



Subject card

Subject name and code	, PG_00059960						
Field of study	Environmental Engineering						
Date of commencement of studies	February 2024			Academic year of realisation of subject		2024/2025	
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						
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_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		
	K7_W05		Student knows principles of design and application related to metal structures anti-corrosion protection		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	[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		

Subject contents	<p>Lecture plan:</p> <p>Steel as a structural material - properties, production, steel products, 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 inhibitors and electrochemical protection of structures.</p> <p>Tutorial plan:</p> <p>"Corrosion traps" - student tutorial with Steel Structures Catalogue.</p> <p>"Structure preparation for hot dip galvanising" - student tutorial with Steel Structures Catalogue</p> <p>"Structure corrosion examples and the anti-corrosion method proposal" - presentation prepared by the groups of students.</p> <p>"Corrosion experiment" - the rate of corrosion assessment performed on steel elements in salt, acid and basic solutions - laboratory.</p>														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="454 978 794 1003">Subject passing criteria</th> <th data-bbox="798 978 1137 1003">Passing threshold</th> <th data-bbox="1141 978 1482 1003">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 1008 794 1032">exercise (2 x)</td> <td data-bbox="798 1008 1137 1032">60.0%</td> <td data-bbox="1141 1008 1482 1032">16.0%</td> </tr> <tr> <td data-bbox="454 1037 794 1061">presentation</td> <td data-bbox="798 1037 1137 1061">60.0%</td> <td data-bbox="1141 1037 1482 1061">24.0%</td> </tr> <tr> <td data-bbox="454 1066 794 1090">test of lecture content</td> <td data-bbox="798 1066 1137 1090">60.0%</td> <td data-bbox="1141 1066 1482 1090">60.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	exercise (2 x)	60.0%	16.0%	presentation	60.0%	24.0%	test of lecture content	60.0%	60.0%
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Recommended reading	Basic literature	<ol style="list-style-type: none"> 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 previously coated 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	<ol style="list-style-type: none"> 1. Praca zbiorowa "Ochrona przed korozją. Poradnik", WKiŁ, Warszawa 1986 2. Chmielewski A. "Problemy z korozją. zabezpieczenia przeciwkorozyjne konstrukcji stalowych - powłoki malarskie", Wyd. PALMApress, Wrocław 1997 													
	eResources addresses	Adresy na platformie eNauczanie:													
Example issues/ example questions/ tasks being completed	<p>Explain what is a pitting corrosion.</p> <p>Explain the Sandelin effect</p> <p>What is a "corrosion trap"? Draw an example of "a corrosion trap".</p>														
Work placement	Not applicable														

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