

Faculty of Electrical Engineering / APPLIED COMPUTER ENGINEERING / COMPUTER NETWORKS & COMMUNICATIONS

Course:	COMPUTER NETWORKS & COMMUNICATIONS			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
964	Mandatory	4	6	3+0+2
Programs	APPLIED COMPUTER ENGINEERING			
Prerequisites	No prerequisites			
Aims	Through this course, students learn the principles of computer networks and communications. IN more details they learn about LAN networks, TCP / IP architecture and basics of digital telecommunications			
Learning outcomes	After passing the exam, student will be able to: 1. Describe types of transmission, codes, modulation techniques and the transfer medium used in computer networks. 2. Analytically examine the performance of computer networks with regards to time delay introduced 3. Define the functions of individual layers of the OSI and TCP / IP reference model 4. Explain the operation of HTTP, then TCP and UDP, and IP protocols 5. Define the most important specifications of IEEE 802.3 and IEEE 802.11 standards 6. Describe the functions and characteristics of network devices 7. Practically demonstrate how to terminate (making connectors) Ethernet cables, and then connecting and addressing of computers in a local network			
Lecturer / Teaching assistant	Assist. prof. Enis Kocan; MSc Ugljesa Urosevic, MSc Slavica Tomovic			
Methodology	Teaching lessons, exercises in laboratory/computer room, consultations. Studying and individual work.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. History of computer networks			
I week exercises	Network cars. Computer hardware identification. MS-DOS commands			
II week lectures	Efficiency of computer networks			
II week exercises	Ping and tracert. Performance of computer networks with regards to delay introduced			
III week lectures	Basic principles of computer communications			
III week exercises	Signal analysis in frequency domain. Signal distortions introduced by transmission through linear systems			
IV week lectures	Signal processing. Noise			
IV week exercises	Modulations and coding			
V week lectures	Transmission medium			
V week exercises	Network cables and connectors. Networking a smaller group of computers			
VI week lectures	First test			
VI week exercises	First test			
VII week lectures	Computer networks architecture. TCP/IP architecture			
VII week exercises	The first laboratory test			
VIII week lectures	Internet protocols of application layer			
VIII week exercises	Network equipment, broadcast and collision domains			
IX week lectures	Internet protocols of transport layer (UDP and TCP)			
IX week exercises	Wireshark - Intro and HTTP			
X week lectures	Internet protocol. IP addressing			
X week exercises	Wireshark - TCP and UDP			
XI week lectures	IP addressing			
XI week exercises	Wireshark - IP			
XII week lectures	Second test			
XII week exercises	Second test			

XIII week lectures	Local area networks (LAN). LAN protocol architecture					
XIII week exercises	Packet tracer - network addressing					
XIV week lectures	IEEE 802.3 standards. IEEE 802.11 standards. WAN networks					
XIV week exercises	The second laboratory test					
XV week lectures	Correction of one of the tests					
XV week exercises	Correction of one of the tests					
Student workload	Working hours: 6 credits x 40/30 = 8 hours. Working hours structure: 3 hours for teaching, 2 hours for lab. exercises and 3 hours for individual work, including consultations.					
Per week			Per semester			
6 credits x 40/30=8 hours and 0 minuts 3 sat(a) theoretical classes 2 sat(a) practical classes 0 excercises 3 hour(s) i 0 minuts of independent work, including consultations			Classes and final exam: 8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts Total workload for the subject: 6 x 30=180 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 36 hour(s) i 0 minuts Workload structure: 128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)			
Student obligations			Lessons attendance is mandatory for students, as well as doing tests and laboratory tests			
Consultations			Consultations are held during all semester, in prearranged term.			
Literature			Material from teaching lessons. Authorized script:M. Pejanović-Đurišić, I.Radusinović, Z.Veljović,: "Računarske mreže i komunikacije".			
Examination methods			First test - 20 points; Second test - 25 points; 2 laboratory tests with 5 points each; Final exam - 45 points.			
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points