University of Gdańsk

Subject card

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|---|---|---|---|---|---|---|---|
| Subject name and code | Phototransformation of Natural Water Constituents - laboratory , PG_00204965 | | | | | | |
| Field of study | Oceanography | | | | | | |
| Date of commencement of studies | October 2027 | | Academic year of realisation of subject | 2027/2028 | | | |
| 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 | 2.0 | | | |
| Learning profile | academic | | Assessment form | credit | | | |
| Conducting unit | | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr hab. Waldemar Grzybowski, prof. UG | | | | |
| | Teachers | | | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 0.0 | 0.0 | 30.0 | 0.0 | 0.0 | 30 |
| | 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 | 30 | | 2.0 | | 18.0 | 50 |
| Subject objectives | Familiarization with methods of examining the influence of solar radiation on the components of natural waters | | | | | | |

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [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 | follows the rules of occupational health and safety, takes care of specialist equipment entrusted to him, is able to recognize threats arising from the task performed (program content: B.1-4 | [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 make measurements and calculations in the field of photochemistry. He/she can design an experiment aimed at solving a research problem in environmental photochemistry. (program content: B.1-4 | [SU8] observation of student's independent or team work |
| [OCEANMU2-W01] knows and understands in-depth specialized terminology used in oceanography and related sciences (in Polish and a selected foreign language) | knows and understands specialized terminology to an in-depth level related to phototransformation of components of natural waters | [SW2] presentation/project/paper/ report |
| [OCEANMU2-U02] is able to fluently and accurately use scientific terminology when presenting and discussing oceanographic issues, and to propose and justify innovative solutions | knows and understands specialized terminology to an in-depth level related to phototransformation of components of natural waters | [SU2] presentation/project/paper/ report |
| [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 able to plan and implement, individually or in a team, assigned tasks, cooperates in the team, performing various roles in it (content | [SK6] demonstration of practical skills<br>[SK8] observation of student's independent or team work |

**Subject contents**

B. Laboratory issues B.1 Phototransformation of dissolved organic matter (quantum yield estimation) B.2 Methods of generating hydroxyl radicals B.3 Photoreduction of iron and nitrates B.4 Degradation of chromophoric dissolved organic matter in the presence of titanium dioxide B.5 Presentation of a selected problem in the field of photochemistry of natural waters based on an English-language scientific publication

**Prerequisites and co-requisites**

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Test | 51.0% | 70.0% |
| Presentation | 51.0% | 30.0% |

**Recommended reading**

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|---|---|
| Basic literature | Zofia Sawicka - Photochemical processes in the environment, 2001, Wydawnictwo UJ, Kraków<br><br>Selected scientific articles on the optical properties of natural waters |
| Supplementary literature | Pierre Boule (wyd.), Environmental Photochemistry Part I (Handbook of Environmental Chemistry), 1999, Springer, Ber-lin Asa Leifer, The kinetics of environmental aquatic photochemistry, 1988, Oxford University Press, Oxford |
| eResources addresses | |

**Example issues/ example questions/ tasks being completed**

**Work placement**

Not applicable

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