Specification for the book of courses

Study program		Electrical Engineering and Computer Science	
Module		Computing and Informatics	
Type and level of studies		Undergraduate Academic Studies	
The name of the course		Computer Networks Design	
Lecturer (for lectures)		Milovanović I. Emina, Ćirić M. Vladimir	
Lecturer/associate (for exercises)		Ćirić M. Vladimir, Simić S. Vladimir	
Lecturer/associate (for OFE)		Dimitrijević M. Aleksandar, Simić S. Vladimir, Vojinović M. Oliver	
Number of ECTS	5	**Course status (obligatory/elective)**	Elective
Prerequisites	Computer networks		
Course objectives	The aim of the course is to gain knowledge on computer networks design concepts and acquire the necessary knowledge and skills for building small and medium sized Local Area Networks.		
Course outcomes	It is expected for the students to be able to design, implement and support small and medium-sized networks, with modern concepts, services and protocols.		
Course outline			
Theoretical teaching	Basic concepts of networking. Switching. Characteristics of passive and active network equipment. Network models, hierarchical model design. Resource planning, local and distributed services design and planing. Reliability. Requirements, identification and validation. Network design. Logical design, physical design, testing, optimization, and network documentation. The process of designing and implementing the network. Typical models for the implementation of small and medium-sized networks. Virtual Local Area Networks. Trunking. ISL and IEEE 802.1q protocols. VTP. Redundant topologies. Protocols for implementing redundant topologies on the second level of the OSI model. Spaning tree. Rapid spaning tree. Routing between virtual networks. Virtual interfaces. Basic concepts of Internet telephony. Wireless networks, standards, design principles, roaming services for mobile devices. Basic security considerations. Typical scenarios of attacks. Application of basic concepts to increase network security		
Practical teaching (exercises, OFE, study and research	Laboratory exercises related to the design and implementation of local area networks based. Virtual Local Area Networks. Routing between virtual networks. Wireless networks. Security.		
Textbooks/references			
1	D. McCabe, "Network Analysis, Architecture and Design", Morgan Kaufmann, 2003.		
2	Wayne Lewis, “LAN Switching and Wireless”, Cisco Press, Indianapolis, USA, 2009, ISBN 978-1-58713-207-0		
3	Israel Koren, C. Mani Krishna, “Fault-Tolerant Systems”, Elsevier, 2007, ISBN: 978-0-12-088568-8		
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, oral and Lab. exercises in specialized laboratory.			

Grade (maximum number of points 100)			
Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	20	**Written exam**	
Exercises		**Oral exam**	40
Colloquia	40		
Projects			