University of Gdańsk

Subject card

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| Subject name and code | Bioindication and Biomonitoring of Water - lecture, PG_00201439 | | | | | | |
| Field of study | Water Management and Protection of Water Resources | | | | | | |
| 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<br>Subject group related to practical vocational preparation | | | |
| 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 | 1.0 | | | |
| Learning profile | practical | | Assessment form | credit | | | |
| Conducting unit | Laboratory of Biodiversity and Benthic Functioning -> Department of Marine Ecology -> Faculty of Oceanography and Geography -> Rector | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr hab. Urszula Janas | | | | |
| | Teachers | | | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15 |
| | 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 | 15 | | 1.0 | | 9.0 | 25 |
| Subject objectives | To develop knowledge on the assessment of threats to aquatic ecosystems associated with human activities. To learn about and be able to select methods to biologically assess the quality and sustainability of the aquatic environment. | | | | | | |

## Learning outcomes

| Course outcome | Subject outcome | Method of verification |
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| [GWOZWL3-W09] The student knows and understands potential threats and sources of pollution of surface and groundwater resulting from the development of civilization, in particular strong anthropopression. | He or she knows and understands the potential threats to surface water resulting from civilization development, especially strong anthropopression | [SW4] test/exam - oral or written |
| [GWOZWL3-K06] The student has the ability an informed and reliable assessment of the impact of humans on the aquatic environment. | He or she is ready to consciously and reliably evaluate the impact of human activities on the aquatic environment using knowledge of bioindication and biomonitoring of waters | [SK8] observation of student's independent or team work |
| [GWOZWL3-U03] The student has the ability observe and describe the changes taking place in water management and predict further directions of its development as well as conduct a critical analysis of case studies of problems of water management and protection of water resources in terms of impact on ecological, social and economic systems; natural valorization and assessment of quality of the environment. | He or she is able to conduct a critical analysis of threats to water resources using biological assessment of the quality of the aquatic environment | [SU8] observation of student's independent or team work |
| [GWOZWL3-W04] The student is familiar with advanced research techniques, methods and tools currently used in water management and the protection of water resources, in both the natural and social sciences, including advanced statistical and IT tools enabling the description, modelling and interpretation of data concerning phenomena and processes occurring in the aquatic environment, as well as tools for describing relationships within socio-ecological systems. | He or she knows and understands research techniques and methods used in biomonitoring of water | [SW4] test/exam - oral or written |
| [GWOZWL3-W03] The student has an advanced knowledge and understanding of the organisation and legal framework of environmental protection, nature conservation and water management, as well as the principles governing the organisation and operation of hydrological and meteorological services and the fundamentals of Integrated Environmental Monitoring. | He or she knows and understands the organization, legislation and operating principles of the State Environmental Monitoring | [SW4] test/exam - oral or written |

## Subject contents

Discussion of bioindication and biomonitoring issues of waterBioindicators and biomarkers as tools for assessing the quality/sustainability of aquatic biotopesTypes of biomonitoring and criteria for selecting species and assemblages for biomonitoringTests and systems determining quality of water and sedimentsBiomonitoring of the aquatic environment in Poland and around the worldAssessment of the quality of European waters in accordance with the Water Framework Directive and the Marine Strategy Framework Directive, types of monitoring, classification of the ecological state of waters

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
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| Written credit with open and test questions | 51.0% | 100.0% |

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| Recommended reading | Basic literature | HELCOM, 2010, Hazardous substances in the Baltic Sea An integrated thematic assessment of hazardous substances in the Baltic Sea. Balt. Sea Environ. Proc. No. 120B.<br><br>Aktualizacja Programu Monitoringu Wód Morskich, Raport do Komisji Europejskiej, 2021, Główny Inspektor Ochrony Środowiska, Warszawa<br><br>Walker C.H., Hopkin S.P., Sibly R.M., Peakall D.B., 2012. Principles of ecotoxicology, pp. 386 |
| | Supplementary literature | www.gios.gov.pl<br><br>www.helcom.fi |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |

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