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 2026	Academic year of realisation of subject	2026/2027
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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Tomasz Berezowski	
	Teachers	dr hab. inż. Tomasz Berezowski dr inż. Marek Kulawiak	

Lesson types

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

eNauczanie source addresses:

Moodle ID: 7927 Technologie kosmiczne w służbie zrównoważonego rozwoju 2026/2027
https://enauczanie.pg.edu.pl/2025/course/view.php?id=7927

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 advanced methods and techniques for processing data from Earth's satellite observation systems for the purposes of monitoring the environment and changes occurring in it. The subject will discuss advanced methods for the interpretation of 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 knowledge of the subject.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[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.	The student is able to present issues related to sustainable development in the context of satellite observations, in the form of a presentation.	[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task
[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 uses remote sensing tools to address issues related to sustainable development.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[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 uses remote sensing tools from programming languages to address issues related to sustainable development.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents

Course content – lecture

During the lectures in which students will actively participate by presenting, methods and tools for observing the earth's environment from recent years will be discussed based on articles from international magazines.

Course content – laboratory

The laboratory sessions focus on monitoring various sustainable development issues using satellite imagery, covering topics such as soil parameters, flooding, mining, and more.

Course content – project

As part of the project, students will develop a case study of varying complexity - for example, a classification or regression model addressing a sustainability-related problem. Students may use existing tools or develop their own using R or Python.

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
Project	50.0%	33.0%
An examination in the form of a presentation on a topic chosen from the subject matter of the course	50.0%	34.0%
Laboratory	50.0%	33.0%

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

Practical activites within the subject	Not applicable

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