POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Telecommunication [S1IZarz1>TEL]

Course

Field of study	Year/Semester
Engineering Management	3/5
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other
15	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2,00

Coordinators

dr inż. Tomasz Marciniak
tomasz.marciniak@put.poznan.pl

Lecturers

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

The program includes: basic concepts of telecommunications, continuous and digital modulations, wired and wireless transmission, data protection.

Course topics

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	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00