GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Chemistry II, PG_00049144 | | |
| Field of study | Civil Engineering | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2022/2023 |
| 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 | 2 | Language of instruction | Polish |
| Semester of study | 3 | ECTS credits | 1.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Małgorzata Szopińska | |
| | Teachers | mgr inż. Filip Pawlak<br>dr inż. Grażyna Gałęzowska<br>dr inż. Aleksandra Sokołowska<br>dr inż. Małgorzata Szopińska | |

| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|---|
| | Number of study hours | 0.0 | 0.0 | 15.0 | 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 | 2.0 | 8.0 | 25 |

| Subject objectives | |
|---|---|
| | Mastering the basic knowledge of general chemistry needed for further study of major subjects.<br><br>To familiarize students with basic laboratory equipment and laboratory work.<br><br>Developing skills in performing chemical calculations, own laboratory work, honest preparation of results and drawing conclusions from conducted experiments. |

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_W01] has knowledge of selected branches of mathematics, physics and chemistry, which is a base of construction subjects, such as construction theory and material technology and id needed to formulate and solve typical problems of civil engineering | 01 - knows and understands the basic concepts and laws of general chemistry discussed during classes, and knows how to apply them to describe chemical processes;<br>02 - can use the known laws and dependencies for chemical calculations (in particular regarding the concentration of solutions, pH);<br>03 - uses laboratory equipment to perform and interpret simple quantitative determinations;<br>04 - is aware of the dangers which may occur in a chemical laboratory and knows and compiles the health and safety rules. | |
| [K6_K02] is responsible for reliability of obtained results of research and its interpretation, formulates conclusions and describes results of own work | 01 - can cooperate in a small student team by performing chemical determinations and prepare reports on result obtained uduring performed experiments; | |

**Subject contents**

The following issues will be discussed as part of the accounting part

(1) moles, acids and bases, oxidation states, reaction equations, stoichiometry

(2) concentrations and solutions

(3) pH, dissociation

The following exercises will be performed during the laboratory part:

EXERCISE 1. The water color and aggressive carbon dioxide

EXERCISE 2. Water hardness, acidity and alkalinity

EXERCISE 3. Chlorides and sulphates

EXERCISE 4. Oxidability (COD determination using the permanganate method)

**Prerequisites and co-requisites**

Basic term and laws of chemistry. The structure of the atom (atomic nucleus, electronic structure of the atom). Periodic table of elements and the law of periodicity. Classes of chemical compounds. Types of chemical reactions. Equilibria in aqueous electrolyte solutions.

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| computational part | 60.0% | 33.3% |
| final test | 60.0% | 33.4% |
| laboratory part | 60.0% | 33.3% |

**Recommended reading**

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|---|---|
| Basic literature | Jerzy Prejzner Chemistry auditorium exercises for students of hydrotechnics, Publisher: Gdansk University of Technology. |
| Supplementary literature | Obliczenia chemiczne, praca zbiorowa pod red. J. Ciby, Wyd. Pol. Śl., Gliwice 2005. |
| eResources addresses | Adresy na platformie eNauczanie: |

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

**Work placement**

Not applicable