University of Gdańsk

Subject card

Subject name and code	Geophysics - lecture, PG_00199134						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study			
Mode of study	full-time studies		Mode of delivery	at the university			
Year of study	2		Language of instruction	Polish			
Semester of study	3		ECTS credits	2.0			
Learning profile	practical		Assessment form	exam			
Conducting unit	Department of Geophysics -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Jarosław Tęgowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		1.0		19.0	50
Subject objectives	To learn and understand the mechanisms of physical phenomena occurring in the geosphere and the geophysical methods used for geological research.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-W04] knows and understands, at an advanced level, the issue of measurements related to the exploration of sea basins and inland waters and tools allowing to describe, interpret and present the results of measurements	knows and understands, at an advanced level, the issues related to geophysical measurements in the context of surveys of marine and inland waters	[SW4] test/exam - oral or written
[HML3-W01] knows and understands, at an advanced level, selected facts, phenomena and processes, as well as methods and theories concerning them, explaining the complex relationships between them, constituting basic general knowledge in the field of scientific disciplines forming the theoretical foundations specific to the field of study	knows and understands, at an advanced level, the physical phenomena occurring in the hydrosphere and their relationships to natural processes	[SW4] test/exam - oral or written
[HML3-W02] knows and understands, at an advanced level, selected phenomena and processes occurring in the hydrosphere, atmosphere, lithosphere and biosphere, their interconnections and relations, as well as practical applications of this knowledge in professional activities related to the field of study	knows and understands, at an advanced level, the implications of the Earth's geospheres and the relationships between them	[SW4] test/exam - oral or written
[HML3-W03] knows and understands, at an advanced level, directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	knows and understands, at an advanced level, the application of geophysical methods in the characterization of lithospheric structures	[SW4] test/exam - oral or written

Subject contents

Lectures: The role and importance of Geophysics in Earth Sciences. The origin and structure of the Universe, Solar System and Earth. Thermology of the Earth, temperature of the Earth's crust, thermal relations in the Earth's interior. Earth's gravitational field, gravimetry, isostasy. Construction and operation of marine gravimeters, their application to seabed studies. Seismic and seismoacoustic methods in the study of the Earth's crust and lithosphere, reflection seismic, refraction seismic, seismoacoustic methods applied to the study of the surface and layered structure of the seabed, construction of seismoacoustic signal sources and construction of receiving systems. Methods of investigating shallow sub-bottom layers - high depth resolution systems - boomers, acoustic profilers, parameter echosounders. Earth's magnetic field, magnetometry, magnetostratigraphy, palaeomagnetism. Construction and operation of magnetometers. Exploration and monitoring of submarine cables, wrecks and other objects with magnetic properties. Types of seabed. Methods and tools for surface sediment sampling. Dynamic processes occurring in the surface layer of the seabed.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	51.0%	100.0%

Recommended reading

Basic literature

FAJKLEWICZ Z. (red.): Zarys geofizyki stosowanej. Wyd. geologiczne, Warszawa 1972. (in Polish)

STENZEL P., SZYMANKO J.: Metody geofizyczne w badaniach hydrologicznych i geologiczno-inżynierskich. Wyd. geologiczne, Warszawa 1973. (in Polish)

	Supplementary literature	Journal of Geophysical Research. The Official Magazine of the American Geophysical Union. http://www.agu.org/journals/jgr/ LOWRIE W.: Fundamentals of Geophysics. Wyd. Cambridge University Press, 2007 MORTIMER Z.: Zarys fizyki Ziemi. Uczelniane Wydawnictwa Naukowo-Dydaktyczne, Kraków 2004. (in Polish) RESNICK R., HALLIDAY D.: Fizyka dla studentów nauk przyrodniczych i technicznych. Tom I, II. Wyd. Naukowe PWN, Warszawa 1980.(in Polish) REYNOLDS J. M.: An Introduction to Applied and Environmental Geophysics, Wiley & Sons, 1997 TELFORD W. M., GELDART L. P., SHERIFF R. E.: Applied Geophysics, Cambridge Univ. Press, 1990.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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