GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	GNSS Applications Programming, PG_00065869		
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
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	2.0
Learning profile	general academic profile	Assessment form	assessment
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 inż. Przemysław Falkowski-Gilski	
	Teachers	dr inż. Przemysław Falkowski-Gilski	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 6997 Programowanie aplikacji GNSS 2026/27
https://enauczanie.pg.edu.pl/2025/course/view.php?id=6997

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	30	5.0	15.0	50

Subject objectives

The aim of the course is to acquaint students with GNSS satellite systems, as well as designing, implementing and testing related mobile applications.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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.	Student gains skills of using selected programming tools	[SU4] Assessment of ability to use methods and tools
[K7_K03] Can analyse and implement assigned tasks while maintaining high technical standards. Is able to work and interact in a group, taking on different roles. Adheres to the principles of professional ethics and respects the diversity of views and cultures.	Student is able to design a mobile application, utilizing various data access techniques, depending on the test scenario	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W04] Knows and understands, to an increased extent, processes occurring in the life cycle of equipment, objects and technical systems, including software systems.	Student learns selected satellite systems and tools for processing data derived from them	[SW1] Assessment of factual knowledge
[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.	Student acquires knowledge regarding the architecture and application of global and local satellite systems.	[SW2] Assessment of knowledge contained in presentation

Subject contents

Course content – lecture

1. Development trends in GNSS satellite systems.

2. Overview of popular programming tools and mobile applications.

3. Implementation and testing of mobile applications.

Course content – laboratory

1. Navigation and positioning in indoor and outdoor environments.

2. Analysis and visualization of signal reception under LOS and NLOS conditions.

3. Collection, processing, and presentation of raw GNSS measurement data.

4. Integration of data from sensors embedded in the user terminal.

5. Testing of mobile applications.

Prerequisites and co-requisites

1. Principle knowledge of GNSS satellite systems.

2. Basic programming skills.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	50.0%	50.0%
Lecture	50.0%	50.0%

Recommended reading	Basic literature	Grewal M. S., Andrews A. P., Bartone C. G., Global Navigation Satellite Systems, Inertial Navigation, and Integration, Wiley, 2013. Murphy M., The Busy Coder's Guide to Advanced Android Development, CommonsWare, 2011.
	Supplementary literature	Darwin I. F., Android Cookbook: Problems and Solutions for Android Development, O'Riley Media, Inc, 2012.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Implementation and testing of a mobile application, utilizing GNSS satellite signals.	
Practical activites within the subject	Not applicable	

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