



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:

Ph.D., Eng., Tomasz Marciniak

Responsible for the course/lecturer:

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Faculty of Control, Robotics and Electrical
Engineering

ul. Jana Pawła II 24, 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

The student describes basic concepts in telecommunications, including telecommunication traffic, types of continuous and digital modulation, and methods of wired and wireless transmission [P6S_WG_16].

The student discusses mobile telephony systems, satellite transmission, and data protection principles in telecommunication systems [P6S_WG_17].

Skills

The student analyzes and applies analog modulations AM and FM, as well as digital keying BPSK and QPSK in a laboratory setting [P6S_UW_13].

The student performs configuration of wireless devices and practices streaming audio-video signals [P6S_UW_14].

The student designs and analyzes simple telecommunication systems, considering technological and organizational aspects [P6S_UW_15].

Social competences

The student integrates technical knowledge in the design of telecommunication systems, considering user needs and various systemic aspects [P6S_KO_02].

The student is aware of the impact of engineering activities in telecommunications on the environment and society, and assesses their responsibility for decisions made [P6S_KR_01].

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) ¹	20	1,0

¹ delete or add other activities as appropriate