GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056134						
Field of study	Mechatronics						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Aleksander Kniat				
	Teachers						

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	0.0	0.0	30

Subject objectives	Presentation of motions' limitations of a 6 joints arm of industrial robot.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U05] is able to use properly choosen tools to compare design solutions of elements and mechatronics systems according to given application and economic crtierions (e.g. power demand, speed, costs)	is able to assess if an industrial robot can be applied in particular task (power, speed, accuracy etc.)	[SU2] Assessment of ability to analyse information
	[K6_W10] has a basic knowledge about development trends in terms of engineering and technical sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering, adequate for Mechatronics curse	understands principles of an industrial robot functioning	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
	[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	does simple task with an industrial robot	[SU1] Assessment of task fulfilment
	[K6_W08] knows and understands design and production processes of elements and simple mechatronic devices	knows how to prepare the control program for an industrial robot	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W11] has a basic knowledge about the life cycle of mechatronic systems and objects	understands an industrial robot's construction and knows how to use it in practical applications	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation

Subject contents	1. Kinematics of an arm of industrial robot (recall), 2. Generating tool path (CAM program), 3. Transforming a tool path into a control program in robot's language (using simulator), 4. Singularities (definition, symptoms), 5. Methods to resolve singularities.

Prerequisites and co-requisites	basic knowledge about automation and kinematics ability to use programs which visualize scenes in 3D space		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	100.0%
Recommended reading	Basic literature	Honczarenko Jerzy, "Roboty przemysłowe", WNT 2011 Groover Mikell P., "Industrial Robotics Technology, Programming and Applications", International Edition, McGraw-Hill, 1987	
	Supplementary literature	Pires Norberto J., "Industrial Robots Programming", Springer-Verlag GmbH 2006	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		