Environmental Law Course Syllabus

1. Course number and name
   51324601 Environmental law

2. Credits and contact hours
   Credit hour(s) 2, class meets ones a week, 2-hour lecture

3. Instructor's or course coordinator's name
   Budi Ruhiatuddin

4. Text book, title, author, and year
   a. Koesnadi Hardjosoemantri, Hukum Tata Lingkungan
   b. R. M. Gatot P Soemartono,Hukum Lingkungan Indonesia
   c. UU No. 32 Tahun 2009 Tentang Pengelolaan Lingkungan Hidup
   d. Kitab Undang-Undang Hukum Acara Perdata
   e. Kitab Undang-Undang Hukum Acara Pidana
   f. Silalahi. 2004. Pengaturan Hukum Sumber Daya Air dan Pengelolaan Lingkungan Hidup Indonesia.

5. Specific course information
   a. Course description:
      This course is aimed to provide insight into aspects of the laws /regulations related to environmental management.
   b. Prerequisites : -
      Co-requisites : -
   c. This course is required /mandatory

6. Specific goals for the course
   a. After attending the course, students are expected to be able:
      i. To explain the meaning, elements, characteristics, nature, purpose and legal division
      ii. To explain the meaning of environmental law and its position in the legal system in Indonesia
      iii. To explain the environmental chamber civil, criminal and administrative law of the state of the environment
      iv. To explain the legal aspects of sustainable development
      v. To explain how environmental dispute resolution outside the court and through the courts (criminal, civil, public administration)
      vi. Analyzing the legal aspects of an environmental case
   b. This course addresses student outcome H, I, and J as follows:
      i. an understanding of professional and ethical responsibility data (SO H)

ii. an ability to communicate effectively (SO I)
iii. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (SO J)

7. Brief list of topics to be covered

Introduction to law, introduction to environmental law, environmental law position in the Indonesian law, the scope of environmental law, sustainable development, environmental dispute resolution through the courts, case studies about environmental issues

State Ideology Course Syllabus

1. Course number and name
   10011601 State Ideology

2. Credits and contact hours
   Credit hour(s) 2, class meets oncea week, 2-hour lecture

3. Instructor's or course coordinator's name
   Budi Ruhiatuddin

4. Text book, title, author, and year
   a. Kaelan. 2003. *Pendidikan Pancasila*, Yogyakarta: PenerbitParadigma
   b. Magnis Suseno. 1997. *Etika Politik*, Jakarta: Gramedia
   c. Undang-Undang Dasar RI Tahun 1945

5. Specific course information
   a. Course description:
      This lecture discusses the foundation and educational purposes of Pancasila, Pancasila in the context of the struggle of Indonesia, Pancasila as a system of philosophy, Pancasila as political ethics and national ideology, Pancasila in the context of constitutional law and Pancasila as the paradigm of life in society, nation, and state.
   b. Prerequisites : -
      Co-requisites : -
   c. This course is required /mandatory

6. Specific goals for the course
   a. After attending the course, students are expected to be able :
      i. To explain and understand the foundation, the objective, the competence and the direction of education of *Pancasila*
      ii. To analyze and appreciate the existence of *Pancasila*
      iii. To analyze and evaluate the policies of the government which is based on *Pancasila* as the state ideology of Indonesia
      iv. To analyze *Pancasila*as a Philosophy
      v. Able to take a responsible attitude as a good citizen (good citizen) in accordance with his/her conscience
      vi. Integral to think comprehensively about the problems in the life of the nation
      vii. Able to solve social and political problems in the state juridical perspective.
      viii. Able to solve social and political problems, the development of science, technology and art with the paradigm of the *Pancasila*.

b. This course addresses student outcome H as follows:
    i. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (SO H)

7. Brief list of topics to be covered
   The foundation and purpose of Education of *Pancasila*, *Pancasila* as a philosophy system, *Pancasila* in the context of the history of the struggle for independence of Indonesian nation, *Pancasila* as the system of political ethics and the state ideology, *Pancasila* in the context of state administration of the Republic of Indonesia, *Pancasila* as a paradigm of life in society, nation and state.

