GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | CORROSION, PG_00036512 | | |
| Field of study | Chemistry | | |
| Date of commencement of studies | October 2023 | Academic year of realisation of subject | 2025/2026 |
| Education level | first-cycle 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 | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 2.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Corrosion and Electrochemistry -> Faculty of Chemistry | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | prof. dr hab. inż. Kazimierz Darowicki | |
| | Teachers | | |

Lesson types and methods of instruction

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 0.0 | 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 | 5.0 | 30.0 | 50 |

Subject objectives: bases of corrosion and types of corrosion damage

Learning outcomes

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U06] can analyze the functioning of equipment, apparatus and technology lines used in laboratories and chemical industry, and can recognize and propose methods to solve the simple engineering tasks which he can meet as an Engineer and select and use routine methods, chemical apparatus and tools to solve practical engineering tasks, including also technological processes; can himself/herself read and make technical drawings using CAD software | The student is able to find methods of protection against them on the basis of the types of corrosion and corrosion damage | [SU3] Assessment of ability to use knowledge gained from the subject |
| [K6_U04] can use professional vocabulary, can prepare and communicate technical information in the form of text documents, spreadsheets, charts and technological schema | The student is able to find methods of protection against them on the basis of the types of corrosion and corrosion damage | [SU2] Assessment of ability to analyse information |
| [K6_W05] knows and understands the chemical processes and algorithms of mathematical models which are necessary for the design of technological processes, knows chemical structure of contemporary materials and its relation to their properties, enabling the selection of the materials for sustainable development technology and material-efficient and energy-efficient methods | The student knows the basic types of corrosion and corrosion damage | [SW1] Assessment of factual knowledge |

<table>
<tr><td>Subject contents</td><td>-Energy band theory of metals, semiconductors and dielectrics. -Electric, magnetics and thermal properties of metals. -Types of crystal lattice of solids. -Solid solutions. -Alloys and phase transitions, heat treatment. -Iron-carbon phase diagram. -Classifications of steels and cast irons. -Basics of thermodynamics and chemical kinetics. -Types of corrosion failures. -Corrosion: general, selective, intergranular, pitting, crevice. -Stress corrosion cracking and corrosion fatigue.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Chemical bonds, theory of solutions, chemical thermodynamics, basics of quantum chemistry.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>test</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>Ch.A.Wert, R.M. Thomson, Fizyka ciała stałego, PWN Warszawa 1974 J. Dereń, J. Chaber, R. Pampuch, Chemia ciała stałego, PWN Warszawa 1977 L.L. Shreier, R.A. Barman, G.T. Burstein, Corrosion , Butterworth, London 1994 P.A. Schweitzer, Fundamentals of Metallic Corrosion, CRC Press, London 2007</td></tr><tr><td>Supplementary literature</td><td>No requirements</td></tr><tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Make a Pourbaix diagram for zincDerive the Butler-Volmer equationCharacterize the electric double layer model</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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