



Subject card

Subject name and code	BIO-CORROSION, PG_00064356						
Field of study	Corrosion						
Date of commencement of studies	February 2027		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		e-learning		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Chemistry Technology and Biotechnology of Food -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Filipkowski				
	Teachers						
Lesson types	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: 15.0						
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		1.0		9.0	25
Subject objectives	The aim of the lecture is familiarizing of students with machanisms of corrosion inducing by microorganisms.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W01] defines the phenomena and processes used to produce consumer goods and run services		defines phenomena and processes used to produce e.g. fermentation tanks and provide services		[SW1] Assessment of factual knowledge		
	[K7_K02] understands the non-technical aspects and implications of graduate activity, including the impact on the environment		understands non-technical aspects and effects of graduates' activities, including the impact on the environment		[SK4] Assessment of communication skills, including language correctness		
	[K7_U02] conducts experiments using properly selected techniques and apparatus, taking advantage of new developments in corrosion and related fields		conducts experiments using properly selected techniques and equipment, taking advantage of new developments in corrosion and related fields		[SU2] Assessment of ability to analyse information		
Subject contents	Course content – lecture						
	General characteristic of microrganisms occurring in natural environment, particularly the microrganisms in the soil and water. Nutrition requirements and growth. Effect of environmental factors on microrganisms temperature, pH, oxidation-reduction potential, water activity, hydrostatic pressure. Microrganisms and environment: ecosystems, kinds of interactions among microorganisms. Corrosion induced by microorganisms: - prokaryotic: sulphate reducing bacteria; sulphur oxidizing bacteria and bacteria oxidizing reduced sulphate compounds; iron bacteria; biofilms producing bacteria, - eukaryotic: fungi, algae. Ways of corrosion inducing by microrganisms; modification of the enmviroment on the metal/solution interface by products of microbial metabolism, biofilm formation. Characteristics of biofilm and biofouling. Microbial inhibition of corrosion: mechanisms (neutralization effects of corrosive substances, forming protective films on a metal surface, decreasing the medium corrosiveness. General characteristic of the methods of detection, identification and monitoring of biocorrosion: control and analysis of biocorrosion, monitoring on line, chemical and physical analysis of water, chemical analysis of biofouling, detection and quantification of microorganisms. Prevention of biocorrosion: mechanical and chemical cleaning, biocides, corrosion inhibitors.						
Prerequisites and co-requisites	General biological knowledge. Knowledge from the courses of Basis of Corrosion and Corrosion Protection Technologies						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test every lecture	60.0%	80.0%
	Presentation/Essay	60.0%	20.0%
Recommended reading	Basic literature	1. Videla H. A. Manual of Biocorrosion. Lewis Publishers, 1996. 2. Borenstein S. Microbiologically Influenced Corrosion Handbook, Woodhead Publishing Ltd., London, 1994. 2. UhligS corrosion handbook und. RV Revie. Willey 3rd, 2011	
	Supplementary literature	1. Schlegel H. S. Mikrobiologia ogólna. PWN, Warszawa, 2000, (Selected problems)	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Practical activites within the subject	Not applicable		

Document generated electronically. Does not require a seal or signature.