GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	CRYSTALLOGRAPHY, PG_00039781		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering, Materials 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 the laboratory may also be in English
Semester of study	2	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
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. Maria Gazda	
	Teachers	dr inż. Kacper Dzierzgowski prof. dr hab. inż. Maria Gazda dr inż. Marta Roman	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8857
Adresy na platformie eNauczanie:
krystalografia 1 -2020/2021 - Moodle ID: 8857
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8857

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	15.0	55.0	100

Subject objectives

Learning the basics of crystallography

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K01	the student understands the need to improve professional and personal competences; is aware of its own limitations and knows when to turn to experts, is able to properly define priorities for the implementation of tasks set by himself or other	[SK2] Assessment of progress of work
K6_W02	the student has knowledge of physics and chemistry useful for formulating and solving simple tasks in the field of crystallography	[SW1] Assessment of factual knowledge
K6_U05	the student is able to independently learn the basics of crystallography	[SU1] Assessment of task fulfilment
K6_W04	the student knows the basic aspects of the construction and operation of an X-ray diffractometer	[SW1] Assessment of factual knowledge
K6_U01	the student is able to use properly selected analytical and experimental methods and devices that enable the measurement of the basic quantities characterizing crystalline materials	[SU1] Assessment of task fulfilment

Subject contents

Intruduction

Basic quantities used to describe lattice networks, crystallographic patterns.Crystal symmetry.Examples of real crystal structures. Their characteristics and some properties.Inverse network: definition, physical interpretation.Methods of studying the structure of crystals.Structure defects. Types and their influence on the properties of crystalline matter.Chemical bonds.How crystals are formed: crystallization, crystal morphology.Physical properties of crystals

Prerequisites and co-requisites

no

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lab.> raports	51.0%	30.0%
lecture: quiz	51.0%	70.0%

Recommended reading

Basic literature	an textbook on crystallography
Supplementary literature	any textbook in crystallography or solid state physics
eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8857 - Krystalografia 1 2020/21 krystalografia 1 -2020/2021 - Moodle ID: 8857 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=8857

Example issues/ example questions/ tasks being completed

1 How many atoms A and B (A - smaller, B - larger) are there in the unit cell (cube) shown in Figure 2? What is the structure? What is the coordination number of the B atom? What is the summary formula for this relationship?2 Draw and mark according to the plane definition (411), (002) and (100) in the orthorhombic crystal with lattice constants a = 4 Å, b = 2 Å and c = 8 Å Write the indicators of the planes equivalent to the plane (100).3. Write Laue's condition and explain its quantities.

Work placement

Not applicable