GE 302
Industry and the Environment

Department of Civil Engineering
King Saud University

Course Description: **GE 302 Industry and the Environment** (Required for a BScE degree)	This course gives an introduction to the impact of engineering and industrial activities on the environment. The lectures cover: basics of ecosystems, environmental balance, types of pollution, and types, sources, and limits of pollutants; in addition to fundamentals of Environmental Impact Assessment (EIA). Pollution control technologies and examples of pollution from various engineering and industrial sectors are also covered. The course also includes a group term project. 2(2,0,0)
Prerequisite	None
Course Learning Objectives	Students completing this course successfully will be able to: 1. Understand the basics of the global ecosystem and the natural cycles of its major components 2. Understand the types of environmental pollution caused by engineering and industrial activities 3. Realize the importance of sustainable development and maintaining environmental balance. 4. Understand the different types of pollutants, their sources, limits and the different technologies for pollution control. 5. Recognize the importance of EIA prior to making development projects. 6. Improve their communication skills, including reading, writing, and oral presentations.
Topics Covered	1. Introduction to the environment, ecosystems and environmental pollution (definition of some environmental terms, categories of pollutants, examples on different types of pollution, natural cycles of important components). 2. Water pollution (water quality, water quantities, pollutants and their standard limits and treatment; wastewater quantity, characteristics, reuse and discharge standards, and treatment) 3. Air pollution (types of pollutants, standards, and control) 4. Solid wastes (quantity, characteristics, management, and disposal) 5. Noise pollution (introduction, rating systems, effects on people, sources, and control). 6. Fundamentals of EIA.
Class/ Tutorial Schedule	Classes are held once per week in 100-minute lecture session or over two-weekly 50-minute lecture sessions.
Computer Applications	Searching the internet for related topics is encouraged during the course and for facilitating the term project.
Project	A project is offered for the students in groups during the course, to improve their understanding of environmental engineering systems and fundamentals as well as relevant contemporary issues (i.e. recycling of materials, global warming, green technologies, sustainable development and public health). Such project includes collection of information and/or studying cases of pollution from an industry, to emphasize the linkage between real cases of pollution and control with the course content. A written report and oral presentation is required.

Contribution of Course to Meeting the Professional Component	1. Students develop awareness of environmental ethics and contemporary issues in their engineering profession 2. Students understand potential impacts of engineering &industrial activities on the environment 3. Students improve their communication and presentation skills. 4. Students recognize the role of professional societies in developing standards and updating current knowledge.
Relationship of Course to Program Outcomes	1. Students use knowledge of math, science & engineering in understanding environmental related issues (ABET a) 2. Students develop knowledge and awareness of environmental contemporary issues; for example, pollution and waste management, sustainable development, public health and environmental ethics (ABET j). 3. Students acquire broad education necessary to understand the impact of engineering solutions in a global, environmental and societal context (ABET h) 4. Students develop their ability to prepare written reports and oral presentations; hence improve their communication skills (ABET g).
Textbook(s): **Other Supporting Materials:**	1. Salvato, Nemerow, & Agardy "Environmental Engineering", 5th ed., Wiley (2008) 2. Dix, Herbert Mason (1981) “Environmental Pollution: Atmosphere, Land, Water & Noise”, John Wiley, Chichester. 3. Saudi Drinking Water Standards. 4. Saudi Ambient Air Quality Standards. 5. American Ambient Air Quality Standards.
Prepared by	Dr. Abduaziz O. Al-Jasser
Date of Preparation	May, 2006
Date of Update	June, and Oct., 2009 Dr. Hesham Al-Flouli; Dr. Waleed Zahid

Grade Distribution

Mid-term Exams	30%
Term Paper	20%
Final Exam	50%

Homework and Reports

Term project report on relevant contemporary issues or other suitable topics must be submitted and presentations delivered by students on time. Late submission will be penalized. Submissions must be neat and clean on A4 paper format.