COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Electrical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="6">Electrical and Electronics Engineering</td><td colspan="2">Degree level and programme type</td><td>bachelor's degree, full time programme</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6">-</td><td colspan="2">Study profile</td><td>-</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Fundamentals of Telecommunications</td><td colspan="2">Course code</td><td>IS-FEE-10086S</td></tr>
<tr><td colspan="2">Course type</td><td>elective</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>summer</td></tr>
<tr><td>15</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>5</td></tr>
<tr><td>Entry requirements</td><td colspan="9"></td></tr>
<tr><td>Course objectives</td><td colspan="9">The aim of the course is to learn basic knowledge in the field of telecommunications, allowing for more effective studying and understanding the specific items they place in all the studies on the direction. The result of the course is to learn the main areas of the discipline, their interrelationships, and the fundamental rights and restrictions associated with the analyzed issues.</td></tr>
<tr><td>Course content</td><td colspan="9">Elements of communication system, source of information, communication channels, fundamentals of information theory; analog modulation systems (DSB-AM, DSB-SC-AM, SSB-SC-AM, FM) and frequency division multiplexing; noise in analog communication systems especially: physical sources ofnoise, noise properties ofsystems, noise in analog modulation systems; discrete signals: sampling theory, pulse code modulation, PCM transmission, line coding, time division multiplexing, digital modulation (ASK, FSK, PSK, DPSK, QAM); noise in digital communication systems: statistical decision theory, distortion in PCM systems, digital modulation in noisy conditions, matched filtering and correlation detection; properties of selected telecommunication systems and technologies</td></tr>
<tr><td>Teaching methods</td><td colspan="9">lecture and laboratory class.</td></tr>
<tr><td>Assessment method</td><td colspan="9">lecture: tests; laboratory class: evaluation of reports.</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="8">Learning outcomes</td><td>Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="8">has an elementary knowledge of modern wired and wireless communication systems and networks, makes their classification and defines the services provided therein;</td><td></td></tr>
<tr><td>LO2</td><td colspan="8">has a theoretical basis for analysis of signals and systems and is able to compare properties of analog</td><td></td></tr>
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	and digital modulation systems;	
LO3	has a theoretical basis on the sources of disturbances and how they impact on the transmitted signals, he can compare the characteristics of wired and wireless transmission media;	
LO4	has hands-on skills in maintenance and operation of digital switching system;	
LO5	measures the basic properties of the transmission mediums;	
LO6	can work in a group and distributes tasks to each person	
LO7		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	tests on lecture content, evaluating the student's reports	L, LC
LO2	tests on lecture content	L
LO3	tests on lecture content	L
LO4	evaluating the student's reports	LC
LO5	evaluating the student's reports	LC
LO6	evaluation of the student's performance in classes	LC
LO7		

Student workload (in hours)		No. of hours
Calculation	lecture attendance	15
	participation in laboratory classes	30
	preparation for laboratory classes	15
	work on reports	30
	participation in student-teacher sessions related to the lecture and laboratory classes	10
	preparation for and participation in exams/tests	30
	TOTAL:	130

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	55	2
Student workload – practical activities	70	2

Basic references	1. Couch L. W.: Digital and analog communication systems. Prentice-Hall, 2001.	
Supplementary references	1. Freeman Roger L.: Fundamentals of Telecommunication, Willey-IEEE Press, May 2005.	
Organisational unit conducting the course	Department of Photonics, Electronics and Lighting Technology	Date of issuing the programme
Author of the programme	Krzysztof Konopko, Ph.D. Eng.	07.02.2020

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar