



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
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Bachelor of Science in Chemistry

MODULE HANDBOOK

Module name:	Industrial Material Analysis
Module level,if applicable:	Undergraduate
Code:	KMA6243
Sub-heading,if applicable:	-
Classes,if applicable:	-
Semester:	6 th
Module coordinator:	Sunarto, M.Si
Lecturer(s):	Sunarto, M.Si and Susila Kristianingrum, M.Si
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	Lectures: 100 minutes lectures, 120 structured activities and 120 individual study per week
Workload:	Total workload of the activity is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks
Creditpoints:	2 SKS (3 ECTS)
Prerequisites course(s):	Chemical Separation Method
Course Outcomes	After taking this course, the students have ability to: CO1. Explain the analysis of water used for industrial purposes CO2. Conduct trace elements analysis from various industries and compare with the allowable threshold value CO3. Explain the understanding and components of steel correctly and students can understand the analysis of steel components CO4. Explain the history of cement and analyze the constituent components of cement and ways of analysis correctly CO5. Explain the understanding of paint and paint raw materials, and analyze the constituent of pigments and paints CO6. Explain the raw materials of ceramics and modern ceramics and can understand ceramics analysis correctly CO7. Explain understand the material of glass and various kinds of glass CO8. Explain glass component analysis correctly

	CO9. Analyze raw material and product analysis based on SNI																																
Content:	<ul style="list-style-type: none"> This course discusses about Introduction, Industry and Water, Steel Industry, trace element analysis in minerals, Cement Industry, Paint Industry, Glass Industry and Ceramic Industry. Lecture emphasizes the mastery of lecture material logically and scientifically and the ability to use scientific methods to solve problems faced by students 																																
Study/exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td rowspan="5">CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9</td> <td>Structural assignment: ability to rasonalize and describing</td> <td>Assignment</td> <td>15%</td> </tr> <tr> <td>Ability to present journal analysis and presentation of results of independent practicum</td> <td>Assignment</td> <td>15%</td> </tr> <tr> <td>Structural assignment: ability to collaborate, analyze, rasonalize, and communicate</td> <td>Assignment</td> <td>15%</td> </tr> <tr> <td>Individual assignment: skill to collect literacy, understanding, and describing</td> <td>Assignment</td> <td>15%</td> </tr> <tr> <td>Mid term exam</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td></td> <td></td> <td>Final exam</td> <td>Written test</td> <td>20%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9	Structural assignment: ability to rasonalize and describing	Assignment	15%	Ability to present journal analysis and presentation of results of independent practicum	Assignment	15%	Structural assignment: ability to collaborate, analyze, rasonalize, and communicate	Assignment	15%	Individual assignment: skill to collect literacy, understanding, and describing	Assignment	15%	Mid term exam	Written test	20%			Final exam	Written test	20%	Total				100%
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Forms of media:	Board, LCD Projector, handouts, PPT slides, and stationaries																																
References:	<p>A. Susila Kristianingrum, Suyanta, dan Siti Sulastri. (2016). <i>Diktat Kuliah Kimia Analisis Bahan Industri</i> Yogyakarta: FMIPA UNY.</p> <p>B. Nemes, H.I. (2018). <i>Industrial Cutting of Textile Materials</i>. Kidlington: Elsevier</p> <p>C. Shackelford, J.F. & Doremus, R.H. (2008). <i>Ceramic and</i></p>																																

	<p><i>Glass Materials: Structure, Properties and Processing.</i> New York: Springer</p> <p>D. Sengupta, P. (2019). <i>Refractories for the Cement Industry.</i> Switzerland.: Springer Nature</p> <p>E. Sreve, N. (1979). <i>Chemical Process Industries.</i> New York: Mc Graw Hill, Inc.</p> <p>F. Ann, Mary. H.F. (2005). <i>Standard Methods for Waste and Waste Water Treatment.</i></p> <p>G. Skoog, Holler & Nieman. 1998. <i>Principles of Instrumental Analysis 5^{ed}.</i> Philadelphia: Saunders College Pub.</p> <p>H. Skoog & West. 1985. <i>Instrumental Methods of Chemical Analysis.</i> Philadelphia: Saunders College Pub</p> <p>I. Information sources from the internet and journals related to the Material</p> <p>J. National Indonesian Standard for various industries</p>	
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PLO and CO mapping

CO	PLO										
	Attitude	Generic Skills			Knowledge				Specific Skills		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	
CO1					✓						
CO2					✓						
CO3					✓						
CO4					✓						
CO5					✓						
CO6							✓				
CO7							✓				
CO8									✓		
CO9									✓		