



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Telecommunication

### Course

Field of study

Engineering Management

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr inż. Tomasz Marciniak

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tel. 61 647 59 35

Responsible for the course/lecturer:

Faculty of Control, Robotics and Electrical

Engineering

ul. Piotrowo 3A, 60-965 Poznań

### Prerequisites

Knowledge: Basic issues of algebra, probability theory and computer science.

Skills: Basic ability to conduct computer calculations and simulations.

Social competences: Is aware of the importance of knowledge of ICT systems standards by the engineer.

### Course objective

Introduction to techniques and the construction of modern telecommunication systems and data communication.



### Course-related learning outcomes

#### Knowledge

1. Student has knowledge of remote and distributed systems, real time systems and network techniques
2. understands the design methodology for specialized analog and digital telecommunications systems

#### Skills

1. is able to analyze and interpret project technical documentation and use scientific literature related to the problem
2. is able to use information and communication techniques

#### Social competences

1. is aware of the need for a professional approach to technical issues, meticulous familiarization with the documentation and environmental conditions in which the devices and their components can function
2. is aware of the need to select appropriate transmission techniques.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Final test (45 min). The test consists of 8 test questions and 3 calculation tasks. Passing threshold 50%.

Laboratory: Class reports. Passing threshold 50%.

### Programme content

Lecture: basic concepts in telecommunications, telecommunications traffic, analog modulation, digital modulation of a sinusoidal carrier, wired transmission, wireless transmission, cellular telephone systems, satellite transmission, data protection in telecommunications systems.

Laboratory: AM and FM analog modulation, BPSK and QPSK digital keying, telecommunication coders, audio-video signal streaming, configuration of wireless devices.

### Teaching methods

1. Lecture: multimedia presentation
2. Laboratory classes: the use of Emona DATEx Telecoms-Trainer 202 modules, simulation tests in Matlab / Simulink environment, measuring devices.

### Bibliography

#### Basic

1. S. Haykin, Systemy telekomunikacyjne, cz.1 i 2, Wydawnictwa Komunikacji i Łączności, Warszawa, 2004



2. W. Kabaciński, M. Żal, Sieci telekomunikacyjne, Wydawnictwa Komunikacji i Łączności, Warszawa, 2008

3. K. Wesołowski, Podstawy cyfrowych systemów telekomunikacyjnych, Wydawnictwa Komunikacji i Łączności, Warszawa, 2006.

#### Additional

1. Annabel Z. Dodd, Essential Guide to Telecommunications, Sixth Edition, Pearson, 2019

2. J. Szóstka, Fale i anteny, Wydawnictwa Komunikacji i Łączności, Warszawa, 2006.

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests, preparation of laboratory reports) <sup>1</sup>	20	1,0

<sup>1</sup> delete or add other activities as appropriate