COURSE DESCRIPTION CARD - SYLLABUS

Course name
Devices and auxiliary instrumentation in non-waste technologies

Course

Field of study
Mechanical Engineering

Year/Semester
3/6

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
16

Laboratory classes
4

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
prof. Marek Szostak

Responsible for the course/lecturer:
dr Waldemar Matysiak

Prerequisites

Basic knowledge of machine construction, founding, plastic working and processing of plastics

Course objective

Understanding the structure of auxiliary equipment used in the casting production processes, plastic working processes and plastics processing

Course-related learning outcomes

Knowledge

1. The student has knowledge of the construction of basic components and elements in the instrumentation used in non-waste technologies

2. The student knows the equipment used in foundry, plastic working and processing of plastics.

3. The student knows what process (part of the process) is implemented by the technological equipment.

Skills

1. Student is able to correctly select the technological equipment for a specific process in material processing technology: molding, plastic working, plastic processing.

2. The student is able to operate the technological equipments in the processes of material technologies.

Social competences

1. The student is able to work on a designated task independently and work in a group.

2. The student understands the need for continuous learning to improve professional qualifications.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

Written credit carried out at the end of the semester (credit if at least 50.1% of correct answers are obtained). Up to 50.0% - ndst, from 50.1% to 60.0% - dst, from 60.1% to 70.0% - dst +, from 70.1% to 80.0% - db, from 80, 1% to 90.0% - db +, from 90.1% - very good.

Laboratory:

Passing on the basis of an oral or written answer regarding the content of each performed laboratory exercise, a report on each laboratory exercise according to the instructions of the laboratory teacher. In order to pass the laboratories, all exercises must be passed (positive grade from the answers and the report).

Programme content

Lecture:

1. Construction and principle of operation as well as intended use of mixers and sand processing stations, molding machines, core machines, devices for removing castings from molds and cleaning castings. Selection of appropriate technological equipment depending on the requirements used in the production process of casting machines and devices.

2. Classification and characteristics of technological equipment for metal forming. Rules for the selection of accessories for individual technological operations (cutting, bending, stamping, spinning, rolling of sheets, profiles and pipes, forging, extrusion, drawing and pushing, joining by plastic working methods). Operation (use, maintenance, management) and modernization of used machines and devices.

3. Construction of basic equipment for plastics processing (dryers, chillers, plastometers, dispensers, manipulators, robots, conveyors, grinders, ...), their functional systems and principles of operation. Description of design solutions of the selected auxiliary equipment and discussion of their advantages and disadvantages. Selection of technological equipment depending on the planned production process of plastic products.

Laboratory:

1. Construction and operation of devices and auxiliary instrumentation for plastics processing.

2. Construction and operation of devices and auxiliary instrumentation for plastic working.

Teaching methods

The lecture is illustrated with a multimedia presentation containing the discussed program content.

Demonstration laboratory.

Bibliography

Basic

1. Fedoryszyn A., Smyk K., Ziółkowski Z., Maszynoznawstwo odlewnicze, Wyd. AGH Kraków, 2008

2. Chudzikiewicz R., Mechanizacja i automatyzacja odlewni, WNT, Warszawa 1980.

3. Golatowski T.: Mechanizacja i automatyzacja w tłocznictwie, WN-T Warszawa 1978.

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

5. Pr. Zbiorowa: Poradnik Tworzywa Sztuczne. Wyd. WNT, Warszawa 2006.

Additional

1. Poradnik inżyniera mechanika. T.3. Zagadnienia technologiczne, rozdz. III, VI, VII. WNT, Warszawa 1970.

2. Erbel S., Golatowski T., Kuczyński K., Marciniak Z.: Technologia obróbki plastycznej na zimno. Warszawa: SIMP 1983.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	20	1,0

[1] delete or add other activities as appropriate