



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

English

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