



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Materials Application

Course

Field of study

Year/Semester

Management and Production Engineering

3/6

Area of study (specialization)

Profile of study

Level of study

Course offered in

First-cycle studies

polish

Form of study

Requirements

part-time

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

8

8

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

PhD Kinga Mencil

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Faculty of Mechanical Engineering

Piotrowo 3, 60-965 Poznań

Prerequisites

Basic knowledge of physics, chemistry, materials science. Logical thinking, using information obtained from the library and the Internet. Understanding the need to learn and acquire new knowledge

Course objective

Comparative analysis of materials properties and their application (metals, plastics, rubbers, wood, ceramics, composites including nanocomposites). Influence of processing technology and initial structure on material properties. Mechanical (static and dynamic), thermal, and electrical properties are compared.



Course-related learning outcomes

Knowledge

1. Student should describe the basic properties of plastics - [K_W04]
2. The student should characterize the basic research methods for plastics - [K_W11]

Skills

1. The student is able to choose the appropriate research method to determine the properties - [K_U10]
2. The student is able to propose a substitute research method - [K_U10]
3. The student is able to test selected properties of plastics - [K_U10]

Social competences

1. The student is able to work in a group - [K_K03]
2. Understands the need for lifelong learning - [K_K01]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

Written credit carried out at the end of the semester (credit if at least 50.1% of correct answers are obtained). Up to 50.0% - ndst, from 50.1% to 60.0% - dst, from 60.1% to 70.0% - dst +, from 70.1 to 80.0 - db, from 80.1% up to 90.0% - db +, from 90.1% - very good.

Lab:

Passing on the basis of an oral or written answer regarding the content of each performed laboratory exercise, a report on each laboratory exercise according to the instructions of the laboratory teacher. In order to pass the laboratories, all exercises must be passed (positive grade from the answers and the report).

Programme content

Lecture:

1. Introduction, characteristics of properties,
2. The influence of structure on the properties of polymeric materials
3. Physicochemical properties of plastics
4. Types of polymers

Lab:

1. Determination of polymer density



2. Determination of strength
3. Determination of impact strength
4. Determination of hardness
5. Identification of materials

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the board,
2. Laboratory exercises: practical exercises, taking measurements, discussion, team work.

Bibliography

Basic

1. Sikora R.: Tworzywa wielkocząsteczkowe . Rodzaje, właściwości i struktura
2. Galina H.: Fizykochemia polimerów.
3. Broniewski T. metody badań materiałów polimerowych

Additional

Standards

Breakdown of average student's workload

| | Hours | ECTS |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload | 50 | 2,0 |
| Classes requiring direct contact with the teacher | 20 | 1,0 |
| Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹ | 30 | 1,0 |

¹ delete or add other activities as appropriate