



COURSE DESCRIPTION CARD - SYLLABUS

Course name

New polymer processing technologies [S1IMat1>NTPTS]

Course

Field of study

Materials Engineering

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

dr hab. inż. Marek Szostak prof. PP
marek.szostak@put.poznan.pl

dr hab. inż. Karol Bula prof. PP
karol.bula@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge of materials science of polymer materials and basic methods of their processing.

Course objective

Learning about newest processing technologies of polymer materials.

Course-related learning outcomes

none

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Passed on the basis of a written exam consisting of 5 general questions (pass in the case of a correct answer to at least questions: <3 - ndst; 3 - dst; 3.5 - dst +; 4 - db; 4.5 - db +; 5 - very good)

conducted at the end of the semester.

Laboratory exercises: Credit based on reports on laboratory exercises in accordance with the guidelines of the teacher.

Programme content

Presentation of the latest achievements in the field of plastics processing technology, especially injection moulding technology, elastomers and biomaterials processing.

Course topics

Lecture:

1. Gas and water assisted injection moulding technology.
2. The use of static and dynamic mixers in injection and extrusion moulding technologies.
3. Obtaining polymeric materials, magnetically soft and hard.
4. Technologies of injection moulding and sintering of powders.
5. Advanced technologies of injection moulding of polymer materials, sandwich and mono-sandwich technologies, micro injection moulding, IML technologies and multi-material injection moulding
6. Injection moulding technology with dynamic changes in mold temperature.
7. Processing of bio-degradable plastics.

Laboratory exercises :

1. Plastic injection moulding with use of a dynamic mixer
2. Analysis of the precision injection moulding process of plastic products
3. Analysis of the stability of the plastic extrusion moulding process
4. Injection moulding of bio-degradable plastics
5. Injection moulding of products made of recycled polymer materials.
6. Statistical control of the injection moulding process.
7. Micro injection moulding technology.

Teaching methods

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

Laboratory exercises: Credit based on reports on laboratory exercises in accordance with the guidelines of the teacher.

Bibliography

Basic:

1. Bociąga E. ,Specjalne metody wtryskiwania tworzyw polimerowych, WNT, W-wa 2008 .
2. Kucharczyk W., Żurowski W., Przetwórstwo tworzyw sztucznych dla mechaników, Radom, Wydawnictwo Politechniki Radomskiej, 2005.
3. Praca zbiorowa. Poradnik - Tworzywa sztuczne, WNT, Warszawa 2006
4. Haponiuk J.T.; Tworzywa sztuczne w praktyce; Wyd. Verlag Dashofer, Warszawa 2008.

Additional:

1. Czasopisma: Przegląd Odlewnictwa, Plastics Review, Rubber Review, Plast News, Tworzywa Sztuczne, Przetwórstwo Tworzyw.
2. Sikora R., Przetwórstwo tworzyw wielkocząsteczkowych, Wyd. Pol. Lubelskiej 2006
3. Smorawiński A., Technologia wtrysku, WNT, Warszawa 1989.
4. Śledziona J., Podstawy technologii kompozytów, Wyd. Politechniki Śląskiej, 1998
5. Koszkuł J., Materiały polimerowe, Wyd. Politechniki Częstochowskiej, 1999

Breakdown of average student's workload

	Hours	ECTS
Total workload	0	0,00
Classes requiring direct contact with the teacher	0	0,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	0	0,00