COURSE DESCRIPTION CARD - SYLLABUS

Course name
Telecommunications network equipment [N1EiT1>UST]

Course

Field of study
Electronics and Telecommunications

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
20

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

6,00

Coordinators

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Lecturers

Prerequisites

The student knows the basic concepts of digital modulation, transmission systems and has basic knowledge of probability theory and graph theory. Can obtain information from literature and databases and other sources in Polish or English; can integrate the obtained information, interpret it, draw conclusions and justify opinions. He can communicate in Polish or English in a professional environment. He knows the limitations of his own knowledge and skills, understands the need for further training.

Course objective

Familiarizing students with the basics of the construction and operation of telecommunications networks, principles their analysis, modeling and design, as well as devices used in these networks.

Course-related learning outcomes

Knowledge:

He knows the terms characterizing telecommunications networks and understands the technical meaning of these terms. Ma structured basic knowledge of the structure, operation and standards of various types telecommunications networks. He knows the basics of traffic engineering, the theory of queues, services,

devices, systems
management, protocols and telecommunications techniques that are used in the networks telecommunications.

Skills:

Can obtain information from literature and databases and other sources in Polish or English; can integrate the obtained information, interpret it, draw conclusions and justify opinions. Can communicate in Polish or English in professional environments.He can educate himself.

Social competence:

He knows the limitations of his own knowledge and skills, understands the need for further training. It has awareness of the need for a professional approach to solving technical problems and taking responsibility for the technical solutions they propose. He has a feeling responsible for the designed telecommunications networks and is aware of the potential
dangers to other people or society, their inappropriate use. Can
formulate opinions on the main challenges faced by modern telecommunications.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Knowledge aquired during the lectures is verified by the final exam. This exam is in the oral or/and written form, depending on the number of students.
The oral exam consists of a set of 5 questions, a set of questions is drawn from at least 10 sets; answer to each question is marked in 0-10 points. 50% of points are needed to pass the exam.
The written exam consists of 45-60 questions of multiple choice type. Students get 1 point for the correct answer and 0 points for wrong answer or lack of answer. 50% of points are needed to pass the exam.
An additional oral question is possible for students with a number of points close to completion.

The knowledge and skills acquired during laboratory classes are verified on the basis of activity during classes, assessment of the current progress of laboratory exercises, evaluation of reports on conducted laboratory exercises, assessment of preparation for laboratory and the grade obtained on the final test. The test is in the form of questions open and test questions (one correct answer out of four proposed). Passing the final test from 50% of the points obtained. For students whose number of points is close to passing, an additional oral question is possible.

Programme content

Structures and operation of telecommunications networks, telecommunications services, construction and operation of network devices, basics of traffic theory.

Course topics

Lectures: The concept of a telecommunications system. The concept of a telecommunications network. Network classification: topologies, usage. Telephone, integrated, cellular and ICT networks. Hierarchical and non-hierarchical structures of telecommunications networks. Routing strategies. Basics of traffic theory: telecommunication traffic, basic models of traffic engineering. Signaling systems in networks. Call handling in telecommunications networks (setting up, disconnecting, maintenance). Switching methods and techniques. Switching nodes.

Laboratory: Handling of connections in fixed and mobile networks. Buffer management in switching nodes. Design and analysis of switching systems. Analysis of loss and waiting systems

Teaching methods

Lectures: Lectures are conducted in the traditional form, with computer presentations that are available earlier to students. Some lectures, or their parts, are led as interactive or problem lectures, where students participate in solving some problems or examples, especially in proving of some mathematical theorems.

Laboratory: carrying out laboratory exercises in accordance with the instructions and existing knowledge, preparation of reports on completed exercises.

Bibliography

Basic
[1] A. Jajszczyk: Wstęp do telekomutacji, WNT, 2009.
[2] W. Kabaciński, M. Żal: Sieci telekomunikacyjne, WKŁ, 2008.
[3] R. L. Freeman, Fundamentals of Telecommunications, 2nd ed. John Wiley & Sons, Inc., 2005. (available from PUT network: https://onlinelibrary.wiley.com/doi/book/10.1002/0471720941)
[4] A. Valdar, Understanding telecommunications networks. The Institution of Engineering and Technology, 2006.
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Additonal
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[7] M. Stasiak, M. Głąbowski, S. Hanczewski, P. Zwierzykowski: Podstawy inżynierii ruchu i wymiarowania sieci teleinformatycznych, Wydawnictwo Politechniki Poznańskiej, Poznań, 2009.
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[9] W. Kabaciński, Standaryzacja w sieciach ISDN, Wydawnictwo Politechniki Poznańskiej, 2001.
[10] G. Danilewicz, W. Kabaciński, System sygnalizacji nr 7, WKŁ, 2005.

Breakdown of average student's workload

	Hours	ECTS
Total workload	130	6,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	4,00