COURSE DESCRIPTION CARD - SYLLABUS

Course name
Plastic processing [S1ZiIP2>PTS]

Course

Field of study
Management and Production Engineering

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

A student starting this subject should have basic knowledge of physics and chemistry.

Course objective

Learning the basics of the physical and physicochemical processes occurring during the processing of polymer materials and analyzing the factors affecting the manufacturing technology and product properties.

Course-related learning outcomes

Knowledge:
1. The student has detailed knowledge of the division and classification of polymeric materials
2. The student knows the basics of manufacturing plastic products
3. The student is able to choose the appropriate technology to manufacture the product

Skills:
1. Student has the ability to distinguish between modern manufacturing technologies.
2. Has knowledge of systems for simulation of technological processes.

Social competences:
1.The student is aware of the importance of processing in the economy and social life.
2. The student demonstrates an active attitude in creating manufacturing processes.
3. The student is able to assess the quality of plastic product manufacturing processes.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit on the basis of the test carried out at the end of the semester, containing general or test questions. Assignment of grades to percentage ranges of results: <90-100> very good; <80-90) good plus; <70-80) good; <60-70) satisfactory plus; <50-60) satisfactory; <0-50) unsatisfactory.
Assessment of laboratories based on reports.

Programme content

Technological processes used in plastics processing / injection, extrusion, pressing, laminating, vacuum forming, rotational molding, production of polymer composites, rubber processing, joining plastics, coating /.
Phenomena occurring during the implementation of various plastic processing processes. Impact of technological parameters of processing processes on the properties of manufactured plastic products. Typical defects of plastic products made with different technologies and ways to prevent them. Discussion of the specifics of individual processes and their possibilities of application in industrial practice. Special injection technologies / gas and water assisted injection technology, sandwich and mono-sandwich technologies, micro-injection /. The use of static and dynamic mixers in injection and extrusion technologies. Production of multilayer films and pipes. Processing of bio-degradable plastics. Directions of development of modern plastics processing technologies.

Course topics

Technological processes used in plastics processing / injection, extrusion, pressing, laminating, vacuum forming, rotational molding, production of polymer composites, rubber processing, joining plastics, coating /.
Phenomena occurring during the implementation of various plastic processing processes. Impact of technological parameters of processing processes on the properties of manufactured plastic products. Typical defects of plastic products made with different technologies and ways to prevent them. Discussion of the specifics of individual processes and their possibilities of application in industrial practice. Special injection technologies / gas and water assisted injection technology, sandwich and mono-sandwich technologies, micro-injection /. The use of static and dynamic mixers in injection and extrusion technologies. Production of multilayer films and pipes. Processing of bio-degradable plastics. Directions of development of modern plastics processing technologies.

Teaching methods

lecture: multimedia presentation, illustrations, sample multimedia films of technological processes
laboratories: work with devices, production of pipe and laminate products, clip

Bibliography

Basic:
R.Sikora - Przetwórstwo tworzyw wielkocząsteczkowych. Wyd. ZAK , Warszawa 1997
Praca zbiorowa- Poradnik inżyniera - Guma.

Additional:
Haponiuk J.T.: Tworzywa sztuczne w praktyce. Wyd. Verlag Dashofer, W-wa 2008r.
Czasopisma: Plastics Review, Rubber Review, Plast News, Tworzywa Sztuczne.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00