

Subject card

Subject name and code	, PG_00159329						
Field of study	Geology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Toxic Substances Transformation -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Bożena Graca				
	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		2.0		19.0	51
Subject objectives	The aim of the course is to familiarize students with basic issues related to chemistry sediments. Information is presented about the importance of bottom sediments in the ecosystem and factors processes that shape their chemical composition. Methods of collection and composition testing are discussed chemical sediments and interstitial waters and estimating the rate of biogeochemical processes in within the sediment						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[GEOLL3_W01] knows and understands the basic natural phenomena and explains their course in relation to geological processes		knows and understands the basics natural phenomena and explains their course about geological processes		[SW4] test/exam - oral or written		
	[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences		knows and understands the terminology appropriate in research biogeochemical bottom sediments		[SW4] test/exam - oral or written		
Subject contents	Topics of the lecture						
	The importance of bottom sediments in the aquatic environment.Natural (biotic and abiotic) and anthropogenic factors (supply of chemical pollutants, bottom trawling, dredging works) shaping the chemical properties of bottom sediments.The circulation cycle of elements in the water-sediment contact zone on the example of nutritional elements. The use of stable isotopes and radioisotopes in the study of bottom sediments.Methods of collecting sediment samples, their preservation and storage in chemical tests.Sequential analyzes in the study of the chemical composition of sediments, using the example of phosphorus.Interstitial water recovery methods, chemical composition, factors influencing variability.Disproportionation of organic matter, influence on pH, Eh, alkalinity, formation of gases in sedimentsClay minerals - reverse weatheringThe use of sediment incubation to study biogeochemical processes in sediments (exchange elements in the zone of contact between water and sediment, denitrification and nitrification rate)						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	pass evaluation	51.0%	100.0%
Recommended reading	Basic literature	Schulz i Zabel 2000 (red.), Marine Geochemistry. Springer-Verlag Berlin-Heidelberg Starmach, K., Wróbel, S., i Pasternak, K., (red.), Hydrobiologia. Państwowe Wydawnictwo Naukowe, Warszawa E.M. Emelyanov (red.), 2002, Geology of the Gdańsk Basin, Baltic Sea. Russian Academy of Sciences, Yantarny skaz, Kaliningrad Libes, S.M., 1992. An introduction to marine biogeochemistry. Wiley and Sons, New York, 743 s. Wulff, F., Rahm, L.A. i Larsson, I.P., (red.), 2001, A systems analysis of the Baltic Sea Czasopisma naukowe	
	Supplementary literature	Wybrane artykuły naukowe z zakresu chemii osadów dennych Graca, B., 2009, Dynamika przemian azotu i fosforu w strefie kontaktu wody z osadem dennym w Zatoce Gdańskiej, Wy-dawnictwo Uniwersytetu Gdańskiego	
	eResources addresses		
Example issues/ example questions/ tasks being completed	The role of sediments in shaping the chemical composition of other spheres of the Earth		
	Experimental methods in the study of processes occurring in sediments		
Work placement	Not applicable		

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