COURSE DESCRIPTION CARD - SYLLABUS

Course name

Thin films

Course

Field of study

Materials Engineering

Year/Semester

3/6

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

elective

Number of hours

Lecture

15

Laboratory classes

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

60-965 Poznań, Piotrowo 3

Responsible for the course/lecturer:

Prerequisites

Basic knowledge of chemistry, physics and materials science. Logical thinking, use of the information obtained from library and Internet. Understanding the need for learning and acquiring new knowledge

Course objective

The knowledge of thin film concepts and their depositions, properties and applications.

Course-related learning outcomes

Knowledge

1. The student has knowledge about the needs of thin film applications in modern industry. K_W08 K_W10

2. 2. The student has knowledge about thin film depositions. K_W01 K_W08

Skills

1. The student can propose the applications of thin films in modern industry. K_U01, K_U02, K_U12

2. The student can choose the proper thin films depositions for specific requirements. K_U01, K_U02, K_U12

Social competences

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

2. The student is aware of importance of nanotechnology in modern science, industry and society. K_K02

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures:

Written test at the end of the semester

Programme content

1. Basic concepts of thin films
2. Applications of thin films in industry
3. Epitaxial thin films
4. Thin film growth modes
5. Typical substrates for thin film depositions
6. Physical methods of thin film depositions (evaporations, PLD, sputtering).
7. Chemical methods of thin film depositions (MOCVD, sol-gel, hydrothermal method).

Teaching methods

1. Lecture: multimedia presentation.

Bibliography

Basic

1. Nanomateriały inżynierskie, K. Kurzydłowski, M. Lewandowska (red.), PWN 2010
2. Wstęp do fizyki ciała stałego, Kittel C., PWN, Warszawa, 1999
3. Nanoelectronics and Information Technology, Waser R., Wiley-VCH, Berlin, 2003
4. Nanotechnologie, R.W. Kelsall, I.W. Hamley, M. Goeghegan (red.), PWN, 2008

Additional

1. Oleś, Metody doświadczalne fizyki ciała stałego, WNT 1998
2. Handbook of thin film devices, M. H. Francombe (red.), Acad. Press, San Diego, 2000
3. scientific papers

Breakdown of average student's workload

	Hours	ECTS
Total workload	40	2,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for tests) [1]	25	1,0

[1] delete or add other activities as appropriate