



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Modern engineering materials and their selection criteria [N2MiBM1>WMI]

Course

Field of study

Mechanical Engineering

Year/Semester

1/1

Area of study (specialization)

–

Profile of study

general academic

Level of study

second-cycle

Course offered in

polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

24

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

12

Number of credit points

6,00

Coordinators

Lecturers

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Prerequisites

Knowledge related to physics, chemistry, materials science. Understanding the need to learn and acquire new knowledge.

Course objective

Knowledge of modern materials used in technology, their properties, manufacturing technology and their selection in terms of design, technology, operation and economy.

Course-related learning outcomes

Knowledge:

1. The student should characterize the basic groups of materials - [K_W09]
2. The student should know modern materials with specific properties - [K_W09]
3. The student should know the requirements for the selection of materials - [K_W09]

Skills:

1. The student is able to assess the properties and optimal use of materials - [K_U10]
2. The student is able to choose the right material for specific machine parts - [K_U12]

3. The student is able to determine the cause of damage to machine parts - [K_U12]
4. The student is able to assess the costs of the materials used - [K_U12]

Social competences:

1. The student is able to work in a group - [K_K03]
2. The student is aware of the importance of modern materials in the modern economy and for society - [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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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).

Projects: credit based on the evaluation of the presentation and active participation in the presentation of other students

Programme content

Criteria for the selection of materials. Properties of materials. Iron alloys. Aluminum, copper, titanium, cobalt, nickel, palladium alloys. Ceramic materials. Plastics. Composites. Biomaterials. Nanomaterials. Intelligent materials. Thermal treatment. Selected methods of surface treatment. Examples of material expertises with indication of correct and improper solutions.

Teaching methods

multimedia presentations

Bibliography

Basic

1. M.F. Ashby, Dobór materiałów w projektowaniu inżynierskim, WNT 1998
2. W. Kucharczyk, A. Mazurkiewicz, W. Żurowski, Nowoczesne materiały konstrukcyjne. Wyd. Politechnika Radomska 2008
3. H. Leda, Współczesne materiały konstrukcyjne i narzędziowe. Wyd. PP, Poznań, 1998

Additional

1. L. A. Dobrzański, Zasady doboru materiałów inżynierskich, Wyd. Politechniki Śląskiej, 2000

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	6,00
Classes requiring direct contact with the teacher	36	6,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	6,00