

**COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-304	
	part-time programme:		
Course title in Polish	Podstawy spawalnictwa		
Course title in English	Basics of welding		
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. Bartłomiej Szwed
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 III
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		NO
ECTS value		2

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

LEARNING OUTCOMES

Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
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Knowledge	W01	The student has in-depth knowledge of the nomenclature, construction, principle of operation of various types of machinery, welding equipment, determination of basic welding parameters as well as technical solutions used in various areas of mechanical and mechanical engineering, e.g. in the automotive industry, in armament engineering, industrial mould design, product design	MiBM1_W06
	W02	Has the knowledge necessary to organize work in accordance with health and safety, environmental protection and ergonomics for welding processes	MiBM1_W19
Skills	U01	Students will be able to apply knowledge from the field of basic sciences to formulate and solve engineering tasks used in welding techniques, both at the stage of design, construction, materials selection, industrial form creation, manufacturing, prototyping, testing. Student will be able to evaluate, critically analyse and synthesise the results obtained as well as express opinions and comments.	MiBM1_U01
	U02	Can design a simple technological process in the area of mechanics and mechanical engineering and select appropriate machines and equipment for this purpose	MiBM1_U08
Competence	K01	Is ready to critically evaluate his knowledge and the need to acquire new information both from the literature and from experts in the field of bonding processes	MiBM1_K01
	K02	Independently completes and expands knowledge in the field of bonding techniques, takes a critical approach to the knowledge possessed. Understands the need for and knows the possibilities of continuous improvement (studies of the second and third degree, postgraduate studies, courses) in order to improve professional, personal and social competences.	MiBM1_K03

COURSE CONTENT

Type of instruction	lecture	Topics covered
lecture		Types and properties of welding heat sources. General classification of welding processes. Welding consumables. Structure of welded joints and their technological properties. Weldability and welding technology of metals and alloys. Welding and brazing processes. Quality control in welding
laboratory		Gas welding and thermal cutting. Manual arc welding with covered electrodes. Mechanised MIG/MAG welding. TIG welding. Submerged arc welding under flux. Welding and brazing processes. Quality control in welding.



**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			
W02			X		X	
U01			X		X	
U02					X	
K01						X
K02						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Obtaining at least 50% of the points from the colloquium in the last class.
laboratory	non-examination assessment	Achievement of at least 50% of the marks in the colloquia of the individual exercises. Approval of reports on individual laboratory exercises.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
1.	Scheduled contact hours	L	C	Lb	P	S	L	C	Lb	P	S	h
		15		15								
2.	Other contact hours (office hours, examination)	2		2								h
3.	Total number of contact hours	34										h
4.	Number of ECTS credits for contact hours	1,4										ECTS
5.	Number of independent study hours	16										h
6.	Number of ECTS credits for independent study hours	0,6										ECTS
7.	Number of practical hours	25										h
8.	Number of ECTS credits for practical hours	1,0										ECTS
9.	Total study time	50										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	2										ECTS

READING LIST

1. Ferenc K., Spawalnictwo. WNT, Warszawa 2018





Fundusze Europejskie
dla Rozwoju Społecznego



Rzeczpospolita
Polska

Dofinansowane przez
Unię Europejską



2. Klimpel A.: Spawanie, zgrzewanie i cięcie metali. Technologie. WNT, Warszawa 2005
3. Jakubiec M., Lesiński K., Czajkowski H.: Technologia konstrukcji spawanych. WNT, Warszawa 1983
4. Praca zbiorowa. Poradnik inżyniera – spawalnictwo. T1 i T2. WNT, Warszawa 2017
5. Instrukcje do ćwiczeń laboratoryjnych.
6. Ferenc K., Ferenc J.: Konstrukcje spawane. Połączenia. WNT, Warszawa 2019
7. Butnicki S.: Spawalność i kruchość stali. WNT, Warszawa 1991
8. Pilarczyk J., Pilarczyk J.: Spawanie i napawanie elektryczne metali. Śląsk, Katowice 1996
9. Nowacki J. i inni: Lutowanie w budowie maszyn. WNT, Warszawa 2007
10. Ferenc K.: Podręcznik spawania. Zagadnienia ogólne. Agenda Wydawnicza SIMP Przegląd Spawalnictwa, Warszawa 2016
11. Ferenc K.: Podręcznik spawania aluminium i jego stopów metoda TIG. Agenda Wydawnicza SIMP Przegląd Spawalnictwa, Warszawa 2017
12. Ferenc K.: Podręcznik spawania aluminium i jego stopów metoda MIG. Agenda Wydawnicza SIMP Przegląd Spawalnictwa, Warszawa 2018
13. Mizerski J.: Spawanie gazowe i cięcie tlenowe. Wydawnictwo REA s.j., Warszawa 2010



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