



Subject card

Subject name and code	Engineer Graphics, PG_00048554						
Field of study	Chemical Technology						
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		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Iwona Cichowska-Kopczyńska				
	Teachers		dr inż. Iwona Cichowska-Kopczyńska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30		2.0		18.0	50
Subject objectives	The aim of the course is to obtain knowledge by the student in the field of the basics of descriptive geometry, construction notation and methods of mapping a multidimensional space in a two-dimensional drawing as well as designing multidimensional objects using CAD systems, and the acquired knowledge is to enable, first of all, the execution and reading of technical machine drawings and technological diagrams and independent design of elements and tools.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K05		The student understands and is able to assess the effects of engineering activities, including its impact on the environment, has the ability to search for information about the latest scientific achievements and the ability to issue opinions about them, which can be described and conveyed in an accessible way.		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_W06		Student after completing the Engineering Graphics course should know the computer aided design software, be able to make technical drawings (eg machine, process diagrams) of installations used in chemical technology). The ultimate effect of education is the skill for practical reading and drawing of technical drawings using CAD software.		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	K6_U04		Student performing design drawings has the knowledge and skills necessary to design the chemical industry equipment that is safe for human and the environment. After completing the course in Engineering Graphics, the student understands the idea of computer aided design. Has knowledge in the field of designing devices and processes in the chemical industry as well as geometrics needed to prepare and read technical documentation.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		

Subject contents	<p>Inventor 2021, creating your own templates, ISO-PL idw drawing template, Part model template, assembly model template; Introduction to user interface, activating an existing project, toolbars and tools, objects views; Introduction to parts design: parametric, mathematical model of the solids, geometric model of the solids, parameters and decision variables, 3D objects, 3D objects in 2D modeling; Concepts related to derivative model technique, typical part design process, part modeling; Editing of documentation; Modification of the design from the level of a model or drawing; 2D parametric modeling, sketches and sketch planes, parametric sketch planes, define sketch planes; Parametric 2D modeling operations; Modeling methods, standard modeling tools and techniques, elements of classic dialog boxes, elements of new type dialog boxes; Tool work process (Workflow); Input geometry; Modeling operation parameters; Modeling method; Advanced properties; Profile definition algorithm; Sketch sharing; Sharing of construction elements; Extruding with a profile (Extrude); Base element; Other pull-out elements; To Next Extrude; To (To) Extrude; Between Extrude; Through draw; Profile rotation (Revolve); Rotation by angle (Angle); To Next; Full rotation; Reorder modeling operations; Sweep; Unbending surfaces (Loft); Ribs (Rib); Inline elements; Holes: types and types of holes, methods of determining the location of holes; Thread and hole definition files; Hole definition algorithm: Concentric method, Linear method, From Sketch method;</p> <p>Editing and editing of 2D part documentation; drawing file types, preliminary steps; creating a drawing file; drawing application options; document settings; drawing templates; fixed drawing elements edition of the sheet layout; i-properties editing; style of objects in the drawing file - drawing standard; general standard settings; standard styles available; default values of objects; main and dependent styles; layers; text style; dimension style; management of standard elements (styles); additional interface elements; creating a new style as standard - exercises; export and import of standard elements - exercises; basics of creating projections; creating a base view of the model; creating basic linked views.</p>											
Prerequisites and co-requisites	Knowledge of basic computer skills, MS Windows operating system, ability to use pointing tools (mouse, tablet)											
Assessment methods and criteria	<table border="1" data-bbox="448 770 1487 875"> <thead> <tr> <th data-bbox="448 770 794 808">Subject passing criteria</th> <th data-bbox="794 770 1141 808">Passing threshold</th> <th data-bbox="1141 770 1487 808">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 808 794 842">Test 3D</td> <td data-bbox="794 808 1141 842">60.0%</td> <td data-bbox="1141 808 1487 842">50.0%</td> </tr> <tr> <td data-bbox="448 842 794 875">Test 2D</td> <td data-bbox="794 842 1141 875">60.0%</td> <td data-bbox="1141 842 1487 875">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Test 3D	60.0%	50.0%	Test 2D	60.0%	50.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>A. Jaskulski "AutoCAD 2021/LT2021/306+" PWN</p> <p>A. Jaskulski "Autodesk Inventor Professional 2021PL/2021+/Fusion 360", PWN</p> <p>A. Jaskulski, Autodesk Inventor Professional 2021 PL / 2021+ / Fusion 360. Metodyka projektowania</p> <p>ISO standards for technical drawings</p>										
Example issues/ example questions/ tasks being completed	basic geometric constructions, drawing orthogonal projections, isometric projections, developing project documentation, 3D constructions of mechanical elements, using libraries of materials and elements											
Work placement	Not applicable											