



## Subject card

Subject name and code	Engineering Graphics II, PG_00039813						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024				
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study				
Mode of study	Full-time studies	Mode of delivery	at the university				
Year of study	3	Language of instruction	Polish				
Semester of study	5	ECTS credits	2.0				
Learning profile	general academic profile	Assessment form	assessment				
Conducting unit	Zakład Konstrukcji Maszyn i Inżynierii Medycznej -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Katarzyna Zasińska					
	Teachers	dr inż. Katarzyna Zasińska mgr inż. Marek Łubniewski mgr inż. Tomasz Żochowski dr hab. inż. Michał Wodtke					
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						
	Additional information:						
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	5.0	15.0	50		
Subject objectives	The aim of the course is to shape the 3D imagination, to learn the principles of projection and defining drawings in accordance with the applicable standards and rules of technical drawing, to learn the principles of presenting connections and components of drive systems in a technical drawing. Introduction to basic CAD systems. Fundamentals of 2D computer sketching of machine components. Principles and methods of creating 3D models of machine components in virtual space.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U03	<p>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.</p>	<p>[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject</p>
	K6_W05	<p>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.</p>	[SW1] Assessment of factual knowledge
	K6_K01	<p>The student understands the importance of Engineering Graphics in the process of implementing design tasks. The student applies the rules set out in the standards for the presentation of technical objects on the drawings.</p>	[SK2] Assessment of progress of work
	K6_U01	<p>The student understands the importance of Engineering Graphics in the process of implementing design tasks. The student applies the rules set out in the standards for the presentation of technical objects on the drawings.</p>	[SU1] Assessment of task fulfilment

Subject contents	<p>LECTURE</p> <p>Dimensioning of lengths, diameters, angles. Determination of tolerances and fits of parts on drawings. Determination of surface condition of parts. Location of elements on a drawing. Drawing rules of working and assembly drawings. Standardization in engineering graphics. Drawing of detachable connections e.g. threaded, screen connection. Drawing inseparable connections (welds connections in the drawings and dimensioning them). Drawing shafts.</p> <p>LABORATORY</p> <p>Introduction to basic CAD systems AutoCAD, Inventor, etc. Overview of engineering calculations software used in analyses of stress, pressure, velocity, temperature and other field distribution problems. Fundamentals of 2D computer sketching of machine components: scale, size, layers, colours, line types, dimensioning, printout preparation. Principles and methods of creating 3D models of machine components in virtual space.</p>		
Prerequisites and co-requisites	Understanding of the fundamentals of descriptive geometry. Basic competence in mechanical technical drawing. Basic competence in the principles of the creation and completion of technical documentation in paper form. The capability to understand and interpret technical drawings.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Colloquium at the end of semester	56.0%	90.0%
	Practical exercise	56.0%	10.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1) Dobrzański T.: Rysunek techniczny maszynowy. Wydawnictwo Naukowo-Techniczne, Warszawa 2006.</li> <li>2) Rigall A., Sadaj J.: Zapis konstrukcji Geometria wykreślna, Wydawnictwo Politechniki Gdańskiej, 2003.</li> <li>3) Kurmaz L.W.: Projektowanie węzłów i części maszyn, Wydawnictwo Politechniki Świętokrzyskiej, 2007.</li> <li>4) Bajkowski J.: Podstawy zapisu konstrukcji. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2014.</li> <li>5) Burcan J.: Podstawy rysunku technicznego. Wydawnictwo WNT, Warszawa, 2016.</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1) Lewandowski Z., Pikoń A.: AutoCAD 2002. Pierwsze kroki. Gliwice: Wydawnictwo HELION, 2002.</li> <li>2) Pikoń A.: AutoCAD 2002. Gliwice: Wydawnictwo HELION, 2002.</li> </ol>	
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Grafika Inżynierska II, W, L, IM, sem 05, zimowy 2023/2024 (PG_00039813) - Moodle ID: 34745</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34745">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34745</a></p>	
Example issues/ example questions/ tasks being completed	1. Make a working drawing of the element shown in the drawing. 2. Make an assembly drawing of screen connection. 3. Make an assembly drawing of welded connection.		
Work placement	Not applicable		

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