



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Designing products shaped by metal forming

Course

Field of study

Mechanical Engineering

Area of study (specialization)

TPM

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

15

Number of credit points

Lecturers

Responsible for the course/lecturer:

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Faculty of Mechanical Engineering

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Responsible for the course/lecturer:

Prerequisites

Basic in the field of the basics of machine construction, production technology and material processing.



Logical thinking, analyzing the occurring phenomena, using the knowledge obtained from scientific, technical and popular science literature. Understanding the need to learn and acquire new knowledge.

Course objective

Getting to know the principles of designing products manufactured by plastic working methods in terms of the processability of their construction.

Course-related learning outcomes

Knowledge

1. Has knowledge in the field of product design in accordance with the principles of technology and with the use of the basics of computer aided design. - [K_W06]
2. Has knowledge of machines and technological devices, including the design of instrumentation and machines, construction and principle of operation of drives. He knows the issues of diagnostics, operation and ergonomics. - [K_W07]
3. Has knowledge of materials science with elements of chemistry, including engineering materials - comparison of their structure, properties and applications. He knows the rules of selecting engineering materials, shaping their structure and properties - [K_W08]

Skills

1. Can select and use manufacturing technology to shape the form, structure and products of products. - [K_U14]
2. Can select machines and technological devices for the implementation of production machines, analyze and evaluate their justification from ergonomics tests, select subassemblies, plan and supervise maintenance tasks for the assessment of the reliable operation of machines and examine machine diagnostics based on the principles of vibroacoustics. - [K_U15]

Social competences

1. The student is able to work in a group - [K_K03]
2. Can think and act in an entrepreneurial way - [K_K06]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written test carried out on the end of the term (in case of a credit min. 50.1% correct). Up to 50.0% - unsatisfactory (2.0) = F, from 50.1% to 60.0% - Satisfactory (3.0) = E, from 60.1% to 70.0% - Satisfactory plus (3,5) = D, from 70.1 to 80 - Good (4.0) = C, from 80.1% to 90.0% - Good plus (4,5) = B, from 90.1% - Very good (5,0) = A.

Projects: Credit on the basis of project evaluation and an oral answer in the field of the project.

Programme content

Lecture:



Principles of designing products shaped by metal plastic working processing methods, taking into account: properties of the shaped material, required functional characteristics of the product, production costs and market price, serial production, the available machinery, technical requirements of individual types of technological operations (e.g. stamping, extrusion, forging), tool strength, the level of the manufacturer's technical culture, etc.

Design:

Technological and strength calculations, simplified technical and economic analyzes necessary to prepare the offer. Examples of designing products made of sheets and bars.

Teaching methods

1. Lecture: multimedia presentation.
2. Project: practical exercises, design consultations, discussion

Bibliography

Basic

1. Erbel S., Kuczyński K., Marciniak Z.:Obróbka plastyczna. Warszawa: PWN 1986.
2. ErbelS.,Golatowski T.,Kuczyński K., Marciniak Z. i inni: Technologia obróbki plastycznej na zimno. Warszawa: SIMP-ODK 1983.
3. Zalecenia do obróbki plastycznej metali. Instytut Obróbki Plastycznej, Poznań.

Additional

1. Muster A.: Kucie matrycowe, Projektowanie procesów technologicznych, Oficyna Wydawnicza Politechniki Poznańskiej, Warszawa 2002.
2. M. Ustasiak, P. Kochmański: Obróbka plastyczna, Materiały pomocnicze do projektowania, Politechnika Szczecińska, Szczecin, 2004.
3. Z. Marciniak: Konstrukcja tłoczników, Ośrodek Techniczny A. Marciniak, Warszawa, 2002

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	3,0
Classes requiring direct contact with the teacher	30	2,0
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