UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
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Module name:	Chemical Process Industry
Module level, if applicable:	Undergraduate
Code:	KMA6317
Sub-heading, if applicable:	-
Classes, if applicable:	2
Semester:	4th
Module coordinator:	Ir. Endang Dwi Siswani, M.T.
Lecturer(s):	1. Ir. Endang Dwi Siswani, M.T. 2. Annisa Fillaeli, M.Si.
Language:	English and bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 structured activities and 120 individual study per week
Workload:	Total workload is 91 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	-
Course Outcomes	After taking this course, the students have ability to: CO1. Students are able to answer correctly about the scope of the Chemical Industry Process and How to manage the Chemical Industry safely, efficiently and effectively CO2. Analyzing Process Engineering Flow Diagrams in a chemical industry CO3. Students are able to explain correctly about the processes that occur in the Sugar Cane, Paper, Portland Cement industry CO4. Students are able to explain correctly about the processes that occur in the Ammonia industry, Urea Fertilizers, Textiles, Milk Powder CO5. Students are able to calculate correctly the amount of heat released during the direct sulfonation process CO6. Students are able to correctly calculate the amount of sulfur that has changed to SO_2 and SO_3 CO7. Students are able to calculate correctly the amount of oxygen needed so that the combustion of a kind of hydrocarbon compound takes place perfectly
Content:	Chemical industrial process courses consist of theories, containing material on: Chapter I: Introduction, Chapter II.

<table>
<tr><td></td><td>The production process in the Chemical Industry includes Industry: Sugar Cane, Paper, Petroleum, Portland Cement, Ammonia, Urea Fertilizer, Textile and Milk Powder, Chapter. III. Sulfonation Process, Chapter IV: Stoichiometry in Industry</td></tr>
<tr><td>Study / exam achievements:</td><td>The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td rowspan="4">CO1, CO2, CO3, CO4, CO5, CO6, CO7</td><td>Individual assignment about observation reporting of waste treatment in the industry</td><td>Assignment</td><td>20%</td></tr>
<tr><td>2</td><td>PEFD analysis in certain industry</td><td>Assignment</td><td>20%</td></tr>
<tr><td>3</td><td>Mid term exam</td><td>Written test</td><td>30%</td></tr>
<tr><td>4</td><td>Final exam</td><td>Written test</td><td>30%</td></tr>
<tr><td colspan="3"></td><td>Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Forms of media:</td><td>Board, LCD Projector, handouts, PPT slides, and stationaries</td></tr>
<tr><td>Reference:</td><td>A. Travis A.S. (2018) The Direct Synthesis of Ammonia. In: Nitrogen Capture. Springer, Cham
B. Yahya N. (2018) Urea Fertilizer: The Global Challenges and Their Impact to Our Sustainability. In: Green Urea. Green Energy and Technology. Springer, Singapore
C. Selvamuthukumaran, M., muthukumaran, S. & Shukla, S.S. Bifidus milk powder: processing parameter standardization and shelf stability evaluation. J Food Sci Technol 53, 2054–2060 (2016). https://doi.org/10.1007/s13197-016-2178-z
D. Li, J., Ji, Y. & Xu, Z. Microstructure evolution of interface between magnesium ammonium phosphate cement and Portland cement under sulphate corrosion environment. Sādhanā 45, 102 (2020). https://doi.org/10.1007/s12046-020-01347-9
E. Loutfy H. Madkour, Helen Njenga, 2013. Industrial chemistry.
F. Shreve, R.N, and Brink, J, A, Jr, 1990, Chemical Process Industries, Mc Graw Hill International Book Co, Tokyo
G. Endang Dwi Siswani (2013), Diktat Proses Industri Kimia, Jurusan Pendidikan Kimia FMIPA UNY</td></tr>
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1	✓									
CO2			✓							
CO3				✓						

CO4								✓		
CO5						✓				
CO6										✓
CO7								✓		