



Subject card

Subject name and code	Superconductivity and superconducting compounds, PG_00053757						
Field of study	Nanotechnology						
Date of commencement of studies	October 2022	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	2	Language of instruction			English		
Semester of study	4	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Winiarski					
	Teachers	dr inż. Michał Winiarski					
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	0.0	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		0.0		0.0	30
Subject objectives	The aim of the course is to acquaint students with the basic issues of superconductivity. In particular, with materials showing the phenomenon of superconductivity.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W02	Student knows the possibilities for application of superconductors in nanotechnology.			[SW1] Assessment of factual knowledge		
	K7_K04	Student can plan learning and preparation for the exam within the semester time			[SK2] Assessment of progress of work		
Subject contents	Historical introduction Metallic state - band structure. Differences between metallic and superconducting state Measurements of superconducting state properties Selected families of superconducting materials Practical applications of superconductors Superconducting nanodevices						
Prerequisites and co-requisites	Basic knowledge of synthesis methods in solid state chemistry. basic knowledge of crystallography.						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	final test	51.0%			100.0%		
Recommended reading	Basic literature	A.C. Rose-Innes, E.H. Rhoderick: <i>Introduction to Superconductivity</i> . Pergamon, 2015					

	Supplementary literature	Ch. Kittel "Introduction to solid state physics" 8th ed., Wiley, 2005
	eResources addresses	Podstawowe http://hyperphysics.phy-astr.gsu.edu/hbase/Solids/scdis.html#c1 - Superconductivity in the HyperPhysics textbook Adresy na platformie eNauczenie: Superconductivity and Superconducting Materials - 23/24 - Moodle ID: 37953 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=37953
Example issues/ example questions/ tasks being completed	What is the superconducting critical temperature for YBa ₂ Cu ₃ O ₇ .	
Work placement	Not applicable	