COURSE DESCRIPTION CARD - SYLLABUS

Course name

Crystallography

Course

Field of study

Material Engineering

Year/Semester

2/4

Area of study (specialization)

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

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ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Basic knowledge of chemistry, physics and materials science. Logical thinking, spatial imagination. Understanding the need for learning and acquiring new knowledge.

Course objective

1. The basic knowledge of crystalline structures of materials.

2. The basic knowledge of crystallography.

Course-related learning outcomes

Knowledge

1. The student has knowledge about crystal lattice. K_W08

2. The student knows the diffraction laws. K_W08

Skills

1. The student can describe the crystalographic properties of materials. K_U09

2. The student can describe symmetry of periodic lattice. K_U01

Social competences

1. The student can collaborate in order to obtain and implement the new knowledge. K_K03

2. The student can gain and correct his/her knowlegde as results of the disscusion. K_K10

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Written test at the end of the semester

Tutorias: Preparation for the classes and activity, written test at the end of the semester

Programme content

Subject and history of crystallography.

Clasification of solid state materials

Crystal definitions

Crystalographic symmetry and its notation

Point and space groups

Miller index (points, axes, directions, planes)

Bravais lattice

Diffraction and Bragg and Laue laws

Real crystals and crystallographic defects

Basic structures

Structural phase transitions

Teaching methods

Lecture: multimedia presentation

Tutorials: problem solving, discussion, usage of crystallographic models

Bibliography

Basic

1. T. Pękala, Zarys krystalografii, PWN 1983

2. Z. Trzaska Durski, H. Trzaska Durska „Podstawy Krystalografii", PWN, 1994.

3. Z. Kosturkiewicz, Metody krystalografii, Wydawnictwo Naukowe UAM, Poznań 2000.

Additional

1. C. Kittel, „Wstęp do fizyki ciała stałego", PWN, W-a, 1999.

2. P. Luger, „Rentgenografia strukturalna monokryształów", PWN Warszawa 1989.

3. „Międzynarodowe Tablice Krystalograficzne"

4. J. Mizera, J. Zdunek, Krystalografia, PW (ww.inmat.pw.edu.pl/download/epodreczniki/Krystalografia_do_PNoM1.pdf)1. Scientific papers

Breakdown of average student's workload

	Hours	ECTS
Total workload	70	3,0
Classes requiring direct contact with the teacher	35	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	35	1,0

[1] delete or add other activities as appropriate