



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Process Organisation of Materials Processing in Industry

### 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

elective

### Number of hours

Lecture

8

Laboratory classes

Tutorials

Projects/seminars

8

Other (e.g. online)

### Number of credit points

2

### 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

The student should have a basic knowledge of manufacturing techniques and production management.

### Course objective

Student should have wide introduction with production systems in material processing technologies. Acquiring the skills to choose the method and elements of the production system depending on the manufactured product.

### Course-related learning outcomes

Knowledge



The student has knowledge about manufacturing technologies mainly used in the machinery industry. It applies to metallurgy and foundry processes and plastics processing.

The student has knowledge about the typical processes in machine construction.

#### Skills

The student is able to determine the area of application of individual manufacturing technologies. He can choose the technology suitable for the part and justify the choice.

#### Social competences

The student knows how to set priorities related to production preparation activities. Understand technical and non-technical conditions of the technology used.

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

Learning outcomes presented above are verified as follows:

##### Lecture

Written colloquium 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. All projects must be passed with positive note.

#### Programme content

##### Lecture

Characteristics of selected machines and devices used in foundries. Box and boxless technological lines. Selection of technological casting technology. The choice of technology due to the size of the production series. Designing a production system for nest and stream production. Consequences of the adopted production technology on the functioning of the production plant (internal transport, efficiency, rhythmicity of production). Designing the production process on the technological line for selected products.

Preparation and circulation of raw material in processing by injection technology and extrusion of polymeric materials. Granulate transport equipment, gravimetric and volumetric dosers. Injection molding machines series, injection socket equipment, manipulators. Multiplication calculations of the injection mold and selection of the injection molding machine size in relation to the required production efficiency. Technological lines for extrusion of profiles with printing. Characteristics of devices in plastic profile production lines.

##### Projects

Understanding the functioning of selected production plants. Organizational structure of the enterprise. Analysis of production preparation (organizational preparation of production, operation of raw



materials warehouses for production). Enterprise internal transport. Arrangement of production and auxiliary stations (storage fields, technological devices warehouses). Influence of the process of changing technological stands on efficiency. Finished goods packaging process, storage.

### Teaching methods

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

Project: carrying out designs of manufacturing in production center and technological lines.

### Bibliography

Basic

1. Chudzikiewicz R., Mechanizacja i automatyzacja odlewni, Wydawnictwa Naukowo-Techniczne, Warszawa, 1980.
2. Frącz W., Krywult B., Projektowanie i wytwarzanie elementów z tworzyw sztucznych. Oficyna wydawnicza Politechniki Rzeszowskiej, Rzeszów 2018.
3. Zawistowski H., Przygotowanie i nadzór produkcji wyrobów wtryskiwanych, PLASTECH Wyd. Poradników i Książek Technicznych, Reguły 2005.
4. Wilczyński K. (red.), Przetwórstwo tworzyw sztucznych, Oficyna wydawnicza Politechniki Warszawskiej 2018.

Additional

1. Perzyk M. i inni, Odlewnictwo. WNT, Warszawa, 2000
2. Samsonowicz Z., Automatyzacja procesów odlewniczych, WNT, Warszawa, 1985
3. Smorawiński A., Technologia wtrysku, Wydawnictwa Naukowo-Techniczne, Warszawa 1989.
4. Saechtling H., Poradnik Tworzyw Sztucznych, Wydawnictwa Naukowo-Techniczne, Warszawa 2007.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	35	1,5
Student's own work (literature studies, preparation for laboratory classes, preparation for tests) <sup>1</sup>	15	0,5

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