

Subject card

Subject name and code	Mineral resources of seas and oceans, PG_00131543						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2028/2029	
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	4		Language of instruction			Polish	
Semester of study	7		ECTS credits			2.0	
Learning profile	practical		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						
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		20.0	52
Subject objectives	Knowledge of geological conditions for the formation and occurrence of deposits. Familiarisation with the geological structure of the most important and largest Polish and world deposits discussed according to the technological classification: energetic, metallic, chemical and rock raw materials. The legal basis of mineral exploitation, the effects of raw material exploitation in the marine environment.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[HML3-U16] prepare in Polish and foreign language a study of a problem in the field of study with documented conclusions, supported by a report and a multimedia presentation	presents, based on literature sources, selected issues on the occurrence, exploitation or effects of mineral resources in the marine environment	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[HML3-W13] global environmental problems resulting from the development of civilisation, in particular strong anthropopressure in the coastal regions of seas and oceans	presents the legal basis for the development and use of deposits and the impact of deposit exploitation on the natural environment	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[HML3-W02] 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	indicates the areas where deposits occur in the marine environment and presents their genesis against the background of geological processes	[SW1] oral statement/conversation/discussion [SW3] text preparation/written work
	[HML3-U14] use the applicable terminology in presenting and discussing problems related to the field of study	uses basic terms used in the geology of deposits occurring in the marine environment	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[HML3-W04] 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	characterises methods of surveying the ocean floor and the minerals found there	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
Subject contents	[HML3-U08] independently use the professional literature available in traditional and electronic form, make an assessment, critical analysis and synthesis as well as the correct interpretation of the information obtained	presents, based on literature sources, selected issues on the occurrence, exploitation or effects of mineral resources in the marine environment	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	Methods of exploration of the ocean floor and mineral deposits. Legal basis for the use of oceanic minerals. Genesis of minerals. Distribution of polymetallic mineral deposits and their resources. Distribution of energy mineral deposits and their resources. Distribution of chemical mineral deposits and their resources. Occurrence and exploitation of gemstones. Distribution of rock mineral deposits and their resources. Forecast development of deposits. Exploitation of the resources from the bottom of the seas and oceans and its impact on the natural environment.		
	Prerequisites and co-requisites		
	Assessment methods and criteria	Subject passing criteria	Passing threshold
		written assessment	51.0%
			100.0%
Recommended reading	Basic literature		
	Depowski S., Kotliński R., Rühle E., Szamalek K., 1998. Mineral resources of the seas and oceans, Wyd. Naukowe Scholar, Warszawa.		
	Gurvich Evgeny G., 2006. Metalliferous Sediments of the World Ocean, Springer		
	Mizerski W., Szamalek K., 2009. Geology and Mineral Resources of the Oceans, Wyd. Naukowe PWN, Warszawa		
	Kotliński R., Mucha J., Wasilewska M., 2008. Problems of resource estimation of polymetallic nodule deposits in the Pacific. Gospodarka surowcami mineralnymi, 24 (2/4)		
	Marine Resources - Opportunities and Risks. World Ocean Review 3. 2014.		

	Supplementary literature	Max Michael D., Johnson Arthur H., Dillon William P., 2006. Economic Geology of Natural Gas Hydrate, Springer Kotliński R., 1999. Metallogenesis of the worlds ocean against the background of ocean crust evolution. Polish Geological Institute Special Papers, 4: 170 Piestrzyński A., 2011. Ocean Mineral Resources, Mining and Geoengineering, 35 (4/1) Mucha J. Kotliński R., Wasilewska-Błaszczuk M., 2011. Methodology for estimating resource parameters of polymetallic nodule deposits in the Pacific Interoceanmetal area. Zeszyty Naukowe Instytutu Gospodarki Surowcami Mineralnymi i Energią Polskiej Akademii Nauk, 81
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Name the polimetallic minerals found on the ocean floor Describe the effects of oil exploitation in the marine environment	
Work placement	Not applicable	

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