STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
The structures and work of telecommunications networks	**1010841161010823602**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electronics and Telecommunications	**general academic**	**3 / 6**

Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Multimedia and Consumer Electronics	**Polish**	**elective**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **3** Classes: **1** Laboratory: **-** Project/seminars: **-**	**4**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
major	**from field**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	He knows basic concepts of digital modulation, transmission systems. He has a basic knowledge of probability theory and graph theory.
2	**Skills**	He is able to obtain information from the literature and databases and other sources in Polish or English, he can integrate the information, make their interpretation, draw conclusions and justify opinions [K1_U01]. He can communicate in Polish or English in a professional environment and other environments [K1_U02].
3	**Social competencies**	He knows his own limitations social knowledge and skills, understands the need for ongoing education [K1_K01]

Assumptions and objectives of the course:

To familiarize students with the fundamentals of the structures and operation principles of telecommunication networks, the principles of analysis, modeling, design and service of these networks .

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. He has a structured knowledge in the field of architecture of telecommunications networks - [K1_W22]
2. He has knowledge of the standards of the telecommunications networks - [K1_W22]
3. He knows the directions of development of telecommunication networks - [K1_W24]

Skills:

1. He understand the basic provisions of the relevant international standards for basic telecommunications networks - [K1_U14]
2. He can make measurements of typical parameters indicating proper operation of telecommunications networks - [K1_U17]
3. He can choose the basic design of equipment for telecommunications networks - [K1_U21]

Social competencies:

1. He knows the limits of their own knowledge and skills and understands the need for ongoing education - [K1_K01]
2. He has awareness of the importance of telecommunications networks in the functioning of society - [K1_K04]

Assessment methods of study outcomes

Current control of skills during exercises and final test.
Written exam.

Course description

Lectures:

The concept of a telecommunications system. The concept of a telecommunications network. Network resources. The functions of the network. Classification of network topologies and applications. Telephone networks, integrated, mobile and data communications . Hierarchical and non-hierarchical structure of networks. The basic of traffic theory: telecommunication traffic, basic traffic engineering models. The concept of service. Classification and attributes of services. The level and quality of service. signalling systems on networks. Connection management in telecommunication networks (connection, disconnection, maintenance). Switching methods and techniques. Switching nodes. Numbering and addressing principles in telecommunications networks. Tariff principles in telecommunication networks. Transmission issues in the networks.

Exercises:

Numerical examples on basic teletraffic theory.

Basic bibliography:

1. A. Jajszczyk: Wstęp do telekomutacji, WNT, 2000.
2. W. Kabaciński, M. Żal: Sieci Telekomunikacyjne, WKŁ, 2008.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures	45
2. Exercises	15
3. Preparation to lectures	5
4. Preparation to exercises	10
5. Preparation to exam	25
6. Ezam	3
7. Discussion on exam results	2

Student’s workload

Source of workload	hours	ECTS
Total workload	105	4
Contact hours	65	3
Practical activities	25	1