COURSE DESCRIPTION CARD - SYLLABUS

Course name
Integrated networks

Course

Field of study
Electronics and Telecommunications
Area of study (specialization)

Level of study
First-cycle studies
Form of study
full-time

Year/Semester
4/7
Profile of study
general academic
Course offered in
Polish
Requirements
elective

Number of hours

Lecture
30
Laboratory classes
15
Other (e.g. online)

Tutorials
Projects/seminars

Number of credit points

4

Lecturers

Responsible for the course/lecturer:
prof. dr hab. inż. Grzegorz Danilewicz,
grzegorz.danilewicz@put.poznan.pl

Responsible for the course/lecturer:

Prerequisites

(S)he knows the taxonomy characterizing telecommunication and computer networks and understands the technical meaning of these terms

(S)he can obtain information from literature, databases and other sources in Polish or English; is able to integrate the obtained information, interpret it, draw conclusions and justify opinions. (S)he can communicate in Polish or English in a professional environment.

(S)he knows the limits of her/his own knowledge and skills, understands the need for further training

Course objective

To teach students about the structure, functions and principles of operation of integrated networks and the services offered in these networks. Indication of different areas and levels of integration in ICT networks.

Course-related learning outcomes

Knowledge

1. (S)he has an ordered knowledge of the architecture and construction of integrated networks

2. (S)he has an ordered knowledge of the standards concern integrated networks

3. (S)he knows the directions of development of ICT networks

Skills

1. (S)he can identify problems in network operation in user access to the network

2. (S)he can check the correctness of operation of network devices in user access to the network

3. (S)he can assess the usefulness of specific solutions in terms of user requirements

Social competences

1. (S)he is aware of the importance of telecommunication networks in the functioning of society

2. (S)he knows the limitations of her/his own knowledge and skills, understands the need for further training

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratories. The following components are assessed: the student's knowledge before the exercise, answers to questions during the exercises, written reports on the implementation of the exercises, written test at the end of the semester.
The final assessment from the laboratory is the result of the component assessments, where each of the component assessments must be positive. For the component grades and the final grade, a grading scale from 2 (unsatisfactory - negative) to 5 (very good) is used.

Lectures. Knowledge is verified during a written and/or oral exam. The written exam is a test of 40 to 60 questions with proposed four answers. Only one proposed answer is correct. Giving the correct answer is one point, incorrect answer is zero points. Mastering the knowledge sufficiently confirms obtaining more than 50% of the exam points.

Programme content

Lectures:

Specialized networks and their history, telecommunication networks and methods of information transfer in the network. Integrated services networks and principles of integration. Conditions for introducing digital networks with service integration. ISDN networks: introduction and reference configuration, interfaces, interface structures. Reference model. Services on various networks. Layers 2 and 3 of digital subscriber signaling. Connection handling example. Inter-node signaling: types of signaling, CCS and CAS, protocols SS7, MTP, SCCP, TC, ISUP, INAP, MAP, B-ISUP. Contemporary solutions of integrated networks. Contemporary integrated services.

Laboratories:

The principle of central office operation. Analysis of subscriber and inter-node signaling. The principle of operation of switching fabrics on the examples of space, time and space-time fabrics.

Teaching methods

Lecture with the use of a whiteboard/projector, seminar lecture, experiment, text preparation.

Bibliography

Basic

1. W. Kabaciński, Standaryzacja w sieciach ISDN, Wydawnictwo Politechniki Poznańskiej, 2001

2. W. Kabaciński, M. Żal: Sieci Telekomunikacyjne, WKŁ, 2008.

3. G. Danilewicz, W. Kabaciński: System sygnalizacji nr 7, WKŁ, 2005.

Additional

Asymmetrical Space-Conversion-Space SCS1 Strict-Sense and Wide-Sense Nonblocking Switching Fabrics for Continuous Multislot Connections / Grzegorz Danilewicz (WEiT) // IEEE Access - 2019, vol. 7, s. 107058-107072

Supplement to “Asymmetrical Space-Conversion Space SCS1 Strict-Sense and Wide-Sense Nonblocking Switching Fabrics for Continuous Multislot Connections” - the SCS2 Switching Fabrics Case / Grzegorz Danilewicz (WEiT) // IEEE Access - 2019, vol. 7, s. 167577-167583

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	58	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests/exam) [1]	42	2,0

[1] delete or add other activities as appropriate