University of Gdańsk

Subject card

Subject name and code	Specialization Workshops at Sea - field classes, PG_00205257						
Field of study	Oceanography						
Date of commencement of studies	October 2027		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study 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	1		Language of instruction	Polish			
Semester of study	2		ECTS credits	4.0			
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 Aleksandra Brodecka-Goluch				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	70.0	0.0	0.0	0.0	70
	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	70		5.0	25.0	100	
Subject objectives	The aim of the course is to introduce the student to the specifics of working as an oceanographer and basic oceanographic equipment, including conducting research and making basic analyses in chemistry, geology, physics and marine biology.						

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	the student is ready to be responsible for his/her own work and to follow the principles of work in a team, feeling responsible for jointly realised tasks	[SK2] presentation/project/paper/ report
[OCEANL3-W07] knows and understands the principles of occupational health and safety for an oceanographer	the student knows and understands the basic rules of safety and hygiene of the work of an oceanographer at sea and in the coastal zone	[SW2] presentation/project/paper/ report
[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	the student has an advanced knowledge of the fundamental techniques, research methods and statistical tools used in the work of an oceanographer in order to characterize and interprete marine processes	[SW5] implementation of a problem task
[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	the student is able to make observations and conduct geological, physical, chemical and biological tests and measurements individually and in teams, using suitably selected measuring and analytical techniques	[SU5] implementation of a problem task
[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	the student is able to use specialised computer software and statistical methods in data analysis and description of processes occurring in the marine environment	[SU2] presentation/project/paper/ report [SU3] text preparation/written work
[OCEANL3-U03] is able to process, describe, and present results, and draw conclusions	the student is able to analytically and synthetically describe the results of the research and to make correct conclusions based on them	[SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU5] implementation of a problem task

Subject contents	

A. On-board activities

A.1 Chemical part:

- sampling of seawater and analysis of selected parameters (e.g. oxygen concentration, pH, alkalinity, salinity) in the Baltic Sea water column;
- discussion of the variability of the parameters studied in relation to environmental conditions;
- indication of processes and phenomena influencing the chemical composition of sea water.

A.2 Geological part:

- sampling of disturbed and undisturbed sediments;
- macroscopic description of sediments and preparation of samples for further laboratory analysis;
- use of non-invasive methods in geological investigations.

A.3 Physical part:

- use of non-invasive methods in physical investigations of the marine environment;
- measurements of selected meteorological parameters and simplified assessment of water transparency;
- investigation into a thermohaline structure with the use of a CTD probe.

A.4 Biological section:

- collection and preservation of samples of marine organisms belonging to different ecological formations (at selected stations and profiles in the Gulf of Gdansk), using chosen methods and tools;
- methods for obtaining basic environmental data (environmental background);
- techniques and tools for collecting and preserving biological material for biotechnological research.

B. Field activities

B.1 Chemical part:

- spatial variability of selected physico-chemical parameters in the sea shore area;
- representativeness of a sampling station
- sampling of surface water and measurement of basic parameters (e.g. temperature, salinity, pH, alkalinity, Eh, oxygen) at selected stations located in the sea shore area.

B.2 Geological part:

- geological processes in the coastal zone (e.g. Hel Peninsula region) (coast types, sea coast morphology);
- methods of sea shore protection;
- sea shore measurements using GPS RTK and discussion of geological processes in the coastal zone and methods of sea shore protection.

B.3 Physical part:

- conception of measurements during workshops at sea;
- documentation of surveys carried out at measuring stations;
- characteristics and basic concepts on using a CTD probe.

B.3 Biological part:

- Collection and preservation of samples of marine organisms belonging to different ecological formations from coastal areas of the Gulf of Gdansk, using selected methods and tools.

C. Laboratory activities

C.1 Chemical part:

- validation and selection of analytical methods in environmental studies;
- analysis of concentration of selected substances in subsurface water samples using different analytical methods

C.2 Geological part:

- analysis of sediment grain size, including sand and gravel fractions (Zingg diagram);
- graphical and statistical methods for processing the results of granulometric analyses;
- analysis of the seabed in the study area using a sonar mosaic, bathymetric map obtained from MBES and sediment samples.

C.3 Physical part:

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<tr><td></td><td>
• data analysis in a computer laboratory: preparation of a temperature-salinity diagram;
• preparation of a bathymetric plan; results of the detection of a sunken shipwreck;
• analysis of data collected with non-invasive methods during offshore campaigns.

C.4 Biological part:

• qualitative-quantitative analysis of marine organisms collected during fieldwork and cruises in the Gulf of Gdansk;
• biotechnological potential of marine organisms.
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<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>determining the final grade based on the average of the partial grades obtained for the individual parts of the course specified in the subject content, i.e. A1-A4, B1-B4, C1-C4; on the basis of reports, worksheets or presentations</td><td>51.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Course script "Fundamentals of interdisciplinary Baltic Sea research"

https://oig.ug.edu.pl/strona/96385/
skrypt do zajec podstawy interdyscyplinarnych badan morza baltyck

Bolałek J. (Ed), 2010. Physical, biological, and chemical studies of marine sediments.Published by UG.</td></tr>
<tr><td>Supplementary literature</td><td>selected publications and online resources recommended by the trainers during the course</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>
Chemistry:
1) Presentation of the principles of water sampling and measuring basic physicochemical parameters in water, from aboard a vessel and in the field.
2) Measuring pH, dissolved oxygen, and redox potential in surface seawater samples.
Geology:
1) Using a Van Veen sampler to collect surface sediments.
2) Granulometric (sieve) analysis of sediments.
3) Preparing a beach profile.
4) Preparation of a map of the studied area divided into thematic classes using hydroacoustic measurements
Biology:
1) Performing research tasks and laboratory works related to marine biology.
Physics:
1) Preparation for the research at sea, presentation of measurement devices, and performing test measurements in a laboratory and in the field.
2) Preparation a bathymetric map/processing wreck identification data, based on data collected with a multibeam echosounder.
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<tr><td>Work placement</td><td>Not applicable</td></tr>
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