GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Manufacturing Engineering I, PG_00060453		
Field of study	Mechanical and Naval Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Division of Manufacturing and Production Engineering -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Daniel Chuchała	
	Teachers	dr hab. inż. Daniel Chuchała dr inż. Aleksander Mroziński dr inż. Sławomir Szymański	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	18.0	0.0	18.0	0.0	0.0	36
	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	36	8.0	81.0	125

Subject objectives	Preparation for recognizing the processes of manufacturing mechanical elements

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W16] has a knowledge of technologies for the manufacture of machine parts, is able to select the appropriate manufacturing process for a given mechanical component, has the ability to use tool catalogues to select tools and processing parameters	The student is able to choose the correct production process, technological machine and the type of tools for the implementation of the production process of a given element.	[SW1] Assessment of factual knowledge
[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	The student is able to determine the necessary manufacturing processes to produce a given mechanical element	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_U08] is able to design a technological manufacturing process for typical elements of machines or devices, using analytical and numerical calculating tools	The student is able to calculate the necessary kinematic and geometric parameters in designed machining processes for typical machine elements	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_U09] is able to plan the manufacturing, assembly and quality control processes of typical constructions and mechanical devices, estimating their costs	The student is able to select the correct parameters of the cutting process with the use of tool catalogs, also in on-line versions, for a given set of workpiece material and cutting edge material	[SU4] Assessment of ability to use methods and tools
[K6_U15] is able to select appropriate measuring tools and techniques for qualitative verification of manufactured or in-service machinery and ship parts, is able to make basic measurements using basic measuring tools for qualitative verification of machinery and ship parts	Students will be able to select and carry out appropriate measurements of the workmanship of typical mechanical parts depending on the quality class using basic measuring tools, e.g. calliper, micrometer, slot gauge, thread outline gauges.	[SU4] Assessment of ability to use methods and tools

Subject contents

LECTURE Geometric and kinematic parameters of cutting. Tool and workpiece movements. Thegeometryofthe blades in the tool and working system, the geometry of the cut layer. The phenomenon offormationchipsand types of chips. Heat and temperature in the cutting zone. Cooling and lubricating agents.Wearcuttingtools. Cutting force and power. Tool materials and rules for their selection. Basic methods ofmachining:turning, milling, drilling, countersinking, reaming. Forming thermoplastics: extrusion and extrusion.

LABORATORY Cutting materials and cutting-off machines. Machining on lathes. Machining ondrills.Machining on milling machines. Machining of gears. Machining on grinders. Machining on planers andslotters. Forming thermoplastics: extrusion and extrusion.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture	56.0%	80.0%
Laboratory exercises	100.0%	20.0%

Recommended reading

Basic literature

1. Olszak W. Obróbka skrawaniem. WNT Warszawa 2008.

2. Podręcznik szkoleniowy. Obróbka metali skrawaniem . Sandvik Coromant 2017.

3. Storch B.: Podstawy obróbki skrawaniem. Wyd. Politechniki Koszalińskiej, Koszalin 2001.

4. Cichosz P.: Narzędzia skrawające. WNT, Warszawa 2006.

5. Bartosiewicz J.: Obróbka skrawaniem i elementy obrabiarek. Wyd. Poilt. Gda. Gdańsk 1997

6. Sikora R. Przetwórstwo tworzyw sztucznych, Lublin 2006

	Supplementary literature	1. Jemielniak K.: Obróbka skrawaniem. Ofic. Wyd. Polit. Warsz. Warszawa1998. 2. Grzesik W.: Podstawy skrawania materiałów metalowych. WNT warszawa 1998. 3. Materiały pomocnicze dostępne na stronach producentów narzędzi np. Seco Tools i in.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	The final test contains many questions relating to the topics throughout the subject, e.g. the geometry of the turning knife cutting edge	
Work placement	Not applicable	

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