



## Subject card

Subject name and code	Engineering Drawing, PG_00037299						
Field of study	Technical Physics						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group			Optional subject group		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			1.0		
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	mgr inż. Marek Łubniewski					
	Teachers	mgr inż. Marek Łubniewski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	<p>Student comprehends the role of of engineering graphics in technology and industry</p> <p>Student understands and can actively use projection drawing at a basic level</p> <p>Student understands the principles of the creation of projected drawings from real life models as well as from imagination</p> <p>Student can draw simple hand sketches of technical objects (e.g. machine components)</p> <p>Student interprets technical documentation created accordingly to technical drawing standards</p> <p>Student knows the fundamental principles for the creation of technical and/or operational documentation for technical systems.</p>						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U02	Student comprehends the role of of engineering graphics in technology and industry Student understands and can actively use projection drawing at a basic level Student understands the principles of the creation of projected drawings from real life models as well as from imagination	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
	K6_U05	Student can draw simple hand sketches of technical objects (e.g. machine components) Student interprets technical documentation created accordingly to technical drawing standards Student knows the fundamental principles for the creation of technical and/or operational documentation for technical systems.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
Subject contents	<p>Introduction to engineering graphics. The importance of graphics to engineering activities. Vision - the fundamental perceptive tool in engineering. Types of engineering graphics (from manual sketches to 3D computer graphics).</p> <p>Manual sketching as a fundamental tool for conveying information about machine components. The usage of manual sketches at different stages of machines" creation and existence (concept, design, completion of documentation, manufacturing, marketing, sale, decommissioning, scrapping).</p> <p>The usage of graphical methods in visualisation of stress and deformation in machine components.</p> <p>Shaping of machine components with the use of graphics aided analyses. Stress optimisation with the use of graphical methods.</p> <p>Representation of bodies (machine components) by projection: perpendicular, axonometry etc..</p> <p>Technical drawing - fundamental tool for engineering information exchange. Types and constituents of a technical drawing used in machine design and other fields of engineering.</p> <p>Presentation of machine elements by projected views, cross sectional views, local sections; Types of drawing lines, meaning and function of line types. Dimensioning of length, diameter, angle and other. Technological aspects of dimensioning. Standardised methods of describing material types, heat treatment, chemical treatment, coatings and other manufacturing details.</p> <p>Design principles and criteria. Why a product exists? Design assumptions, principles and requirements. Concept creation. Design optimisation.</p>		
Prerequisites and co-requisites	<p>Basic level experience in manual pencil drawing.</p> <p>Comprehension of the princiles of the Euclidean geometry</p> <p>Active understanding of the fundamental theorems of geometry (e.g. Pitagorean, Telsian)</p>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	55.0%	25.0%
	Laboratory excercise reports	100.0%	75.0%

Recommended reading	Basic literature	Technical Drawing for Mechanical Engineers Handbook Fundamentals of machine design Mechanical Engineering Handbook
	Supplementary literature	Descriptive Geometry
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	