**III.2.13 ENVIRONMENTAL MANAGEMENT**

**A. Course description**

**1. Credit points: 2 ECTS**

**2. Time commitment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Items | Lecture | Tutorial/Exercise | Practice/Assignment | Lab-work | Total |
| No. of hours | 16 |  | 4 |  | 20 |

**3. Prerequisites:** None

**4. Recommended background knowledge** : None

**5. Subject description**

Environmental management is a broad discipline devoted to understanding human-environment interactions and the application of science to solve problems.  This course aims to enable the students to identify, describe, and compare core themes and priciples of the subject.  In accordance with this main goal, the student would explain how pollutants behave in environmental media (air, water, and soil), how human beings are exposed to the pollutants, how adverse human health effects occur, what are environmental standards and how they are developed, and discuss the relations among these subjects.  The students would interpret environmental risk levels to make management decisions.

Subjects of environmental impact assessment, pollution prevention and waste management are to be covered, which would add to the knowledge required for out of field students such as mechanical, civil, chemical, food engineers. The students would be aware of the contemporary environmental issues and potential mitigation approaches .

**6. Objectives & Outcome**

The aims are to enable students to acquire:

- Knowledge of the functioning of the natural system which makes life possible on Earth

- An appreciation of the diverse influences of human activity on the natural system

- An awareness of the need for management and human responsibility to keep the system in a healthy condition if life as we know it is to continue

- An understanding of sustainable development and management to meet the needs of the present without compromising the ability of future generations to meet their own needs

- An understanding of how local environments contribute to the global environment

- An awareness of their own values concerning environmental issues

**7. Assessment/ Evaluation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Component | Attendance | Exercises | Practical | Participation | Midterm | Final |
| Percentage % | 10 | 20 |  |  | 20 | 50 |

**8. Prescribed Textbook(s)**

[1] Coulson & Richardson - Chemical Engineering Vol 6

**B. Course content**

Introduction

Exposure and Human Health Risks

Environmental standards and monitoring (Monitoring Chemicals in the environment)

Environmental Laws and Policies

ISO14001

Regulating Chemicals in the Environment: RCRA (http://www.epa.gov/solidwaste/laws-regs/index.htm), CERCLA (http://www.epa.gov/agriculture/lcla.html), CWA (http://www.epa.gov/agriculture/lcwa.html), FIFRA (http://www.epa.gov/agriculture/lfra.html)

Case studies: (e.g. The United State of America and European Union environmental laws)

Emerging environmental issues

Waste Management

Pollution Management

Guidelines for Assignment and Exercise/Mid-term test

Writing Assignment

Submit one well written properly referenced research paper discussing the fate or effects of a contaminant and media of your choosing. The paper should be a minimum of 8 pages long excluding the title page and reference page, standard font and margins apply. Number your pages. Plagiarized papers will receive a zero. Any paper that is not properly referenced will not be accepted – automatic zero.

Mid-term test/Group Work (presentation)

Over the course, there will be announced the activities for mid-term test (a short quizzes) or the group work by presentation of the recent news story in any aspect of environmental management. The story for presentation can come from newspapers, magazines, or internet sources. The story needs to been relatively recent, which means the stories need to be from the last year (2014 to present).

The class presentation needs to include:

An introduction to the topic of the story

The context of the story MUST be supported by information obtained from primary scientific literature

Explain the contribution of this story to understanding to the different aspects of the.

Include ALL references on your final slide. The citation style to be used for the references is as guideline below.

Each group will be graded on the quality of the presentation based on: (1) the information of the presentation; (2) adherence to guidelines of the exercise; (3) inclusion of any references used to obtain additional information; (4) adhering to the time limit of 3-5 minutes; (5) oral presentation style; and (6) the news story and presentation must be submit to lecture before presentation class (late sending will result in a loss 30% of the total grade of exercise).

References Guideline

*Citation in text*

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text.

*Reference management software*

Ssoftware such as Mendeley (<http://www.mendeley.com/features/reference-manager>), EndNote (<http://www.endnote.com/support/enstyles.asp>) and Reference Manager (<http://refman.com/support/rmstyles.asp>) can be used to manage the references.

*Reference formatting*

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present

**C. Reference Literature**

Barrow, C. J., Environmental Management: Principles and Practice, Taylor & Francis, 2002.

Asante-Duah, K., Risk assessment in environmental management: a guide for managing chemical contamination problems. John Wiley and Sons, 1998.

Ricci, P.F., Environmental and Health Risk Assessment and Management: Principles and Practices, Springer, 2006.

Theobald, R.H., Environmental management, Nova Science Publishers, 2008.

Madu, C.N., Environmental planning and management, Imperial College Press, 2007.