

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Material science and theory of machines in chemical technology – supporting structures</b>		Code
Field of study <b>Chemical Technology</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>2 / 3</b>
Elective path/specialty	Subject offered in: <b>English</b>	Course (compulsory, elective) <b>elective</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: - Classes: - Laboratory: - Project/seminars: <b>15</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>2 100%</b>
<b>Responsible for subject / lecturer:</b> dr inż. Waldemar Szaferski e-mail: waldemar.szaferski@put.poznan.pl tel. +48 61 665 3334 Faculty of Chemical Technology ul. Berdychowo 4, 61-131 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Knowledge in the field of mathematics, physics and the basics of technical drawing and engineering graphics
2	<b>Skills</b>	Ability to read and understand technical drawings
3	<b>Social competencies</b>	Ability to take decisions and cooperation within a specified team and have awareness of the need for continuous development
<b>Objectives of the course:</b> The objective of the course is to familiarize with fittings occurring in the construction of industrial devices and equipment. Additionally, development of engineering skills in independent designing and application to the supporting structure that keeps the tank in a vertical or horizontal position		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Student knows the basic forces acting on the supports of equipment [K_W5, K_W13] 2. Student knows the selection criteria for construction materials in process equipment and their components [K_W15] 3. Student knows the design process of the truss as the supporting structure keeping the tank in a vertical or horizontal position [K_W15]		
<b>Skills:</b> 1. Student can choose the right type of construction material during the process design of equipment [K_U1, K_U14] 2. Student knows how to choose a computer program to speed up the design process [K_U6] 3. Student can design a truss structure that keeps the tank in a vertical or horizontal position [K_U20]		
<b>Social competencies:</b> 1. Student is aware of the limits of her/his own knowledge, and therefore foresee the need for education and continuous development [K_K1] 2. Student knows the advantages and disadvantages of team work. - [K_K4] 3. Student can think and act in a creative and enterprising way.- [K_K5]		

<b>Assessment methods of study outcomes</b>		
<b>Knowledge</b> Practical application of acquired knowledge in the form of an individual design of a truss structure supporting the tank in a vertical or horizontal position. Applies to points 1-3.		
<b>Skills</b> Activity during classes and assessment of delivered project. Applies to points 1-3.		
<b>Social competence</b> Presentation and defense of the project in the form of a multimedia presentation and activity during the classes. Applies to points 1-3.		
<b>Course description</b>		
During the course, a practical strength calculations of apparatus components such as supports and supporting structures that support equipment in vertical or horizontal position will be presented.		
<b>Basic bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Potrykus J., Poradnik mechanika, REA, Warszawa 2008</li> <li>2. Wilczewski T., Pomoce projektowe z podstaw maszynoznawstwa chemicznego, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2008</li> <li>3. Lewandowski W.M., Rymys M., Maszynoznawstwo chemiczne podstawy wytrzymałości i przykłady obliczeń, PWN, Warszawa 2017</li> <li>4. Katalog norm branżowych</li> <li>5. Pikoń J.: Podstawy konstrukcji aparatury chemicznej, cz. I i II, PWN, Warszawa 1979</li> </ol>		
<b>Additional bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Mały Poradnik Mechanika, t. I i II, WNT, Warszawa 1985</li> <li>2. Błasiński H., Młodziński B.: Aparatura przemysłu chemicznego, WNT, Warszawa 1971</li> <li>3. Lisowski A., Siemieniec A.: Wytrzymałość materiałów -przykłady obliczeń - zadania, PWN, Warszawa - Kraków 1976</li> <li>4. Marcolla k.: Maszynoznawstwo, t. IV, Części maszyn, PWN, Warszawa - Poznań 1972</li> <li>5. Mrowiec A., Mrowiec M.: Maszynoznawstwo i technika ciepła, t. II, cz. II, Podstawy wytrzymałości materiałów, Kraków 1974</li> <li>6. Dobrzański T.: Rysunek techniczny maszynowy, WNT, Warszawa, wyd. 24.</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
Preparation of the project	20	
Preparation of the presentation	10	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	25	1
Practical activities	25	1