

Subject card

Subject name and code	Chemistry of the Bottom Sediments - lecture, PG_00205334						
Field of study	Oceanography						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	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, prof. UG				
	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		18.0	50
Subject objectives	The aim of the course is to familiarise students with the basic issues related to sediment chemistry. Information on the importance of bottom sediments in the ecosystem and the factors and processes shaping their chemical composition are presented. Methods of collecting and examining the chemical composition of sediments and interstitial waters and estimating the rate of biogeochemical processes within the sediment are discussed.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OCEANL3-W02] has a broad knowledge and understanding of physical, biological, chemical, and geological processes and phenomena occurring in aquatic environments, with particular emphasis on the marine environment		knows and understands basic natural phenomena and explains their course about geological processes		[SW4] test/exam - oral or written		
	[OCEANL3-W05] has an advanced knowledge of techniques, research methods, and tools (mathematical, statistical, and computational) used by oceanographers to describe and interpret processes and phenomena occurring in the marine environment		knows and understands the terminology relevant to biogeochemical studies of bottom sediments		[SW4] test/exam - oral or written		

Subject contents	A. Problems of the lecture A1.The importance of bottom sediments in the aquatic environment. A2. Natural (biotic and abiotic) and anthropogenic factors (chemical pollution supply, bottom trawling, dredging) shaping chemical properties of bottom sediments. A3.Circulation cycle of elements in the water-sediment contact zone using nutrient elements as an example. A4.Use of stable isotopes and radioisotopes in the study of bottom sediments. A5. Methods of sediment sampling their preservation and storage in chemical studies. A6. Sequential analyses in sediment chemical composition studies using phosphorus as an example. A7. Interstitial waters - methods of recovery, chemical composition, factors shaping variability. A8. Disproportionation of organic matter, effect on pH, Eh, alkalinity, gas formation in sediments. A9 Clay minerals - reverse weathering A10. Use of sediment incubation to study biogeochemical processes in sediments (exchange of elements in the water-sediment contact zone, rates of denitrification and nitrification).		
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	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 Earth spheres Experimental methods in the study of bottom sediment	
Work placement	Not applicable		

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