COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Bialystok University of Technology</td></tr>
<tr><td>Field of study</td><td colspan="6">Erasmus</td><td>Degree level and programme type</td><td>Bachelor’s degree
Full time</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6">-</td><td>Study profile</td><td>-</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Computer Networks</td><td>Course code</td><td>IS-FEE-10063W</td></tr>
<tr><td>Course type</td><td>elective</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>winter</td></tr>
<tr><td>30</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>6</td></tr>
<tr><td>Entry requirements</td><td colspan="9">-</td></tr>
<tr><td>Course objectives</td><td colspan="9">Obtaining knowledge of contemporary networking technologies and protocols used in local and backbone computer networks.
Acquiring practical skills in setting up wired and wireless computer networks, examining operation of network protocols and configuring typical network devices.</td></tr>
<tr><td>Course content</td><td colspan="9"><u>Lecture</u>: General terms connected with computer networks. Classification of networks and their basic topologies. Description of communication process using Open Systems Interconnection (OSI) 7 layers reference model. Network devices: hubs, switches, routers, modems, gateways etc. Technologies and architectures of wired and wireless Local Area Networks (LAN): Ethernet, Fast Ethernet, Gigabit Ethernet, Wi-Fi. Concept of Virtual Local Area Network (VLAN). Main and auxiliary network protocols used in TCP/IP networks: IP, TCP, UDP, ICMP, ARP and other. Device addressing in IP networks. Static and dynamic IP routing. Interior and exterior dynamic routing protocols: e.g. RIP, OSPF, BGP. Internet architecture. Interconnecting LAN and WAN networks. Domain name system (DNS).

<u>Laboratory class</u>: Configuring and testing LAN and WLAN networks (Ethernet, Wi-Fi). Using protocol analyser and other network tools in order to observe and analyse network traffic and to connectivity testing. Examining and analysing of family of TCP/IP protocols. Testing operations of dynamic routing protocols. Configuring routers and switches using command line interface (CLI).</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Lecture, laboratory class</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture - written exam
Laboratory class - evaluation of reports, verification of preparation for classes, assessment of activity, written and oral tests</td></tr>
<tr><td>Symbol of</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the</td></tr>
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learning outcome		learning outcomes for the field of study	
LO1	Student describes a communication process using the layered model,		
LO2	explains the architecture and functionalities of technologies and devices used in wired and wireless local area networks,		
LO3	describes features and functions of main and auxiliary protocols used in TCP/IP networks and practically checks their operations using network analyser and other network tools.		
LO4	calculates IP addressing and subnetting parameters,		
LO5	configures stations, network devices and services in LAN and WLAN networks and checks their functionality using typical network tools.		
LO6			
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	written exam	L	
LO2	written exam	L	
LO3	written exam, evaluation of reports, assessment of activity, short written quiz, final oral test	L, LC	
LO4	written exam	L	
LO5	evaluation of reports, assessment of activity, short written quiz, final oral test.	LC	
LO6			
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	30	
	revising of the content of subsequent lectures	15	
	participation in student-teacher sessions (2L+3LC)	5	
	preparation for the final exam	30	
	participation in laboratory classes	30	
	preparation for laboratory classes and work on reports	40	
	TOTAL:	150	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		65	2,6
Student workload – practical activities		73	2,9
Basic references	1. Andrew S. Tanenbaum, Nick Feamster, David J. Wetherall: Computer Networks. Sixth ed., Pearson Education, 2021. 2. Odom W.: CCNA 200-301 Official Cert Guide Library. Cisco Press, 2019. 3. Comer Douglas E.: Computer Networks and Internets. Sixth Edition, Pearson, 2015.		
Supplementary	1. Kurose James F., Ross Keith W.: Computer Networking: A Top-Down Approach. 8th		

references	**Edition, Pearson, 2021.** **2. RFC documents (avaiable on the Internet: http://www.rfc-editor.org)**	
Organisational unit conducting the course	**Department of Photonics, Electronics and Lighting Technology**	**Date of issuing the programme**
Author of the programme	**Andrzej Zankiewicz, PhD Eng.**	**21.01.2022**

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar