Introduction to the computer nets - course description

General information

Course name	Introduction to the computer nets
Course ID	11.3-WE-INFP-IttCN
Faculty	Faculty of Computer Science, Electrical Engineering and Automatics
Field of study	Computer Science
Education profile	academic
Level of studies	First-cycle Erasmus programme
Beginning semester	winter term 2021/2022

Course information

Semester	2
ECTS credits to win	2
Course type	obligatory
Teaching language	english
Author of syllabus	• dr hab. inż. Marcin Mrugalski, prof. UZ

Classes forms

The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Credit with grade

Aim of the course

Abilities and competence in implementation and configuration of simple local area network connected to Internet, IP address management, switch and router configuration.

Prerequisites

Computer architectures

Scope

Introduction to computer networks: Classification of computer networks. Reference models: ISO/OSI and TCP/IP.

Physical layer: Types of physical media: copper wire, optical fiber and wireless. Physical topology. Collision domains. Network devices of physical layer: hub and repeater.

Data link layer: Concepts and technologies. Logical topologies. LAN networks segmentation. Network devices of data link layer: NIC, bridge and switch. Fundamentals of switch configuration. LAN networks standards: Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet.

Network layer: Routing and addressing. Routing protocols and routed protocols. Network layer device: router. IPv4 address management.

Transport layer: Functions and TCP and UDP transports protocols.

Session, presentation and application layers: Functions and protocols. Internet technology components.

Introduction to routers: Router components and operation. User interface and configuration principle. Troubleshooting.

Teaching methods

Lecture

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Is able to operate the tools for creating and testing network cabling in Ethernet technology.		• a test	• Lecture
Can diagnose the infrastructure of hardware and sof tware of LAN, MAN and WAN.		• a test	• Lecture
Can choose, configure and operate network devices, in particular switches and routers		• a test	• Lecture
Can creatively develop the division of IP address space into subnets.		• a test	• Lecture
Can present currently available LAN and WAN technologies on the market.		• a test	• Lecture
Can run basic configuration of static and dynamic routing.		• a test	• Lecture
Can characterize ISO/OSI and TCP/IP models.		• a test	• Lecture

Assignment conditions

Lecture – the main condition to get a pass are sufficient marks in written or oral tests conducted at least once per semester.

Recommended reading

1. Dye M., McDonald R., Rufi A.: *CCNA 1 Exploration Network Fundamentals*. Cisco Networking Academy, Indianapolis, Indiana, 2012.
2. Graziani R., Johnson A.: *CCNA2 Routing Protocols and Concepts: CCNA Exploration Companion Guide,* Cisco Networking Academy, Indianapolis, Indiana, 2012.

Further reading

Notes

Modified by dr hab. inż. Marcin Mrugalski, prof. UZ (last modification: 24-07-2021 09:23)