University of Gdańsk

Subject card

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| Subject name and code | Technology of water and waste water treatment, PG_00144422 | | |
| Field of study | Chemistry | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2024/2025 |
| Education level | postgraduate studies | Subject group | Obligatory subject group 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 | 1 | ECTS credits | 2.0 |
| Learning profile | academic | Assessment form | |
| Conducting unit | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Aleksandra Pieczyńska | |
| | 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 | 5.0 | 15.0 | 50 |

| Subject objectives | |
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| | The aim of the course is to introduce the student to the basic issues of technologies used in water andsewage treatment processes. During the course, the student learns about the sources of water pollution,quality indicators and pollution removal technologies. |

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [CHEMMU2_U01] Plans and implements chemical experiments of medium complexity. | explains the choice of water treatment method for water supply purposes depending on its physicochemical characteristics.<br>carries out laboratory tests in the field of purification according to the instructions<br>water and sewage, prepares written reports on their implementation | [SU5] implementation of a problem task<br>[SU6] demonstration of practical skills<br>[SU8] observation of student's independent or team work |
| [CHEMMU2_K03] Understands the need for systematic work on various projects of a long-term nature and knows how to set priorities for the implementation of undertaken tasks. | understands the need for further education.<br>recognizes the need to use environmental engineering technologies in industrial plants in relation to water and sewage management and improving the quality of human life. | [SK1] oral statement/conversation/ discussion |
| [CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied. | lists the types of water and sewage pollution and the sources of their formation<br>: defines parameters for assessing the quality of water and sewage, describes their methods<br>marking<br>- draws diagrams of selected sewage treatment plants and water treatment plants<br>- explains the processes occurring during wastewater treatment and water treatment.<br>: defines and characterizes facilities and devices used for wastewater treatment and water treatment | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/ report |
| [CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so. | cooperates in a team when performing laboratory tests and developing results<br>: demonstrates creativity in independent and team work | [SK1] oral statement/conversation/ discussion<br>[SK8] observation of student's independent or team work |
| [CHEMMU2_W02] Has extended and in-depth knowledge in the field of basic chemistry. | uses professional terminology<br>identifies sources of wastewater formation.<br>interprets the types of contaminants in sewage and describes possible methods for them<br>deletion.<br>explains the processes occurring during wastewater treatment and water treatment.<br>: defines and characterizes objects and devices used for purification<br>sewage and water treatment | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/ report |
| [CHEMMU2_W12] Knows the principles of occupational health and safety to the extent that allows independent work on a research and/or measurement position. | follows the safety rules applicable in the chemical laboratory; | [SW1] oral statement/ conversation/discussion |

**Subject contents**

Examples of technological processes used in sewage and water treatment.

**Prerequisites and co-requisites**

basics of laboratory work and chemical analysis,

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| reports | 51.0% | 30.0% |
| Activity in classes | 0.0% | 10.0% |
| tests | 51.0% | 60.0% |

**Recommended reading**

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| Basic literature | 1. Kowal A. L., Świderska-Bróż M., Oczyszczanie wody, WydawnictwoNaukowe PWN, Warszawa 20072. Dymaczewski Z, Oleszkiewicz J.A.,Sozański M.M., Poradnik eksploatatora oczyszczalni ścieków, PZIiTS,Poznań 19973. Kowal A., Technologia wody, Arkady, W-wa, 19954.Bortkiewicz B., 2002. Oczyszczanie ścieków przemysłowych. PWN,Warszawa |

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|---|---|---|
| | Supplementary literature | Nawrocki J. Uzdatnianie wody Wydawnictwo Naukowe PWN,Warszawa2010Anielak A. M. Chemiczne i fizykochemiczneoczyszczanie ścieków Wydawnictwo Naukowe PWN, Warszawa 2000 |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | List advanced oxidation processes.Describe the ozonation process and what factors determine its effectiveness.Describe the ion exchange process and give examples of ion exchangers. | |
| Work placement | Not applicable | |

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