Kingdom of Saudi Arabia Ministry of Higher Education **Qassim University** College of Engineering		**المملكة العربية السعودية** وزارة التعليم العالي **جامعة القصيم** **كلية الهندسه**

Engineering Safety and the Environment

College: Engineering

Department: Mechanical Eng. Dept.,

First: Course Definition

1- Course Code: ME 677

2- Units: 3 credit hrs

3- Semester:

4- Prerequisite: N

5- Co-requisite: N

6- Location (if not on main Campus):

Second: Course Objectives

1- To provide students with insight into the nature of mechanisms of environmental control.
2- To develop an understanding of the challenges of managing engineering approaches such as meeting environment assessment, environmental impact statements and other legal requirements.
3- To help students apply the engineering safety and the environmental principles to the energy power plants structures.

Third: Course Specifications

1- Topics to be covered

Subject	No of Weeks	Units
Introduction to engineering safety.	1	3
Administrative functions in the control of environmental factors.	2	6
Factors affecting human health and survival.	2	6
Introduction to challenges of managing engineering approaches.	2	6
Environment assessment.	2	6
Environmental impact statements.	2	6
Legal requirements.	2	6
Applications.	2	6

2- Course components (Total 45 hrs in the Semester)

Lecture (hr)	Exercise (hr)	Other
45	---	0

3- Intended Learning Outcomes of the Course (ILO's)

a. *Knowledge*

i) Description of the knowledge to be acquired:

1. A knowledge of contemporary and emerging environmental issues and a recognition of the need for, and an ability to engage in, life-long learning.
2. Understanding of professional, societal, and ethical responsibilities and the importance of, and role for, multidisciplinary teams in professional practice.
3. Understand materials processes, and the application of general natural science and engineering principles to the analysis and design of materials systems of current and/or future importance to society.
4. Understand the environmental context within which materials engineering is practiced.

ii) Teaching strategies to be used to develop that knowledge:

- Class lectures .
- Term projects.
- Students' presentations.
- Group discussion.

iii) Methods of assessment of knowledge acquired:

- Exams.
- Quizzes.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed:

- Recognition effect of humans on the environment.
- Analyze the safety systems.
- Capability of recognition different environmental schemes.
- Differentiate among different environmental types.

ii) Teaching strategies to be used to develop these cognitive skills:

- Class lectures.
- Case studies analysis.
- Problem assignments and Students' presentations.

- Reports.
- Group discussion
- Term projects.

iii) Methods of assessment of students' cognitive skills:
- Students' seminars and presentations.
- Quizzes.
- Term projects.
- Written reports.

C. Interpersonal Skills and Responsibility

i) Description of the interpersonal skills and capacity to carry responsibility to be developed:
- Decision making based on engineering analysis.
- Communication skills.
- Team work.

ii) Teaching strategies to be used to develop these skills:
- Class lectures.
- Term projects.
- Case studies analysis.

iii) Methods of assessment of students' interpersonal skills and capacity to carry responsibility:
- Term project .
- Written reports.
- Students' seminars and presentations.

d. Communication, Information Technology and Numerical Skills

i) Description of the skills to be developed in this domain:
- Use of the internet search for course related issues.
- Write acceptable technical report.
- Verbally present technical report.

ii) Teaching strategies to be used to develop these skills:
- Reading assignments and Students' presentations.
- Case study (data collection, Internet search, and reporting).
- Reports.
- Group discussion.

iii) Methods of assessment of students numerical and communication skills:
- Term projects.

- Written reports.
-Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

i) Description of the skills to be developed in this domain:
- Not Applicable.

ii) Teaching strategies to be used to develop these skills:
- Not Applicable.

iii) Methods of assessment of student's psychomotor skills:
Not Applicable

4- Student Assessment Schedule

Serial	*Assessment tool (test, group project, examination etc.)*	*Week due*	*Weight*
1	Four quizzes	Weeks 5, 8, 9 and 14	10 %
2	Two mid-term exams	Weeks 6 and 12	20 %
3	Mostly eight assignments (in-class/out-class) and homework. This number may increases according to the instructor view.	Weeks 3, 5, 7, 9, 11, 12, 14 and 15	16 %
4	Attendance	All weeks	4 %
5	Final Exam	Week 16	50%

5- Student Support:

- Providing electronic library of textbooks and scientific periodicals.
- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References):
- Marguglio, B. W., Environmental Management Systems, Dekker Incorporate Publisher, 1991.

ii) Course Notes:
-NA

iii) Recommended Books:
- Chris, Environmental Management and Development, Rutledge Publisher, 2000.
- Li, H. & Chen, G. Environmental Management in Construction: A Quantitative Approach, Routledge Publisher, 2001.

- Burke, Gwendolyn, Singh, B. R., and Louis Theodore, L., Handbook of Environmental Management and Technology. New York: John Wiley, 2000.

iv) Electronic Books & Web Sites:

- Scientific journals and forums.
-Instructor's instruction.

v) Periodicals:

- Journal of Environmental Pollution.
- http://www.sciencedirect.com/science/journal/02697491
- Journal of Atmospheric Environment.
- http://www.sciencedirect.com/science/journal/13522310
- Atmospheric Environment. Part B. Urban Atmosphere.
- http://www.sciencedirect.com/science/journal/09571272

7- Course Evaluation and Improvement Processes:

i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Students' questioners.
-Students' evaluation of course and instructor.

ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department:

- Public faculty seminars.
-Assessment by external evaluators of students achievements.

iii) Processes for Improvement of Teaching:

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
-Seminars by industry professionals.

iv) Processes for verifying standards of student achievement:

- Check marking by an independent faculty member of a sample of student work.

v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement: .

-A continuous improvement process through adopting a closed loop assessment/improvement. The process depends on assessment by all stake holders for the M.Sc. program educational outcomes ending with proposing the necessary improvements.