



Subject card

Subject name and code	GPS and Galileo Satellite Navigation Systems, PG_00047977						
Field of study	Informatics						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group		Optional 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	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Geoinformatics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Jerzy Demkowicz				
	Teachers		dr inż. Jerzy Demkowicz dr inż. Andrzej Chybicki mgr inż. Łukasz Markiewicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		5.0		60.0	125
Subject objectives	GNSS acquaintance & information systems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	Knowledge of GNSS signal processing algorithms, protocol protocol analysis, implementation of algorithms, acquiring knowledge to build your own GNSS receiver	[SU1] Assessment of task fulfilment
	[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Knowledge of the GNSS position calculation process	[SW1] Assessment of factual knowledge
	[K6_U43] can analyse data and formulate, apply and assess appropriate formal models and algorithms for solving problems in the field of information systems and applications	Verification and creation of test tools	[SU1] Assessment of task fulfilment
	[K6_U41] can produce, test or evaluate software using modern programming platforms, tools, languages and paradigms of different levels, as well as use software packages supporting scientific and research processes as well as business decision-making processes and teamwork	Knowledge of GNSS system architecture	[SU1] Assessment of task fulfilment
	[K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	Knowledge of GNSS algorithms, produces GNSS applications	[SW1] Assessment of factual knowledge
Subject contents	1. GNSS system 2. GNSS Segments 3. Kalman Filtering 4. Pseudoranges 5. GNSS Receiver 6. GPS, GLONASS i GALILEO 7. SG EUPOS 8. System Loran C		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	51.0%	50.0%
	Lab	51.0%	50.0%
Recommended reading	Basic literature	1. Elliott D. Kaplan Understanding GPS Principles and Applications (Artech House Mobile Communications) , 1996 , ISBN-10: 0890067937 2. Specht C., System GPS, Biblioteka Nawigacji nr 1, Wydawnictwo "Bernardinum", Pelplin, 2007.	
	Supplementary literature	Systemy satelitarne GPS Galileo i inne Jacek Januszewski, 2010 , <i>Naukowe PWN</i>	
	eResources addresses	Adresy na platformie eNauczanie: SYSTEMY NAWIGACJI SATELIT.GPS I GALILEO - 2023 - Moodle ID: 28423 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28423	

Example issues/ example questions/ tasks being completed	GNSS Positioning Process
Work placement	Not applicable