



## Subject card

Subject name and code	Introduction to Design and Engineering Graphics, PG_00040523						
Field of study	Engineering Management						
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	Part-time studies	Mode of delivery				at the university	
Year of study	1	Language of instruction				Polish	
Semester of study	1	ECTS credits				3.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Informatics in Management -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Krzysztof Redlarski				
	Teachers		dr inż. Krzysztof Redlarski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	16.0	0.0	16.0	0.0	0.0	32
	E-learning hours included: 0.0						
Podstawy projektowania i grafika inżynierska - NSTC - Moodle ID: 26212 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26212">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26212</a>							
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	32		6.0		37.0	75
Subject objectives	The student knows the basics of design methodology, has the ability to apply them in practical design works, is able to independently make basic technical drawings and read them correctly. Can use IT tools used in the design process, ie AutoCAD.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K6_W05] knows the statistical and IT methods and tools that enable the acquisition and presentation of data on the organisation's resources, including technical resources		knows drawing standards and knows how to use them in practice			[SW3] Assessment of knowledge contained in written work and projects	
[K6_U06] uses basic theoretical knowledge to solve selected organizational problems, design technical solutions and manage projects, including engineering projects		knows the design methodology			[SU4] Assessment of ability to use methods and tools		
Subject contents	<p><b>LECTURE</b></p> <p>Presentation of design theory. Determination of the features of technical drawings. The concept of scale and drawing tolerance. Types of drawing lines, rules and areas of their application. Principles of orthographic projection. Principles of creating sections and sections of solids. Principles of dimensioning technical drawings. Drawing sheet formats. Elements of technical drawing.</p> <p><b>LABOLATORY:</b></p> <p>Preparation of technical drawings with the use of AutoCAD software. Principles of drawing various elements of a machine technical drawing. Drawing, dimensioning and describing technical drawings. Drawing connections of machine and device elements. Drawing executive, assembly and isometric drawings. Drawing diagrams from various fields of technology.</p>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	60.0%	70.0%
	Written exam	60.0%	30.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Tadeusz Dobrzański: Rysunek techniczny maszynowy (wyd. 24), WNT Warszawa, 2005</li> <li>2. J. Mazur, K. Kosiński, K. Polakowski: Grafika inżynierska z wykorzystaniem metod CAD, Wydawnictwo Politechniki Warszawskiej 2006r.</li> <li>3. Wojciech Gasparski: Projektowanie, PWN, Warszawa 1978 i nowsze.</li> <li>4. Jaskulski, A. (2016). <i>AutoCAD 2016/LT2016/360+: kurs projektowania parametrycznego i nieparametrycznego 2D i 3D</i>. Wydawnictwo Naukowe PWN.</li> </ol>	
	Supplementary literature	Other design subject literature available.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. List the features of the assembly technical drawing.</li> <li>2. List the features of the executive technical drawing.</li> <li>3. List the basic drawing sheet formats</li> <li>4. Describe the method of obtaining other sheet formats from the standard A4 format.</li> <li>5. Define the concept of technical drawing scale.</li> <li>6. List the basic drawing scales used in the engineering drawing.</li> <li>7. List the types of drawing lines used in engineering drawing.</li> <li>8. Indicate the areas of application for particular types of drawing lines used in the engineering drawing.</li> <li>9. List the order of priority of the drawing lines used in the engineering drawing.</li> <li>10. Indicate the elements of a technical drawing.</li> <li>11. Indicate the characteristics of the technical writing type A or type B.</li> <li>12. Discuss the principle of submitting technical drawings to the basic format</li> <li>13. Discuss the principle of creating a rectangular projection.</li> <li>14. Characterize the concept of an axonometric projection.</li> <li>15. Define the concept of isometric axonometry.</li> <li>16. Present the method of rectangular projection, according to European method.</li> <li>17. Present the method of rectangular projection, according to American method.</li> <li>18. Indicate the difference between the concepts of view - layout used in the engineering drawing.</li> <li>19. Indicate the properties and area of application for half-views and quarter-views.</li> <li>20. Describe the method of creating a cross-section and indicate its advantages.</li> <li>21. List the basic principles of dimensioning</li> <li>22. Discuss the principle of "not closing dimensional sequences".</li> <li>23. Discuss the principle of "specifying the necessary dimensions".</li> <li>24. Discuss the principle of "dimension uniqueness".</li> <li>25. Discuss the properties of dimension lines and auxiliary lines in a machine engineering drawing</li> <li>26. Discuss the dimensioning method in series.</li> <li>27. Discuss the dimensioning method in a parallel system.</li> <li>28. Give an example of dimensioning openings and arches on any technical drawing.</li> <li>29. Give the definition of the surface roughness.</li> <li>30. Give the definition of surface waviness.</li> <li>31. List the methods of marking surface roughness on technical drawings.</li> <li>32. Define the concept of dimension tolerance.</li> <li>33. Define the terms nominal dimension, lower limiting dimension and upper limiting dimension.</li> <li>34. Define the terms upper deviation and lower deviation of the dimension.</li> <li>35. Give the definitions of the term fit and indicate its variants.</li> </ol>		
Work placement	Not applicable		