KSH 341 Environmental Pollutions

Credit	:	2(2-0)
Semester	:	5 (odd)
Course format	:	100 minutes per week. 14 weeks
Pre-requisite	:	**-**
Lecturers	:	Mrs. Siti Badriyah Rushayati, MS. (Course coordinator) Mr. Agus Priyono, MS. Mr. Rahmad Hermawan, MSc.F. Dr. Mirza Dikari K., MSi.

Course Description

This course is design to provide the students with understanding of pollution sources, processes, impacts of pollution on environment and means of controlling and efforts to increase environmental quality

Course Objectives

The course is designed to enable students to explain and analyze sources of pollution, processes, and pollution impacts on environment. Students will be able to apply ways of managing and increasing environmental quality.

Learning Outcomes

1. **General learning outcomes**

   Upon successful completion of this course the students will be able to:

   Explain source, impacts and ways to manage environmental pollution.

2. **Specific learning outcomes**

   Upon successful completion of this course the students will be able to:

   Analyze and carry out environmental management from planning to managing air, land and water pollution through vegetation management approach (Green open space, forest, etc).

Structure of Course Delivery

1. Lectures and discussions.

2. Individual and group assignments.

Major References

1. Arsyad S. 1989. Konservasi Tanah dan Air. IPB Press. Bogor.
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3. Connell D.W. dan Gregory J.M. 1995. Kimia dan Ekotoksikologi Pencemaran. Penerbit Universitas Indonesia. Jakarta.
4. Darmono. 1995. Logam dalam Sistem Biologi Makhluk Hidup. UI Press. Jakarta.
5. Fardiaz S. 1992. Polusi Air dan Polusi Udara. Departemen Pendidikan dan Kebudayaan, Direktorat Jenderal Pendidikan Tinggi, Pusat Antar Universitas Pangan dan Gizi, Institut Pertyanian Bogor. Bogor.
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7. Kartodihardjo H, Kukuh M., Hadi S.P., Untung S. dan Nunung N. 2000. Kajian Institusi Pengelolaan DAS dan Konservasi Tanah. Koperasi Sodaliti. Bogor.
8. Kompas. 2001. Air PDAM Diduga Mengandung Karsinogenik. http://www.fujiro.com/artikel/kompas 130901.htm.
9. Mansfield T.A. 1976. Effects of Air Pollutants on Plants. Cambridge University Press. London.
10. Maryono, A. 2002. Eko-Hidraulik Pembangunan Sungai : Menanggulangi Banjir dan Kerusakan Lingkungan Wilayah Sungai. Program Magister Sistem Teknik, Fakultas Teknik, Universitas Gadjah Mada. Yogyakarta.
11. Murdiyarso D. 2003. CDM : Mekanisme Pembangunan Bersih. Penerbit Buku Kompas. Jakarta
12. Murtadho, D. dan E. Gumbira Sa'id. 1988. Penanganan dan Pemanfaatan Limbah Padat. Mediatama Sarana Perkasa. Jakarta.
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14. Pusposutardjo, S dan Sahid S. 1993. Perspektif dari Pengembangan Managemen Sumber Air dan Irigasi untuk Pengembangan Pertanian (kumpulan karangan). Liberty. Yogyakarta.
15. Soedomo M. 2001. Pencemaran Udara. Penerbit ITB Bandung. Bandung.

16. Soemarwoto O. 2001. Atur Diri Sendiri : Paradigma Baru Pengelolaan Lingkungan Hidup (Pembangunan ramah lingkungan, berpihak pada rakyat, ekonomi berkelanjutan). Gadjah Mada University Press. Yogyakarta.

Teaching Material Support

The choice of media and type of technology use include:

1. Face-to-face contact.
2. Printed power point presentation.
3. Computer
4. Projector Infocus
5. Whiteboard

Course Outline

Topics	Sub-topics	Bloom's Taxonomy	Week
Definition, scope of study and environmental problems	1. Definition of environmental pollution 2. Environmental problems	C1, C2	1
Impacts of air pollution on environment	1. Global warming 2. Climate change 3. Heat Island 4. Acid rain 5. Ozone thinning	C1, C2, C3	2
Controlling an monitoring of air pollution	1. Air pollution monitoring 2. Urban forest 3. Policies and regulations	C1, C2	3
Source, process and negative impacts of water pollution	1. Water pollution sources 2. Water pollution process 3. Impacts of water pollution on living things and environment	C1, C2	4
Valuation, monitoring and controlling of water pollution	1. Water pollution valuation 2. Monitoring of water pollution 3. Water pollution bio-indicators 4. Water pollution controlling and management	C1, C2, C3	5
Sources, process and negative impacts of soil pollution	1. Soil pollution sources 2. Impacts of soil pollution on living things and environment 3. Soil pollution management	C1, C2	6
Monitoring, controlling and overcoming of	1. Soil pollution monitoring 2. Soil pollution controlling and monitoring	C1, C2	7

