



Subject card

Subject name and code	Modern manufacturing techniques in medical application, PG_00057495						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Division of Structural Materials Technology and Welding -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marek Szkodo				
	Teachers		dr hab. inż. Marek Szkodo dr inż. Mateusz Wrzochal				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		3.0		17.0	50
Subject objectives	Acquainting students with modern manufacturing techniques in medical issues						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W08] He/she broad knowledge related to understand social, economic, legal, ecological and other outer techniques conditions of engineering activities in mechanical-medical engineering		Possesses widened knowledge within the range of design methods of hydraulic systems, heating and fluid-flow machines and transport devices		[SW1] Assessment of factual knowledge		
	[K7_W07] He/she in-depth knowledge related to engineering materials and technologies used in mechanical-medical engineering		Possesses profound knowledge on the diagnostics and monitoring of the condition of devices, assemblies and technical systems, as well as measurement methods of process and operation control		[SW1] Assessment of factual knowledge		
	[K7_U09] He/she has skills to work in industrial environment and is aware of work safety rules		Is able to design a procedural equipment or device compliant with the specifications using a design aid system in the form of a design documentation, selecting the appropriate model, performing critical analysis with the proper selection of tools and technologies.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K7_K02] He/she understands outer aspects of influence of mechanical engineer and manager, their social consequences and impact on the environment, needs to follow the rules of ethics and respect for the diversities of views and cultures		Correctly identifies professional problems and is able to define the priorities and hierarchy using knowledge in solving problems		[SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work		
Subject contents	Medical industry, manufacturing techniques, composite production, metal processing, laser processing, additive methods, SLM, measurement methods, reverse engineering.						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	51.0%	49.0%
	Lectures	51.0%	51.0%
Recommended reading	Basic literature	1. Modeling of Metal Forming and Machining Processes: By Finite Element and Soft Computing Methods by Prakash M. Dixit. 2. Mechanics Modeling of Sheet Metal Forming by Sing C. Tang. 3. Sheet Metal Forming: Processes and Applications by Taylan Altan, A. Erman Tekkaya	
	Supplementary literature	1. Technologia metali laboratorium by Robert Skoblik, Lech Wilczewski (in Polish)	
	eResources addresses	Adresy na platformie eNauczanie: Nowoczesne techniki wytwarzania w zastosowaniach medycznych, W, P, IMM, II st., sem. 2, zimowy 2024/25 - Moodle ID: 41764 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41764	
Example issues/ example questions/ tasks being completed	Manufacturing methods, SLM, additive manufacturies, reverse engineering.		
Work placement	Not applicable		

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