



Subject card

Subject name and code	Computer Aided Design of Technological Processes, PG_00055503						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group 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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Mariusz Deja					
	Teachers	dr inż. Dawid Zieliński mgr inż. Ewa Kozłowska dr inż. Bogdan Ścibiorski dr hab. inż. Mariusz Deja					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	15.0	0.0	60
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	60	4.0		36.0	100	
Subject objectives	A student designs technological processes of typical machine parts using CAD and CAM systems. Selects a system to support manufacturing depending on the needs and capabilities of the production plant.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U04] is able to perform a critical analysis of the existing technical solutions, present the specification of the technology of manufacturing basic construction elements of machines and engineering assemblies	Comparison of various manufacturing techniques, including subtractive and additive technologies, with an indication of their advantages and disadvantages.			[SU2] Assessment of ability to analyse information		
	[K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating basic values describing the operation of mechanical systems, knows basic calculating methods applied to analyse the results of experiments	Ability to use computer software for supporting manufacturing processes, design and selection of technological parameters.			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U08] is able to design a technological manufacturing process for typical elements of machines or devices, using analytical and numerical calculating tools	The selection of the manufacturing process plan depending on the class, type of parts, material, and dimensional and shape requirements.			[SU1] Assessment of task fulfilment		

Subject contents	<p>LECTURE Production process and its components supported by computer systems. Data for the technological design process, documentation and technical time standard. Selection of machining allowances. Design of semi-finished products. Technology of construction. Machining bases and principles of setting workpieces on machine tools and machining accuracy. Technological methods of shaping the surface layer of machine parts and their impact on operational properties. Technological processes of typical machine parts for various types and degrees of automation of processing and assembly. Process typification. Group processing. Flexible manufacturing systems. LABORATORY Selection of semi-finished products and machining bases in the CAM system. Determining the technical standard for processing time in the CAM system. Selection and programming of machining depending on dimensional and shape accuracy. Selection of technology for axially symmetric and prismatic parts. Programming and machining on CNC machines. PROJECT Designs of technological processes of typical machine parts: e.g. shaft and prismatic components using the CAM system. Preparation of documentation, selection of: allowances, tooling, tools, technological parameters, determination of the technical time standard based on simulation of the machining process.</p>																	
Prerequisites and co-requisites	Manufacturing technology, basics of machining, Computer Aided Design CAD and Computer Aided Manufacturing CAM																	
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 775 794 801">Subject passing criteria</th> <th data-bbox="799 775 1137 801">Passing threshold</th> <th data-bbox="1142 775 1481 801">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 808 794 835">Activity during classes</td> <td data-bbox="799 808 1137 835">80.0%</td> <td data-bbox="1142 808 1481 835">20.0%</td> </tr> <tr> <td data-bbox="456 842 794 891">Completing tasks during laboratories</td> <td data-bbox="799 842 1137 891">60.0%</td> <td data-bbox="1142 842 1481 891">20.0%</td> </tr> <tr> <td data-bbox="456 898 794 925">Projects</td> <td data-bbox="799 898 1137 925">60.0%</td> <td data-bbox="1142 898 1481 925">20.0%</td> </tr> <tr> <td data-bbox="456 931 794 958">Exam</td> <td data-bbox="799 931 1137 958">60.0%</td> <td data-bbox="1142 931 1481 958">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Activity during classes	80.0%	20.0%	Completing tasks during laboratories	60.0%	20.0%	Projects	60.0%	20.0%	Exam	60.0%	40.0%
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Example issues/ example questions/ tasks being completed	1. Selected production processes for parts of a specific class type, with specific design and technological requirements.2. Basic principles of selecting technological parameters for technological operations.3. The influence of manufacturing technique on the properties of the surface layer.4. Technical standard of working time.5. Methods of generating CNC programs for controlling technological devices.																	
Work placement	Not applicable																	