GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming of GNSS Applications, E:41036W0		
Field of study	Space and Satellite Technologies		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	3.0
Learning profile		Assessment form	assessment
Conducting unit	Department Of Geoinformatics -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Przemysław Falkowski-Gilski	
	Teachers		

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	0.0	0.0	45

Subject objectives

The aim of this subject 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_W12	Student has the knowledge on GNSS systems and tools for processing data derived from them.	[SW1] Assessment of factual knowledge
K7_U12	Student is able to design a mobile application utilising GNSS data for several applications.	[SU1] Assessment of task fulfilment [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.	The student implements tasks related to programming GNSS applications with maintaining high technical standards.	[SK2] Assessment of progress of work

Subject contents

Programming of GNSS applications: Positioning and navigation algorithms; Satellite navigation receivers; Structure and formats of GNSS data (at various levels of processing); Methods and algorithms for GNSS data processing; Mobile systems and platforms; Selected evaluation platforms and its programming; Selected graph-based algorithms related to navigation; Numerical libraries to solve navigational equations; GNSS signal processing algorithms

Prerequisites and co-requisites

1. Principle knowledge on GNSS.

2. Principle 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	1. Grewal M. S., Andrews A. P., Bartone C. G., Global Navigation Satellite Systems, Inertial Navigation, and Integration, Wiley, 2013. 2. Murphy M., The Busy Coders Guide to Advanced Android Development, CommonsWare, 2011.
	Supplementary literature	3. Darwin I. F., Android Cookbook: Problems and Solutions for Android Development, ORiley Media, Inc, 2012
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Define sensors and systems used in positioning and navigation of mobile devices.	
Work placement	Not applicable	

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