GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00052093		
Field of study	Nanotechnology		
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	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bogdan Ścibiorski	
	Teachers	dr inż. Bogdan Ścibiorski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

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	30	2.0	18.0	50

Subject objectives

To acquaint students with the basic techniques of manufacturing structural elements of technological devices and the quality requirements for various types of processing, including with an accuracy below 1 micrometer.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U04	The student is able to plan a simple one technological and critical process analyze its results	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
K6_W09	The student knows the basic techniques measuring physical quantities and their possibilities in machining machine parts.	[SW1] Assessment of factual knowledge
K6_K04	The student makes reports on the course of the machining process by assessing the appearing there processes by interacting in a group of students.	[SK5] Assessment of ability to solve problems that arise in practice
K6_W07	The student knows the basic phenomena occurring during machining. The student is able to choose devices and tools depending on type of process and structure workpiece material	[SW1] Assessment of factual knowledge
K6_U02	The student analyzes simple machining processes by selecting the process parameters and tools.	[SU4] Assessment of ability to use methods and tools

Subject contents	LECTURES: Aspects of accuracy in production, methods of measuring and determining the quality of workmanship due to the accuracy of machining, the basics of machining, the basics of manufacturing systems, basics planning of technological processes, computer-aided manufacturing. Tools used in typical technological processes of machine parts. Micro and nano coatings of cutting tools. The influence of nano-layers on the functional aspects of cutting tools. Finishing machining, including machining below 1 micrometer, abrasive machining, non-wastage technologies. Application of grinding and burnishing technology for parts of different classes. LABORATORY: Basics of designing elements in CADCAM systems, basic systems manufacturing including a lathe manufacturing system, milling manufacturing system, finishing machining, production of gears, workshop measurements of various sizes and control of quality requirements.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Raports	56.0%	20.0%
Colloquium	56.0%	80.0%

Recommended reading	Basic literature	1. Feld M.: Podstawy projektowania procesów technologicznych typowych części maszyn, WNT, Warszawa, 2021. 2. Poradnik inżyniera. Obróbka skrawaniem, T. I-III, WNT, Warszawa 1993. 3. M. P. Groover: Fundamentals of modern Manufacturing, JOHN WILEY&SONS, INC. 4. S. Kalpakjian, S. R. Schmid: Manufacturing Engineering and Technology, Pearson Prentience Hall.
	Supplementary literature	Meyer Kutz: Mechanical Engineers' Manufacturing and management, JOHN WILEY&SONS, INC
	eResources addresses	Adresy na platformie eNauczanie: Nowoczesne techniki wytwarzania elementów urządzeń technologicznych, W/L, Nanotechnologia, zimowy 23/24 (PG_00033009) - Moodle ID: 33750 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33750
Example issues/ example questions/ tasks being completed	1. Characterize tool materials. 2. Describe the cutting process 3. Characterize machining allowances, 4. Bases in the manufacturing process, 5. Describe the relationship between the accuracy class of the manufactured elements and the surface structure 6. What is a technological base, 7. Operation, treatment in the manufacturing process, 8. Characterize machining, 9. Characteristics of the grinding process, 10. Abrasive grains and micro-grains	
Work placement	Not applicable	