



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 2023		Academic year of realisation of subject		2023/2024		
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						
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						
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_W05		Knowledge of relationships between metal and alloys structures and its properties.		[SU3] Assessment of ability to use knowledge gained from the subject [SK1] Assessment of group work skills		
	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		[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
Subject contents	-Energy band theory of metals, semiconductors and dielectrics. -Electric, magnetics 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		
	Seminars		60.0%		50.0%		
	Lecture		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		Adresy na platformie eNauczanie:				

Example issues/ example questions/ tasks being completed	Describe a diagram illustrating the durability of the water. What is ferrite.
Work placement	Not applicable