

Engineering Ethics STSH-4230

Fall Semester 2004
Tuesdays and Fridays, Noon to 1:50 pm
Sage Lab 3705

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Course Description

What does it mean to be an “ethical” engineer? Are there inherent values in the practice of engineering that are important to understand? Do engineers have particular responsibilities to their employers, fellow workers, the general public, and to themselves? Should ethics even matter to engineers?

In this course, we will address these questions from a variety of perspectives. First, we will examine where the profession of engineering came from, why it is considered a profession, and what makes it different from other professions such as doctors and lawyers. We will then explore the field of ethics as it relates to engineering practice and use this framework to examine several case studies of ethical problems in engineering. Finally, we will discuss the concepts of environmental protection and sustainability to understand how they relate to engineering ethics. The course is intended to promote greater reflection by engineers on their activities and better understand the social dimensions of engineering practice.

Readings

There are two required books for the course, available at the RPI bookstore and through various online booksellers:

Davis, Michael (1998) *Thinking Like an Engineer: Studies in the Ethics of a Profession*, Oxford University Press.

Schnzinger, Roland and Mike Martin (2000) *Introduction to Engineering Ethics*, McGraw-Hill.

Additional book chapters and articles are available from the university library electronic reserves system and through various websites. If you are unfamiliar with the library reserve system, ask the instructor. A bibliography of the readings is included at the end of this syllabus.

Assignments and Grading

Course grading will be based on class participation, daily essays, four quizzes, a group presentation, and a term paper. Brief descriptions of each assignment are provided below and more detailed descriptions will be provided as they are assigned. All assignments are due at the beginning of class.

Class Participation (15%)

Each class member will be graded on participation. Participation means that as a class member, you attend class regularly and come prepared to discuss the assigned readings. Missing one or two class periods is acceptable and does not require special permission from the instructor. Missing more than two class periods will have an impact on your participation grade unless you have discussed your absence in advance from the instructor.

Daily Essays (35%)

Daily essays are intended to be informal commentaries on the day's readings and are due at the beginning of the class period. These writing assignments are to be 350 to 400 words in length (about one page). The content of the essays should include your opinions, critiques, and reactions to the reading content and should not merely be a summary of the readings. Your lowest scoring daily essay will be dropped from your final grade.

Quizzes (20%)

Quizzes are given at the end of each section of the course. The quizzes consist of short-answer questions and specifically address the readings and class content for their particular sections. Sample questions will be provided by the instructor prior to the first quiz. Quizzes are closed book and closed notes.

Group Presentation (10%)

Each class member will participate in a group presentation to address an assigned engineering ethics case study. Group members will gather information from print and on the web for their particular case study and discuss the facets of the case study within their group. On a particular date, each group will present to the class a summary of their case including their opinions and analysis. Each group member must be involved in the presentation and discussion.

Term Paper (20%)

The term paper is the major writing assignment of the course and will consist of a 2,500 to 3,000-word paper (about 6 to 8 pages) covering the case study of the student's group. Each group member will turn in an individual term paper. Discussion between the group members on the case study is encouraged but the written document must be original work by the individual and cannot be a collaboration between team members.

No additional work such as extra credit assignments will be available to make up for missing assignments.

Grading

Your final grade for the course will be determined using the following scale:

Grade	Points
A	90.0 to 100.0%
B	80.0 to 89.9%
C	70.0 to 79.9%
D	60.0 to 69.9%
F	Below 60.0%

Academic Conduct

All work that you submit for this course **MUST** be your own. Acts of plagiarism and other forms of cheating carry harsh penalties at RPI and each student should take the issue of academic conduct very seriously. You are encouraged to study and discuss course material with class members but daily essays and term paper are to be written independently in your own words. When drawing information from another source, you must give credit by citing it as an endnote or footnote. Cheating on quizzes by looking at a neighbor's quiz or using cheat sheets will result in an F for the course. If you are unsure of what to do in a situation, ask the instructor. Further information on academic conduct can be found in the Rensselaer Handbook.

Technology Issues

Laptop computers are not allowed in the classroom (except in special circumstances) as they have a tendency to distract other students from the lecture and discussion. Also, part of the education process of all university courses is to learn how to take notes by hand for reference at a later date. Cellular phones should be turned off or set to silent mode and text messaging is not allowed during class time.

Week	Date	Topic	Readings
1	T 8/31	Introduction	
	F 9/3	Why Study Ethics?	Handout
2	T 9/7	Engineering History	Davis 18-30 Reynolds 7-26, 169-190
	F 9/10	Engineering Perspectives	Davis 31-40 Noble 33-49
3	T 9/14	Ethical Perspectives	Schinziger & Martin 39-70 Winner 376-385
	F 9/17		Rachels 1-19, 21-48
4	T 9/21	Codes of Ethics	Davis 43-60 Unger 32-55
	F 9/24	QUIZ 1	Code of Ethics
5	T 9/28	Safety and Risk	Schinziger & Martin 107-129 Gladwell 32-36
	F 10/1		Schlossberger 41-84
6	T 10/5	Engineering Judgment and Decision-Making	Davis 61-82
	F 10/8		Davis 85-106
7	T 10/12	Engineers and Corporations	Schinziger & Martin 143-184 Davis 73-82
	F 10/15		Noble 50-65 Morgenstern 45-53
8	T 10/19	The Global Engineer	Petrella 413-421 Collste 423-438
	F 10/22	QUIZ 2	

Week	Date	Topic	Readings
9	T 10/26	An Introduction to the Case Study Approach	
	F 10/29	Case Study The Ford Pinto	Dowie (web) DeGeorge 1-14
10	T 11/2	Case Study Group 1	TBA
	F 11/5	Case Study Group 2	TBA
11	T 11/9	Case Study Group 3	TBA
	F 11/12	Film	
12	T 11/16	Case Study Group 4	TBA
	F 11/19	Case Study Group 5	TBA
13	T 11/23	QUIZ 3 and TERM PAPER	
	F 11/26	NO CLASS (Thanksgiving)	
14	T 11/30	Engineering and the Environment	Whitbeck 236-262
	F 12/3		Schinziger & Martin 185-222 Gunn & Vesilind 33-39
15	T 12/7	Engineering and Sustainability	Weiler 511-524 McLissac and Morey 110-119
	F 12/10	QUIZ 4	

Bibliography

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- DeGeorge, Richard (1981) "Ethical Responsibilities of Engineers in Large Corporations: The Pinto Case," in *Business and Professional Ethics Journal*, Vol 1, No 1, pp. 1-14.
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- Noble, David (1977) "The Wedding of Science to the Useful Arts – III: The Emergence of the Professional Engineer," and "Preservation Through Change: Corporate Engineers and Social Reform," in *America by Design: Science, Technology and the Rise of Corporate Capitalism*, Knopf, pp. 33-49 and pp. 50-65.
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- Rachels, James (1997) "Moral Philosophy as a Subversive Activity," and "Can Ethics Provide Answers," in *Can Ethics Provide Answers?*, Rowman & Littlefield, 1997, pp. 1-19 and pp. 21-48.

Reynolds, Terry S. (1991) *The Engineer in America: A Historical Anthology from Technology and Culture*, University of Chicago Press, pp. 7-26 and 169-190.

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Weiler, Raoul (2001) "Sustainability: A Vision for a New Technical Society?" in *Technology and Ethics: A European Quest for Responsible Engineering* (edited by P. Goujon and B. Heriard Dubreuil), Peeters, pp. 511-524.

Whitbeck, Caroline (1998) "Responsibility for the Environment," in *Ethics in Engineering Practice and Research*, Cambridge University Press, pp. 236-262.

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