GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Space Technologies for Sustainable Development, PG_00065871						
Field of study	Space and Satellite Technologies						
Date of commencement of studies	February 2025		Academic year of realisation of subject	2025/2026			
Education level	second-cycle studies		Subject group	Specialty subject group 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	2		ECTS credits	3.0			
Learning profile	general academic profile		Assessment form	exam			
Conducting unit	Department of Geoinformatics -> Faculty of Electronics Telecommunications and Informatics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Berezowski					
	Teachers	dr inż. Tomasz Berezowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	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 familiarize the student with advanced methods and techniques for processing data from Earth observation satellite systems for the purposes of environmental monitoring in the context of sustainable development aspects. The course will discuss advanced methods of interpreting observational data, theoretical models used in the field and satellite data processing technologies. As part of the project, students will develop a case study based on their knowledge of the subject.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U03] Is able to recognise, formulate and solve scientific problems. Is able to formulate and verify hypotheses regarding technical and scientific problems in the field of space and satellite technologies. Is able to prepare a scientific paper on specific issues in the field of space and satellite technologies, as well as to present the results of his/her own scientific research.	The student is able to identify problems in the field of Earth observation and solve them, as well as prepare reports from his/her research.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K7_U02] Is able to communicate using modern techniques in professional and non-professional environment. Is able to prepare an oral presentation of issues and problems from the field of space and satellite technologies.	Student is able to prepare an oral presentation on Earth observation issues, including those related to the sustainable development goals.	[SU5] Assessment of ability to present the results of task
[K7_U07] Identifies and describes technical problems and is able to solve them choosing the relevant methods and tools. Is able to select and use the appropriate, also the advanced, IT solution for the specific problem in the field of space and satellite technologies.	The student is able to select appropriate measurement tools and software for data processing and analysis in a task related to Earth observation.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[K7_W06] Has well-ordered and extended knowledge on ICT in space and satellite engineering. Has well-ordered and extended knowledge about potential, methods and application areas of satellite remote sensing and Earth observation as well as about the structure of individual segments, principles of operation and applications of satellite navigation systems.	The student knows what tools and data can be used to observe the Earth, in specific in applications related to sustainable development goals.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation

Subject contents

During lectures in which students will actively participate, methods and tools for observing the earth's environment in the context of the sustainable development goals of recent years will be discussed, based on articles from international journals.
As part of the laboratory, students will perform tasks in the field of classification, point cloud processing, spectrometry and photogrammetry in the context of sustainable development goals.
As part of the project, students will develop a case study of varying difficulty, e.g. a model (subpixel classification) or pixel classification aimed at environmental monitoring related to sustainable development goals.

Prerequisites and co-requisites

Knowledge of remote sensing of the environment, basic knowledge of scripting languages is recommended.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	50.0%	25.0%
Laboratory	50.0%	25.0%
Project	50.0%	25.0%
Presentation	50.0%	25.0%

Recommended reading

Basic literature	The fundamentals of Satellite Remote Sensing: An environmental aproach, Emilio Chuvieco, CRC Press, Taylor & Francis Group
Supplementary literature	Environmental Sensing: Analytical Techniques for Earth Observation, James K. Lein, ISBN 978 1-4614-0142-1
eResources addresses	

Example issues/ example questions/ tasks being completed

Presentation of the content of the article from the scientific journal with a personal assessment

Work placement

Not applicable

Document generated electronically. Does not require a seal or signature.