GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Engineering Graphics, PG_00055362					
Field of study	Mechatronics					
Date of commencement of studies	October 2022		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	1		Language of instruction		Polish	
Semester of study	1		ECTS credits		5.0	
Learning profile	general academic profile		Assessment form		assessment	
Conducting unit	Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship Technology					
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Waldemar Karaszewski			
	Teachers		mgr inż. Marek Łubniewski			
			dr inż. Krzysztof Druet			
			mgr inż. Bartosz Bastian			
			dr hab. inż. Waldemar Karaszewski			
			dr inż. Sebastian Grelik-Urbanowski			
			mgr inż. Katarzyna Mazur			

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	30.0	0.0	60
	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	60	4.0	61.0	125

Subject objectives	The aim of the course is:
	• shaping 3D imagination, • learning the principles of projecting and defining working drawings in accordance with applicable standards, • learning the rules of machine drawing parts and joints used in the machine design, • learning the principles of creating assembly drawings.

Learning outcomes		Course outcome	Subject outcome	Method of verification
		[K6_W04] has organized and theoretically supported knowledge in terms of general mechanics, strength of materials, theory of mechanisms and machine dynamics, fluid dynamics, hydraulics and pneumatics, machine construction and engineering graphics	A student draws space elements based on orthographic projection. He presents the rules of presentation elements in engineering drawing. He draws and reads structural forms of three-dimensional mechanical elements. He describes surface attributes of elements. He draws of machine elements dimensions and creates working drawings of machine elements according to machine technical drawing standards. He creates working and assembly drawings of machine elements. He reads information about machine elements based on presented elements and units drawings. He draws and reads structural forms of three-dimensional mechanical elements and mechanical units. He reads diagrams of complex mechanical systems.	[SW1] Assessment of factual knowledge
		[K6_U07] is able to design elements of mechatronic systems taking into consideration given application and economic criteria, using appropriate methods, techniques and tools	A student draws space elements based on orthographic projection. He presents the rules of presentation elements in engineering drawing. He draws and reads structural forms of three-dimensional mechanical elements. He describes surface attributes of elements. He draws of machine elements dimensions and creates working drawings of machine elements according to machine technical drawing standards. He creates working and assembly drawings of machine elements. He reads information about machine elements based on presented elements and units drawings. He draws and reads structural forms of three-dimensional mechanical elements and mechanical units. He reads diagrams of complex mechanical systems.	[SU1] Assessment of task fulfilment
		[K6_U08] is able - according to a given specification - design, calculate costs and develop a simple device, object, system or process typical for mechatronics, using approproate methods, techniques and tools	A student draws space elements based on orthographic projection. He presents the rules of presentation elements in engineering drawing. He draws and reads structural forms of three-dimensional mechanical elements. He describes surface attributes of elements. He draws of machine elements dimensions and creates working drawings of machine elements according to machine technical drawing standards. He creates working and assembly drawings of machine elements. He reads information about machine elements based on presented elements and units drawings. He draws and reads structural forms of three-dimensional mechanical elements and mechanical units. He reads diagrams of complex mechanical systems.	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment

Subject contents	A role of graphics in engineering activity. Introduction to an individual graphical description of technical objects. Orthogonal and axonometric projections. Views, sections, revolved and removed sections of machine elements. Dimensioning of lengths, diameters, angles. Tolerances of dimensions, fits. Description of surface attributes of machine elements. Location of elements on a drawing. Drawing rules of working and assembly drawings. Standardization in engineering graphics. Permanent joints presentation of machine elements (welded, glue, rivet joints). Presentation of joint connections of machine elements (screw, shaft-hub joints). Presentation ways of standardized machine elements (bearings, gears, clutches, brakes, shafts and axles). Presentation ways of springs and seals. Basic information about technical drawings in electrotechnics and electronics, electric diagrams. Pneumatics and hydraulics diagrams. Drawings and machine diagrams practical reading.
Prerequisites and co-requisites	Based knowledge of elementary geometry and stereometry, theory of machines and metrology.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final exam	60.0%	60.0%
	Design tasks	60.0%	40.0%

Recommended reading	Basic literature	
		Dobrzański T .: Technical and Machine Drawing. WNT, Warsaw, 2017. Rigall A., Sadaj J .: Technical Drawing - Descriptive geometry, Gdansk University of Technology, 2003. Burcan J.: Basics of Technical Drawings, PWN, 2016
	Supplementary literature	Kurmaz L.W.: Designing nodes and machine parts, publishing house of the Kielce University of Technology, 2007
	eResources addresses	Adresy na platformie eNauczanie: Grafika Inżynierska, W, P, MECHATRONIKA, sem01, zimowy, 2022/2023 (PG_00055362) - Moodle ID: 25511 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25511

Example issues/ example questions/ tasks being completed	
	Make a working drawing of the element shown in the drawing. Make an assembly drawing of drive component presented in the 3D drawing. Create an assembly drawing of the schematically illustrated weld joint.

Work placement	Not applicable