



Subject card

Subject name and code	Tooling of manufacturing systems, PG_00059372						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Technologii Maszyn i Automatykacji Produkcji -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Adam Barylski					
	Teachers	dr inż. Piotr Sender prof. dr hab. inż. Adam Barylski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	9.0	0.0	0.0	9.0	0.0	18
	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	18	6.0		51.0	75	
Subject objectives	Rules of universal workholders. Designs special workholders.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U06] when solving engineering problems on design, technology and operation of machines is able to assess and classify typical methods and tools, define systemic and ex-technical aspects using modern calculating methods and design tools or modifying the current ones	Rules of usage universal workholder			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K7_W09] possesses profound knowledge on the directions of development of construction of machines, devices, calculating methods and systems aiding the design, materials and their properties, manufacturing methods and diagnostics, control-measurement equipment	Rules of usage modular workholder and designs special workholders			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K7_W06] possesses organized, profound knowledge necessary for designing and optimization of complex technological processes, modelling and calculations using numerical methods, knows modern manufacturing methods and tools for designing manufacturing processes of machines, devices, their elements and components	Significance of instrumentation in manufacturing process			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		

Subject contents	LECTURE: Significance of instrumentation in a machine components manufacturing process. Errors influencing on accuracy of workholder development. Setting an object in the workholder. Fastening an object in the workholder. Setting and fixing workholder in the machining tool. Principles of workholder design. Lathe chucks. Drill chucks. Milling fixtures. Modular fixtures. Toolholders. Assembly instrumentation. Instrumentation of transportation, manipulators and robots. Rules of computer aided and management of workplace aids. Principles of universal fixtures usage. Costs of instrumentation. PROJECT: Skills of setting and fastening objects in fixtures and implementation of machining fixture for a given operation.		
Prerequisites and co-requisites	Knowledge from recording design and manufacturing engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	60.0%	50.0%
	Written paper	60.0%	50.0%
Recommended reading	Basic literature	Feld M.: Uchwyty obróbkowe. WNT, Warszawa, 2002. Dobrzański T.: Uchwyty obróbkowe. Poradnik konstruktora, WNT, Warszawa 1987. Normy przedmiotowe. Materiały informacyjne producentów oprzyrządowania.	
	Supplementary literature	Poradnik inżyniera. Obróbka skrawaniem. T. I-III, WNT, Warszawa, 1993.	
	eResources addresses	Adresy na platformie eNauczenie: Oprzyrządowanie systemów wytwarzania - Moodle ID: 33205 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=33205	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		