Załącznik nr 2 do Zarządzenia Nr 915 z 2019 r. Rektora PB

**COURSE DESCRIPTION CARD**

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| **Bialystok University of Technology** | | | | | | | | | | |
| **Field of study** | **Erasmus** | | | | | | | **Degree level and programme type** | **Bachelor’s degree**  **Full time** | |
| **Specialization/ diploma path** | **-** | | | | | | | **Study profile** | **-** | |
| **Course name** | **Computer Networks** | | | | | | | **Course code** | **IS-FEE-10082S** | |
| **Course type** | **elective** | |
| **Forms and number of hours of tuition** | **L** | **C** | **LC** | **P** | **SW** | **FW** | **S** | **Semester** | **summer** | |
| **30** |  | **30** |  |  |  |  | **No. of ECTS credits** | **6** | |
| **Entry requirements** | **-** | | | | | | | | | |
| **Course objectives** | **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.** | | | | | | | | | |
| **Course content** | **Lecture: 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).**  **Laboratory class: 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).** | | | | | | | | | |
| **Teaching methods** | **Lecture, laboratory class** | | | | | | | | | |
| **Assessment method** | **Lecture - written exam**  **Laboratory class - evaluation of reports, verification of preparation for classes, assessment of activity, written and oral tests** | | | | | | | | | |
| **Symbol of learning outcome** | **Learning outcomes** | | | | | | | | **Reference to the 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 references** | **1. Kurose James F., Ross Keith W.: Computer Networking: A Top-Down Approach. 8th 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**