GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Visualization and Multimedia in Technology, PG_00038327
Field of study	Automation, Robotics and Control Systems

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	second-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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Metrology and Information Systems -> Faculty of Electrical and Control Engineering

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Golijanek-Jędrzejczyk
	Teachers	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	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	20	4.0	26.0	50

Subject objectives	The aim of the course is to prepare students to work on designing ergonomic interaction systems for automation devices.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K7_U02	The student defines and classifies visualization systems. The student is able to choose the graphic form to the presented data. The student is able to plan and design an ergonomic user interface	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
	K7_W04	Based on the acquired knowledge, the student is able to solve complex optimization problems.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	K7_K02	The student is able to work in a group.	[SK2] Assessment of progress of work [SK1] Assessment of group work skills [SK4] Assessment of communication skills, including language correctness [SK3] Assessment of ability to organize work

Subject contents	**Lectures** Information theory. The concept of visualization, data visualization, scientific visualization. Historical examples of scientific visualization. Traps visualization: visual illusions - formation mechanisms. Unambiguous and ambiguous visual illusions. Visualization of data - the relationship between the presentations of data: graphic forms. Selection of graphic type and dimensionality range fields and dependencies. One-dimensional and multidimensional range visualization. Improving the readability of data visualization: ordering data. Methods of symbolic data presentation, the role of size, multidimensional symbols. The role of color in visualization. Inquiries in the visualization. Design of visualization systems. Visualization in technical sciences and natural sciences. Multimedia techniques. Media opportunities. The use of media in the visualization. **Laboratory** Preparing a user-friendly visualization system for a device/system. Preparing documentation for the designed system.

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	60.0%	100.0%
Recommended reading	Basic literature	1. Cooper A., Wariaci rządzą domem wariatów. Dlaczego produkty wysokich technologii doprowadzają nas do szaleństwa i co zrobić, żeby tego uniknąć. 2004. 2. Jacek Matulewski, Tomasz Dziubak, Marcin Sylwestrzak, Radosław Płoszajczak:" Grafika. Fizyka. Metody numeryczne. Symulacje fizyczne z wizualizacją 3D." Wydawnictwo Naukowe PWN 2010. 3. 3. Garr Reynolds: „Zen prezentacji. proste pomysły i ważne zasady". Helion 2009.	
	Supplementary literature	1. Bednarek J., Multimedia w kształceniu. PWN, Warszawa 2006. 2. Paul Beynon-Davies: „Inżynieria systemów informacyjnych". WNT W-wa 2004.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Definition of visualization. 2. Classification and characteristics of visualization. 3. Data and methods of symbolic presentation. 4. Steps in designing visualization systems. 5. Rules for the drafting of technical documentation.		
Work placement	Not applicable		