
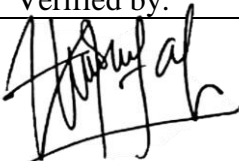





Faculty of Natural Sciences and Mathematics
Chemistry Department
Chemistry Education Study Program

Module Name		Environmental Chemistry		
Module level, if applicable		3 st year		
Code, if applicable		SPK-648		
Semester (s) in which the module is taught		6 st semester		
Person responsible for the module		Prof. Riyanto, M.Si., Ph.D		
Lecturer(s)		Prof. Riyanto, M.Si., Ph.D Muhaimin, M.Sc.		
Language		English- Indonesia		
Relation to curriculum		Compulsory		
Types of teaching and learning	Class size	Forms of active participation	Workload: 91 hours	
Class discussion	50 – 60	Discussion	Lecture: 100 (min) x 16 (meeting)	27 hours
			Assignment: 120 (min) x 16 (week)	32 hours
			Independent study: 120 (min) x 16 (week)	32 hours
ECTS credit		3.25		
Credit points		2 SCU		
Requirements according to examination regulations		Minimum attendance at lectures is 75% (according to UII regulation)		
Recommended prerequisites		N/A		
Related course		Analytical Chemistry I and II		
Module objectives/intended learning		<p>On successful completion of the course students should be able to:</p> <ol style="list-style-type: none"> 1. Explain chemical knowledge in the fields of chemical industry, energy and the environment 2. Identify the link between chemical knowledge and its analysis in the chemical industry, environmental energy correctly 		
Content		<ul style="list-style-type: none"> ● Introduction to environmental chemistry ● Hydrological cycle ● Characteristics of water bodies ● Chemical reactions in the waters ● Heavy metal and nutrient cycle ● Changes in species of compounds in the waters ● Water pollution ● Atmospheric composition 		

	<ul style="list-style-type: none"> • Photochemical reactions in the atmosphere • Ozone depletion chain reaction • Basic knowledge of environmental impact analysis • Environmental quality standards • Basic knowledge of wastewater treatment 									
Study and examination requirements and forms of examination	Final score (NA) is calculated as follows:									
	<table border="1"> <thead> <tr> <th>Intended learning outcomes</th> <th>Weight (%)</th> <th>Technique of assessment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>50</td> <td>Written test: assignment, midterm</td> </tr> <tr> <td>2</td> <td>50</td> <td>Written test: assignment, final examination</td> </tr> </tbody> </table>	Intended learning outcomes	Weight (%)	Technique of assessment	1	50	Written test: assignment, midterm	2	50	Written test: assignment, final examination
	Intended learning outcomes	Weight (%)	Technique of assessment							
1	50	Written test: assignment, midterm								
2	50	Written test: assignment, final examination								
Media employed	Powerpoint slide presentation, video, Google classroom									
Reading lists	<ol style="list-style-type: none"> 1. Baird, C., and Cann, M., 2008, Environmental Chemistry, 4th ed., W. H. Freeman. 2. Manahan, S.E., 2009, Environmental Chemistry, Ninth Edition. CRC Press. 3. Van Loon, G.W., and Duffy, S.J., 2009, Environmental Chemistry: A global perspective, 3rd ed., Oxford University Press, USA. 4. Girard, J.E., 2009, Principles of Environmental Chemistry, 2nd ed., Jones & Bartlett Publishers. 5. Ibanez, J.G., Hernandez-Esparza, M., Doria-Serrano, C., Fregoso-Infante, A., and Singh, M.M., 2009, Environmental Chemistry: Fundamentals, Springer. 6. Spiro, T.G., and Stigliani, W.M., 2002, Chemistry of the Environment, 2nd ed., Prentice Hall. 7. Baird, C., and Cann, M., 2012, Environmental Chemistry, 5th ed., W. H. Freeman. 									

Prepared by:	Verified by:	Authorized by:
		
Person responsible for the module	Student representative	Coordinator Program