



Subject card

Subject name and code	Fundamentals of Material Science , PG_00018188						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2020/2021		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
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			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Kazimierz Darowicki					
	Teachers	prof. dr hab. inż. Kazimierz Darowicki					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	E-learning hours included: 0.0 Adresy na platformie eNauczanie: NAUKA O MATERIAŁACH - WYKŁAD - Moodle ID: 5472 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=5472						
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	2.0	18.0	50		
Subject objectives	Knowledge of relationships between metal and alloys structures and its properties.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U01	Students can obtain information from literature, can integrate the information obtained, interpret the data, as well as draw conclusions and formulate and justify opinions			[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W05	Knowledge of relationships between metal and alloys structures and its properties.			[SK1] Assessment of group work skills [SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	-Energy band theory of metals, semiconductors and dielectrics. -Electric, magnetic and thermal properties of metals. -Types of crystal lattice of solids. -Solid solutions. -Alloys and phase transitions, heat treatment. -Iron-carbon phase diagram. -Classifications of steels and cast irons. -Basics of thermodynamics and chemical kinetics. -Types of corrosion failures. -Corrosion: general, selective, intergranular, pitting, crevice. -Stress corrosion cracking and corrosion fatigue.						
Prerequisites and co-requisites	Chemical bonds, theory of solutions, chemical thermodynamics, basics of quantum chemistry.						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Lecture	60.0%			50.0%		
	Seminars	60.0%			50.0%		
Recommended reading	Basic literature	Ch.A.Wert, R.M. Thomson, Fizyka ciała stałego, PWN Warszawa 1974 J. Dereń, J. Chaber, R. Pampuch, Chemia ciała stałego, PWN Warszawa 1977 L.L. Shreier, R.A. Barman, G.T. Burstein, Corrosion, Butterworth, London 1994 P.A. Schweitzer, Fundamentals of Metallic Corrosion, CRC Press, London 2007					
	Supplementary literature	No requirements					

	eResources addresses	NAUKA O MATERIAŁACH - WYKŁAD - Moodle ID: 5472 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5472
Example issues/ example questions/ tasks being completed	Describe a diagram illustrating the durability of the water. What is ferrite.	
Work placement	Not applicable	