GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Biocorrosion of Building Materials, PG_00053162		
Field of study	Chemistry in Construction 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	Department of Chemistry, Technology and Biochemistry of Food -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Edyta Malinowska-Pańczyk	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	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	2.0	3.0	50

Subject objectives

The aim of the course is to familiarize students with the microorganisms that cause the degradation of building materials, to identify factors that promote the process of their biocorrosion and to present agents that prevent the growth of these microorganisms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U10	The student understands the importance of the presence of microorganisms on building materials and their role in the degradation process.	[SU3] Assessment of ability to use knowledge gained from the subject
K7_U07	The student is able to make an initial identification of microorganisms related to the biocorrosion of building materials. Selects appropriate methods of detection and control.	[SU4] Assessment of ability to use methods and tools
K7_W08	The student anticipates the effects of using various methods to reduce the susceptibility of building materials to biocorrosion processes.	[SW1] Assessment of factual knowledge
K7_W07	The student is able to relate the chemical composition and properties of materials with their susceptibility to colonization by selected groups of microorganisms.	[SW1] Assessment of factual knowledge

Subject contents

Lecture: Organisms inhabiting buildings. Classification and characteristics of individual groups of microorganisms. Microbes in the air. Microbiological decomposition of building materials: products made of wood and wood-based materials, paper products, fibers, fabrics and products from natural resources, paints, varnishes and adhesives, plastics. Biocorrosion of metals - factors leading to corrosion. Mechanisms of metal biocorrosion. Biofilm. Characteristics of individual groups of microorganisms occurring in a biofilm. Biocorrosion control strategies.Laboratory: Principles of work in a microbiological laboratory. Characteristics of the growth of microorganisms on liquid and solid media. Observations of bacteria and fungi in microscopic slides. Determination of the degree of microbial air pollution. Determination of the degree of biocidal effectiveness of commercial preparations for cleaning objects. Determination of microbial contamination of cutting fluids. Metal changes caused by Acidithiobacillus ferrooxidans.

Prerequisites and co-requisites

General biological knowledge.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory activity	60.0%	40.0%
	Lecture tests	60.0%	60.0%
Recommended reading	Basic literature	Wazny J. Karas J. Ochrona budynkow przed korozja biologiczna. Wydawnictwo Arkady Sp. z o.o. Warszawa 2001. Javaherdashti R. Microbiologicaly influenced corrosion. Springer International Publishing Switzerland 2017. Malinowska-Panczyk E, Sommer A., Filipkowski P. Wstep do biokorozji. Wydawnictwo PG, Gdansk 2021.	
	Supplementary literature	Schlegel H.G. Mikrobiologia ogolna. Wydawnictwo Naukowe PWN, Warszawa 1996.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		