GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Satellite telecommunications, PG_00050017		
Field of study	Space and Satellite Technologies, Space and Satellite Technologies		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Radiocommunication Systems and Networks -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Wojciech Siwicki	
	Teachers	dr inż. Wojciech Siwicki	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	45	8.0	22.0	75

Subject objectives

The aim of the course is to acquaint the student with the basic concepts related to satellite telecommunications, satellite link balance, properties of the terrestrial and satellite segments, transmission methods and multiplexing in the satellite channel and applications of satellite telecommunications (various systems, their organization and services), as well as the practical operation of selected radiocommunication systems

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W12	Has system knowledge of the construction and operation of a satellite radio link	[SW3] Assessment of knowledge contained in written work and projects
K7_W09	Knows the functionality of INMARSAT, IRIDIUM and GPS systems	[SW3] Assessment of knowledge contained in written work and projects
K7_U05	Is able to use in practice the communication and location capabilities of INMRSAT, IRYDIUM and GPS systems.	[SU4] Assessment of ability to use methods and tools

Subject contents

lectures:

Basic definitions and terms related to satellite telecommunications. History of satellite telecommunications systems. Earth satellites orbits. Architecture of satellite systems. Satellite link balance. Description and properties of the ground segment. Description and characteristics of the satellite segment. Signal transmission methods. Methods of multiplying the transmission in the satellite channel. Applications of satellite telecommunications systems - description of various satellite systems, their organization and properties, and services offered.

Laboratory:
During the laboratory, the student will become familiar with the practical operation of selected satellite radiocommunication systems, including practical communication procedures using a satellite communication simulator.

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture exam	60.0%	60.0%
	Laboratory	100.0%	40.0%
Recommended reading	Basic literature	1. Zieliński R.J.: Satelitarne sieci teleinformatyczne. Warszawa: Wydawnictwo Naukowo-Techniczne 2016. 2. Kabaciński W.: Sieci telekomunikacyjne. Warszawa: Wydawnictwa Komunikacji i Łączności 2015. 3.Anil K. Maini, Varsha Agrawai: Satelite technology principles and applications. John Wiley&Sons Ltd. 2011. 4. ITU: Handbook on satelite communications. John Wiley & Sons Ltd. 2002.	
	Supplementary literature	1. Bem D.J.: Radiodyfuzja satelitarna. Warszawa: Wydawnictwa Komunikacji i Łączności 1990. 2. Wesołowski K.: Systemy Radiokomunikacji Ruchomej. Warszawa: Wydawnictwa Komunikacji i Łączności 2006. 3. Maral G.:VSAT Networks. John Wiley&Sons Ltd. 2002.	
	eResources addresses	Adresy na platformie eNauczanie: Telekomunikacja Satelitarna 2022/2023 - Moodle ID: 26353 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26353	
Example issues/ example questions/ tasks being completed	Not applicable		
Work placement	Not applicable		