GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Manufacturing Engineering, PG_00050286		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
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	3	Language of instruction	English
Semester of study	5	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Mariusz Deja	
	Teachers	dr hab. inż. Mariusz Deja dr inż. Dawid Zieliński dr inż. Agata Sommer	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	15.0	0.0	60

E-learning hours included: 0.0

Manufacturing Engineering, 2022/2023, s. zimowy, DaPE, s. 5 - Moodle ID: 26275
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26275

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	6.0	84.0	150

Subject objectives

Acquainting with basic manufacturing techniques in terms of technological effects and properties of the workpiece surface layer. Analysis of manufacturing costs, designing the technological process.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U09	Selection of the manufacturing process and appropriate machining parameters for parts with specific design and technological requirements; selection of technological equipment	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
K6_W11	Process selection with the analysis of the obtained experimental results related to the achieved technological effects; selection of metrological devices	[SW3] Assessment of knowledge contained in written work and projects
K6_W06	Is oriented in the construction of CNC machine tools, knows the basic machine tool control systems	[SW3] Assessment of knowledge contained in written work and projects
K6_U08	Design of the technological process for typical mechanical components	[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task
K6_U04	Variant analysis of the technological process	[SU2] Assessment of ability to analyse information

Subject contents

Basic design and technological requirements. Manufacturing processes, fundamentals of cutting. Advanced machine tools, CNC centers. Technological stages and the cost of production. Sequence of operations for typical mechanical components. Abrasive machining and finishing operations. Innovations in Abrasive Products for Precision Grinding. Bio-design and bio-machining. Electrical discharge machining. Comparison between additive and subtractive technologies. Analysis of the manufacturing costs. Tools for the quality control. Measurement techniques.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Material removal processes, machine tools and tools. Technical drawing.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>60.0%</td><td>35.0%</td></tr>
<tr><td>Laboratory</td><td>60.0%</td><td>35.0%</td></tr>
<tr><td>Exam</td><td>60.0%</td><td>30.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. Rufe, Philip D. Fundamentals of manufacturing. Society of Manufacturing Engineers, 2013.
2. Chryssolouris, G. (2013). Manufacturing systems: theory and practice. Springer Science & Business Media.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Selected papers from the journals available on-line:

1. Journal of Manufacturing Processes.
2. Journal of Manufacturing Systems.
3. CIRP ANNALS - Manufacturing Technology.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. Selected manufacturing processes for a given part with specific design and technological requirements.
2. Basic rules for selecting technological parameters for milling operations.
3. Basic rules for selecting technological parameters for turning operations.
4. The structure of a grinding wheel.
5. Influence of the manufacturing technique on the properties of the surface layer.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
</table>