



## Subject card

Subject name and code	, PG_00062014						
Field of study	Mechanical and Naval Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2026/2027		
Education level	first-cycle studies	Subject group					
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			8.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Bogdan Ścibiorski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	36.0	0.0	9.0	18.0	0.0	63
	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	63		0.0		0.0	63
Subject objectives	The objective of the course is to familiarize students with machine manufacturing technology, including technological processes of machining, designing technological operations for typical machine parts, and the use of computer-aided manufacturing tools. Students will acquire the ability to design technological processes, analyze machining accuracy, and select technological parameters						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W08] has a knowledge of the analysis and design of selected technical systems, machines and technical equipment, selection of construction materials, manufacturing and operation, including their life cycle	The student is able to analyze the life cycle of machines and devices, taking into account technical and material aspects during design and production	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[K6_W11] has knowledge of analysis, design, technology and manufacturing of selected technical systems, machinery and equipment, metrology and quality control, knows and understands methods of measurement and calculation of basic quantities describing the operation of technical systems, knows basic calculation methods used to analyse experimental results	The student is able to design and implement technological processes and use measurement methods and calculations in the analysis of technical systems	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	The student is able to prepare technological documentation and present the results of technological projects using computer tools	[SU1] Assessment of task fulfilment [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
[K6_U14] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	The student is able to critically analyze technological processes of machine manufacturing, taking into account safety, environmental, and economic criteria.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task	
Subject contents	Course content – lecture The production process and its components. Data for the technological design process, documentation, and the technical time standard. Selection of machining allowances. Design of semi-finished products. Technological manufacturability of the design. Machining bases and principles for setting workpieces on machine tools, as well as 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 machining and assembly. Process standardization. Group machining. Flexible manufacturing systems. Computer- aided manufacturing. Programming numerically controlled machines and robots.		
	Course content – laboratory Determination of the technical time standard. Influence of machining bases and lathe setup methods on machining errors of a shaft. Technological analysis of finishing operations of shafts by burnishing and grinding. Analysis of machine subassembly assembly processes. Fundamentals of programming and machining on CNC machine tools.		
	Course content – project Design of technological processes for typical machine parts: shaft and lever. Preparation of documentation, selection of machining allowances, fixtures, tools, technological parameters, determination of the technical time standard		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory	60.0%	20.0%
	project	60.0%	20.0%
	egzam	60.0%	60.0%
Recommended reading	Basic literature	1. Feld M.: Projektowanie i automatyzacja procesów technologicznych. PWN W-wa 2018. 3. Przybylski i in.: Technologia maszyn i automatyzacja produkcji. Laboratorium. Politechnika Gdańska, 4. Cichosz P.: Narzędzia skrawające. WNT,	
	Supplementary literature	1. Obróbka skrawaniem Poradnik inżyniera 1-3, Wydawnictwa Naukowo Techniczne WNT 2. Olszak W.: Obróbka skrawaniem. WNT	

	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Process design as a fundamental element of engineering activities. The production process and its components. Data for the technological design process, documentation, and the technical time standard. Selection of machining allowances, design of semi-finished products, manufacturability of the design. Machining bases and principles for setting workpieces on machine tools, as well as 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 machining and assembly. Process standardization, group machining, and flexible manufacturing systems. Computer-aided manufacturing, programming of numerically controlled machine tools. Determination of the technical time standard. The impact of machining bases and the lathe setup on shaft machining errors. Technological analysis of the finishing process of shafts through burnishing and grinding. The use of industrial robots in technological processes. Basics of programming and machining on CNC machines (lathe and milling machine). The impact of hole machining technology on the accuracy of their axis spacing. Projects of technological processes for typical machine parts, e.g.: shaft, lever, gear. Preparation of documentation, selection of machining allowances, fixtures, tools, technological parameters, and the technical time standard for machining.</p>	
Practical activities within the subject	Not applicable	

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