

**COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-409
	part-time programme:	
Course title in Polish	Podstawy obróbki plastycznej	
Course title in English	Fundamentals of metal forming	
Valid from (academic year)	2024/2025	

GENERAL INFORMATION

Programme of study	MECHANICAL ENGINEERING
Level of qualification	first-cycle
Type of education	academic
Mode of study	full-time programme
Specialism	all
Department responsible	Department of Metal Science and Manufacturing Processes
Course leader	dr inż. Tomasz Milek
Approved by	dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering

COURSE OVERVIEW

Course type	programme-specific	
Course status	compulsory	
Language of instruction	English	
Semester of delivery	full-time programme	Semester IV
	part-time programme	
Pre-requisites	Technical Drawing, Material Science I and II, Fundamentals of Metal Forming - lecture	
Examination required (YES/NO)	NO	
ECTS value	1	

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme			15		
	part-time programme					

LEARNING OUTCOMES



Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	Having successfully completed this course, students will be able to use a acquired theoretical knowledge to select a type of metal forming technology in order to manufacture mechanical elements of a given shape.	MiBM1_W06 MiBM1_W07
Skills	U01	Students are able to obtain information relevant to metal forming. They are able to analyze and interpret the information, draw conclusions.	MiBM1_U03
	U02	Students are able to write a report from metal forming exercise where they discuss, analyse and synthesize their results.	MiBM1_U04
Competence	K01	Students are aware of the need to critically assess and update their expertise from metal forming and by exchanging knowledge and experiences with other metal forming experts	MiBM1_K01

COURSE CONTENT

Type of instruction lecture	Topics covered
laboratory	Introduction to laboratory class, getting acquainted with the health and safety regulations in force in the metal forming laboratory, discussing of assessment criteria and the report template. Deep drawing of cylindrical drawpieces without collar. Blanking. Bending of sheets. Bar drawing. Longitudinal rolling of flats

ASSESSMENT METHODS

Outcome code	Methods of assessment (<i>Mark with an X where applicable</i>)					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
U01			X		X	
U02			X		X	
K01						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
laboratory	non-examination assessment	The pass mark is a minimum of 50% for each in-class post-lab test. A pass grade for each post-lab report.

OVERALL STUDENT WORKLOAD

ECTS weighting			
No.	Activity type	Student workload	Unit





		full-time program- me					part-time program- me					
		L	C	Lb	P	S	L	C	Lb	P	S	
1.	Scheduled contact hours			15								h
2.	Other contact hours (office hours, ex- amination)			2								h
3.	Total number of contact hours	17										h
4.	Number of ECTS credits for contact hours	0,7										ECTS
5.	Number of independent study hours	8										h
6.	Number of ECTS credits for inde- pendent study hours	0,3										ECTS
7.	Number of practical hours	25										h
8.	Number of ECTS credits for practi- cal hours	1,0										ECTS
9.	Total study time	25										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	1										ECTS

READING LIST

1. Instructions for laboratory exercises.
2. Miłek T.: Techniques of production. Kielce University of Technology, Kielce 2012
(www.wmibm-moodle.tu.kielce.pl)
3. Lange K: Handbook of metal forming, McGraw-Hill Book Company
4. Lascoe O. D.: Handbook of fabrication processes, ASM International, Ohio, 1988
5. Gołatowski T.: Design of deep drawing process and press-forming dies Selected problems. Warsaw: Warsaw University of Technology, 1984 (in Polish)
6. Pacanowski J.: Design of deep drawing process of axisymmetric draw pieces and design press-forming dies T1 Methods and directives for deep drawing of axisymmetric draw pieces, Kielce: Kielce University of Technology, 2018 (in Polish)
7. Marciniak Z Limit strains in deep drawing process of sheet metals, Warsaw: WNT, 1971 (in Polish)
8. Erbel J i inni.: Encyklopedia technik wytwarzania stosowanych w przemyśle maszynowym. Tom I, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2001
9. Łuksza J.: Elementy cięgarstwa, Wydawnictwo Naukowo-Dydaktyczne AGH, Kraków 2001
10. Morawiecki M., Sadok L., Wosiek E.: Przeróbka plastyczna. Podstawy teoretyczne, Wydawnictwo Śląsk, Katowice 1986.
11. Muster A.: Kucie matrycowe. Projektowanie procesów technologicznych, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2002.
12. Pacanowski J., Chałupczak J.: Projektowanie procesów kucia matrycowego odukuw kołowo-symetrycznych na młotach i prasach korbowych. Wydawnictwo Politechniki Świętokrzyskiej w Kielcach, Kielce 2011.
13. Pater Z., Samołyk G.: Podstawy technologii obróbki plastycznej metali, Politechnika Lubelska, Lublin 2013.
14. Sińczak J. i inni: Podstawy procesów przeróbki plastycznej. Wydawnictwo Naukowe AKAPIT Kraków 2010.
15. Pacanowski J.: Design of deep drawing process of axisymmetric drawpieces and design press-forming dies T1 Methods and directives for deep drawing of axisymmetric drawpieces, Kielce: Kielce University of Technology, 2018 (in Polish)
16. Sińczak J. i inni: Metal forming processes. Laboratory exercises. Wydawnictwo naukowe AKAPIT, Kraków 2001 (in Polish)..





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17. Richert J.: Innovative methods of metal forming processes. Wydawnictwa AGH 2010 (in Polish).
18. Żaba K., Mamala A.: Metal forming of non-ferrous metals. Laboratory exercises. Rolling and drawing. Wydawnictwa AGH, Kraków 2011 (in Polish).



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*Projekt „Dostosowanie kształcenia w Politechnice
Świętokrzyskiej do potrzeb współczesnej gospodarki”
nr FERS.01.05-IP.08-0234/23*

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i Budowy Maszyn