



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fundamentals of materials science

### Course

Field of study

Materials Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

30

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Natalia Makuch-Dziarska

Responsible for the course/lecturer:

e-mail: natalia.makuch@put.poznan.pl

Wydział Inżynierii Materiałowej i Fizyki  
Technicznej

ul. Jana Pawła II 24, 61-139 Poznań

### Prerequisites

Basic knowledge of chemistry, physics, materials science and metal science.

### Course objective

Students become familiar with the type, production methods, structure and properties of materials.

### Course-related learning outcomes

Knowledge

Student has ordered, theoretically founded general knowledge covering key issues in the field of materials science [K\_W08].



### Skills

Student is able to obtain information from the literature, databases and other properly selected sources (also in English) from materials science [K\_U01].

Student has the ability to self-study [K\_U05].

### Social competences

Student understands the need for lifelong learning; can inspire and organize the learning process of other people [K\_K01].

Student is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions made [K\_K02].

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Tutorials: Passing on the basis of oral and written answers (pass if student get at least 51% of points).

### Programme content

Tutorials:

1. Atomic structure and basic classification of materials.
2. Crystal structure, crystallographic system, basics of indexing.
3. Calculating and analyzing the mechanical, technological and exploitational properties of materials.
4. Analyzing the structure of materials and determining its influence on properties.
5. Interpretation of typical 2-component phase equilibrium systems: systems with unlimited solubility of components in the solid state, systems for components that are not mutually dissolving in the solid state, systems with eutectic transformation when the components dissolve in the solid state

### Teaching methods

Tutorials: problem solving, practical exercises, discussion, team work.

### Bibliography

Basic

Blicharski M. Wstęp do inżynierii materiałowej. WNT, Warszawa, 2003.

Przybyłowicz K. Metaloznawstwo, WNT, Warszawa, 2007.

Additional

Dobrzański L. Podstawy nauki o materiałach i metaloznawstwo. WTN, Warszawa, 2002.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	3,0
Classes requiring direct contact with the teacher	30	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	30	1,0

<sup>1</sup> delete or add other activities as appropriate