University of Gdańsk

Subject card

Subject name and code	Field Classes at Sea in Geological and Physico-Chemical Oceanography , PG_00206138		
Field of study	Oceanography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	3.0
Learning profile	academic	Assessment form	credit
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. Dorota Burska	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	40.0	0.0	0.0	0.0	40
	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	40	3.0	32.0	75

Subject objectives	The aim of the course is to develop the student's skills in conducting oceanographic research, cooperating in a research team. In addition, to planning and conducting research and performing basic analyses/ measurements in chemical, physical oceanography and marine geology using oceanographic instruments and equipment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OCEANL3-K01] is willing to plan and implement, individually or as a team, the subsequent stages of the entrusted task, is willing to take responsibility for the results of these works, effectively cooperates in the team and performs various roles in it	is ready to follow the steps of a given task, takes responsibility for its results and interacts effectively in a team with different roles	[SK2] presentation/project/paper/ report [SK8] observation of student's independent or team work
[OCEANL3-U02] is able to independently and collaboratively conduct observations and perform measurements in the field or laboratory using appropriately selected techniques, tailored to the research problem	is able to individually and collectively conduct observations and perform basic research and measurements in the field of geological, physical, and chemical oceanography, selecting appropriatemmeasurement and analytical techniques	[SU3] text preparation/written work [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[OCEANL3-U05] is able to use general-purpose and specialized software, as well as mathematical and statistical methods, in data analysis and the presentation of results	is able to use specialised computer software and statistical methods in data analysis and description of processes occurring in the marine environment in the field of geological, physical and chemical oceanography	[SU3] text preparation/written work [SU8] observation of student's independent or team work
[OCEANL3-W03] has an advanced understanding of the relationships between living and non-living components of aquatic environments, and is aware of the complex nature, intricacy, and natural variability of these environments	knows and understands to an advanced level the relationships and dependencies between animate and inanimate elements of the marine environment, understands their natural variability and dynamics	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task
[OCEANL3-U03] is able to process, describe, and present results, and draw conclusions	is able to analytically and synthetically prepare the results of tests and analyses and to make correct conclusions on the basis of them	[SU2] presentation/project/paper/ report [SU3] text preparation/written work
[OCEANL3-K05] is willing to take responsibility for the safety of his/ her own and others' work, is aware of the risks and threats resulting from the work performed	is ready to be responsible for the safety of his own work and that of others, to take care of the specialised equipment entrusted to him, and is aware of the risks and hazards of working in the field and laboratory	[SK2] presentation/project/paper/ report [SK3] text preparation/written work [SK8] observation of student's independent or team work

Subject contents

A. General Conditions for Conducting Work as Part of Specialized Exercises in the Sea and Coastal Zone

1. Fieldwork will be conducted within the same research site in at least two thematic areas. It will be interdisciplinary in nature, allowing for the planning, execution of measurements and analyses, and comparison of results in the fields of physical oceanography, chemical oceanography, and marine geology.
2. The exercises will take into account differences in environmental research methods between chemical, physical, and geological measurements, including sampling frequency, time-consuming procedures, tools and equipment used, meteorological/sea conditions enabling reliable measurements and sampling, as well as the amount of data obtained and its processing.
3. Processing of results: including accurate reporting of the sampling process, result verification, statistical analysis, methodological and environmental conclusions.
4. Comparison of results in at least two thematic areas, e.g., physicochemical characteristics of seawater, geophysical and geological assessment of marine sediments indicating the integrity/interdependence of processes occurring in the aquatic environment.
5. Occupational health and safety in laboratory work and fieldwork

B. Detailed scope of laboratory and field work (ship, coastal zone)

B.1. Chemical oceanography:
1. Methodological foundations for the analysis of organic and trace substances in the marine environment, including the stages of sample collection, storage, and preparation, as well as selected chemical oceanography methods, taking into account the objectives, methodology, and scientific significance of the research.
2. Mobilization of equipment, apparatus, and a "field laboratory" preparation for conducting research in the coastal zone and/or on a ship, measurements, sampling, and chemical analyses. Demobilization of field campaigns, including equipment maintenance and sample storage.
3. Collection of seawater samples, determination of the concentration of selected nutrients, and measurement of pH and O2 in seawater (ship/coastal zone).
4. Analysis of nutrient concentration variation in the water column/shoreline in relation to biogeochemical processes occurring in the sea and thermal and salinity stratification of the water.

B.2. Physical Oceanography:
1. Presentation of the structure and operation of measurement equipment. Demonstration of the equipment's operation in a land-based laboratory and familiarization with its software.
2. Students will independently conduct measurements in a laboratory setting under the supervision of the instructor to acquire practical skills in operating the equipment, preparing for its use during fieldwork on board a ship.
2. Analysis of thermohaline structure, water transparency, and measurements of the vertical profile of overhead lighting spectra.
3. Identification of the phenomena responsible for the thermohaline structure and variability of overhead lighting in the water column observed during measurements.

B.3. Marine Geology
1. Specialized software for operating hydroacoustic instruments (e.g., sonars) used in seabed surveys and processing results, including verification of obtained results and methods for presenting seabed maps.
2. Collecting sediment samples using selected sediment samplers (e.g., Van Veen scoop, Rumohr Lot core probe) and performing basic characterization (including macroscopic analysis).
3. Characterizing the morphology and relief of the seabed using hydroacoustic equipment.
4. Interpreting sedimentary environments based on the analysis of disturbed and undisturbed bottom sediments.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	51.0%	15.0%
Results presentation/report	51.0%	60.0%
Observation of student work	51.0%	25.0%

Recommended reading

Basic literature	J. Bolałek (ed), 2010 Physical, biological and chemical studies of marine bottom sediments. Wydawnictwo UG
	Puck Bay. Volume I. Geological and Physical Aspects, eds. Jerzy Bolałek, Dorota Burska
	Puck Bay. Volume II. Chemical Aspects, eds. Jerzy Bolałek, Dorota Burska

	Supplementary literature	Literature updated on an ongoing basis depending on the location of the testing ground
	eResources addresses	
Example issues/ example questions/ tasks being completed	provided by trainers	
Work placement	Not applicable	

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