University of Gdańsk

Subject card

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|---|---|---|---|
| Subject name and code | Chemistry of Suspended Particulate Matter - laboratory, PG_00206149 | | |
| Field of study | Oceanography | | |
| Date of commencement of studies | October 2027 | Academic year of realisation of subject | 2029/2030 |
| Education level | Bachelor'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 | 3 | Language of instruction | Polish |
| Semester of study | 6 | ECTS credits | 2.0 |
| 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, prof. UG | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 0.0 | 25.0 | 0.0 | 0.0 | 25 |

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 | 25 | 2.0 | 23.0 | 50 |

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| Subject objectives | Indication of analytical methods and environmental measurements that allow quantitative and qualitative characterization of suspended solids in the aquatic environment . |

## 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 take responsibility for his own work in a chemical laboratory; complies with the principles of teamwork by accepting various tasks; is responsible for jointly conducted experiments in the field of chemical suspensions and the correctness of the obtained results. | [SK2] presentation/project/paper/ report |
| [OCEANL3-U03] is able to process, describe, and present results, and draw conclusions | Can develop, describe and present the results of measurements and analysis of chemical composition of suspensions obtained in experiments. Carries out Correct inference on the basis of the obtained results. | [SU2] presentation/project/paper/ report<br>[SU3] text preparation/written work |
| [OCEANL3-K03] is ready to exercise caution and criticism in accepting information from scientific literature, the Internet and other media relating to natural sciences | Is ready to be cautious and critical in accepting information available in scientific literature, the Internet or other sources regarding the marine environment, especially in the field of information regarding the quantity and quality of suspensions | [SK2] presentation/project/paper/ report |
| [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 | Can individually and in teams perform basic measurements and analyses on the quantity of marine suspensions and their chemical composition, using techniques appropriate to the problem posed, conversions | [SU4] test/exam - oral or written |

## Subject contents

1. Determination of suspension concentration using the gravimetric method.2. Correction of salinity using the weighing method (preparation of a salinity curve, salt washing).3. Sorption/flocculation processes in the aquatic environment (natural and anthropogenic absorbents).4. Determination of selected components of the suspension, e.g.: mineralization (e.g. phosphorus/nitrogen/carbon in suspension), extraction (e.g. chlorophyll a) with final spectrophotometric determination.5. Chemical composition of suspensions in various sea and land areas (natural and anthropogenic suspensions, e.g. calcium carbonate, humus, plastic, soot) - analysis of archival data (cruise reports, online databases, hydrodynamic model, SatBałtyk) using the literature on the subject.

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Test | 51.0% | 35.0% |
| Worksheet/databases | 51.0% | 40.0% |
| poster/presentation | 51.0% | 25.0% |

## Recommended reading

Basic literature

1.Głuch I., Balcerzak M., (red), 2007, Chemia analityczna, Ćwiczenia laboratoryjne, Wyd. Politechniki Warszawskiej, Warszawa

2. Parsons T. R.,Maita Y.,Lalli C. M.,1984, A manual of chemical and biological methods for seawater analysis,Pergamon Press,New York, 173 pp.

3. Falkowska L Bolałek J. Łysiak-Pastuszak E. 1999, Biogenic elements: N, P, Si, Fe, Chemical analysis of sea water Vol. 2, Ed. Gdańsk University Press , Gdańsk

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|---|---|---|
| | Supplementary literature | 1. Burska D., Szymczak E., Pryputniewicz-Flis D. 2022: Suspended matter in the waters of the Bay of Puck, [in]: Bolałek J., Burska D., (red). 2022 Puck Bay. Chemical aspects. Volume 2. Ed. Gdańsk University Press, Gdańsk ( in Polish)<br><br>2. Burska D., Szymczak E., 2018, Suspension in the waters of the Vistula Lagoon. [in] The Vistula Lagoon J.Bolałek (red.), PWN, 115-129; warsaw (in Polish)<br><br>3. scientific publications, environmental reports, thematic studies |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | Test: calculate the concentration of suspended forms of P, N, C; Suspension concentration using the gravimetric method - provide methods for correcting the effect of salinity; provide the procedure for performing the kinetics of phosphate sorption on lime carbonate (examples)Presentation topics: Suspended organic carbon in fresh and salt water; Forms of phosphorus in suspension in the coastal zone; Presence of salt on glass filters - SEM images, presence of plastics - FTIR spectra (examples) | |
| Work placement | Not applicable | |

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