

Discipline	BASICS OF COMPUTER COMMUNICATIONS code: 31 <b>winter semester</b>		
Specialty	Computer Systems and Technologies		
ECTS credits: 6	Form of assessment: exam		
Lecturer	Assoc. Prof. Veneta Aleksieva, PhD Room 207-4 E Phone: +359 52 383 439 E-mail: valeksieva@tu-varna.bg		
Department	Computer Science and Engineering		
Faculty	Faculty of Computing and Automation		
<p>Learning objectives:</p> <p>The main goal of the course is to provide students with basic knowledge of information transmission through communication environment, coding and signaling. Students receive basic knowledge about current standards and modern terminology related to computer communications. In the context of local networks, methods of coding information, modern modulation schemes, physical interfaces are considered. Initial knowledge is given about the types of physical and logical topologies of computer networks and about the functioning of the devices necessary for their construction. Students get acquainted with different transmission environments and protocols working on the physical and channel layer of the OSI model.</p> <p>The discipline is related to next subjects "Computer Networks", "Administration of Local and Internet Networks" and "Computer and Network Security".</p>			
<b>CONTENTS:</b>			
	Training Area	Hours lectures	Hours seminar exercises
	Basic terms related to computer communications. International Organizations for Standardization.	2	2
	Theory of information. Entropy. Concepts of quantity of information. Transmission of information. Communication model.	2	2
	Coding of the information. Even and uneven coding. Shannon - Fano code and Hafman. Noise-proof coding. Cyclic codes.	2	2
	Physical interfaces - RS232, USB, v.35 and others.	2	2
	Synchronization in data transmission. Asynchronous and synchronous transmission. Protocols.	2	2
	Modulation. Essence. Types.	2	2
	Basic terms related to computer networks. PAN, LAN, MAN, WAN. Physical and logical network topology.	2	2
	International standards for the design, construction and testing of computer networks.	2	2

Network protocols and communications. Rules of communication. OSI and TCP / IP model.	2	2
Logical and physical topology of the network. Types of topologies, advantages and disadvantages. Hierarchical Network Design.	2	2
Designing the Network. Structured cabling. Testing of copper and fiber optic cable systems.	2	2
OSI physical layer. Media. Presentation of the data. Coding - Manchester, NRZ, 4B / 5B, MLT-3	2	2
OSI Data Link Layer. Frame Format. Access to the network environment (MAC). LLC and MAC.	2	2
Ethernet. Types of Ethernet. Collision and its detection (CSMA / CD). Collision domain.	2	2
ARP protocol. Network segmentation. Switches.	2	2
<b>TOTAL:</b> 60 h	<b>30</b>	<b>30</b>