Environmental Pollution Control

MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATE STUDIES
DIPONEGORO UNIVERSITY

SEMESTER LEARNING PLAN

Study program: Master of Environmental Science				**Faculty: Graduate School**			
Courses:	**Environmental Pollution Control**	**Code:** CIL-2-2-610		**Credit: 2**		**Shem:2**	
Supporting lecturer:	**Dr. Ir. Bambang Yulianto, DEA** Prof. Dr. Tri Retnaningsih S., MAppSc						
Learning Outcomes Courses:	• Students can analyze pollution problems, classify pollution sources, know pollution materials, characterize waste, pollution cycles, pollution impacts, prevention, control, and prevention						
Short Description of Courses:	This course examines the analysis of pollutant problems, classification of pollution sources: water, soil, air, toxicology of heavy metals, food, and medicine, pesticides; pollution materials, waste characteristics, pollution cycles, pollution impacts, prevention, control, and prevention: supervision, determination/estimation of environmental quality (water, air, and land).						

1	2	3	4	5	6	7	
Week	**Final Ability of each learning stage**	**Study Materials/ Subjects**	**Learning methods**	**Time**	**Student Learning Experience**	**Rating**	
						Criteria & Indicators	**Weight (%)**
1.	Introduction / Lecture contract	Understand the preparation before face-to-face lectures and the obligation to report face-to-face lectures	Lectures, questions and answers, and discussions	150min			2.5
2, 3	Students can explain and understand and analyze pollution problems	Analysis of pollution problems	Lectures, questions and answers, and discussions	150 minutes	Read recommended Modules and libraries; Discussion of learning outcomes;	Criteria: Accuracy and mastery of theory Non-test form: Student activity	2.5

					Presentation of the results of the Discussion	and Presentation of Assignments	
4, 5	Students can classify sources of pollution: water, soil, air, heavy metal toxicology, food and medicine, pesticide	Classification of pollution sources: water, soil, air, heavy metal toxicology, food and medicine, pesticide	Lectures, questions and answers, and discussions	150 minutes	a. Discussion of the previous week's homework b. Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss	Accuracy and Completeness and the truth explanation as well accuracy understanding	5
6, 7	Students can understand water management, water pollution in the environment, pollutants, and their sources.	1) Water management techniques. 2) Wastewater treatment 3) Characteristics of wastewater. 4) Integrated water management	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) b. Discussion of the results of the previous week's group assignments	Completeness and the truth explanation as well accuracy understanding	15
8, 9	Students can understand and understand air pollution and noise that occurs in the environment and control over it	1) Effects of air and noise pollution. 2) Sources and criteria for noise. 3) Prediction of traffic noise. 4) Noise control	Lectures, questions and answers, and discussions	150 minutes	Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss	Completeness and the truth explanation as well accuracy understanding	15

10	**UTS**		**Written test**	150 minutes		Completeness and the truth explanation as well accuracy understanding	15
11, 12	Students can understand and understand the pollution that occurs in the soil, pollutants and their sources	Pollution occurs on the soil: pollutants and sources of pollution.	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) Discussion of the results of the previous week's group assignments (influence diagram)	Completeness and the truth explanation as well accuracy understanding	15
12	Students can understand the installation and management of waste treatment	1) Waste treatment plant. 2) Waste treatment management.	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) Discussion of the results of the previous week's group assignments	Completeness and the truth explanation as well accuracy understanding	15

13	Students can understand radiation and its effects on the environment.	1) Biological effects of radiation. 2) Radiation Exposure 3) Radioactive waste. 4) Protection against radiation.	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) Discussion of the results of the previous week's group assignments	Completeness and the truth explanation as well accuracy understanding	15
14	Students can understand water, air, and soil pollution and its effects on the environment	Water, air, and soil pollution and their impact on the environment	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) Discussion of the results of the previous week's group assignments	Completeness and the truth explanation as well accuracy understanding	15
15	Students able to understand Countermeasures, control, and prevention Quality control, determination/estimation environment (water, air, and soil)	Prevention, control, and prevention Quality control, determination/estimation environment (water, air, and soil)	Lectures, questions and answers, and discussions	150 minutes	a) Students listen to the lecturer's explanation and answer the lecturer's questions, and discuss b) Discussion of the results of the previous	Completeness and the truth explanation as well accuracy understanding	15

					week's group assignments		
16	**UAS**		Written test	150 minutes		Completeness and the truth explanation as well accuracy understanding	15
8. Reference List:		1. Environmental Science, Soeriatmadja, ITB, 1987. 2. Environmental Pollution, Satrawijaya, A. Tresna, Rineka Cipta, Jakarta, 1991. 3. McGraw-Hill Encyclopedia of Environmental Science and Engineering (3rd Edition). McGraw-Hill, Inc. 1993. 4. The Environment and Its Sustainability Imam Soepardi, Alumni, Bandung, 1994. 5. Sims, J. Activated sludge, Environmental Encyclopedia. Detroit. 2003 6. Minister of Environment Regulation No. 13 of 2010 7. Introduction to ISO 14001, Cokorda Prapti Mahandari, Gunadarma University, 2004 8. Cunningham, WilliamP., and Barbara Woodworth Saigo. 1985. Environmental Science, A Global Concern. Dubuque-USA: Win. C. Brown Publisher. 9. Connel& Miller. 1995. Chemical Pollution Ecotoxicology. UI Press Jakarta. 10. Darmono.1995. Metals in the Biology of Living Things. UI. Jakarta. 11. Mahida, UN. 1986. Water pollution. Rajawali, Jakarta. 12. Mason. CF. 1991. Biology of Freshwater Pollution. John Willey & Sons Inc. New York. 13. Miller, G. Tylor. 1986. Environmental Science, An Introduction. Wadsworth Publishing Company, Bronson. California. 14. Sastrawijaya.1991. Environmental pollution. Rineka Cipta. Jakarta. 15. SoemarwotoO. 1988. Environmental Impact Analysis. UGM Press Yogyakarta 16. Soemirat, Y. 2003. Environmental Toxicology. UGM. Yogyakarta. 17. Wardhana, W.A. 2004. Impact of Environmental Pollution. Andi. Yogyakarta.					