



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design of Plastics Products

### Course

Field of study

Mechanics and Machine Building

Area of study (specialization)

TPM

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

4/8

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

10

Laboratory classes

Tutorials

Projects/seminars

8

Other (e.g. online)

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

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Faculty of Mechanical Engineering

Piotrowo 3 st., 60-965 Poznań

Responsible for the course/lecturer:

### Prerequisites

Student should have basic knowledge of materials science and strength of the polymeric materials.

### Course objective

Student should obtain knowledge about materials selection for making plastic parts and should know the roles important in design of plastic elements.

### Course-related learning outcomes

Knowledge

Student is be able to characterize and compare polymeric materials based on their properties and application.



Student should know how to determine the material properties appropriate for selected item.

#### Skills

Student is able to take the information from data bases and literature in case of engineering materials.

Student is able to give the most suitable polymer material for making plastic part used in machine building.

Student is able to take into consideration some ecological aspects during designing process

#### Social competences

Student can underline the most important elements in designing process which are connected with the influence on the environment.

2. Student is able to define priorities which are crucial in plastic part designing process.

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

##### Lecture

Written exam at the end of the semester, contains open questions (credit in case of obtaining at least 50,1% correct answers).

##### Project

Passing on the credits based on projects implemented during the classes, containing calculations and drawings of details. All projects must be passed with positive note.

#### Programme content

##### Lecture

1. Designing of injection channles.
2. Designing with technological aspects of plastic part design.
3. Designing of snap-fit joints and welding joints.
4. Designing of propellers.
5. Designing of threads and leaving hinges.
6. Dimensinal aspects in designing of onjection molede parts.
7. Main roles in Designing of plastic parts connected with recycling aspects

##### Project

1. Designing of plastic parts involved by the technological properties of polymer.



2. Designing of plastic parts connected with technological aspects.
3. Designing of propellers.
4. Designing of welding points and leaving hinges.
5. Designing of plastic parts connected with recycling aspects.

### Teaching methods

Lecture: multimedia presentation illustrated with examples given on a board.

Project: carrying out designs of injection-molded parts made of polymer materials, solving tasks, discussion, teamwork.

### Bibliography

Basic

1. H. Zawistowski, D. Frenkler: Konstrukcja form do tworzyw termoplastycznych, WNT, 2000, W-wa
2. Garbarski J. i in.: Części maszyn z tworzyw sztucznych, Oficyna Wydawnicza Politechniki Warszawskiej, W-wa, 2016.
3. W. Frącz, B. Krywult – Projektowanie i wytwarzanie elementów z tworzyw sztucznych, wyd. Politechniki Rzeszowskiej, 2005.
4. B. Łączyński: Nietalowe elementy Maszyn. WNT, 1998, W-wa

Additional

1. Poradnik: Tworzywa Sztuczne, WNT, W-wa, 2000.
2. W. Surowiak, H. Chydyński: Tworzywa sztuczne w budowie maszyn, WNT, W-wa

### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	50	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	25	1,0

<sup>1</sup> delete or add other activities as appropriate