# COURSE DESCRIPTION CARD - SYLLABUS

Course name
ICT network optimization [S2EiT1-SKiTI>OST]

## Course

Field of study
Electronics and Telecommunications

Year/Semester
2/3

Area of study (specialization)
Computer Networks and Internet Technologies

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

## Number of hours

Lecture
30

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

## Number of credit points

4,00

## Coordinators

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## Lecturers

## Prerequisites

A student starting the subject should have a basic knowledge of the construction and operation of computer networks. In particular, he should know the basic protocols that ensure communication in the network (ARP, IPv4/IPv6, RIP, DHCP). He or she should also have the ability to obtain information from the indicated sources and have a willingness to cooperate as part of a team.

## Course objective

To provide students with the basic knowledge of methods, technologies and protocols necessary to understand the network optimization process. To develop in students the ability to select and modify solutions and protocols to solve an optimization problem.

## Course-related learning outcomes

none

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

none

## Programme content

This subject presents selected solutions used to achieve optimal performance of computer networks. Topics covered include protocols, techniques and mechanisms used in TCP/IP networks.

## Course topics

The lecture ematics covers the following topics:
1. Enterprise network architectures.
2. Packet switching
3. Concept and protocol of STP
4. Virtual local networks, trunks, and EtherChannel link clustering
5 OSPF protocol
6 BGP protocol
7 IP Multicast
8. Quality of service
9. IP Services
10. Network security assurance
11. Network device access control and infrastructure security
12. Basic concepts of network programmability

The following topics are covered during the labs:
1. Introduction. Virtual local area networks
2. Distributed VLANs.
3. Switching between VLANs.
4. Link aggregation techniques - Etherchannel.
5. Static routing
6. First Hop Redandancy Protocols (HSRP as an example).

## Teaching methods

Lectures: depending on the topic discussed and the interest of the students, the lecture is conducted in one of three forms: traditional lecture (multimedia presentation supplemented by examples given on the blackboard), problem lecture (discussion with the students on the solution of a given problem), or conversational lecture (involving the students in the discussion, controlling the course of the lecture depending on the answers given, etc.).

Laboratory exercises: exercises are conducted in the laboratory of Huawei or Cisco Network Academy. During the course of the exercises, students perform tasks presented by the instructor, which involve the proper connection of devices switches, routers and computers) and configuration of network devices in accordance with the
requirements of a given exercise .

## Bibliography

none

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 100 | 4,00 |
| Classes requiring direct contact with the teacher | 58 | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 42 | 2,00 |