POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Selected issues in surface engineering

Course

Field of study	Year/Semester
Materials Engineering	2/3
Area of study (specialization)	Profile of study
Nanomaterials	general academic
Level of study	Course offered in
Second-cycle studies	polish
Form of study	Requirements
full-time	elective

Number of hours

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

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Adam Piasecki

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tel. 61 665 37 77

Faculty of Materials Engineering and Technical Physics

ul. Piotrowo 3 60-965 Poznań

Prerequisites

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

Course objective

Knowledge of methods and techniques for surface treatment.

Course-related learning outcomes

Knowledge

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1. Student should characterize the basic methods and techniques of modifying the properties of the surface layer. - [K_W04, K_W06]

2. The student should characterize the basic methods of investigating the properties of surface layers. - [K_W06]

Skills

1. Student is able to propose an appropriate method of surface layer modification for a specific application. - [K_U01, K_U03, K_U05, K_U08 K_U09, K_U13]

2. Student is able to propose a method of protection against corrosion of construction materials. - [K_U01, K_U05]

3. The student is able to plan and conduct research on the properties of surface layers. - [K_U08, K_U10]

Social competences

1. The student is able to work in a group - [K_K03]

2. The student is aware of the importance of modern methods of producing surface layers in modern economy and for society - [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: - credit on the basis of a test consisting of both open and test questions carried out at the end of the semester. Scale of estimate: 51-60% - dst(C), 61-70% - dst+(C+), 71-80% - db(B), 81-90% - db+ (B+), 91-100% - bdb(A).

Laboratory classes: evaluation of students knowledge necessary to prepare, and carry out the lab tasks and evaluation of reports.

Programme content

Lecture: Characteristics and properties of surface layer. Metal and non-metal coatings. Protective, decorative and technical coatings. Production of technological surface layers. Mechanical, thermal, chemical and thermochemical methods. Processing abrasive. Electron, laser and implantation methods. CVD methods. PVD methods.

Laboratory classes: 1. Carbide layers. 2. Chromoaluminizing. 3. Laser surfacing. 4. Galvanic coatings. 5. Tribological research.

Teaching methods

multimedia presentations

Bibliography

Basic

1. Burakowski T., Areologia. Podstawy teoretyczne, Instytut Technologii Eksploatacji – PIB / 2013.

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2. Blicharski M., Inżynieria powierzchni, Wyd. PWN, 2009.

3. Młynarczak A. Jakubowski J.: Obróbka powierzchniowa i powłoki ochronne. Wyd. PP 1998.

Additional

1. Klimpel A.: Napawanie i natryskiwanie cieplne. WNT Warszawa 2000.

2. Praca Zbiorowa. Poradnik Galwanotechnika. WNT Warszawa 2002.

3. Klimpel A.: Technologie laserowe. Wyd. Politechniki Śląskiej, Gliwice 2012.

4. Kula P.: Inżynieria Warstwy Wierzchniej. Wyd. Politechniki Łódzkiej, 2000

5. Burakowski T. Wierzchoń T.: Inżynieria powierzchni metali. WNT Warszawa 1995.

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

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[1] delete or add other activities as appropriate