Level: bachelor

Course title: Computer networks (code: I243)

Status: obligatory for module *Information technology*, elective for module *Computer science*

ECTS: 7

Requirements: None

Learning objectives

Objective of this course is to introduce the 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

Expected:

Understanding the basic functions, technologies and architectures of modern computer networks.

Desired:

Adopting skills required for administration and usage of simple local area networks and several 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 to 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 computer network.

Weekly teaching load				Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	Student research:	