Acquisition and processing of sensor data. Mobile positioning technologies and location-based systems applications. Context recognition and development of ubiquitous context-aware systems and services. Smart objects, spaces and adaptive systems. Management and analysis of Big data in mobile and ubiquitous systems. IoT systems and services on edge, fog and cloud computing. Privacy and security in mobile and ubiquitous systems and IoT. Advanced mobile and ubiquitous applications and IoT systems: smart home, smart and autonomous vehicles, ubiquitous health care, smart mobility and traffic, smart industry, etc.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Work on design and implementation of ubiquitous system components and application over the set of lab exercise and practical project that follows topics covered at theoretical classes.			
<b>Textbooks/references</b>				
	1	John Krum (Ed.): Ubiquitous Computing Fundamentals. CRC Press, October 2009.		
	2	Simone Cirani, Gianluigi Ferrari, Marco Picone, Luca Veltri, Internet of Things: Architectures, Protocols and Standards, Wiley 2018.		
	3	Perry Lea, Internet of Things for Architects, Packt Publishing, 2018		
	4	Stefan Poslad, Ubiquitous Computing: Smart Devices, Environments and Interactions, Wiley, 2009.		
	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	0		
<b>Teaching methods</b>	Lectures, auditive exercises, lab practicing, independent student work on assignments and projects, student seminars.			
<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>	40	
<b>Exercises</b>		<b>Oral exam</b>		
<b>Colloquia</b>	40			
<b>Projects</b>	20			