University of Gdańsk

Subject card

Subject name and code	Sea floor geology - lecture, PG_00091109		
Field of study	Geology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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	4	ECTS credits	2.0
Learning profile	academic	Assessment form	
Conducting unit	Laboratory of Marine Geology -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Ewa Szymczak	
	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

Additional information:
lecture with multimedia presentation

lecture with discussion

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	3.0	17.0	50

Subject objectives

The aim of the course is to learn and understand the geological processes responsible for the evolution of the oceans and the geological structure of the oceanic crust, the morphological structure of the world ocean floor and the types of bottom sediments and their patterns of occurrence. Students will also learn about the methods of ocean floor exploration, the scientific programmes under which oceanic crust research is carried out and the major achievements of the ocean drilling programme. The post-glacial evolution of the Baltic Sea will be presented.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GEOLL3_U05] can reconstruct the history of geological development of selected regions in Poland and in the world on the basis of maps, cross-sections and exposures in the field	is able to use source materials (maps, diagrams, cross-sections) to correctly describe the morphology and characteristics of the bed, sediments and reconstruct the course of geological processes	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[GEOLL3_U02] has the skill of analytical and synthetic way of reasoning leading to correct inference based on the results obtained or the facts presented	is able to describe the causes, course and effects of geological processes on the basis of their knowledge and the results obtained or facts presented	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[GEOLL3_W01] knows and understands the basic natural phenomena and explains their course in relation to geological processes	knows and understands the relationship between physical, chemical and biological processes with the geological processes taking place within the oceanic crust (including sedimentary cover) and in the marine environment	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[GEOLL3_W04] knows and understands phenomena and processes occurring in the past and today in the interior of the Earth and on its surface, defines the methods of how to study them	know and understand the geological processes involved in the evolution of the seas and oceans, defines the methods of their study and reconstructs the history of geological development	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences	knows and understands the terminology used in marine geology and used to describe geological processes in the seas and oceans	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion

Subject contents

History of ocean floor research and contemporary research programmes.The formation of modern oceans and the geological development of their substrates.Structure of the oceanic crust.Forms of ocean basin floor topography and their relationship to geological processes.Inflow of sedimentary material to the seas and oceans.The regularities of spatial distribution of sediments in the ocean.Marine sediments and their rate of sedimentation.The geological history of the Baltic Sea.

Prerequisites and co-requisites

Assessment methods and criteria

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

Recommended reading	Basic literature	Burke K., 2011. Plate Tectonics, the Wilson Cycle, and Mantle Plumes: Geodynamics from the Top. Annual Review of Earth and Planetary Sciences, Vol. 39: 1 -29, DOI: 10.1146/annurev-earth-040809-152521 Duxbury A. C., Duxbury A. B., Sverdrup K. A., 2002. Oceans of the World, Wyd. Naukowe PWN, Warszawa Erickson J., 1996. Marine Geology: Undersea Landforms and Life Forms, Facts on File, New York Floyd P.A.(ed), 1991. Oceanic Basalts. Springer Science Kearey P., Klepeis K.A., Vine F.J., 2009. Global tectonics, Wiley-Blackwell Kent C. Condie, 2003. Plate Tectonics and Crustal Evolution. Butterworth-Heinemann Larter R.D., Leat P.T., 2003. Intra-Oceanic subduction systems, The Geological Society London Leontiew O. K., 1989. Marine geology, Wyd. Naukowe PWN, Warszawa Yuen, D.A., Maruyama, S., Karato, S.-i., Windley, B.F. (Eds.), 2007, Superplumes: Beyond Plate Tectonics, Springer Sarle R., 2013. Mid-Ocean Ridges. University Printing House, Cambridge Seton M., Müller R.D., Zahirovic S., Gaina C., Torsvik T., Shephard G., Talsma A., Gurnis M., Turner M., Maus M., Chandler M. 2012. Global continental and ocean basin reconstructions since 200 Ma, Earth-Science Reviews, Vol 113 (34), s. 212-270, http://dx.doi.org/10.1016/j.earscirev.2012.03.002. Torsvik T., Steinberger B., Gurnis M., Gaina C., 2010. Plate tectonics and net lithosphere rotation over the past 150My, Earth and Planetary Science Letters 291, s.106112, doi:10.1016/j.epsl.2009.12.055 Uścinowicz Sz., Kramarska R., 2011. Geological structure and bottom sediments of the Baltic Sea, [in:] Geochemistry of Baltic Sea surface sediments, Sz. Uścinowicz (ed.), PIG-BIP Witak M., 2013. Outline of the postglacial evolution of the Southern Baltic. [in:] J. Cyberski (Ed.), Coastal protection in state maritime policy.
	Supplementary literature	Leontjew O.K. 1972 Bottom of the Ocean. Wyd. Geologiczne Stanley S. M., 2002, History of the Earth. Wydawnictwo Naukowe PWN

	eResources addresses	Podstawowe http://www.deepseadrilling.org/ - Presentation of the achievements of the Deep Sea Drilling Project http://www.odplegacy.org/index.html - Presentation of the achievements of the Ocean Drilling Program https://iodp.tamu.edu/ - The International Ocean Discovery Program (IODP) is an international research collaboration that coordinates seagoing expeditions to study the history of the Earth recorded in sediments and rocks beneath the ocean floor. https://tos.org/oceanography/ - Journal "Oceanography" is the official magazine of The Oceanography Society Uzupełniające Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Describe the types of oceanic basalts and the criteria for distinguishing them. Name the main morphological units of the oceans. Compare the active and passive marginal edges of the ocean. Characterise the distribution of biogenic sediments, identify factors influencing their distribution.	
Work placement	Not applicable	

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