



Subject card

Subject name and code	Engineering Graphics, PG_00072237						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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	Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Waldemar Karaszewski				
	Teachers		mgr inż. Marek Łubniewski dr hab. inż. Waldemar Karaszewski dr inż. Katarzyna Zasińska mgr inż. Balbina Makurat-Kasprolewicz dr hab. inż. Beata Świczko-Żurek				
Lesson types	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		5.0		60.0	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_W03] possesses structured and theoretically grounded knowledge of design, manufacturing technologies, metrology, quality control, and operation of machine components and mechanical systems, including technical documentation and the life cycle of engineering objects	The student maps 3D elements based on parallel projection. Demonstrates the principles of representing objects in structural notation. Captures and interprets the structural forms of three-dimensional mechanical elements. Describes the surface characteristics of elements. Dimensions machine elements and creates detailed drawings of machine elements according to engineering drawing standards. Creates assembly and general drawings of machine elements. Determines information about machine elements from drawings of components and assemblies. Captures and interprets the structural forms of three-dimensional mechanical elements and assemblies of mechanical devices. Reads diagrams of complex technical systems.	[SW1] Assessment of factual knowledge
	[K6_U03] is able to identify, formulate, and develop documentation for design or technological tasks, and communicate the results using appropriate tools and presentation techniques	Students can demonstrate the principles of representing objects in design notation. They can record and read the structural forms of three-dimensional mechanical elements. They can describe the surface characteristics of elements. They can dimension machine elements and create detailed drawings of machine elements according to engineering drawing standards. They can create assembly and general arrangement drawings of machine elements. They can read information about machine elements from component and assembly drawings. They can record and read the structural forms of three-dimensional mechanical elements and mechanical device assemblies. They can read diagrams of complex technical systems.	[SU1] Assessment of task fulfilment

Subject contents	Course content – lecture 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.		
	Course content – project A point and a segment in axonometric and orthographic projection onto the primary viewports. A straight line in the projections. The actual size of a segment. Any position of a segment relative to the viewport, a segment in axonometric projection. The actual size of a figure placed perpendicular to one of the primary viewports. Projections of solids from a model. Orthometric projections, in axonometric projections, projections onto an additional viewport with a defined plane parallel to one surface of the solid, which is not parallel to any of the primary viewports. Projecting solids from 3D models + axonometric projection. Projecting elements from 3D prints – 2 examples. Representing solids using orthographic projection. Sections from 3D prints – 2 examples. Orthographic projection of solids with a defined primary view and section types. Dimensioning a shaft-type element (drawing with "hexagon" and "square" elements). Specifics of dimensioning a turned part. Dimensioning II (with elements of the detailed drawing) - dimensioning the part along with selecting the appropriate main view and additional views/sections. Applying dimensional/shape/position tolerances. Completing the title block. Methods of marking and presenting welds. Assembly drawing of a welded element. Title block for an assembly/assembly drawing. Methods of presenting threads and bolted connections. Assembly drawing consisting of elements such as a channel, flat bar, block, screws, washers, and nuts. A detailed drawing of a shaft from the description. Creating a detailed drawing with the use of symbols reflecting the imposed geometric requirements. Threaded Connections II. Methods of presenting threads and bolted connections. Assembly drawing showing an example of an adjustable support using a connection. screw. Creation of an assembly drawing with a title block and parts list. Creation of an assembly sketch (or drawing) based on the 3D model.		
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
	Design tasks	60.0%	40.0%
	Final exam	60.0%	60.0%
Recommended reading	Basic literature Dobrzański T.: Technical and Machine Drawing. WNT, Warsaw, 2017 or newer edition. 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		

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.
Practical activities within the subject	Not applicable

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