



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Computer Network

Course

Field of study

Education in Technology and Informatics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

26

Laboratory classes

15

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Jarosław Ruczkowski

tel. 61 665 3228

FACULTY OF AUTOMATIC CONTROL, ROBOTICS
AND ELECTRICAL ENGINEERING

ul. Piotrowo 3A 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Student starting this module should have basic knowledge regarding computer systems. Student should have skills that are necessary to acquire information from given sources of information. Student should understand the need to extend his/her competences

Course objective

1. Provide students' knowledge regarding computer networks, within the scope of using and configuration of local area and wide area networks, and cognition of technical solutions applied in these networks.
2. Develop students' skills in solving simple problems related to the use and configuration of computer networks.



3. Presentation of methods of analyzing network traffic.

Course-related learning outcomes

Knowledge

1. has a basic knowledge of the theory, technology and operation of computer networks; knows the properties and principles of operation of various network devices - [K1_W15]
2. has knowledge of IT systems including the architecture of computer and operating systems - [K1_W14]

Skills

1. can, in accordance with a given specification, design and configure selected elements of a computer network - [K1_U16]
2. can analyze network traffic using dedicated software - [K1_U19]

Social competences

1. can work on a designated task independently and work in a team taking on different roles in it; demonstrates professionalism and responsibility for decisions made in this work - [K1_K01]
2. is able to adequately define priorities for the implementation of a task defined by himself or others - [K1_K07]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: final test

Laboratory: evaluation of reports, final test

Programme content

Lecture:

Types of networks. Network hardware and software. OSI and TCP/IP reference models.

Data transmission. Examples of communication systems.

Data link layer. Problems at the data link layer. Ethernet.

Network layer. Network layer services. Routing algorithms. Quality of the service.

The network layer in the Internet. IP protocol. Other network layer protocols.

Transport layer. Transport layer services and protocols.

Application layer. Domain Name System. World Wide Web.

Analysis of problems and network security.

Computer security. Elements of cryptography.

Laboratory:

TCP/IP diagnostic tools.

Configuration of the network connection.

DHCP server.

Network traffic analysis using Wireshark program.

NAT networks. ARP buffer poisoning simulation.



Teaching methods

Lectures: multimedia presentation

Labs: practical exercises, solving tasks

Bibliography

Basic

A.S. Tanenbaum, D.J. Wetherall, Computer networks, Pearson Longman 2014

D.E. Comer, Computer networks and internets, Pearson Education 2009

C. Sanders, Practical packet analysis, No Starch Press 2011

Additional

W. Stallings, Cryptography and network security, Pearson Education 2017

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	41	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	59	2,0

¹ delete or add other activities as appropriate