Occupational Safety and Health Course Syllabus

1. Course number and name
   51323603 Occupational Safety and Heatlh

2. Credits and contact hours
   Credit hour(s) 2, class meets once per week, 2 hour lecture

3. Instructor's or course coordinator's name
   Aulia Ulfah Faradiba

4. Text book, title, author, and year
   Rachmatiah. 2015. Kesehatan dan keselamatan Lingkungan Kerja. UGM Press

5. Specific course information
   a. Course description:
      In this course, students will gain an understanding of the elements of the working environment and its effect on health, occupational diseases, pollutant parameters and the prevention method, management and monitoring
   b. Prerequisites : Basic Physics II
      Co-requisites : -
   c. This course is required/mandatory

6. Specific goals for the course
   a. After attending the course, students are expected to be able :
      i. to explain the history, scope, definition, and objectives of occupational safety and health.
      ii. to identify the source of hazard, determine the exposure pathway, describe the risk of hazard receiver from their surrounding environment also in the workplace
      iii. to explain the general principle of hazard measurement method, demonstrate the ability to use the hazard measurement equipment, analyze the measurement results and compare the results with the standards
      iv. to analyze and explain how to control hazard in several working place such as: extreme temperatures, dust, noise, radiation, vibration, and ergonomic problems
      v. to solve the problem related with occupational safety and health that become national or international issue
      vi. to explain the general principles to make simple design of industrial building safety and local exhaust

b. This course addresses student outcome G and J as follows:
    i. An ability to identify, formulate and solve environmental engineering problems (SO G)
    ii. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (SO J)

7. Brief list of topics to be covered
   Introduction, Occupational health, industrial toxicology, skin diseases caused by industry, effect of temperature changes in workplace, physical and mental of ergonomics pressure, industrial noise, dust in industrial environment, local ventilation system, fire hazard protection, ionizing radiation safety, the layout of industrial buildings.

Water Supply Engineering

1. Course number and name
   51323602 Water Supply Engineering

2. Credits and contact hours
   Credit hour(s) 4, class meets twice per week, 4-hour lecture

3. Instructor's or course coordinator's name
   Hudori

4. Text book, title, author, and year
   1) Joko, T. 2010. Unit Produksi dalam Sistem Penyediaan Air Minum. Yogyakarta : Graha Ilmu
   2) Jordan, T.D. 2008, A Handbook of Gravity Flow Water Systems, Practical Action : UK
   3) Rishel, J.B. 2002. Water Pumps and Pumping Systems, Water/wastewater Treatment Applications. McGraww-Hill
   4) Skinner, B. 2003. Small-scale Water Supply, A review of Technologies, Practical Action. UK

5. Specific course information
   a. Course description:
      Design a water supply system from raw water, analysis of the quality and quantity, the selection of processing unit, the planning of distribution systems for a particular region.
      Prerequisites : Plumbing, Unit Operation
      Co-requisites : -
   b. This course is required /mandatory

6. Specific goals for the course
   a. After attending the course, students are expected to be able :
      i. To design the water supply system (SO E)
      ii. To explain the principle of physical, chemical and biological treatment for drinking water (SO E)
      iii. To explain some types of technology for drinking water treatment (SO E)
      iv. To explain the key parameters of drinking water (SO G)
      v. To explain the principle of drinking water treatment system plan (SO G)
      vi. To plan the piping channels manually and by using a software (EPANET) (SO M)
      vii. To explain and arrange the BOQ and RAB for drinking water supply (SO M)
      viii. To draw a design of water supply system (SO M)
   b. This course addresses student outcome E, G, and M as follows:
      i. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (SO E)

ii. an ability to identify, formulate, and solve environmental engineering problems (SO G)
iii. an ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practice (SO M)

7. Brief list of topics to be covered

Raw water sources, Water quality standards, Transmission system, Pump & Reservoir, Piping Accessories, Drinking Water Treatment Plant of Water Reservoir / Lake, Drinking Water Treatment Plant of Groundwater; Drinking Water Treatment Plant of Sea Water.

