



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Modern technologies of plastics processing

Course

Field of study

Materials Engineering

Area of study (specialization)

Metal materials and plastics

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

prof. dr hab. inż. Tomasz Sterzyński

Responsible for the course/lecturer:

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Wydział Inżynierii Mechanicznej

udowy Maszyn i Zarządzania

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Prerequisites

Basic knowledge of the basics of machine building, material processing technology, physicochemistry of polymers and material science. Logical thinking, analyzing occurring phenomena, using knowledge obtained from scientific, technical and popular science literature. Understanding the need to learn and acquire new knowledge.

Course objective

Learning about modern technologies of plastics processing and the possibility of producing unique products using them.



Course-related learning outcomes

Knowledge

1. The student should learn modern technologies of plastics processing - [K_W07, K_W11]
2. The student should be able to describe the course of selected technological processes - [K_W11]
3. The student should be able to propose a process for the production of a selected product - [K_W11, K_W07]

Skills

1. The student is able to select the process for the production of a specific product - [K_U13]
2. The student is able to analyze the course of the technological process - [K_U16]
3. The student is able to control the technological process - [K_U13, K_U20]

Social competences

1. The student is aware of the role of manufacturing processes in the economy and human life. - [K_K02]
2. The student shows an active attitude in creating the processing of theorem. pcs - [K_K05]
3. The student is able to interact and work in a group, assuming different roles in it. - [K_K03]
4. The student is determined to achieve the goals set for him - [K_K04]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

Passing on the basis of a written exam consisting of 5 general questions (pass if the correct answer to at least 3 questions: <3? Ndst .; 3? Dst; 3.5? Dst +; 4? Db; 4.5? Db +; 5 ? vg) carried out at the end of the semester.

Laboratories:

Passing on the basis of a written test on the content of each laboratory and reports from each laboratory according to the instructions of the teacher (positive assessment of the answers and the report).

Programme content

Lecture:

1. Special injection technologies: sandwich and mono-sandwich.
2. Gas and water assisted injection technology.
3. Micro-injection technology.



4. The use of static and dynamic mixers in injection and extrusion technologies.
5. Production of CDs and DVDs.
6. Manufacturing of multilayer PA / Al / PE pipes for hot water.
7. Preparation of polymeric soft and hard materials.
8. Processing of bio-degradable plastics.

Lab:

1. Production of flat foil in the "chill-roll" technology.
2. Plastic injection with the use of a dynamic mixer
3. Analysis of the precision injection molding process of plastic products
4. Stability analysis of the plastic extrusion process
5. Extrusion of plastics on twin-screw extruders.
6. Injection of bio-degradable plastics.

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the blackboard.
2. Laboratory exercises: practical exercises, carrying out experiments, discussion, team work.

Bibliography

Basic

1. Bociąga E: Specjalne metody wtryskiwania tworzyw polimerowych, WNT, Warszawa 2010
2. Praca zbiorowa. Poradnik "Tworzywa sztuczne", WNT, Warszawa 2006
3. Haponiuk J.T.; Tworzywa sztuczne w praktyce; Wyd. Verlag Dashofer, Warszawa 2008

Additional

1. Czasopisma: Plastics Review, Rubber Review, Plast News, Tworzywa Sztuczne
2. Sikora R., Przetwórstwo tworzyw wielkocząsteczkowych, Wyd. Pol. Lubelskiej 2006



Breakdown of average student's workload

	Hours	ECTS
Total workload	65	2,0
Classes requiring direct contact with the teacher	40	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	15	1,0

¹ delete or add other activities as appropriate