Topics	Sub-topics	Bloom's Taxonomy	Week
soil pollution			
Sources, impacts and management of solid wastes	1. Solid wastes sources 2. Impacts of solid wastes on living things and environment 3. Solid wastes management	C1, C2	8
Sources, impacts and management of B3 wastes	1. B3 wastes sources 2. Impacts of B3 wastes on living things and environment 3. B3 wastes management	C1, C2	9
Sources, impacts, anticipation and overcoming of oil pollution	1. Oil pollution sources 2. Impacts of oil pollution on living things and environment 3. Oil pollution anticipation and overcome	C1, C2	10
Sources, impacts, anticipation and overcoming of solid detergent pollution	1. Detergent wastes sources 2. Impacts of detergent pollution on living things and environment 3. Detergent pollution anticipation and overcome	C1, C2	11
Sources, impacts, anticipation and overcoming of additive compounds pollution	1. Additive compounds pollution sources 2. Impacts of additive compounds on living things (human) 3. Additive compounds pollution anticipation and overcome	C1, C2	12
Controlling and improving environmental qualities (soil, water and air)	1. Environmental pollution controlling (soil, water and air) 2. Environmental quality improvement 3. Environmental quality improvement programmes (clean river, blue sky, etc)	C1, C2	13

Potential Course Overlap

Potential overlap may occur with topics offered in Management of Enviromental Services and Impact Control (KSH343) although with different emphasis and in-depth focus.

Evaluation and Grading

1. Midterm examination

Midterm examination will be held during examination period scheduled by Registrar's office (after 7 weeks lecture). Each exam is composed 100% essay

questions. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 1-7. A key and score will be attached on announcement board after exam paper is graded.

2. Final examination

Final examination will be held during examination period scheduled by Registrar's office (after 14 weeks lecture). Each exam is composed of 100% essay questions. Length of the exam is 90-120 minutes. The exam will cover course topics delivered in week 8-14. A key and score will be attached on announcement board after exam paper is graded.

3. Assigned Paper

Group of student are required to submit assigned papers. This assigned papers or reports are objected to help students make connection between lecture material and field application, through case study reports. Students are obligued to write reiew papers on enviromental pollution related materials (land, water, air) and effects of pollution (global warming and change) and their management. The due date of the reports submission is one week after during lecture period. Standardized format for paper writing is expected. The reports are graded based on formulas and calculation format.

Compositions of grading are as follows:

Assessment Tools	Maximum Score	% of Grade
Midterm Examination	100	40
Final Examination	100	40
Assigned Paper	100	20

Final grade classification: A (≥ 75); B (60 -75); C (50-60); D (40-50); E (< 40)

Coverage of DFORCE Core Competence

in Environmental Pollution (KSH 341)

Code : KSH 341

Course : Environmental Pollutions

Credit : 2(2-0)

Code	Core Competencies	Course Content Covered	Cognitive Level	Topics
I	Students will be able to understand environmental pollution and problems	Definition of environmental pollution Environmental problems	C1, C2, C3	Definition, scope of study and environmental problems
II	Students will be able to understand impacts of air pollution on environment	Global warming Climate change Heat Island Acid rain Ozone thinning	C1, C2, C3	Impacts of air pollution on environment
III	Students will be able to understand and apply controlling and monitoring of air pollution	Air pollution monitoring Urban forest Policies and regulations	C1, C2, C3	Controlling and monitoring of air pollution
IV	Students will be able to understand Source, process and negative impacts of water pollution.	Water pollution sources Water pollution process Impacts of water pollution on living things and environment	C1, C2, C3	Source, process and negative impacts of water pollution
V	Students will be able to understand and apply Valuation, monitoring and controlling of water pollution	Soil pollution sources Soil pollution process Impacts of soil pollutions on living things and environment	C1, C2, C3	Valuation, monitoring and controlling of water pollution
VI	Students will be able to understand Sources, process and negative impacts of soil pollution	Water pollution valuation Monitoring of water pollution Water pollution bio-indicators Water pollution controlling and overcoming	C1, C2, C3	Sources, process and negative impacts of soil pollution

