



Subject card

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|---|---|--|---|-------------------------------------|-------------------|------------|-----|
| Subject name and code | Engineering Diploma Project, PG_00058324 | | | | | | |
| Field of study | Green Technologies | | | | | | |
| Date of commencement of studies | October 2021 | | Academic year of realisation of subject | | 2024/2025 | | |
| Education level | first-cycle studies | | Subject group | | | | |
| Mode of study | Full-time studies | | Mode of delivery | | at the university | | |
| Year of study | 4 | | Language of instruction | | English | | |
| Semester of study | 7 | | ECTS credits | | 15.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Process Engineering and Chemical Technology -> Faculty of Chemistry | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | prof. dr hab. inż. Anna Zielińska-Jurek | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 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 | | 50.0 | | 295.0 | 375 |
| Subject objectives | The aim of the course is to prepare the student to write a diploma thesis and to deepen knowledge through discussions on issues related to the presence of micropollutants in the environment and technologies preventing their release into the environment. | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | [K6_K02] is aware of the social role of a technical college graduate, take the reflections on the ethical, scientific and social aspects of the work performed, understands the need to promote, formulating and providing the public with information and opinions concerning the activities of the profession of engineer. | The student is aware of the threats resulting from the presence of micropollutants in the environment, is able to convey this knowledge, and discusses various ways of solving the problem of the presence of pollutants in the environment. | [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice |
| | [K6_U03] is able to use information and communication technologies relevant to the common tasks of engineering, is able to use known methods and mathematical-physical models to describe and explain phenomena and chemical processes | The student has detailed knowledge of the theoretical foundations of methods and types of apparatus used in chemical technology as well as the design and supervision of environmentally friendly technologies. | [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment |
| | [K6_U01] is able to obtain information from literature, databases and other sources, is able to integrate the information obtained, to make their interpretation, as well as draw conclusions and formulate and justify opinions, take part in the discussion | The student is able to obtain information from literature, databases and other sources, is able to integrate the obtained information, interpret it, draw conclusions, formulate and justify opinions, participate in discussions | [SU5] Assessment of ability to present the results of task |
| | [K6_K06] has awareness of the importance of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions. | The student is aware of the impact of industrial processes on the environment and technologies that prevent the emission of micropollutants into water, air and soil. | [SK2] Assessment of progress of work [SK3] Assessment of ability to organize work |
| | [K6_K03] turns the attention to the prestige associated with the profession and professional solidarity properly understood, shows respect for others and concern for their welfare | Uses chemical terminology to the extent necessary for presentation | [SK4] Assessment of communication skills, including language correctness |
| Subject contents | Hazards resulting from the presence of pharmaceuticals in surface waters. Light-initiated processes. Advanced oxidation techniques. Water and wastewater treatment technologies. Environmental remediation technologies. | | |
| Prerequisites and co-requisites | Knowledge of basic issues in inorganic chemistry, organic chemistry, analytical chemistry, chemical technology and environmental remediation technology. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | activity | 60.0% | 40.0% |
| | presentation | 60.0% | 60.0% |
| Recommended reading | Basic literature | Reference Articles | |
| | Supplementary literature | Patent Literature | |
| | eResources addresses | Podstawowe https://www.elsevier.com/ - data science Adresy na platformie eNauczanie: | |
| Example issues/ example questions/ tasks being completed | List the methods used to remove organic pollutants in wastewater treatment plants and indicate their advantages and disadvantages. | | |
| | Discuss the problem of micropollutants in surface waters (types of micropollutants, sources of their origin, methods of preventing emissions). | | |
| | Propose and present (in the form of a schematic diagram of 4-6 unit) a method for removing micropollutants (e.g. pharmaceuticals) from wastewater. | | |

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