Study programme(s): Information Technologies	

Level: Bachelor

Course title: Computer Networks

Lecturer: Danijela D. Tešendić

Status: elective

ECTS: 6

Requirements: None

Learning objectives

Objective of this course is to introduce basic functions and design of computer networks to students. TCP/IP protocol stack is taught as the dominant protocol stack in modern computer networks as well as techniques for configuring parameters of the computer network.

Learning outcomes

Minimum:

After the successful completion of this course students are able to describe the architecture of modern computer networks, to specify and describe technologies and protocols used in computer networks.

Desirable:

After the successful completion of this course students are able to describe the architecture of modern computer networks, to specify and describe technologies and protocols used in computer networks, as well as to configure and use a simple local area network and various Internet services.

Syllabus

Theoretical instruction

Theoretical instruction is divided into five sections. The first section covers the topologies and architectures of the computer networks, passive and active computer network equipment, structured cabling and standards in computer networks. The second section covers functions of computer network on the Data link layer (OSI 2), Data link layer protocols (Ethernet, PPP ...) and communication devices that operate on that layer (hub, switch). The third section covers functions and protocols of computer network on the Network layer of the computer network (OSI 3). IPv4, ICMPv4, routing principles, dynamic routing protocols, IP new generation are taught as well as communication devices of the Network layer (router). The fourth section covers functions and protocols on the Transport layer of the computer network (UDP, TCP). The fifth section covers functions and protocols on the Application layer of the computer network. Various protocols and services of that layer are taught such as DNS, SMTP, POP, IMAP, HTTP, HTTPS and FTP.

Practical instruction

Practical instruction covers introduction with passive and active network equipment, creation of the structured cabling example of the building, monitoring, capturing and analysis of traffic on the network, configuration of available network devices in the classroom in order to make a simple LAN computer network.

Literature

Recommended

Stallings, W., *Data and Computer Communications,* Prentice Hall

Tanenbaum, A. S., *Computer Networks*, Prentice Hall

Anderson, A., Benedetti, R., *Head First Networking*, O'Reilly Media

Weekly teaching load

Lectures: 2	Exercises:0	Practical Exercises: 2	Student research:0	Other:

Teaching methodology

Classical teaching methods using computer equipment are applied during lectures. Practical exercises are performed in computer laboratory equipped with computer network equipment and devices. Student has to pass two tests, practical part and oral exam.

Grading method (maximal number of points 100)

Pre-exam oblications	points	Final exam	points
Test 1	20	oral exam	50
Test 2	20		
Practical test	10		