GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Machine engineering, PG_00060846		
Field of study	Chemical Technology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Ryms	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	0.0	45

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	45	5.0	40.0	90

Subject objectives

To provide students with technical and engineering problems, such as.: technical drawing, strength of materials, construction materials, connection of machines and parts of devices and apparatus n the chemical industry.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U11] individually plans and implements his/her own learning	Student has knowledge about the distribution of construction materials used for construction of the plant industry	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W04] understands processes occurring in the life cycle of equipment and facilities and has knowledge of mechanical engineering, chemical apparatus, technical thermodynamics and chemical engineering and chemical reactor engineering necessary to analyse technological processes and correctly design installations and systems in the chemical industry	Student identifies five basic stress in strength of materials in engineering (tensile, compressive, shearing buckling and contact stress). Classifies, describes and draws a fundamental connection used in the chemical industry. Calculates the basic dimensions of the tank or installation elements. Recognize the basic types of valves and fittings of chemical industry.	[SW1] Assessment of factual knowledge
[K6_K03] is aware of the responsibility for his/her own work and is ready to follow the rules of teamwork and take responsibility for the tasks performed jointly	Is aware of the advantages arising from the practical application of appropriate strength of materials calculations in engineering and in the chemical industry.	[SK2] Assessment of progress of work

<table>
<tr><td>Subject contents</td><td>Program Content:

- Selected sections of the strength of the materials for the design of tanks and pipes.

- The connections used in the chemical industry, among which are listed: disjoint (threads, call keyways) and shaft (welded, welded, riveted).

- Materials used in construction of chemical industry, including metals (Ferrous and non-ferrous), natural materials (wood, leather, cork, rubber) and artificial (ceramics, glass, plastics).

- Fittings chemical industry, food and pharmaceutical industries with emphasis on tanks, piping, valves, sight glasses, connector and measurement pipes.

- The calculation, drawing, detailing the constituent elements of structural devices the chemical industry such as the wall of the tank, screw the lids, legs reactors, spindle valves, etc.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>No requirements</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Participation in lectures</td><td>80.0%</td><td>50.0%</td></tr>
<tr><td>Tests in the semester</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Test</td><td>60.0%</td><td>20.0%</td></tr>
<tr><td>Folder (Project)</td><td>60.0%</td><td>10.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>M. Ryms, W.M. Lewandowski, Chemical Theory of Machines, PWN 2017,

Praca zbiorowa, Mały Poradnik Mechanika t.I i II, WNT, Warszawa, 1988,

W.Lewandowski, Maszynoznawstwo chemiczne, Wyd. PG., 1998,

W.Lewandowski Handout at home page of the Department, (https://chem.pg.edu.pl/kkime/projekt-z-maszynoznawstwa-chemicznego)</td></tr>
<tr><td>Supplementary literature</td><td>No requirements</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>- Introduction to the subject (formats, lines, scales, technical writing),
- Methods of imaging three-dimensional objects on a drawing plane (object projections, finding the missing projection and isometric projections, cross-sections, revolved sections with dimensioning guidelines),
- Working and assembly drawings preparation,
- Disjoint connection drawings (screw joints, pipe threaded connections, bolts, fittings and elbows, thread protections against dismantling),
- Drawings of permanent joints (welded, soldered and riveted joints),
- Drawings of selected elements from heating and plumbing installation and armature (with emphasis on tanks, piping, valves, sight glasses, liquid level gauges and measuring points).
- Designing of valves (drawings and calculations). Drawing fittings elements of chemical, installations with special attention to tanks, piping, valves, sight glasses, liquid level gauges and measuring connectors. Selection from the catalogues the tank fittings and equipments.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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