GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00052319		
Field of study	Chemical Technology		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	3.0
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 hab. inż. Jacek Gębicki	
	Teachers	dr hab. inż. Jacek Gębicki dr hab. inż. Justyna Łuczak dr inż. Robert Aranowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	45.0	0.0	0.0	0.0	15.0	60

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/my/

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	60	5.0	10.0	75

Subject objectives

The aim of the course is to introduce students to the basic principles of organization and conduct of technological processes in the chemical industry and related, involving the chemical processing of raw materials into products. Chemical technology is one of the areas of knowledge about production processes in which products with a specific chemical composition are produced from appropriately selected raw materials with appropriate efficiency.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W05	The student can choose the synthesis from raw materials to the product of basic chemical compounds in industry. Can critically evaluate the analyzed process	[SW2] Assessment of knowledge contained in presentation
K6_U05	The student has acquired basic knowledge in the field of chemical technology and unit processes and operations. In addition, he knows the principles of green engineering and chemistry	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents

1. Basics of chemical processes, equilibrium constant, reaction rate,
2. Mathematical theory of planning experiments, optimization
3. Elements of process design. Unit operations. Schematic and technological diagram
4. Material and heat balance
5. Technological principles
6. Basic unit operations
7. Issues of the kinetics of the technological process
8. Basics of reactor theory
9. Increasing the scale of the technological process
10. Technological methods of environmental protection (air, water)

<table>
<tr><td>Prerequisites and co-requisites</td><td>The student has a basic knowledge of:

1. Chemical apparatus

2. Thermodynamics and chemical kinetics

3. Basics of environmental protection</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>lecture</td><td>60.0%</td><td>70.0%</td></tr>
<tr><td>seminar</td><td>60.0%</td><td>30.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. S. Bretsznajder i in., Podstawy Ogólne Technologii Chemicznej, WNT, Warszawa, 1973

2. J. Molenda, Technologia Chemiczna, WSiP, Warszawa, 1997

3. K. Schmidt-Szałowski i in., Technologia Chemiczna, PWN, Warszawa, 2013</td></tr>
<tr><td>Supplementary literature</td><td>Scientific publications and trade journals, e.g. Chemical Industry</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>1. Describe the dependence of the equilibrium degree of transformation on temperature

2. Describe the dependence of the reaction rate on the degree of conversion

3. Show the model of a plug-flow tubular reactor using a diagram

4. List the types of absorbers

5. Describe what is the mass exchange process in the co-current and countercurrent systems</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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