COURSE DESCRIPTION CARD - SYLLABUS

Course name

Metallic nanomaterials

Course

Field of study

Materials Engineering

Year/Semester

2/3

Area of study (specialization)

Metal and Polymeric Materials

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:

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Faculty of Materials Engineering and Technical Physics

Piotrowo 3 Street, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

basic in physics, chemistry, materials science

Course objective

1. Providing students with basic knowledge of metallic nanomaterials, to the extent specified by the curriculum content appropriate for the field of study

2. Developing the ability of students to solve simple problems related to the selection of nanomaterials, distinguish between materials and analyze the results of microscopic observations based on the acquired knowledge

3. Developing teamwork skills in students

Course-related learning outcomes

Knowledge

K2_W04 Has a structured, theoretically based general knowledge of materials engineering, thanks to which he can describe the basic functional properties of materials, technological properties of materials, factors affecting the properties of materials - chemical and phase composition, structure, manufacturing process, working environment.

P7S_WG the graduate knows and understands to an in-depth degree - selected facts, objects and phenomena, as well as methods and theories related to them, explaining the complex relationships between them, constituting advanced general knowledge in the field of scientific or artistic disciplines forming the theoretical basis, structured and theoretically based knowledge covering key issues and selected issues in the field of advanced detailed knowledge - appropriate for the educational program

Skills

K2_U10 Can apply advanced methods of testing the structure and properties of engineering materials, use specialized scientific and research equipment to assess the effectiveness of technological processes and take into account the impact of working conditions.

P7S_UK graduate is able to communicate on specialist topics with diverse circles of recipients

Social competences

K2_K06 Can think and act in a creative and entrepreneurial way.

P7S_KK graduate is ready to fulfill obligations, inspire and organize activities for the benefit of the natural environment

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit on the basis of a colloquium consisting of 5 general questions (pass in the case of correct answers to at least 3 questions: <3 ? not good, 3 ? dst, 3.5 ? dst+, 4 ? good, 4.5 ? good +, 5 - very good) carried out at the end of the semester.

Laboratory: Credit on the basis of an oral or written answer in the scope of the content of each laboratory exercise performed, report on each laboratory exercise according to the indications of the laboratory teacher. In order to pass the laboratories, all exercises must be passed (positive grade from answers and reports).

Programme content

Nanoscience/nanotechnology in materials engineering, metallic nanomaterials, nanometals, nanocomposites, nanolayers, nanofibers, nanopowders, structure and properties of selected engineering nanomaterials, characterization and modeling of nanomaterial properties.

Teaching methods

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

Bibliography

Basic

1. M. Jurczyk, Nanomaterials. Selected issues, Poznań University of Technology Publishing House, Poznań 2001

2. Structural and functional engineering nanomaterials. red. K. Kurzydłowski, M. Lewandowska. PWN

3. JCR publications given by the lecturer during the classes

Additional

1. JCR publications given by the lecturer during the classes

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