

Subject card

Subject name and code	Geophysics and geochemistry - laboratory, PG_00119852						
Field of study	Geography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Palaeoenvironmental Research -> Department of Geomorphology and Quaternary Geology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Maurycy Żarczyński				
	Teachers		dr Maurycy Żarczyński				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	10.0	0.0	0.0	10
	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	10		12.0		35.0	57
Subject objectives	Introduction to the basic processes and phenomena occurring in the Earths environment with emphasis on geophysics and geochemistry. Rules and laws governing energy and matter migration and transformation as well as physicochemical processes shaping the Earths structure as a whole and part of the Universe.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[GEOGRL3-U01] identify and analyze basic natural and socio-economic processes and phenomena and analyze their causes and course		Identifies and names basic natural processes.		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		
	[GEOGRL3-U03] use theoretical knowledge of geographic sciences and available sources of information to correctly interpret basic natural, social, economic and political processes		Interprets information contained in sources to describe selected environmental processes or phenomena.		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		
	[GEOGRL3-U05] find and select the necessary information from professional literature and other sources, including electronic sources		Can conduct a review and selection of subject literature and digital resources.		[SU2] presentation/project/paper/report		
	[GEOGRL3-U09] develop a selected geographical problem in the form of a scientific text in Polish in the specified methodological convention, with correct documentation		Can prepare a written work on a selected geographical topic.		[SU3] text preparation/written work		

Subject contents	1. Introduction to the energy and matter in the Standard Model and evolution of the Universe; 2. Evolution of stars and stellar systems including Solar System and Suns influence on the Earth; 3. Earth formation, its place in the Solar System. Basics of kinematics and dynamics; 4. Earth structure and inner conditions; laws and rules governing wave physics; 5. Gravitational and geomagnetic fields of the Earth; electromagnetic force, including properties of minerals and rocks; 6. Elements of atmospheric physics, optical and electrical phenomena; 7. Atom and molecules; matter, phases and phase transitions; 8. Radioactivity, natural and artificial, radioactive transformations, decay chains, nuclides, isotopes and energy emission; 9. Geochronology: methods of rock, minerals, sediments, other objects, phenomena and processes dating; 10. Migration of the elements in the environment, migrations in the atmosphere, hydrosphere and lithosphere. Weathering, erosion and accumulation.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	51.0%	30.0%
	Written text	51.0%	10.0%
	Presentation	51.0%	60.0%
Recommended reading	Basic literature	Fedorowicz S., 2008, Geofizyka i geochemia. Skrypt dla studentów kierunku geografii, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk Kozera A., Stajniak J., 1971, Geofizyka ogólna, Wyd. Geol., Warszawa Macioszyk A., 1987, Hydrogeochemia, Wydawnictwa Geologiczne, Warszawa Mietelski J., 2001, Astronomia w geografii, PWN, Warszawa Migaszewski Z. M., Gałuszka A., 2007, Podstawy geochemii środowiska, Wydawnictwo Naukowo-Techniczne, Warszawa Perelman A.J., 1971, Geochemia krajobrazu, PWN, Warszawa Pokojska U., Bednarek R. (red.), 2012, Geochemia krajobrazu, Wyd. Nauk. UMK, Toruń Polański A., 1961, Geochemia izotopów. Wydawnictwa Geologiczne, Warszawa Polański A., Smulikowski K., 1969, Geochemia. Wydawnictwa Geologiczne, Warszawa Stenz E., Mackiewicz M., 1964, Geofizyka ogólna, PWN, Warszawa	
	Supplementary literature	Czechowski L., 1994, Plate tectonics and convection in the Earth's mantle, PWN Scientific Publishers, Warsaw, Poland (in Polish) Perelman A.J., 1971, Geochemistry of the landscape, PWN, Warszawa (in Polish) Stodórkiewicz J.S., 1982, General astrophysics with elements of geophysics, PWN, Warsaw (in Polish)	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	1. Showcase of the selected elements migration; 2. Description what is being emitted during one of the alpha, beta or gamma processes.	
Work placement	Not applicable		

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