



## Subject card

Subject name and code	, PG_00058708						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
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		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Tomasz Klimczuk				
	Teachers		prof. dr hab. inż. Tomasz Klimczuk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	15.0	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		5.0		50.0	100
Subject objectives	The purpose of the course is to familiarize students with the basic issues of superconductivity, followed by a thorough discussion of the most important superconducting compounds.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U01		As part of the seminar classes, the student prepares and presents a seminar on issues related to the subject of the classes. When preparing a seminar, the student independently obtains the necessary information from literature, databases and all available sources, mainly in English, and acquires the ability to integrate it, critically analyze it, formulate appropriate conclusions and present the issues in an understandable way.		[SU2] Assessment of ability to analyse information		
	K7_W01		The student acquires extended knowledge in the field of materials engineering, in particular in the field of issues related to superconductivity and superconducting materials, both from a historical perspective and the latest achievements and trends in this field.		[SW1] Assessment of factual knowledge		
Subject contents	<ul style="list-style-type: none"><li>• Superconducting metals;</li><li>• Superconducting alloys;</li><li>• Antiperovskites;</li><li>• Borocarbides;</li><li>• MgB2;</li><li>• Non-centrosymmetric superconductors;</li><li>• CuO2-based high-temperature superconductors;</li><li>• "Wet" superconductor;</li><li>• Iron-based superconductors;</li><li>• Exotic superconductivity.</li></ul>						

Prerequisites and co-requisites	Knowledge of synthesis techniques for inorganic materials. Knowledge of the basics of crystallography.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	60.0%	80.0%
	seminar	60.0%	20.0%
Recommended reading	Basic literature	A.C. Rose-Innes, E.H.Rhoderick: Superconductivity	
	Supplementary literature	Physical Review B, Physical Review M, Superconductor Science and Technology	
	eResources addresses	Adresy na platformie eNauczanie: Materiały nadprzewodzące - Moodle ID: 34542 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34542">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34542</a>	
Example issues/ example questions/ tasks being completed	What is the highest critical temperature among A15 class superconductors?		
Work placement	Not applicable		