COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fundamentals of designing processes for the production of nanomaterials

Course

Field of study

Materials Engineering

Year/Semester

2/3

Area of study (specialization)

Nanomaterials

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

15

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Grzegorz ADAMEK

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Wydział Inżynierii Materiałowej i Fizyki Technicznej

ul. Piotrowo 3 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: Basic knowledge of solid state physics, materials science and crystallography,

Skills: The ability to solve problems based on the acquired knowledge, the ability to obtain information from the indicated sources

Social competences: The ability to solve problems based on the acquired knowledge, the ability to obtain information from the indicated sources

Course objective

Understanding the methods of modeling the properties of nanomaterials with special properties

Course-related learning outcomes

Knowledge

The student should characterize the basic properties of nanomaterials, technological properties and factors influencing the functional properties of nanomaterials. K_W04, K_W08

Skills

The student is able to select the technology of production and processing of nanomaterials to their expected properties and applications K_U01, K_U11

Social competences

The student is able to cooperate in the group K_K03

The student is aware of the importance of designing the properties of nanomaterials for the modern economy and society K_K01, K_K02

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Final test at the end of the semester, current knowledge verification - oral answers.

Programme content

Possibilities of designing properties of nanomaterials - numerical methods of calculating phenomena occurring in solids: nanomaterials / nanocomposites: magnetics, materials reversibly absorbing hydrogen, biomaterials. Methods of producing nanomaterials.

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the blackboard.

2. Laboratory exercises, discussion and preparation of the results in the form of a report, formulation of conclusions concerning the issues discussed during the classes.

Bibliography

Basic

1. M. Jurczyk, J. Jakubowicz, Nanomateriały ceramiczne. Wyd. Pol. Pozn. 2004

2. M. Jurczyk, J. Jakubowicz, Bionanomateriały, Wyd. Pol. Pozn. 2008

3. Artykuły przeglądowe.

Additional

R. W. Kelsall, Nanotechnologie, PWN 2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	70	2,0
Classes requiring direct contact with the teacher	35	1,0
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