



Subject card

Subject name and code	, PG_00066181						
Field of study	Geodesy and Cartography						
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		Polish		
Semester of study	1		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Geodesy -> Faculty Of Civil And Environmental Engineering -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jerzy Pyrchla				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	15.0	0.0	75
	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	75		0.0		0.0	75
Subject objectives	To familiarize students with the issues of obtaining, analyzing, interpreting and practical application of gravimetric data through the interconnection of geometric and physical aspects from global to regional issues.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W05] has a well-established knowledge of analytical methods and surveying techniques necessary for creating and solving a variety of problems in geodesy and cartography		Has knowledge about the characteristics of the importance of data from gravimetric measurements in geodetic work		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_U06] creates solutions to complex and unstructured problems taking into account the variability of the environment by synthesising information from different sources, using analytical and simulation methods		Is able to relate geometric and geophysical issues for the purpose of solving geodetic tasks.		[SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	Introduction; Basics of potential theory; Expression on the potential of the equipotential ellipsoid; Surface spherical harmonics; Height system; Altimetry; gravimetry; Instruments for gravimetric measurements; Noise reduction of the gravimetric signal; Gravimetric anomalies. Reductions and corrections; Deviation of the vertical; The tides of the earth's crus						
Prerequisites and co-requisites	Knowledge of Geodesy higher						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Project report		60.0%		40.0%		
	Test		60.0%		60.0%		
Recommended reading	Basic literature		Kazimierz Czarnecki, Geodezja współczesna. Wyd. PWN 2014; Adam Łyszkowicz, Geodezja fizyczna. Wyd. Uniwersytetu Warmińsko-Mazurskiego w Olsztynie 2012; Marcin Barlik, Andrzej Pachuta, Geodezja fizyczna i grawimetria geodezyjna. Teoria i praktyka. Oficyna Wydawnicza Politechniki Warszawskiej 2007; Martin Vermeer, Physical Geodesy. https://users.aalto.fi/~mvermeer/mpk-en.pdf ; Hofmann-Wellenhof B., Moritz H., Physical Geodesy, Institut für Navigation und Satellitengeodäsie Technische Universität Graz, Graz, Austria, 2006; Barlik M., Pomiary grawimetryczne w geodezji. OWPW 2001; Barlik M., Wstęp do teorii figury Ziemi, 1995; Stefan Przewłocki, Geomatyka. Wyd.: naukowe PWN, Warszawa 200				

	Supplementary literature	Articles in scientific journals. Eg. Journal of Geodesy; Marine Geophysical Research; Journal of Geodynamics; Journal of the Geodetic Society of Japan
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Characterize the potential of the body as Newton's integral. Characterize the Poisson and Laplace equations related to the potential of a solid. Introduce functions called solid spherical harmonics and functions called surface harmonics (Laplace). Give Dirichlet's boundary issues and their solutions to the sphere. Please, write down the radial derivative of the harmonic function. Present the solution of the Laplace equation in ellipsoidal coordinates	
Work placement	Not applicable	

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