

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Plastic Forming		Code 1010601131010240185
Field of study Mechanical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: 1 Laboratory: - Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 2 100%
Responsible for subject / lecturer: dr inż. Waldemar Matysiak email: waldemar.matysiak@put.poznan.pl tel. +4861 665-2681 Budowy Maszyn i Zarządzania ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mathematics, physics
2	Skills	Logical reasoning skills and knowledge acquired during mating education according to the curriculum, the ability to review and selection of literature.
3	Social competencies	Understanding and perception of the Reed for learning and acquiring New knowledge and its continuous deepening.
Assumptions and objectives of the course: Knowledge of metalworking methods as applied to the manufacture of parts and exploitation of machines and the introduction of machinery and tooling for metal forming.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has a basic knowledge of manufacturing techniques used in engineering, such as cutting materials, forging, stamping, bending - [K1A_W15]		
2. Has a basic knowledge of metal forming methods as applied to the manufacture of parts and exploitation of machines - [K1A_W09]		
3. Has a basic knowledge of the operation of machines for metal forming. - [K1A_W09]		
Skills:		
1. Is able to how to identify technical problems in the field of plastic forming processes, the exploitation of machinery and tooling - [K1A_U24]		
2. Has the ability perform elementary calculations forming processes - [K1A_U17]		
3. Has ability how to choose appropriate technologies to shape metal plastic products with the required properties - [K1A_U18]		
4. Has ability how to choose machines for metal plastic working, depending on the required assumptions - [K1A_U25]		
5. Has ability how design the technology of simple machine component - [K1A_U18]		
Social competencies:		
1. Understands the need and knows the possibilities of continuous training - [K1A_K01]		
2. Can provide information about metal forming in a commonly understood - [K1A_K02]		
3. Knows how to interact and work in a group taking on different roles - [K1A_K03]		

Assessment methods of study outcomes		
<p>Lectures: Written examination conducted at the end of semester (credit in the case of a minimum 50.1% of correct answers). <50.1% - 2.0; 50.1%+60% - 3.0; 60.1%+70% - 3+; 70.1%+80% - 4.0; 80.1%+90% - 4+; >90.1% - 5.0.</p> <p>Classes: Credit on the basis of the written reply from the scope of the content of the material covered during the classes (credit in the case of a minimum 50.1% of correct answers). <50.1% - 2.0; 50.1%+60% - 3.0; 60.1%+70% - 3+; 70.1%+80% - 4.0; 80.1%+90% - 4+; >90.1% - 5.0.</p>		
Course description		
<p>Lectures:</p> <ol style="list-style-type: none"> 1. Basic theoretical knowledge of plastic forming of metals and their alloys (plasticity conditions, the mechanism of plastic deformation). 2. technological operations forming of sheet metal products (cutting, bending, stamping) or rods (forging, rolling, extrusion, wire drawing). 3. Materials prone to forming. 4. Change the properties of materials during the forming of plastic products processing methods. 5. General information about the materials, tools and lubricants technology. 6. Defects in products and possibilities to prevent their occurrence. 7. Examples of technological Processes. <p>Classes:</p> <ol style="list-style-type: none"> 1. Calculation the strain components and replacement, plasticity conditions. 2. Calculation of sheet metal cutting process using guillotine shears. 3. Calculation of sheet metal cutting process using press and cutting devices. 4. Calculation of technological process of cylindrical die stamping processes of single intervention. 5. Calculation of technological process of cylindrical die stamping processes of multi intervention. 6. Calculation of a rectangular die stamping process. 7. Calculation of the volume forming processes (forging, extrusion, rolling). 		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Erbel S., Kuczyński K., Marciniak Z.:Obróbka plastyczna. Warszawa: PWN 1986 2. Morawiecki M., Sadok L., Wosiek E.: Teoretyczne podstawy technologicznych procesów przeróbki plastycznej, Wyd. Śląsk, 1986 3. Marciniak Z.: KONSTRUKCJA TŁOCZNIKÓW, Ośrodek Techniczny A. Marciniak, Warszawa, 2002 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Erbel S.,Golatowski T.,Kuczyński K., Marciniak Z. i inni: Technologia obróbki plastycznej na zimno. Warszawa: SIMP-ODK 1983. 2. Muster A.: KUCIE MATRYCOWE Projektowanie procesów technologicznych, Oficyna Wydawnicza Politechniki Poznańskiej, Warszawa 2002. 3. Zalecenia do obróbki plastycznej metali. Instytut Obróbki Plastycznej - Poznań. 4. M. Ustasiak, P. Kochmański: OBRÓBKA PLASTYCZNA Materiały pomocnicze do projektowania, Politechnika Szczecińska, Szczecin, 2004. 		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture	15	
2. Classes	15	
3. Consultation	5	
4. Exam	5	
5. Student's own work	20	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	2
Contact hours	40	1

Practical activities	15	0
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