



Subject card

Subject name and code	Space Applications of Advanced Information Technologies, PG_00050031						
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 Computer Architecture -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jerzy Proficz					
	Teachers	dr hab. inż. Jerzy Proficz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	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 students are going to be introduced to practical skills related to the advanced Information Technologies including High Performance Computing						
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.	The student can identify and describe a practical problem related to satellite data analysis using advanced IT methods (Big Data or HPC).			[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 gains knowledge related to using advanced IT solutions along with space and satellite technologies.			[SW1] Assessment of factual knowledge		
	[K7_W04] Knows and understands, to an increased extent, processes occurring in the life cycle of equipment, objects and technical systems, including software systems.	The student gains knowledge related to a lifecycle of space and satellite software systems, including their maintenance.			[SW1] Assessment of factual knowledge		
Subject contents	Lectures: There are going to be presented modern technologies related to High Performance Computing in cluster architecture in Big Data, Cloud and MPI environments. Project: Preparing an software application for one on presented technologies within context of the space/satellite data.						

Prerequisites and co-requisites	Skills in C or similar programming language		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	51.0%	50.0%
	Project	70.0%	50.0%
Recommended reading	Basic literature	B. Wilder, Cloud Architecture Patterns, O'Reilly 2012 W. Gropp, E. Lusk, A. Skjellum, Using MPI: Portable Parallel Programming with the Message-Passing Interface (Scientific and Engineering Computation), The MIT Press 2014	
	Supplementary literature	T. White, Hadoop, The Definitive Guide, O'Reilly 2012	
	eResources addresses	Adresy na platformie eNauzanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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