Code	Core Competencies	Course Content Covered	Cognitive Level	Topics
VII	Students will be able to understand and apply Monitoring, controlling and overcoming of soil pollution	Soil pollution monitoring	C1, C2, C3	Monitoring, controlling and overcoming of soil pollution
		Soil pollution controlling and monitoring		
VIII	Students will be able to understand Sources, impacts and management of solid wastes	Solid wastes sources	C1, C2, C3	Sources, impacts and management of solid wastes
		Impacts of solid wastes on living things and environment		
		Solid wastes management		
IX	Students will be able to understand B3 wastes pollution	B3 wastes sources	C1, C2, C3	Sources, impacts and management of B3 wastes
		Impacts of B3 wastes on living things and environment		
		B3 wastes management		
X	Students will be able to understand oil pollution	Oil pollution sources	C1, C2, C3	Sources, impacts, anticipation and overcoming of oil pollution
		Impacts of oil pollution on living things and environment		
		Oil pollution anticipation and overcome		
XI	Students will be able to understand detergent waste pollution	Detergent wastes sources	C1, C2, C3	Sources, impacts, anticipation and overcoming of solid detergent pollution
		Impacts of detergent pollution on living things and environment		
		Detergent pollution anticipation and overcome		
XII	Students will be able to understand additive compounds pollution	Additive compounds pollution sources	C1, C2, C3	Sources, impacts, anticipation and overcoming of additive compounds pollution
		Impacts of additive compounds on living things (human)		
		Additive compounds pollution anticipation and overcome		
XIII	Students will be able to understand environmental pollution (soil, water and air) and apply controlling and monitoring of environmental qualities	Environmental pollution controlling (soil, water and air)	C1, C2, C3	Controlling and improving environmental qualities (soil, water and air)
		Environmental quality improvement		
		Environmental quality improvement programmes (clean river, blue sky		

Assessment Tools to Measure the Achievement of
Learning Outcomes in Environmental Pollution (KSH 341)

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Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
I	Students will be able to understand environmental pollution and problems	Students will be able to explain environmental pollution and problems	C1, C2	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
II	Students will be able to understand impacts of air pollution on environment	Students will be able to explain impacts of air pollution on environment	C1, C2	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
III	Students will be able to understand and apply Controlling and monitoring of air pollution	Students will be able to explain and apply Controlling and monitoring of air pollution	C1, C2, C3	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
IV	Students will be able to understand Source, process and negative impacts of water pollution.	Students will be able to explain Source, process and negative impacts of water pollution.	C1, C2	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
V	Students will be able to understand and apply Valuation, monitoring and controlling of water pollution	Students will be able to explain and apply Valuation, monitoring and controlling of water pollution	C1, C2	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
VI	Students will be able to understand Sources, process and negative impacts of soil pollution	Students will be able to explain Sources, process and negative impacts of soil pollution	C1, C2, C3	Written examinations at different cognitive level (mid-term exam).	Classroom lecture and discussion
VII	Students will be able to understand and apply	Students will be able to explain and apply	C1, C2	Written examinations at different cognitive level	Classroom lecture and discussion

Code	Core Competencies	Learning Outcome	Bloom's Taxonomy	Assessment Tool(s)	Learning Activities
	Monitoring, controlling and overcoming of soil pollution	Monitoring, controlling and overcoming of soil pollution		(mid-term exam).	
VIII	Students will be able to understand Sources, impacts and management of solid wastes	Students will be able to explain Sources, impacts and management of solid wastes	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion
IX	Students will be able to understand B3 wastes pollution	Students will be able to explain B3 wastes pollution	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion
X	Students will be able to understand oil pollution	Students will be able to explain oil pollution	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion
XI	Students will be able to understand detergent waste pollution	Students will be able to explain detergent waste pollution	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion
XII	Students will be able to understand additive compounds pollution	Students will be able to explain additive compounds pollution	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion
XIII	Students will be able to understand environmental pollution (soil, water and air) and apply controlling and monitoring of environmental qualities	Students will be able to explain environmental pollution (soil, water and air) and apply controlling and monitoring of environmental qualities	C1, C2	Written examinations at different cognitive level (final exam).	Classroom lecture and discussion