GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Corrosion of underwater structures, PG_00072665		
Field of study	Chemical Technology, Chemistry, Biotechnology, Engineering and Technologies of Energy Carriers, Corrosion , Green Technologies, InfoBioChem		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Corrosion and Electrochemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Juliusz Orlikowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	15.0	45

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	45	5.0	25.0	75

Subject objectives

The aim of the course is to familiarize students of the Faculty of Chemistry with corrosion problems occurring in underwater structures, especially in the Baltic Sea environment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U05] uses computer methods for data analysis, modelling and simulation uses instrumental methods applied to corrosion and related fields	is able to use the obtained knowledge regarding corrosion protection technologies for watercraft and hydraulic structures	[SU1] Assessment of task fulfilment
[K7_W05] recognises key developments in research, apparatus and technology in corrosion and material degradation and related fields	Obtaining knowledge about corrosion mechanisms occurring in the Baltic Sea	[SW1] Assessment of factual knowledge

Subject contents

Course content – lecture
Corrosion processes occurring in marine and freshwater environments, environmental factors influencing corrosion. The influence of biological and meteorological factors on corrosion rates in freshwater, the Baltic Sea, and oceans. Corrosion of hydraulic structures (wind towers, drilling and production platforms, gas pipelines, piers, and coastlines). Electrochemical corrosion protection and coating protection of hydraulic structures. The influence of biological life on corrosion processes. Inspection testing methodology.

Course content – laboratory
Steel corrosion rate testing in the Baltic Sea environment - coupon method. Anti-corrosion protection testing.

Course content – seminar
Visual assessment of the condition of coatings and galvanic anodes based on data recording from an ROV.

Prerequisites and co-requisites

Basic information on chemistry and electrochemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory - test results	60.0%	33.0%
seminar - final test results	60.0%	33.0%
lecture - final exam result	60.0%	34.0%

Recommended reading

Basic literature	Praca zbiorowa, Technika Przeciwkorozyjna cz.1 i 2
Supplementary literature	M. Fontana, Corrosion Engineering,
eResources addresses	

Example issues/ example questions/ tasks being completed	What are the causes of corrosion in the marine environment? What factors influence the rate of corrosion? How are structures protected in the marine environment? How are corrosion protection technologies inspected?
Practical activites within the subject	Not applicable

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