COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computer Network [S1ETI2>SK]

Course

Field of study
Education in Technology and Informatics

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

dr hab. Jarosław Ruczkowski prof. PP
jaroslaw.ruczkowski@put.poznan.pl

Lecturers

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 knowledge in the field of information systems, including the architecture of computers and operating systems, theory, technology and operation of computer networks, knows the properties and principles of operation of various network devices

Skills:
1. can, in accordance with a given specification, design and configure selected elements of a computer network and analyze network traffic using dedicated software

Social competences:
1. is able to work on a given task independently and cooperate in a team, assuming various roles, demonstrates professionalism and responsibility for decisions made

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: final test
5 questions. Answers scored from 0-5 points. Total possible score = 25.
Laboratory: Report Assessment, Final Test
The 6 exercises are scored from 0-5 points. The final test is scored from 0-30 points. Total possible score = 60 points.
Grading scale based on the percentage score obtained, in accordance with the Study Regulations:
<50 – 60) % – 3.0
<60 – 70) % – 3.5
<70 – 80) % – 4.0
<80 – 90) % – 4.5
<90 – 100> % – 5.0

Programme content

Lecture: Basic knowledge about the construction and operation of computer networks.
Laboratory: Simple issues related to the use and configuration of computer networks. Network traffic analysis.

Course topics

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
W. Stallings, L. Brown, Computer Security: Principles and Practice, Pearson 2021

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00