Syllabus

Course : CEGE 3103, Engineering Ethics and Professional Practice, 1 credit
Meeting Time: TBD
Meeting Place: TBD

Course Description: Introduction to ethical thinking, legal aspects of professional practice, codes of ethics for engineers, ethical problem-solving using case studies.

Prerequisites: CEGE Upper Division

Course objectives:
(1) To familiarize students with the main ethical issues arising in engineering practice;
(2) To familiarize students with legal aspects of professional practice;
(3) To familiarize students with problem-solving methods applicable to ethical issues;
(4) To practice ethical problem-solving on case studies.

Required Text: Fleddermann, C., *Engineering Ethics*, 4th edition, Pearson Prentice Hall.

Assignments:
(1) Each week there will be an assigned reading to be completed before the next class. Associated with this will be several questions to be answered and turned in at the start of the next class.
(2) Each week the class will be divided into small (3-4 students) teams which will prepare answers to 2-3 essay questions based on that week's assigned reading. Selected team spokespersons will present their team's answers to the class for discussion, and each team's answer will be turned in at the end of the class.
(3) There will be midterm and final exams, covering material from the assigned readings.

Grading:

Weekly assignments	25%
Attendance/class participation	25%
Midterm exam	25%
Final exam	25%

Homework Submissions
The ability to communicate in a clear and comprehensible manner is an essential engineering skill. It is not required that you type your homework, but neatness and clarity of presentation are important. To this end you should:
(1) Express answers in complete, grammatically correct sentences.
(2) Use a consistent size and type of paper
(3) Use only one side of each sheet of paper
(4) Avoid pages with ragged edges
(5) Number the pages
(6) Staple or bind multiple pages.
Homework submissions that deviate markedly from the above guidelines will be returned with a

grade of zero, with no resubmission permitted.

Course Schedule

Week	Topic	Preparatory Reading
1	Course Intro/Overview of Ethics	In class video
2	Space Shuttle challenger	Fleddermann, chap. 1
3	Professional ethical codes	Fleddermann, chapt 2
4	Legal aspects of professional practice	To be determined
5	Understanding ethical problems	Fledermann chapt 3
6	Ethical problem solving	Fleddermann, chapt 4
7	Midterm exam	
8	Risk, safety, and cost	Fleddermann, chapt 5
9	Rights and responsibilities	Fleddermann, chapt 6
10	Whistle-blowing	Case study handout
11	Ethics in research	Case study handout
12	Ethics in private practice	Case study handout
13	Case Study	Handout
14	Case Study	Handout
15	Final exam	

ABET Outcomes

The Department of Civil, Environmental, and Geo-Engineering offers three ABET accredited undergraduate degrees: Civil Engineering (CE), Environmental Engineering (EE), Geo-Engineering (GE). (ABET used to stand for Accreditation Board of Engineering and Technology.) To maintain ABET accreditation, the Department must demonstrate that all of its graduates have the following eleven general skills and abilities:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on a multi-disciplinary team
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

In this course, *CEGE 3103, Engineering Ethics and Professional Practice*, the following ABET outcomes will be specifically emphasized:

(f) an understanding of engineering and professional responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context

(i) a recognition of the need for, and the ability to engage in life- long learning
(j) a knowledge of contemporary issues

Academic Standards
Students are responsible for knowledge of and adherence to the published academic code of conduct. This can be found on the internet at:

http://www1.umn.edu/regents/policies/academic/StudentConductCode.pdf

The University Student Conduct Code defines scholastic dishonesty as follows:

> Scholastic Dishonesty: Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

CEGE 3103
Engineering Ethics and Professional Practice

Assignment 1

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A. To be turned in at start of next class period.

Read Chapter 1 of the text. Based on your reading answer the following questions:

1. What, according to the text, is "moral autonomy?"

2. What does the text give as an example of activity that is legal, but unethical?

3. When was the first documented joint failure of the Space Shuttle *Challenger*?

4. On what date and time was the Space Shuttle *Challenger* launched, and what was the air temperature at the launch site at that time?

B. Be prepared to answer the following for class discussion:

1. Bob Lund was famously asked to "take off your engineer hat and put on your management hat." Is this possible? Should it be done? Why or why not?

2. Should a launch have been allowed when there were no test data for the expected (cold) conditions? Why or why not?

3. What could NASA managers have done to prevent the accident? What could the Thiokol engineers have done to prevent the accident? Given the prevailing economic and political conditions, evaluate the possible consequences of your proposed actions.