



## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------|---------|-----------------------------------------------------------------------------------------------|-----|
| Subject name and code                       | , PG_00065840                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
| Field of study                              | Analiza uszkodzeń korozyjnych                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
| Date of commencement of studies             | October 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          | Academic year of realisation of subject                                                           |                                     |         | 2025/2026                                                                                     |     |
| Education level                             | second-cycle studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                          | Subject group                                                                                     |                                     |         | Specialty subject group<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                                                                                      |                                     |         | 3.0                                                                                           |     |
| Learning profile                            | general academic profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          | Assessment form                                                                                   |                                     |         | assessment                                                                                    |     |
| Conducting unit                             | Department of Corrosion and Electrochemistry -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej                                                                                                                                                                                                                                                                                                                                                                                        |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | dr hab. inż. Paweł Ślepski                                                                        |                                     |         |                                                                                               |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          | dr hab. inż. Paweł Ślepski                                                                        |                                     |         |                                                                                               |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lecture                                                  | Tutorial                                                                                          | Laboratory                          | Project | Seminar                                                                                       | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.0                                                      | 0.0                                                                                               | 0.0                                 | 30.0    | 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                                                       |                                                                                                   | 4.0                                 |         | 41.0                                                                                          | 75  |
| Subject objectives                          | The aim of the course is to familiarize students with the procedures used in the analysis of component/objectdamage, to carry out damage tests (corrosion tests, chemical analyses, mechanical tests, microscopic examinations, etc.) and to analyze the results.                                                                                                                                                                                                                              |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          | Subject outcome                                                                                   |                                     |         | Method of verification                                                                        |     |
|                                             | [K7_W04] Has enhanced knowledge of materials sciences, within the scope required for describing and understanding the correlation between the chemical composition, structure and mechanical and physical properties.                                                                                                                                                                                                                                                                          |                                                          | The student can explain the changes in the physical properties of an object undergoing corrosion. |                                     |         | [SW1] Ocena wiedzy faktograficznej                                                            |     |
|                                             | [K7_U01] Can obtain information from literature, databases and other properly selected sources, also in English; can integrate the obtained information, interpret and draw conclusions, formulate and justify opinions                                                                                                                                                                                                                                                                        |                                                          | Can select construction materials suitable for a given corrosive environment                      |                                     |         | [SU2] Ocena umiejętności analizy informacji                                                   |     |
|                                             | [K7_K02] Is aware of the importance of non-technical aspects and effects of engineering, including the influence on the environment and resulting responsibility for the decisions.                                                                                                                                                                                                                                                                                                            |                                                          | Students works in team, adopting various roles                                                    |                                     |         | [SK1] Ocena umiejętności pracy w grupie                                                       |     |
| Subject contents                            | Course content – project<br>Analysis of corrosion failure caused by various corrosion processes (general, galvanic, concentration, pitting, fracture, intergranular corrosion, corrosion cracking, etc.). General characteristics of particular corrosion phenomena. Overview of the most common locations of corrosion failure in industrial installations. Failure analysis methods. Forms of corrosion prevention. Familiarization with corrosive damage databases. Building analyse report |                                                          |                                                                                                   |                                     |         |                                                                                               |     |
| Prerequisites and co-requisites             | Knowledge of various corrosion processes and mechanisms, knowledge of electrochemical techniques                                                                                                                                                                                                                                                                                                                                                                                               |                                                          |                                                                                                   |                                     |         |                                                                                               |     |

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| Assessment methods and criteria                                | Subject passing criteria         | Passing threshold                                                                                             | Percentage of the final grade |
|                                                                | Report                           | 100.0%                                                                                                        | 100.0%                        |
| Recommended reading                                            | Basic literature                 | 1. Practical Engineering Failure Analysis, H.M. Tawancy, A. UIHamid, N.M. Abbas, Marcel Dekker, New York 2004 |                               |
|                                                                |                                  | 2. Fundamentals of Metallic Corrosion, P.A. Schweitzer, CRC Press, New York 2006                              |                               |
|                                                                | Supplementary literature         | Engineering Failure Analysis - ISI journal                                                                    |                               |
|                                                                | eResources addresses             |                                                                                                               |                               |
| Example issues/<br>example questions/<br>tasks being completed | Effect of corrosive environment  |                                                                                                               |                               |
|                                                                | Analysis of material composition |                                                                                                               |                               |
|                                                                | Operating conditions             |                                                                                                               |                               |
|                                                                | Damage analysis                  |                                                                                                               |                               |
| Practical activites within the subject                         | Not applicable                   |                                                                                                               |                               |

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