GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Technological process design, PG_00055055		
Field of study	Management and Production Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-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	2	Language of instruction	Polish
Semester of study	3	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	prof. dr hab. inż. Adam Barylski	
	Teachers	prof. dr hab. inż. Adam Barylski mgr inż. Karolina Chodnicka-Wszelak	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45
	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	45	6.0	49.0	100

Subject objectives	The ability to select technological processes for the production of typical machine parts. Design for manufacturing.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U05] is able to prepare and present a presentation on the results of analysis of the tasks in the area of production engineering, is able to plan and carry out experiments, measurements, computer simulations and analyses and interpret the results and draw conclusions is able to use analytical methods, simulation and experiments for formulating and solving problems associated with production engineering	Simulation of specific manufacturing processes with the analysis of the obtained results.	[SU4] Assessment of ability to use methods and tools
	[K6_W03] has knowledge of the design record (the record structure)for the preparation of the manufacturing process documentation and basic knowledge of the implementation and management of production systems, including the principles of designing machine parts and manufacturing technologies using information techniques	Technological process planning with the use of computer systems, databases, and calculators for the selection of technological parameters.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_U04] is able to develop documentation in the area of preparation, implementation and control of production processes in Polish and in a foreign language considered basic for scientific fields, is able to identify and formulate the basic objectives of quality management in the product life cycle, is able to use information and communication techniques appropriate to the implementation of tasks typical in engineering activities including preparation, production and supervision of the manufacturing process	Process planning for typical mechanical components.	[SU1] Assessment of task fulfilment
	[K6_W09] knows the general principles of creating and developing forms of individual entrepreneurship and stimulating employee creativity, using knowledge in the field of design, production and operation of machinery and technical devices	Determining manufacturing costs for specific production conditions.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W06] has knowledge of the life cycle of products and mechanical devices and systems, in the field of machine parts manufacturing techniques, as well as the possibilities and trends in the development of machines and production devices and process control	Analysis of the life cycle of a specific product with a high level of technological advancement.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_K02] is able to interact and work in a group, assuming different roles, can inspire and organize the learning process of others, properly identifies priorities for realization of a task specified by themselves or others	Implementation of tasks related to planning the production process depending on the assigned function in the project group.	[SK1] Assessment of group work skills

Subject contents	LECTURE The production process and its components. Data for the technological design process,documentation and technical time standard. Selection of machining allowances. Design of semi-finishedproducts. Technological construction. Machining bases and rules for determining objects on machine toolsand machining accuracy. Technological methods of shaping the surface layer of machine parts and theirinfluence on operational properties. Technological processes of typical machine parts for various types anddegrees of automation of machining and assembly. Process typification. Group processing. Flexiblemanufacturing systems. Computer-aided manufacturing. Programming of numerically controlled machinetools and robots. LABORATORY Determining the technical standard of time. Influence of machining basesand the way of setting the lathe on errors in machining the shaft. Technological analysis of shafts finishingby burnishing and grinding. Influence of hole processing technology on the accuracy of spacing their axes.Helical gear technology. Analysis of the assembly of machine components. Basics of programming andmachining on CNC machine tools. PROJECT Designs of technological processes for typical machine parts:e.g. shaft and lever. Preparation of documentation, selection of: allowances, instrumentation, tools,technological parameters, determination of the technical standard of time.
Prerequisites and co-requisites	Engineering drawing, manufacturing processes

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	60.0%	30.0%
Projects	80.0%	35.0%
Laboratory reports and tests	80.0%	35.0%

Recommended reading

Basic literature	1. Feld M.: Podstawy projektowania procesów technologicznych typowych części maszyn. WNT, Warszawa, 2013. 2. Gawlik E. i inni: Procesów technologicznych obróbki skrawaniem. Wydawnictwa AGH, Kraków 2019. 3. Poradnik inżyniera. Obróbka skrawaniem. T. I-III. WNT, Warszawa, 1993. 4. Przybylski i inni: Technologia maszyn i automatyzacja produkcji. Laboratorium. Wyd. PG, Gdańsk, 2001.
Supplementary literature	1. Olszak W.: Obróbka skrawaniem. WNT, Warszawa, 2008. Cichosz P.: 2. Piotr Cichosz. Narzędzia skrawające. WNT, Warszawa, 2006. 3. Sobolewski i in.: Projektowanie technologii maszyn. Oficyna Wydawnicza Politechniki Warszawskiej. Warszawa 2007.
eResources addresses	Adresy na platformie eNauczanie: Projektowanie procesów technologicznych - Moodle ID: 33021 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33021

Example issues/ example questions/ tasks being completed

1. Selected production processes for parts of the selected class, with specific design and technological requirements.
2. Basic principles of selecting machining parameters for technological operations.
3. Influence of the manufacturing technique on the properties of the surface layer.
4. Technical standard of working time.
5. Methods of generating programs for controlling technological devices.

Work placement: Not applicable

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