University of Gdańsk

Subject card

Subject name and code	Geodesy and Cartography - laboratory classes, PG_00201086		
Field of study	Marine Hydrography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
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	2.0
Learning profile	practical	Assessment form	credit
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Ireneusz Bojarowski	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	25.0	0.0	0.0	25
	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	25	3.0	22.0	50

Subject objectives	
	1. To develop the ability to practically apply the theory of geodesy and cartography in the analysis and visualisation of spatial data. 2. Transfer of knowledge related to the procedure for processing survey data and elements of alignment calculus.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-U14] is able to use the applicable terminology in presenting and discussing problems related to the field of study	is able to use knowledge of the shape and dimensions of the Earth and reference surfaces in solving geodetic problems; is able to transform (convert) coordinate systems in geodesy; is able to apply appropriate measuring procedures and use geodetic instruments and apparatus; is able to produce a correctly constructed base map	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[HML3-W05] knows and understands, at an advanced level, map construction and its symbolism	knows and understands at an advanced level the issues involved in determining the shape of the Earth; knows and understands at an advanced level the theory and types of reference systems and coordinate systems; knows the basic principles of geodetic surveying; knows and understands at an advanced level the theory of cartographic projections and map construction and symbology	[SW4] test/exam - oral or written
[HML3-U15] is able to communicate using a variety of techniques, including non-verbal and different technical means in the professional environment and in other environments	is able to skilfully convey geographical information in the form of a map	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written

Subject contents

Geodetic calculations. Alignment calculus. Coordinate transformation. Sources and analysis of errors. Principles of calculation. Traditional and modern methods of performing geodetic calculations. Basic map construction and content. Choice of projection according to region creation of contour maps of indicated areas of the Earth using selected software (e.g. ArcGIS, Matlab, GMT). Creation of a base map from a set of measured data. Geodetic instruments. Linear measurements. Direct and indirect distance measurements. Theodolite. Angle measurements. Coordinate determination methods. Use of GPS in geodesy. Geometric and trigonometric levelling. Automatic, laser and digital levellers. Laser scanner. Implementing measurements. Cartographic grid calculations. Creating a base map from a set of measured data.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
reports	51.0%	50.0%
colloquium	51.0%	50.0%

Recommended reading

Basic literature	KADAJ R.: Wykłady z geodezji-zbiór materiałów wizualnych wersja 015/20.02.2017. (in Polish) OSADA E.: Geodezja i geoinformatyka, Geodezyjne pomiary szczegółowe, Wydanie 2, UxLAN, Wrocław 2014. (in Polish) OSADA E.: Geodezja i geoinformatyka, Geodezyjne układy odniesienia, Wydanie 3, UxLAN, Wrocław 2016 (in Polish) PRZEWSŁOCKI S.: Geomatyka. Wydawnictwo naukowe PWN, 2008. (in Polish)
Supplementary literature	JAGIELSKI A.: Geodezja I. Wydawnictwo Geodpis, Kraków 2005. (in Polish) JAGIELSKI A.: Geodezja II. Wydawnictwo Geodpis, Kraków 2005. (in Polish) SZPUNAR W.: Podstawy Geodezji Wyższej. PPWK Warszawa 1982. (in Polish) SKÓRCZYŃSKI A.: Podstawy obliczeń geodezyjnych. PPWK, Warszawa 1983. (in Polish) CZARNECKI K.: Geodezja współczesna w zarysie, Wydawnictwo Gall, Katowice 2010. (in Polish)
eResources addresses	

Example issues/ example questions/ tasks being completed

Transformations. Equalization account and surveying calculations. Cartographic projections. Distance measurement. Angle measurement. Leveling. Modern measurement techniques. Creating maps in geodesy.

Work placement

Not applicable

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