GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | , PG_00048766 | | |
| Field of study | Green Technologies | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2023/2024 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<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 | English |
| Semester of study | 5 | ECTS credits | 6.0 |
| Learning profile | general academic profile | Assessment form | exam |
| Conducting unit | Department of Process Engineering and Chemical Technology -> Faculty of Chemistry | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Marek Lieder | |
| | Teachers | dr hab. inż. Marek Lieder<br>dr hab. inż. Justyna Łuczak | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 30.0 | 15.0 | 0.0 | 60 |

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=6136

**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 | 60 | 10.0 | 80.0 | 150 |

**Subject objectives**

Learning of theoretical and practical aspects of the green chemical technologies. Acquiring the ability to combine theoretical knowledge with technological expectations.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U02] is able to operate equipment and perform typical analyzes of studies of environmental pollution, is able to carry out an analysis of typical environmental pollution and simple devices according to specification | Students will acquire knowledge in accordance with [9411] [K6_U02] | [SU5] Assessment of ability to present the results of task<br>[SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment |
| [K6_W03] has a basic knowledge of soil, air and water pollutants, design and supervision of environmentally friendly technologies and technologies which do not produce waste, knows technology of cleaning and neutralization of industrial waste and wastewater management, has a basic understanding of the theoretical basis of methods and types of apparatus used in chemical analysis of environmental pollutants | Students will acquire knowledge in accordance with [9488] [K6_W03] | [SW1] Assessment of factual knowledge |

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|---|---|
| Subject contents | 1. Physico-chemical principles of technological processes<br>2. Chemical and technological conception of a method<br>3. The best use of raw materials<br>4. Principle of the best use of energy<br>5. Elements of electrochemical technology<br>6. Energy management in industry. Combustion<br>7. Simulations of chemical processes<br>8. Energy and mass balance |
| Prerequisites and co-requisites | Student has basic knowledge of general, inorganic, organic and physical chemistry. |
| Assessment methods and criteria | |

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Exam | 60.0% | 60.0% |
| Lab repors | 0.0% | 40.0% |

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| Recommended reading | Basic literature | 1. Jess, A., Wasserscheid, P., Chemical Technology: An Integral Textbook, Wiley, 2013<br>2. Kirk, R.E., Encyclopedia of Chemical Technology, Wiley & Sons Inc., 2007<br>3. Moulijn, J.A., Makkee, M., Diepen, A.E., Chemical Process Technology, 2014<br>4. Koyikkal, S., Chemical Process Technology and Simulation, PHI learning, 2013<br>5. H. L. White: Introduction to Industrial Chemistry, Wiley, 1987 |
| | Supplementary literature | not applicable |
| | eResources addresses | Adresy na platformie eNauczanie:<br>Basis of Chemical Technology - Lab - 2022/2023 - Nowy - Moodle ID: 29068<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29068<br>Basis of Chemical Technology - Lab - 2022/2023 - Nowy - Moodle ID: 29068<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29068<br>Basis of Chemical Technology - Lab - 2022/2023 - Nowy - Moodle ID: 29068<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29068 |
| Example issues/ example questions/ tasks being completed | 1. Define the following terms: unit operations, and unit processes. Support definition with technological examples.<br>2. What does it mean to 'freeze' a chemical system?<br>3. Describe parallel heat exchange.<br>4. Describe the Sabatier's rule (energy profiles are necessary).<br>5. Describe the shift conversion. |
| Work placement | Not applicable |