GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Designing processes of manufacturing, PG_00050258		
Field of study	Management and Production Engineering, Management and Production Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
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	4	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 inż. Bogdan Ścibiorski	
	Teachers	dr inż. Bogdan Ścibiorski prof. dr hab. inż. Adam Barylski dr hab. inż. Daniel Chuchała dr inż. Tomasz Seramak dr inż. Piotr Sender dr inż. Sławomir Szymański	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	30.0	0.0	90
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						

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	90	9.0	51.0	150

Subject objectives	Get to know the problems: the specific manufacturing process, the creation of technical documentation, the structure of the process, the standard time. Getting to Know the issues: types of blanks, technological preparation of production, and calculations of stock removal, grading machine parts, design processes typical of machine parts.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W09	Understanding the real aspects of manufacturing on the market, taking into account the selection of technologies adequate to the capabilities of a potential future producer	[SW3] Assessment of knowledge contained in written work and projects
K6_W03	Posiada znajomość hierarchiczności procesu oraz jego właściwej struktury. Posiada wiedzę z zakresu projektowania procesów technologicznych typowych części maszyn.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K6_W06	Has knowledge of the selection of appropriate manufacturing structures and devices depending on the production volume. He knows the directions of development of manufacturing equipment due to the automation of production	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
K6_K02	The ability to solve a task together with other students in a laboratory of machine tools and technological processes.	[SK5] Assessment of ability to solve problems that arise in practice
K6_U05		

Subject contents

LECTURE

Process design as a fundamental element of engineering. The fabrication process and its components. Data for the process of technological development, technical documentation and standard time. Selection of cutting excess material, semi-finished design, manufacturability design. Machining database objects and rules for determining the accuracy of machine tools and machining. Technological ways of constituting the surface layer of the machines and their effect on performance characteristics. Processes typical of machine parts for different types and degree of automation of machining and assembly. Typing process, the treatment group, and flexible manufacturing systems. Computer-aided manufacturing, programming, numerical machine tools and robots, modeling and visualization processes.

LABORATORY

Determination of technical standards working time. Effect of machining bases and the method of setting the machine tool on machining errors. Analysis of the technological process of finishing rollers by burnishing and polishing. The use of industrial robots in manufacturing processes. Basic programming and CNC machining (lathe and milling machine). Influence of hole spacing on the accuracy of their axes. Analysis of the technical time norm and shortening the machine changeover time

EXERCISE DESIGN

Projects of typical processes such as machine parts: shaft, gear, gear wheel and assembly. Design documentation, selection of excess material, equipment, tools, machining process parameters, technical standards working time.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	60.0%	50.0%
Laboratory	60.0%	20.0%
Exercise design	60.0%	20.0%
eNauczanie kurs	60.0%	10.0%

Recommended reading

Basic literature

1. Feld M.: Design and automation of technological processes. PWN Warsaw 2018.
2. Przybylski, W., Deja M.: Computer-aided manufacturing machines. WNT, Warsaw, 2007.
3. Przybylski et al.: Technology and automation of production machines. Laboratory. University of Technology, Gdańsk 2001.
4. Cichosz P.: Cutting tools. WNT, Warsaw, 2006.

	Supplementary literature	1. Engineer's Guide. Machining. Red. Górski E. WNT, Warsaw
	eResources addresses	
Example issues/ example questions/ tasks being completed	Process design as a fundamental element of engineering. The fabrication process and its components. Data for the process of technological design, documentation and technical standard time. Selection of stock removal machining of semi-finished design, producibility. Base Machining and rules for determining the items on machine tools and machining accuracy. Technological ways of constituting the surface layer of machine parts and their impact on performance characteristics. Processes typical of machine parts for different types and degree of automation of machining and assembly. Typing process, treatment group, and flexible manufacturing systems. Computer-aided manufacture, programming CNC machines. Determination of the technical standards of working time. The impact of databases and how to adjust machining lathes for machining errors shaft. Analysis of the technological process of finishing rollers by burnishing and polishing. The use of industrial robots in manufacturing processes. Basics of programming and machining on CNC machine tools (lathe and milling machine). Influence of hole spacing on the accuracy of their osi.Projekty processes typical of machine parts such as: roller lever gear. Design documentation, selection of excess material, equipment, tools, technological parameters of processing technical standard working time.	
Work placement	Not applicable	