IE 380
The Responsible Engineer
Spring Term 2011

General Information

Course Description

The idea of responsibility and the ethical responsibilities of the engineer. Introduction to ethics, including the concept of value, types and nature of value, and ethical systems. Engineering as value creation and the ethical ramifications of engineering practice and engineering products. Codes of engineering ethics. Recognizing and addressing ethical dilemmas in engineering. Examination of the individual, social, and environmental effects of engineering and technology. (Bacc Core Course)

3 credits (3 hours of lecture per week)

This course satisfies the Bacc Core Science, Technology, and Society requirement.

Instructor

Dr. Ken Funk, Associate Professor of Mechanical, Industrial, and Manufacturing Engineering

- office: Rogers 212
- phone: 1-541-737-2357
- e-mail: funkk@engr.orst.edu
- office hours: TBA

Learning Outcomes

Upon completing this course, you should be able to:

1. Define and describe the fundamental terms and concepts of ethics and explain how they apply to the practice of engineering.
2. Describe, compare, and contrast several ethical systems (e.g., utilitarianism, duty ethics, virtue ethics, religious ethics) and apply them to the examination of ethical issues in engineering.
3. Clearly state your own personal ethical principles and apply them to ethical issues in engineering.
4. Recognize an engineering ethical dilemma and apply a systematic process of moral reasoning to resolve it.
5. Explain the advantages and limitations of engineering ethics codes and apply one to the resolution of an ethical dilemma.
6. Define responsibility, identify to whom and to what you will be responsible as a practicing engineer, and give examples of how you might fulfill -- or fail to fulfill -- those responsibilities.
7. Describe the effects of technology on individuals, society, and the environment and apply your ethical principles, as well as those of other ethical systems, to the critical examination of technology in light of those effects.

Required Textbook


Other Recommended But Optional Readings (on reserve in the library)


Format, Coursework, and Policies

Course Format

The course format is reading, lecture, and facilitated discussion. Readings, assigned in the Schedule, will come from the text and I will provide study questions well in advance of each discussion. You should read the material, think critically about it and the questions, answer the questions before coming to class. Bring two copies of your answers to class, one to turn in at the beginning of class, the other for you to refer to
in discussion.

In class, I will give a brief lecture summarizing the material from the reading and adding additional information to clarify or expand on it. Then we will discuss the material. I will ask you, individually, to give your answers to specific study questions. Sometimes I will pose additional questions in class for you to think critically, write, and speak about, either individually or in small groups. Occasionally, professional engineers will join us to enrich our discussions from their experiences with ethical problems in their work.

Coursework and Credit

| Attendance | credit (see below) |
| Study Question Answers | credit (see below) |
| Midterm Examination | 100 points |
| Final Examination | 100 |
| Essay | 100 |

**Total 300 points**

**Attendance** is mandatory, and just one unexcused absence is permitted without penalty. You are required to submit **Study Question Answers** for each discussion, but you may miss one set without penalty. The penalty for missed attendance is 10 points per class missed (one excused, per above) and the penalty for failing to submit Study Question Answers is 10 points per set missed (one excused, per above).

The midterm and final **Examinations** will be closed-book, closed-notes, but you may use one 8.5" x 11" (both sides) crib sheet for each.

You will write an **Essay** in which you address a real or hypothetical ethical dilemma in your field of engineering. The dilemma you address must be approved by me. Your essay must explicitly reference fundamental concepts of axiology and engineering ethics, draw on your own personal values, beliefs, and experiences, clearly articulate one or more personal ethical principles, and apply those principles in your approach to the resolution of the dilemma. The essay should be five to 10 pages long, double-spaced. Cite at least three authoritative sources and provide a complete list of references, with full bibliographic information in Chicago (humanities) style ([http://www.chicagomanualofstyle.org/tools_citationguide.html](http://www.chicagomanualofstyle.org/tools_citationguide.html)). Your essay is due at class time on the day specified in the schedule.

Grading
Your study question answers will not be graded but I will record whether or not you submit them. Your exam question answers will be graded based on factual accuracy, logic, and clarity. Your essay will be graded based on meeting specific essay requirements, factual accuracy, logic, organization, clarity, and writing conventions (grammar, spelling, etc.).

The grading scale is

- 93% - 100% A
- 90% - 92% A-
- 87% - 89% B+
- 83% - 86% B
- 80% - 82% B-
- 77% - 79% C+
- 73% - 76% D
- 70% - 72% C-
- 67% - 69% D+
- 63% - 66% D
- 60% - 62% D-
- 0% - 59% F

Your course grade will be reduced one-third letter grade (e.g., A- to B+, B to B-) for each unexcused absence in excess of one unexcused absence. Your course grade will be reduced one-third letter grade for each set of study questions you fail to submit in excess of one set.

**Statement Regarding Students with Disabilities**

"Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098."

**Expectations for Student Conduct**

Students in this course are expected to abide by OSU's Student Conduct Code. Specifically prohibited acts include the following (from the Code):

- CHEATING - use or attempted use of unauthorized materials, information or
study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

FABRICATION – falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

TAMPERING - altering or interfering with evaluation instruments or documents.

PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one’s own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

For OSU's complete Student Conduct Code, see [http://oregonstate.edu/admin/stucon/achon.htm](http://oregonstate.edu/admin/stucon/achon.htm).

### Schedule (subject to change)

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Revised 7 February 2011