GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00059960		
Field of study	Environmental Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksander Perliński	
	Teachers	dr inż. Aleksander Perliński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	0.0	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	5.0	19.0	54

Subject objectives

The purpose of the course is acquaint students with the problem of corrosion of metal parts causing loss of capacity, stability or functionality of technical systems and sanitary systems. Types of corrosion will be presented and the process of their course. Ways of metal protection by coatings and metallization will be discussed. Students learn the process of selection of the corrosion protection system for the selected components.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U08] is able to assess risks in the implementation of engineering projects and implement appropriate safety rules	Student knows threats during anti-corrosion works	[SU3] Assessment of ability to use knowledge gained from the subject
K7_W05	Student knows principles of design and application related to metal structures anti-corrosion protection	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation
[K7_W02] has broadened and well-ordered knowledge of the current law on construction, water, environmental protection and planning and spatial planning.	Student understands the code requirements related to anti-corrosion protection of metal structures	[SW1] Assessment of factual knowledge

Subject contents

Lecture plan:

Steel as a structural material - properties, production, steel spoducts, structures. Phenomena of corrosion. Types of corrosion. Electrochemical and chemical corrosion. Corrosion traps. Corrosion environmental classification. Steel with improved anti corrosion properties. Steel surface treatment for anti corrosion protection. Anti corrosion protection with paints and galvanising. Anti corrosion protection testing. Protection with inhbitors and electrochemical protection of structures.

Tutorial plan:

"Corrosion traps" - student tutorial with Steel Structures Catalogue.

"Structure preparation for hot dip galvanising" - student tutorial with Steel Structures Catalogue

"Structure corrosion examples and the anti-corrosion method proposal" - presentation prepared by the groups of students.

"Corrosion experiment" - the rate of corrosion assessment performed on steel elements is salt, acid and basic solutions - laboratory.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test of lecture content	60.0%	60.0%
presentation	60.0%	24.0%
exercise (2 x)	60.0%	16.0%

Recommended reading

Basic literature

1. PN EN ISO 12944 - Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part. 1-7
2. PN EN ISO 1461 Zinc coatings applied to steel by immersion (galvanizing unit) - Requirements and testing
3. BS EN ISO 8501 - Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness. Part 1. Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings. Part 2 preparation of previosly coates steel substrates after localized removal of previous coatings.
4. Praca zbiorowa "Technika przeciwkorozyjna. Część 1", WSZiP, Warszawa 1989
5. Praca zbiorowa "Technika przeciwkorozyjna. Część 2", WSZiP, Warszawa 1976

Supplementary literature

1. Praca zbiorowa "Ochrona przed korozją. Poradnik", WKiŁ, Warszawa 1986
2. Chmielewski A.:"Problemy z korozją. zabezpieczenia przeciowkorozyjne konstrukcji stalowych - powłoki malarskie", Wyd. PALMApress, Wrocław 1997

eResources addresses

Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Explain what is a pitting corrosion.

Explain the Sandelin effect

What is a "corrosion trap"? Draw an example of "a corrosion trap".

Work placement

Not applicable