# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Optimum use of materials and technologies [S2IMat1>OWMiT]

## Course

Field of study
Materials Engineering

Year/Semester
2/3

Area of study (specialization)
Nanomaterials

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

## Number of hours

Lecture
15

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
15

## Number of credit points

3,00

## Coordinators

dr inż. Mikołaj Popławski
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## Lecturers

## Prerequisites

Knowledge related to physics, chemistry, materials science.

## Course objective

Students learning the most important methods of optimum use of materials and technologies .

## Course-related learning outcomes

Knowledge:
student should be able to characterize basic requirements for materials.
student should be able to suggest appropriate material solutions.

Skills:
student is able to potrafi select material and technology.

Social competences:
student understands the need for lifelong learning; can inspire and organize the learning process of others; can cooperate and work in a group, adopting various roles.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Final test, laboratory reports.
Laboratory classes: evaluation of students knowledge necessary to prepare and carry out the lab tasks and evaluation of reports.

## Programme content

1. Identification of functions and requirements for materials. 2. Most common criteria of optimizing : technologiability, mechanical properties, exploitation properties, durability and reliability, ecological performance. 3. Costs generated by the above mentioned requirements. 4. Use of the knowledge of reinforcement processes in the selection of materials, technology and its parameters. 5. Considering factors promoting machine elements and tools wear.

## Teaching methods

Lecture : presentation illustrated with examples shown on the board, task solution, discussion.
Project : individual students work on the project, discussion.

## Bibliography

Basic
1. M.F. Ashby - Dobór materiałów w projektowaniu inżynierskim, WNT 1998.
2. M.F. Ashby, D.R.H. Jones - Materiały inżynierskie t. 1 i 2, WNT 1995 i 1996.
Additional
1. H. Leda - Strukturalne aspekty własności mechanicznych wybranych materiałów, WPP 1998.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 30 | 3,00 |
| Classes requiring direct contact with the teacher | 15 | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 15 | 1,00 |