



## Subject card

Subject name and code	Engineer Graphics, PG_00060838						
Field of study	Chemical Technology						
Date of commencement of studies	October 2023	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	1	Language of instruction			Polish		
Semester of study	1	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						
	Additional information: Attendance at classes is mandatory. Absence is justified by a medical certificate. One unexcused absence is allowed.						
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 the student's knowledge of the basics of descriptive geometry, construction notation and methods of mapping multi-dimensional space on a two-dimensional drawing and designing multi-dimensional elements using CAD systems. The acquired knowledge will enable, first of all, reading technical machine drawings and technological diagrams, as well as making drawings independently. technical and design of chemical industry equipment.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U04] performs basic design calculations of selected processes and unit operations, is able to calculate and select the basic apparatus of chemical industry in a process line	The student is able to select the appropriate model and use it to solve a specific problem. Is able to design part of the technological process using chemical industry equipment.			[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	[K6_W06] has knowledge of information technology and computer-aided design, the use of databases in technological design	The student knows how to properly select and use computer tools. Knows where and how to find data necessary in technology design.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K6_K05] is aware of the social role of a technical university graduate, and in particular understands the need to formulate and communicate to the public, in particular through the mass media, information and opinions on the achievements of technology and other aspects of engineering activity	The student is aware of how the results of his work may affect the social environment and how engineering activities contribute to the development of the economic environment, the state of the environment and sustainable development.			[SK1] Assessment of group work skills [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice		

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	Computer skills, knowledge of the office package, geometry, dimensioning principles, basics thermodynamics, process engineering, chemical technology, technological principles, green principles chemistry, green engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test 2D	60.0%	50.0%
	Test 3D	60.0%	50.0%
Recommended reading	Basic literature	<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>	
	Supplementary literature	ISO standards for technical drawings	
	eResources addresses	Adresy na platformie eNauczanie:	
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		