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| Discipline „COMPUTER NETWORKS AND INTERNET”, code: 30 |
| Annotation: The main objective of the course is to provide the students with basic knowledge about the purpose and operation of network devices, configuration of end devices and network devices. The students receive a basic knowledge of computer network performance; they differentiate different types of network devices, and know how to develop network solutions. The course makes the students familiar with current standards and modern terminology related to computer networks. In the context of local and Internet networks, security, performance, reliability and fault-tolerance are considered. They are familiar with the main diagnostic tools for monitoring and troubleshooting networking issues. Initial knowledge for building a physical topology and skills for designing logical topology of computer networks is given. |
| Main issues of the syllabus content:* Basic terms related to computer networks. LAN, WAN, and the Internet. Network architectures. International standards for the design, construction and testing of computer networks.
* OSI and TCP / IP model. Network protocols and communications. Rules of the communication. Collision and Broadcast Domains
* Designing the network design. Structured cabling. Testing of copper and fiber optic cable systems.
* OSI physical layer. Media. Presentation of the data.
* OSI Data Link Level. Frame Format. Access to the network media (MAC).
* Ethernet. Types of Ethernet. Collision and its Removal (CSMA / CD)
* ARP protocol. Network segmentation. Switches.
* Network layer. Addressing of networks. Types of IP addresses. IPv4 and IPv6 protocols.
* Protocols, running on the network layer. Router architecture. Routing table. Access to local and remote network resources (direct and indirect routing).
* Subnetting. Fixed length and variable length subnet masking (VLSM).
* Transport layer. TCP and UDP protocols.
* Application layer. Application protocols and services - DHCP, NAT, FTP, HTTP, SMTP, DNS.
* Configuring and testing the local network. Selection of devices, protocols. Managing of configuration files.
* Wireless Technology. Home networking technologies. VPN
* Network and Information Security. Types of threats.
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