University of Gdańsk

Subject card

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| Subject name and code | Field Classes at Sea and in the Coastal Zone - field classes, PG_00204964 | | |
| Field of study | Oceanography | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2026/2027 |
| Education level | Master's studies | Subject group | Obligatory subject group in the field of study<br>Optional subject group<br>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 | 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 | 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 | 4.0 | 26.0 | 100 |

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| Subject objectives | Planning tests, collecting water samples, performing chemical measurements and analyses, and verifying the reliability of results. Using meters/probes to measure physicochemical parameters of water and samplers to collect water and suspended solids samples. Chemical analysis of collected samples in a laboratory on board or on land, taking into account the need for sample storage/preservation. Interpreting the obtained data using available monitoring data. Incorporating safe work practices in the field/at sea and in the laboratory into fieldwork and laboratory work. |

## Learning outcomes

| Course outcome | Subject outcome | Method of verification |
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| [OCEANMU2-K01] is ready to plan, implement and supervise, individually or collectively, next stages of the entrusted task, is ready to take responsibility for its results; | Is ready to plan and implement subsequent stages of work at sea and in the chemical laboratory, work effectively in a team, and take responsibility for the results achieved | [SK2] presentation/project/paper/ report<br>[SK8] observation of student's independent or team work |
| [OCEANMU2-U03] can plan and carry out independently advanced research and measurements, both in field and laboratory, using appropriately selected measurement and analytical techniques in the field of oceanography, adequately to the studied specialty and research problem | Can independently carry out tests and measurements in marine and atmospheric chemistry, both in the field and laboratory, using appropriately selected measuring and analytical techniques | [SU2] presentation/project/paper/ report<br>[SU8] observation of student's independent or team work |
| [OCEANMU2-W03] has an in-depth understanding of research methods used in oceanography and related sciences, and interprets their mechanisms and interrelationships across different spatial and temporal scales | Knows in depth the research methods used in the study of marine and atmospheric chemistry | [SW1] oral statement/ conversation/discussion<br>[SW2] presentation/project/paper/ report<br>[SW5] implementation of a problem task |
| [OCEANMU2-U11] is able to work individually and cooperate in laboratory and field groups, performs various functions in them, including managerial ones, performs various assigned tasks | Is able to work individually and in a group, performs various roles in the group, including leadership, and executes assigned tasks related to the investigation of marine and atmospheric chemistry | [SU8] observation of student's independent or team work |
| [OCEANMU2-K05] is ready to follow the rules occupational health and safety, taking care of the entrusted person specialized and recognition equipment emergency situations and take appropriate action activities | Is ready to comply with health and safety rules in the field and laboratory, take care of measuring equipment and samplers and is aware of the risks and hazards associated with working at sea and in a chemical laboratory | [SK8] observation of student's independent or team work |

## Subject contents

- Conducting field research, including sampling and measurements from shipboard or in the coastal zone. Performing laboratory analyses in an on-board laboratory or on land.
- Preparing and securing the necessary equipment and reagents for fieldwork (before and after the cruise, coastal measurements). Training in occupational health and safety regulations for fieldwork, particularly for work at sea. Familiarization with alarms: for lifesaving equipment, fire protection.
- Measurement of physical parameters in the planned study areas (shallow and deep water), including temperature, salinity (CTD probe; multi-parameter meters), and basic meteorological parameters (ship-based weather stations/IMGW). Description of measurement station locations, including: geographic coordinates, measurement station depth.
- Collection of water for analysis of dissolved, suspended and gaseous substances (bathymetric bottle, bathometer rosette, others, e.g. Garett mesh).
- Determination of selected chemical compounds in water samples in the laboratory (on board/on land), e.g. concentration of nutrients, oxygen and pH. Filtration of seawater samples taking into account the type of chemical compounds analyzed in suspension. Analysis of compounds with high concentrations in small volume samples.
- Storage and preservation of collected samples of water and suspended solids, taking into account the type of analysis planned.
- Analysis of the results obtained obtained during field work (cruise, coastal zone), assessment of the precision of the analyses carried out (error analysis, calibration of equipment), critical verification of the results obtained.
- Evaluation of spatial distributions of chemical and physical parameters characterizing the waters and sediments of the southern Baltic Sea (including the coastal zone); distribution maps, parameter cross-sections and vertical distribution (chemocline, halocline, thermocline, freshwater inflow). Graphical and statistical processing and description of the results. Comparison of results with monitoring and literature data (HELCOM, PIG, IMGW, hydrodynamic models).

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Correct execution of assigned tasks | 51.0% | 30.0% |
| Research report, worksheets | 51.0% | 60.0% |
| Observation of work in class, discussion | 51.0% | 10.0% |

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| Recommended reading | Basic literature | Zaawansowane metody interdyscyplinarnych badań Morza Bałtyckiego przygotowany w ramach projektu POWER ProUG (In Polish)<br>Falkowska L., Bolałek J., Łysiak-Pastuszak E., 1999, Analiza chemiczna wody morskiej 2, Pierwiastki biogeniczne N, P, Si, Fe, Wyd. UG, Gdańsk (In Polish)<br>Bolałek J., (red.) 2010, Fizyczne, biologiczne i chemiczne badania morskich osadów dennych. Wydawnictwo UG, Gdańsk (In Polish)<br><br>Raporty IMGW, WIOŚ, HELCOM, model hydrodynamiczny południowego Bałtyku, prognozy pogody, system SatBałtyk |
| | Supplementary literature | Bolałek J., Falkowska L., 1999, Analiza chemiczna wody morskiej 1, Makroskładniki i gazy rozpuszczone w wodzie morskiej, Wyd. UG, Gdańsk (In Polish)<br><br>Różdżyński K., Miernictwo oceanograficzne, tom 1-12, IMGW, Warszawa 1996 (In Polish) |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | - taking in-situ measurements,<br>- collecting material for testing using various devices,<br>- chemical analysis of seawater,<br>- verification of results,<br>- statistical and graphical analysis of the obtained results. | |
| Work placement | Not applicable | |

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