GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Tooling of Manufacturing Systems, PG_00050175		
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	Optional subject group 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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład Technologii Maszyn i Automatyzacji Produkcji -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Sender	
	Teachers	dr inż. Piotr Sender	

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	8.0	62.0	100

Subject objectives

The role of instrumentation in manufacturing systems. Principles of instrumentation design. Machining, tool and assembly holders. Equipment for transport, manipulators and robots. Principles of computer-aided design and management of workshop aids. Principles of using universal and modular handles. Tooling costs.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	Principles of using modular handles and designing special handles. The role of tooling and instrumentation in transport systems.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U05] is able to plant an experiment within the range of measuring the basic operating parameters of mechanical devices using a specialized equipment, interpret the results and reach the correct conclusions	Principles of use and design of universal handles.	[SU5] Assessment of ability to present the results of task

Subject contents

LECTURE: The role of tooling in the machine parts manufacturing system. Errors affecting the accuracy of execution in the fixtures. Arrangement the workpieces in the fixtures. Fixing the workpieces in the fixtures. Fixing and mounting the fixturing equipment in the machine tool. Rules for designing of fixtures: lathe fixtures, drill fixtures, milling fixtures, modular fixtures. Tool holders. Fixing accessories. Equipment for transport, manipulators and robots. Principles of computer design and management of workshop aids. principles of using universal fixtures. Tooling costs. Calculation of clamping forces.

LABORATORY (computer): Acquisition of the ability to apply the principles of basing and fixing workpieces in fixtures in practice and designing a machining fixtures for the indicated operation.

Prerequisites and co-requisites

Knowledge in the field of preparing of construction and machine technology's drawings.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written test	60.0%	50.0%
Design of fixture	60.0%	50.0%

Recommended reading	Basic literature	Feld M.: Machining fixtures. WNT, Warssaw, 2002.Dobrzański T.: Machining fixtures. Constructor's guide., WNT,Warszawa, 1987.Standards
	Supplementary literature	Engineer's handbook. Machining. Volume I-III, WNT, Warsaw 1993. Manufacturers Catalogs. Studying studies (books, presentations, lectures) from Polish and foreign technical universities.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Describe fixture used on lathes and milling machines. Describe ways to calculate fixturing forces. List the principles of construction of turning and milling machining equipment.	
Work placement	Not applicable	