POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Sieci IP - IP Networks

Course

Field of study

Teleinformatics

Year/Semester

2/3

Area of study (specialization)

Profile of study

general academic

Level of study

first-cycle studies

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	30	

Tutorials	Projects/seminars	
0	0/0	

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

prof. dr hab. inż. Mariusz Głąbowski
Institute of Communication and Computer
Networks
Faculty of Computing and Telecommunications
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Prerequisites

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Students starting this course should have basic knowledge of computer networks. They should be able to carry out basic configuration of network devices and be able to self-educate. They should also have awareness of the need to expand their competencies and willingness to cooperate as part of the team

Course objective

1. Provide students with knowledge in the field of routing protocols, traffic flow management, designing secure virtual private networks as well as MPLS and GMPLS techniques.
2. Acquainting students with engineering methods of designing and building local and wide-area networks.
3. Developing students' ability to configure network devices in the field of routing protocols, virtual private networks, and traffic flow management.
4. Acquainting students with the techniques of automation of network device configuration processes.

Course-related learning outcomes

Knowledge

1. Students have a structured, mathematically founded, basic knowledge of the operation of routing algorithms and protocols.
2. Students have a basic knowledge of development trends in the field of local and wide area network technology. They have structured knowledge of the most important standards, architecture, operation and design of extensive ICT networks. They also have structured knowledge of the most important standards in modern intra-domain and inter-domain routing protocols.
3. Students have a basic knowledge of the operation and configuration of routing protocols in wide area and local computer networks.

Skills

1. Students can use technologies enabling secure data transmission in wide area networks.
2. Students can solve typical design problems related to the selection of the optimal routing protocol.
3. Students can configure routers to work with a specific routing protocol, both intra-domain, and inter-domain.

Social competences

1. Students know the limits of their own knowledge and skills, understand the necessity of further training.
2. Students are able to adjust to the rules of team work.
3. Students are aware of the responsibility for their own work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified during an oral and / or written test.

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Test issues, based on which questions are developed, are sent to students by e-mail and / or posted on the ekursy.put.poznan.pl website.

Passing threshold: 50% of points.

The skills acquired during the laboratory classes are verified on an ongoing basis. At each laboratory class, the correctness of the network devices configuration is assessed on a scale from 2 to 5. The final grade is the average of the grades obtained from individual laboratory classes.

Programme content

A review of the most important protocols of the TCP / IPv4 / IPv6 stack

Managing the flow of packets in IP networks with the use of access control lists

Single-area and multi-area OSPF protocol

ISIS protocol

Basics of BGP

Optimization of routing protocols

Policy-based routing

Inter-AS traffic flow optimization

Fundamentals of secure traffic transmission in IP networks

Overlay virtual private networks

MPLS

Layer 3 peer-to-peer virtual private networks

GMPLS and T-MPLS networks

Layer two virtual private networks implemented using MPLS and Carrier Ethernet techniques.

Introduction to the quality of service in IP networks

Introduction to automation of network device configuration processes

Teaching methods

Lectures: multimedia presentations, illustrated with examples given on the blackboard.

Laboratory exercises: practical exercises in groups with the use of network devices.

Bibliography

Basic

- Raymond Lacoste, Brad Edgeworth, CCNP Enterprise Advanced Routing ENARSI 300-410 Official Cert Guide, 2020, Hoboken, USA
- www.ietf.org

Additional

metroethernetforum.org

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Breakdown of average student's workload

	Hours	ECTS
Total workload	116	4.0
Classes requiring direct contact with the teacher	60	2.0
Student's own work (preparation for tests, preparation for laboratory classes, literature studies)	56	2.0