POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Manufacture technics

Course

Field of study	Year/Semester
Logistisc	2/3
Area of study (specialization)	Profile of study
	general academic
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
part-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
12	10	
Tutorials	Projects/seminars	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

Ph.D., Eng., Kinga Mencel

Mail to:kinga.mencel@put.poznan.pl;

Phone: 6652787

Faculty of Mechanical Engineering

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge of basic physical and chemical aspects of processing of metals and polymers. The analysis of the main factors which influence the producibility of products.

Course objective

In-depth knowledge of the physical and physicochemical foundations of processes occurring during the processing of materials and analysis of factors affecting the technological design of products

Course-related learning outcomes

Knowledge

POZNAN UNIVERSITY OF TECHNOLOGY

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1. Has detailed knowledge of the division and classification of chipless technologies for the production of machine elements [P7S_WG_03].

2. Has knowledge of the basics of producing metal alloys, the formation of castings in a casting mold [P7S_WG_03].

3. Knows the differences between types of heat and thermo-chemical treatment [P7S_WG_07].

4. Has detailed knowledge of plastics and processing methods [P7S_WG_07] .

Skills

1. Student has the ability to distinguish between modern manufacturing technologies [P7S_UU_01].

2. Has knowledge of systems for simulation of technological processes [P7S_UW_03].

Social competences

1.The student is aware of the importance of processing in the economy and social life [P7S_KK_01].

2. The student demonstrates an active attitude in creating manufacturing processes [P7S_KO_02].

3. The student is able to assess the quality of plastic product manufacturing processes [P7S_KR_01].

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, credit if 60% of points are obtained.

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.

Introduction to computer simulations of plastic processing processes. Basics of using simulation software on the example of a selected program. Preparation of input data for the simulation of plastic injection process. Material databases in the injection process simulation. Basics of setting simulator

POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

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program solver parameters. Interpretation of the results of numerical calculations. Comparison of simulation results with the actual injection process.

Basics of plastic deformation of materials. Plasticity conditions. Technological processes used in metal forming such as: cutting, stamping, rolling, forging, extrusion, bending as well as phenomena related to them. The influence of the technological process parameters on the properties of obtained products and semi-finished products. Examples of products manufactured using metal forming processes. Disadvantages of products manufactured using metal plastic forming methods, the reasons for their formation and the possibility of preventing their occurrence. Construction of basic tools used in metal plastic forming. Classification of machines used for metal plastic forming processing and their basic construction. Basic knowledge about the possibilities of computer aided by metal plastic forming processes.

Teaching methods

lecture, laboratories

Bibliography

Basic

R.Sikora - Przetwórstwo tworzyw wielkocząsteczkowych. Wyd. ZAK , Warszawa 1997

 Praca zbiorowa- Poradnik inżyniera - Guma.

Erbel S., Kuczyński K., Olejnik L.: Technologia obróbki plastycznej na zimno. Oficyna wydawnicza Politechniki Warszawskiej, Warszawa 2003.

Additional

Haponiuk J.T.: Tworzywa sztuczne w praktyce. Wyd. Verlag Dashofer, W-wa 2008r.

Czasopisma: Plastics Review, Rubber Review, Plast News, Tworzywa Sztuczne.

Marciniak Z.: Konstrukcja tłoczników, Ośrodek Techniczny A. Marciniak, Warszawa, 2002.

Mazurkiewicz A.: Technologie specjalne kształtowania materiałów, Radom, 2002.

POZNAN UNIVERSITY OF TECHNOLOGY

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Breakdown of average student's workload

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

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[1] delete or add other activities as appropriate