COURSE DESCRIPTION CARD - SYLLABUS

Course name
Plastic and loss processing

Course

Field of study
Education in Technology and Informatics

Year/Semester
3/5

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	
Tutorials	Projects/seminars	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
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Wydział Inżynierii Mechanicznej

Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

The student has basic knowledge of the fields of study related to the field of study being studied. Has basic knowledge of the fields of study related to the field of study being studied. Understands the need for lifelong learning; is able to inspire and organize the learning process of other people, and is able to interact and work in a group, assuming different roles in it.

Course objective

1. Getting to know the theoretical basis and the course of manufacturing processes of products shaped by plastic working and by waste technologies.

2. Shaping students' teamwork skills.

Course-related learning outcomes

Knowledge

1. has knowledge of the ecological aspects of technical activities [K1_W05].

2. has basic knowledge of technical mechanics, material strength and general principles of engineering structures [K1_W10].

3. knows the issues concerning the technology of production and processing of engineering materials [K1_W11].

Skills

1. can work individually and in a team, including the ability to manage his own time and undertake and keep commitments [K1_U05].

2. is able to carry out a preliminary economic analysis of undertaken engineering activities and estimate their labor consumption [K1_U15].

3. can choose the appropriate manufacturing technologies in order to shape products, their structure and properties [K1_U21].

Social competences

1. understands the need and knows the possibilities of continuous learning and improving professional, personal and social competences [K2_K01].

2. understands the importance of non-technical aspects and effects of engineering activities [K2_K02].

3. is aware of the importance of engineering activity and its non-technical aspects, including its impact on the environment [K2_K06].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Written exam. The first part of the selection test was assessed 1 point for a good answer from the 10 questions asked and 5 problem questions assessed for 5 points. for every good answer. Problem questions are assessed on a scale (0-5 points). In total, you can get 35 points for a perfect test. A positive assessment is obtained after obtaining 20 points.

Laboratory: Presence at all classes. Positive responses to written or oral questions from the teacher, accepted by the teacher, the final report.

Programme content

Basic theoretical knowledge about plastic forming of metals and their alloys (plasticity conditions, the mechanism of plastic deformation). Technological operations of shaping sheet products (cutting, bending, pressing, spinning) and bars (forging, rolling, extrusion, drawing). Materials susceptible to plastic working. Changing the properties of materials during shaped products by plastic working methods. General information about tool materials and technological lubricants. Using FEM to design products by plastic processing.

Basic theoretical information on the defective shaping of metals and non-metals.

Technological operations of shaping products with subtractive technologies (turning, milling, grinding, drilling, chiselling, cutting, special methods). General information about machines used in subtractive technologies.

Examples of technological processes.

Lab:

Sheet metal cutting with guillotine and circular shears and a punch on an eccentric press. Bending with a bending machine and a press brake. Punching a cylindrical and rectangular drawpiece with a hydraulic press. Free upsetting with a drop hammer.

Drop forging with a screw press and extrusion with a hydraulic press. Longitudinal and transverse rolling with the use of laboratory rolling mills.

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the blackboard.

2. Laboratory exercises: practical exercises, performing experiments, discussion, team work.

Bibliography

Basic

1. W. Weroński - Obróbka plastyczna

2. W. Weroński, Schabowska K - Przeróbka plastyczna

3. Banaszak R., Dubicki K., Muster A. Obróbka plastyczna Laboratorium

4. Pater Z., Gontarz A Weroński W. Obróbka plastyczna, Obliczenia sił kształtowania

5. Pająk E., Podstawy obróbki mechanicznej - materiały pomocnicze do wykładów i laboratoriów, Skrypt PWSZ Konin, 2007

6. Grzesik W., Podstawy skrawania materiałów metalowych, WNT 1998, Warszawa

7. Przybylski L., Strategia doboru warunków obróbki współczesnymi narzędziami. Toczenie. Wiercenie. Frezowanie, Politechnika Krakowska 2000 Kraków

8. Sobolewski J. i in., Projektowanie technologii maszyn, Oficyna Wydawnicza PW 2002 Warszawa

Additional

1. W. Wasiunyk Kucie matrycowe

2. Chodnikiewicz K. Mechanika młotów i pras mechanicznych

3. Brodziński A. Maszyny i urządzenia do obróbki plastycznej

4.Golatowski T., Projektowanie procesów tłoczenia i tłoczników

5. Kunstetter S., Narzędzia skrawające do metali, WNT 1969 Warszawa

6. Poradnik inżyniera. Obróbka skrawaniem, T.1, WNT 1991 Warszawa

Breakdown of average student's workload

	Hours	ECTS
Total workload	62	2,0
Classes requiring direct contact with the teacher	37	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1,0

[1] delete or add other activities as appropriate