Wastewater Treatment Plant Design Course Syllabus

1. Course number and name
   51322601 Wastewater Treatment Plant Design

2. Credits and contact hours
   Credit hour(s) 4, class meets twice per week, 4 hours lecture

3. Instructor's or course coordinator's name
   Eko Siswoyo

4. Text book, title, author, and year
   1) MetMetcalf & Eddy. 2003. Wastewater Engineering Treatment and Reuse. McGraw-Hill.
   2) NSPM Public Works Department – PLP Section.

5. Specific course information
   a. Course description:
      The course covers materials to understand domestic wastewater since the generation until disposal or reuse. In general, the course is divided into four main topics: the generation and characteristics of domestic wastewater, individual on-site wastewater treatment, communal on-site wastewater treatment and off-site wastewater treatment.
   b. Prerequisites : Unit Operation, Unit Process
      Co-requisites : -
   c. This course is required/mandatory

6. Specific goals for the course
   a. After attending the course, students are expected to be able:
      i. To design the wastewater treatment plant (SO E)
      ii. To explain principle of physical, chemical and biological wastewater treatment (SO E)
      iii. To explain some technologies in wastewater treatment (SO E)
      iv. To explain the key parameters of wastewater (SO G)
      v. To explain the basic principle of wastewater treatment plant design (SO G)
      vi. To explain and arrange the BOQ and Cost Plan for wastewater treatment plant (SO M)
      vii. To draw a design for wastewater treatment plant (SO M)
   b. This course addresses student outcome E, G and M as follows:
      i. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (student outcome E).
      ii. An ability to identify, formulate, and solve environmental engineering problems (student outcome G).

iii. An ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practice (student outcome M)

7. Brief list of topics to be covered

   The problem of wastewater in developing countries, wastewater characteristics, choosing process of waste water treatment, individual on-site wastewater treatment, conventional wastewater treatment, conventional off-site wastewater treatment, sludge treatment and utilization, performance issues of wastewater treatment plant.

Fieldwork Course Syllabus

1. Course number and name
   51323621 Fieldwork

2. Credits and contact hours
   Credit hour(s) 2, minimum 20 working hours

3. Instructor's or course coordinator's name
   Adam Rus Nugroho

4. Specific course information
   a. Course description:
      This course allows direct exposure to environmental engineering-related works in industries, government institution or private projects related to environmental engineering field of expertise. Student should write a report and present it orally.
   b. Prerequisites : completion of minimum 90 credit hours with minimum GPA of 2.5
      Co-requisites : -
   c. This course is required /mandatory

5. Specific goals for the course
   a. After attending the course, students are expected to be able:
      i. to have Islamic behavior (SO A)
      ii. to function on a team (SO F)
      iii. to identify, formulate and solve particular problems within one field in environmental engineering expertise given during practical work (SO G)
      iv. to explain possible ethical issues involved in various professional works and how ethical principles should be addressed to make a decision (SO H)
      v. to recognize some new technologies and understands that professionals should be able to self-learn and sometimes work in unfamiliar areas (SO K)
      vi. to write a report and present it orally (SO I)
   b. This course addresses student outcome A, F, G, H, I and K as follows:
      i. Having Islamic character and values (SO A)
      ii. An ability to function on multidisciplinary teams (SO F)
      iii. An ability to identify, formulate and solve environmental engineering problems (SO G)
      iv. An understanding of professional and ethical responsibility (student outcome H)
      v. An ability to communicate effectively (SO I)
      vi. A recognition of the need for, and ability to engage in life-long learning (SO K)

6. Brief list of topics to be covered
   Exposure to environmental engineering works, writing report and present it orally.