



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:	Hazardous Waste Management									
Module level, if applicable:	Undergraduate									
Code:	KMA 6246									
Sub-heading, if applicable:	-									
Classes, if applicable:	-									
Semester:	6 th									
Module coordinator:	Sunarto, M.Si.									
Lecturer(s):	1. Regina Tutik Padmaningrum, M.Si. 2. Erfan Priyambodo, M.Si. 3. Sunarto, M.Si.									
Language:	Bahasa Indonesia and English									
Classification within the curriculum:	Elective 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 90,67 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):	Laboratory Management, Environmental Chemistry									
Course Outcomes	After taking this course the students are expected to be able to: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">CO1</td> <td>describe the theoretical concept of emergency response systems for the management of hazardous and toxic waste based on PP 101/2014 and other B3 Waste management regulations</td> </tr> <tr> <td style="text-align: center;">CO2</td> <td>understand how to manage B3 waste and overcome the various problems caused by chemicals in the environment</td> </tr> <tr> <td style="text-align: center;">CO3</td> <td>apply ways to prevent and overcome various problems caused by B3 waste in the environment in everyday life</td> </tr> <tr> <td style="text-align: center;">CO4</td> <td>arrange the design of B3 waste processing installation</td> </tr> </table>		CO1	describe the theoretical concept of emergency response systems for the management of hazardous and toxic waste based on PP 101/2014 and other B3 Waste management regulations	CO2	understand how to manage B3 waste and overcome the various problems caused by chemicals in the environment	CO3	apply ways to prevent and overcome various problems caused by B3 waste in the environment in everyday life	CO4	arrange the design of B3 waste processing installation
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CO3	apply ways to prevent and overcome various problems caused by B3 waste in the environment in everyday life									
CO4	arrange the design of B3 waste processing installation									
Content:	This course provides experience to students to analyze the physicochemical properties of B3 waste and its management related to environmental health. Lecture materials are focused on 1) Definition, nature and classification of B3 waste, 2) Regulations related to B3 Waste Management, 3) Identification, documents, symbols, labels, packaging, storage, collection, transportation, processing, utilization, stockpiling and final disposal of waste B3, 4) Emergency response system in the processing of B3 waste, 5) Hospital									

	waste treatment, 6) Processing of chemical laboratory waste, 7) Processing of chemical industry waste, 8) Printing waste treatment. Lectures are conducted with discussions, demonstrations, and assignments that provide experience to students to solve the problem of B3 waste management.															
Study/exam achievements:	<p>Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude. The student is given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of the requirements to pass the course. Students will pass this course if at least they show a good attitude.</p> <p>The final mark will be weighted as follows:</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>1</td> <td>CO1, CO2, CO3, CO4</td> <td>a. Performance b. Individual and Group Assignment c. Mid-term Exam d. Final Exam</td> <td>Observation Presentation / written test</td> <td>15% 55% 15% 15%</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	a. Performance b. Individual and Group Assignment c. Mid-term Exam d. Final Exam	Observation Presentation / written test	15% 55% 15% 15%	Total				100%
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Forms of media:	Board and Board markers, LCD Projector, Laptop/Computer, Learning Videos, <i>Power Point Slides</i>															
References:	<p>Handbooks:</p> <ol style="list-style-type: none"> Lehman, J. P. (2013). <i>Hazardous Waste Disposal</i>. Washington DC: US Environmental Agency LaGrega, M.D., Buckingham, P.L. & Evans. J.C. (2010). <i>Hazardous Waste Management: 2nd ed</i>. Illinois: Waveland Press VanGuilder, C. (2012). <i>Hazardous Waste Management: An Introduction</i>. Mercury Learning and Information Peraturan Menteri Negara Lingkungan Hidup Nomor 18 Tahun 2009 tentang Tata Cara Perizinan Pengelolaan Limbah B3 Keputusan Menteri Negara Lingkungan Hidup Nomor 128 Tahun 2003 tentang Tata Cara dan Persyaratan Teknis Pengolahan Limbah Minyak Bumi dan Tanah Terkontaminasi oleh Minyak Bumi Secara Biologis PP RI No 101 Thn 2014 tentang Pengelolaan Limbah B3 dan lampirannya SNI 6989.59:2008 pengambilan sampel air dan air limbah Peraturan daerah Propinsi DIY Nomor 2 Than 2012 tentang Pengelolaan Limbah B3 Peraturan Menteri Lingkungan Hidup dan Kehutanan RI Nomor PP.55/MenLHK-Setjen/2015 tentang Tata Cara Uji Karakteristik Limbah B3 <p>Suggested Readings:</p> <ol style="list-style-type: none"> Ign. Suharto. 2011. <i>Limbah Kimia: dalam Pencemaran Udara dan Air</i>. Andi Offset: Yogyakarta 															

	2. Sakti A. Siregar. 2005 . <i>Instalasi Pengolahan Air Limbah</i> . Kanisius: Yogyakarta 3. Sumanto Imamkhasani. 1990. <i>Keselamatan Kerja dalam Laboratorium Kimia</i> . Gramedia: Jakarta 4. Achadi Budi Cahyono. 2004. <i>Keselamatan Kerja Bahan Kimia di Industri</i> ,UGM Press: Yogyakarta
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PLO and CO mapping

	PLO										
	Attitude	General Skill			Knowledge				Specific Skill		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	
CO1					√						
CO2					√						
CO3							√				
CO4									√		

