

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		
Lecturer (for lectures)		Milovanović I. Emina		
Lecturer/associate (for exercises)		Dimitrijević M. Aleksandar, Veljković Ž. Nataša, Stojnev Ilić I. Aleksandra		
Lecturer/associate (for OFE)		Veljković Ž. Nataša, Stojnev Ilić I. Aleksandra, Simić S. Vladimir		
Number of ECTS	6	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives	The course provides an introduction to fundamental concepts in the design and implementation of computer communication networks, their protocols and applications.			
Course outcomes	As a result of successfully completing this course, students will become familiar with layered communication architectures (OSI and TCP/IP); Understand the client/server model and key application layer protocols; Learn sockets programming and how to implement client/server programs; Understand the concepts of reliable data transfer and how TCP implements these concepts.			
Course outline				
Theoretical teaching	Introduction. Uses of computer networks (CN). Taxonomy of CN. The OSI reference model. Protocols and services. TCP/IP reference model. Network hardware and software. Data link layer. Design issues. Services provided to network layer. Framing. Error and flow control. Elementary data link protocols. Examples of data link protocols. HDLC. PPP. Local area networks. Media access sublayer. Channel allocation problem. Multiple access protocols (ALOHA, slotted ALOHA, CSMA/CD). Ethernet. Ethernet cabling. Frame format. Repeaters, hubs, bridges, switches, routers, gateways. The network layer. Virtual circuits and datagrams. Routing algorithms. Network layer in the Internet. IP protocol. IP addresses. Subnets. CIDR routing. Internet control protocols (ICMP, ARP, DHCP). Routing protocols (OSPF, RIP). The transport layer. transport services. Addressing. Connection establishment. Internet transport protocols. UDP. TCP. Socket programming. The application layer. DNS. e-mail. www.HTTP. Network security and kriptography. DES. Public key kriptography. Digital signatures.			
Practical teaching (exercises, OFE, study and research)	Oral and laboratory exercises in specialized laboratory.			
Textbooks/references				
1	IA. Tanenbaum, D. Wetherall, Computer networks, 5th edition, Pearson, 2011.			
2	J. F. Kurose, K. W. Ross, Computer networking: A top-down approach featuring the Internet, 7th edition, 2016.			
3				
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			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	5	Written exam		
Exercises	20	Oral exam	45	
Colloquia	30			
Projects				