POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Signalling and Management Systems [S1Teleinf1>SSiZ]

Course

Field of study	Year/Semester
Teleinformatics	3/5
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

4,00

Coordinators

Lecturers

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Prerequisites

A student starting this course should have knowledge of the basics of ICT networks and devices. He should have basic knowledge of the basics of telecommunications. Should have the ability to obtain information from the indicated sources. He should also understand the need to expand his competences. In addition, in the field of social competences, the student must present attitudes such as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

The aim of the course is to provide students with basic knowledge of signaling in ICT networks, connection handling and network management; developing students' skills solving basic problems with connection handling and operation of ICT networks; shaping students' skills in acquiring knowledge about implemented solutions for the ICT network.

Course-related learning outcomes

Knowledge:
1. knows the signaling functions in telecommunications networks; understands the principles of signaling systems operation and their importance for the proper operation of ICT networks.

2. Has ordered knowledge of signaling protocols, their structure, functions and operation.
3. Has ordered knowledge in the field of ICT networks management.

Skills:
1. Can obtain information from literature, databases and other sources; is able to integrate acquired information, drawing conclusions and forming opinions; is able to analyze standardization recommendations.
2. Can configure devices and communication protocols in ICT networks.
3. Can analyze signaling messages and supervise the operation of the ICT network in order to ensuring its proper operation.

Social competences:
1. Is aware of the responsibility for their own work, can work in a group.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lectures is verified during an oral and / or written exam.
The oral exam requires the student to provide correct answers to the questions asked by the teachers. In the written part, the exam is a final credit test.
The test consists of 45-60 test questions. Each question has four answers to choose from, one of which is correct. The student receives 1 point for a correct answer and 0 points for an incorrect or no answer. Passing the test with 50% of points. An additional oral question is possible for students with a number of points close to completion.

The knowledge and skills acquired during the laboratory classes are verified on the basis of active participation in the classes, evaluation of the current progress in the implementation of laboratory exercises, the substantive evaluation of the reports from the laboratory exercises, the preparation for the laboratory and the final test. The test takes the form of open-ended questions and test questions (one correct answer out of four proposed). Passing the final test from 50% of the points scored.

Programme content

Methods of signaling and handling calls in fixed and mobile telecommunications networks, and management of these networks. Structure, functions and operation of selected signaling and network management protocols.

Course topics

Lecture: Types of telecommunications networks. User, control and management planes in network models. Services in networks. Types of network connections. Network connection handling. Functions and types of signaling. Examples of making connections in different networks. Handling calls in subscriber access, numbering and addressing in networks, types of subscriber signaling. DSS1 signaling. SS7 signaling. Signaling in the VoIP service. Signaling in optical networks. SLAs. IT infrastructure management - ITIL. Reporting systems. Network management protocols and applications. Service management.

Laboratory: Analysis of the connections handling and construction of signaling messages in various types of services in fixed and mobile networks. Handling calls using DSS1, SS7, SIP signaling. Construction of the MIB database, SNMP protocol.

Teaching methods

Lecture: lectures are conducted in the form of a conventional lecture with the use of a multimedia presentation previously made available to the audience.

Laboratory: classes are conducted using the practice method. Depending on the topic, the tutor asks the students for sample service operation runs to be analyzed. On the basis of the received files with messages for handling calls, students are to get acquainted in detail with the types and structure of signaling messages, their functions while handling various types of services. Students also perform analyzes of the MIB base and SNMP protocol for the examples given in the instructions.

Bibliography

Basic:
1. W. Kabaciński, M. Żal: Sieci Telekomunikacyjne, WKŁ, 2008
2. G. Danilewicz, W. Kabaciński: System sygnalizacji nr 7, WKŁ, 2005
3. A. Clemm, Network Management Fundamentals, Cisco Press, 2006
4. W. Stallings, Protokoły SNMP i RMON. Vademecum profesjonalisty, Helion, Gliwice, 2003
5. M. Bromirski, Telefonia VoIP
6. Stefan Rommer i in., 5G Core Networks. Powering Digitalization, Academic Press, ISBN 978-0-08-103009-7, 2020.

Additional:
1. L. Dryburgh, J. Hewett: Signaling System No. 7, Networking Technology Series, Cisco Press, 2004
2. T. Russel: Signaling System #7, McGraw-Hill Education, 2014

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,00
Classes requiring direct contact with the teacher	49	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	41	2,00