SYLLABUS

Date/ Revision : 15 August 2016
Faculty : Engineering
Approval : Dean of Engineering Faculty

SUBJECT : ENVIRONMENTAL SCIENCE

1. Identification of Subject:

Name of Subject : Environmental Science
Code of Subject : ENVI-2000
SKS : 2
Semester : 3
Study Program : All Engineering Study Program
Lecturer : Dr. Luth / Nonni Soraya Sambudi / Teuku Beuna Bardant

2. Competency

After having the course, students are expected to:

a) Have full understanding about sustainability concept that for the world to survive, all human living and/or production systems need to be designed as close as possible to adopt
b) Have full understanding about the three principles of sustainability, which is relying only to solar energy, helping the preservation of biodiversity and balancing all chemical cycle.
c) Have the brief understanding about the philosophy of science, technology, and basic knowledge of ecology for supporting whole comprehension of environmental science.
d) Have the knowledge about biodiversity concept and its interaction with climate, human population growth and human society. Thus, able to understand the effort for sustaining biodiversity from species approach and ecosystem approach.
e) Have full understanding about the concept of capital, resources and services, thus having an understanding about sustaining resources and environmental quality.
f) Have ability and sufficient knowledge to develop applicable idea, and thus leads to real actions, that can be an effort to help human action in improving environmental quality, saving the earth.

3. Description of Subject:

This course was intended to rearrange and reframe student's knowledge and concept about environment into a more structured comprehension. The comprehension that built on the basic principles to become environment concerning souls that has ability for creating applicable idea for improving environmental quality. For gaining this intention, the course will introduce four basic concepts, the concept of sustainability, the concept of sustainability, concept of sustaining biodiversity, the concept of sustaining resources and environmental quality and the concept of sustaining human societies.

4. Learning Approach

Approach : Combination of Expository - inquiry and colaborative
Method : Discussion, question answer, sample problem,
Student Task : Home work, quiz
Media : LCD projector, film.

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5. Evaluation

a) Absence maximum : 25%
b) Participation in discussion : 5 points
c) Homework, Simulation : 20 points
d) Daily Quiz : 15 points
e) Final Examination : 60 points

Total : 100 points

6. Contents/ Topics of Lecturing:

Week	Topics	Content	Remark
1	Introduction to Environmental science	Environmental Science, environmental problems, its causes and the sustainable solutions	
2	Brief philosophy of science	Science, technology, matter, energy and ecosystem	
3	Biodiversity	Definition of biodiversity, its components, its essence in earth sustainability, and case study of the importance of a species in its ecosystem	
4	Sustaining biodiversity	Observing how species interaction with each other and with environment. Human role in conservation	
5	Simulation of developing applied ideas to save earth environment	Case study : biogas production, ecotourism, process digitalization, improvement of solar energy utilization	
6	Brief review in environmental science and biodiversity	Brief review in basic philosophy of environmental science and biodiversity	quiz
7	Sustaining soil resources	Food, Soil, and Pest Management	
8	**MIDSEMESTER BREAK**		
9	Sustaining water resources	The importance of fresh water stocks, water resources and water pollution	
10	Sustaining mineral resources	Geology and Nonrenewable Minerals. Rock cycle, tectonic movement.	
11	Sustaining energy resources	Laws of energy conservations, energy and fuel category,	
12	Sustaining air resources	The importance of fresh air, air pollution and climate disruption.	
13	Solid and hazardous waste management	Solid and Hazardous , Municipal waste. Case study of municipal and hazardous waste management in Indonesia	

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14	Environmental and human health	Environmental Hazards and Human Health. biological hazard, chemical hazard, natural hazard, cultural hazard.	
15	Brief review in sustaining resources and waste management	Brief review in sustaining resources and waste management	quiz
16	Final Examination		

7. Book Reference:

Main Text Book:

"*Environmental Science*", (14th edition) – **Authors:** G. Tyler Miller and Scott E Spoolman – Brooks/Cole **Publisher:** Cengage Learning, **ISBN**: 97898147321

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