COURSE DESCRIPTION CARD - SYLLABUS

Course name
Materials Science

Course

Field of study
Technical Physics

Year/Semester
1/1

Area of study (specialization)

Profile of study

Level of study
First-cycle studies

Course offered in
polish

Form of study
full-time

Requirements

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	15	
Tutorials	Projects/seminars	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
dr inż. Grzegorz Adamek

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Responsible for the course/lecturer:

Prerequisites

Basic knowledge of physics and chemistry.

The ability to solve simple material problems based on the acquired knowledge, the ability to obtain information from indicated sources.

Understanding the need to expand your competences.

Course objective

Provide students with knowledge about engineering and functional materials, nanomaterials, material technologies - including nanotechnology, material properties.

Course-related learning outcomes

Knowledge

As a result of the conducted classes, the student:

1. has ordered and theoretically founded general knowledge of the structure and functions of nano- and microworld objects [K1_W11]

2. has detailed knowledge related to selected issues of analysis of the properties of functional materials and processes in the nano scale [K1_W12]

Skills

As a result of the course, the student should demonstrate skills in the following areas (the student will be able to):

1. can select materials with appropriate physicochemical and design properties for laboratory and engineering applications [K1_U18]

2. is able to obtain information from literature, databases and other sources, interpret them and draw conclusions, formulate and justify opinions [K1_U02]

Social competences

As a result of the course, the student will acquire the competences listed below. Completing the course means that:

1. can work independently and in a team on a given task, shows responsibility in this work [K1_K01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Assessment based on a test consisting of 5 general questions at the end of the semester. Score for each question, passing from 50.1%. Laboratories: checking knowledge (written or oral) at each class - the final grade is the arithmetic mean of the partial grades. Passing minimum dst for all partial grades.

Programme content

Engineering materials: ceramics and glass, metals and alloys, polymer materials, composites; nanomaterials, powder metallurgy, mechanical properties of materials, mechanical synthesis, biomaterials, material corrosion, steel and other Fe alloys, materials for hydrogen storage, materials surface treatment technologies, nanotechnologies, heat treatment.

Teaching methods

Lecture: multimedia presentation, presentation illustrated with examples given on the board.
Laboratory exercises: practical exercises, discussion, team work.

Bibliography

Basic

1. L.A. Dobrzański – Podstawy nauki o materiałach

2. Blicharski – Materiałoznawstwo

3. Jurczyk – Nanomateriały

4. Barbacki – Materiały w budowie maszyn

5. Inne dotyczące materiałoznawstwa i nauki o materiałach

Additional

1. Publikacje JCR podawane przez prowadzącego na zajęciach

Breakdown of average student's workload

	Hours	ECTS
Total workload	78	3,0
Classes requiring direct contact with the teacher	48	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1

[1] delete or add other activities as appropriate