

**BIOE 320: Professionalism and Engineering Ethics
3 Credit Hours, Winter 2009**

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Office Hours: MW 3:00-4:00; Th 11:00-12:00

Meeting time: MWF 1:00-1:50, Womens Building 205

Prerequisites: WR 121

Revision date: 02 January 2009

Catalog Description

Introduction to engineering ethics. Topics include ethical theory, professional engineering responsibility, codes of ethics, ethical assessment, conflicts of interest, risk and safety, loyalty and dissent, as well as overarching professional concerns.

Course Format

The course will include collaborative learning experiences, such as analysis of case studies and writing-to-learn activities, as well as background lectures and guest speakers.

Required Reading Material

Bentham, J. The Principle of Utility, from *The Principles of Morals and Legislation*, 1789.

Davis, M. Three myths about codes of engineering ethics, *IEEE Technology and Society Magazine*, Fall 2001, pp 8-14, 22.

Guin, U. *The Ones Who Walk Away From Omelas*, in New Dimensions 3, 1997.

Harris, C.E., Jr., M.S. Pritchard and M.J. Rabins. Practicing Engineering Ethics, IEEE Engineers Guide to Business, Vol. XI, The Institute of Electrical and Electronics Engineers, Inc., New York, 1997.

Kant, I. Good will, duty, and the categorical imperative, from Fundamental Principles of the Metaphysics of Morals. Translated by T.K. Abbott (1898).

Mill, J.S. *Utilitarianism*, London, NY: Longman, 1907

Rachels, J. The ethics of virtue, in *Elements of Moral Philosophy*, 2nd Ed., New York: McGraw-Hill Inc., 1986.

Vesilind, P.A, Gunn, A.S. *Engineering, Ethics, and the Environment*, Cambridge University Press, Cambridge, UK, 1998. (Chapter 5: pp 87-100)

Whitbeck, C. *Ethics in Engineering Practice*, Cambridge University Press, Cambridge, UK, 1998. (Chapter 1: pp 53-73; Chapter 2: pp 74 -107; Chapter 8: pp236-262; Chapter 10 pp 295-305)

Woodhouse, E.J., Curbing overconsumption: challenge for ethically responsible engineering, *IEEE Technology and Society Magazine*, Fall 2001, pp 23-30.

Learning Objectives

The goal of this course is to introduce students to professional ethics in engineering. By the end of the course, students must demonstrate ability to:

1. state what makes an occupation a “profession” and the basis and scope of an engineer’s professional responsibility;
2. describe and apply at least three ethical theories;
3. identify ethical conflict in a given situation;
4. select strategies for assessing ethical dilemmas, and critically arrive at a resolution;
5. describe engineers’ responsibility as it relates to risk assessment and safety, truthfulness and reliability, and loyalty and dissent in the workplace; and
6. describe engineers’ responsibility as it relates to overarching professional concerns, such as environmental issues, animals in research, and agricultural biotechnology.

Course Grading: Letter option only (A-F).

To pass this course, completion of the following training module is required:

- Laboratory Animal Training Association's module (base module only):
<http://hazel.forest.net/latanet/client/oregonst/introduction.htm>

Grade Weighting: Grades will be determined according to the following criteria:

- **Class Participation:** **10%**
There will be small group discussions occurring randomly throughout the term so you must come to class prepared, having done the required reading. For these assignments, you will be evaluated on a pass/no pass basis. This means that if you are present in class, are prepared and participate in the group, you will receive credit. If any one of these three criteria is not met, you will not receive credit. In addition, you will receive credit for attending sessions when a guest speaker is presenting or a video is shown.
- **Quizzes** **10%**
- **Midterm exam I** **15%**
- **Midterm exam II** **15%**
- **Midterm exam III (held during finals week)** **10%**
- **Critical reviews of web-accessed and in-class ethics videos** **10%**
- **Professional "milestone" interview and write-up** **15%**
- **Case Study** **15%**
Student will work in pairs to write a short paper (essay, position paper, dialogue, etc.) regarding an ethical issue in engineering. I will disseminate the topic midway through the term.

In general, final performance percentage will be assigned a letter grade by the following scale:

100-94	A	74-76	C
90-93	A-	70-73	C-
87-89	B+	67-69	D+
84-86	B	64-66	D
80-83	B-	60-63	D-
77-79	C+	60<	F

However, if warranted I will adjust term percentages by a few points (in the positive direction).

Course policy on attendance, late work, etc.

I will not accept any late homework and will not allow make-up quizzes or class participation activities EXCEPT in the event of an emergency or illness. In the latter cases, you must notify me as soon as possible to discuss a time-line for making up the work. In most cases, you should be able to contact me before your absence (email is fine). It will be your responsibility to secure handouts and notes from the class periods you miss.

Academic honesty

I take the issue of academic honesty very seriously. You will be expected to conduct yourself in a professional manner. Academic dishonesty such as cheating will not be tolerated -- students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- cheating- use or attempted use of unauthorized materials, information or study aids,
- fabrication- falsification or invention of any information,
- assisting- helping another commit an act of academic dishonesty,
- tampering- altering or interfering with evaluation instruments and documents, or
- plagiarism- representing the words or ideas of another person as one's own.

For more information about academic integrity and the University's policies and procedures in this area, please refer to the Student Conduct web site at: <http://www.orst.edu/admin/stucon/achon.htm> and the section on Academic Regulations in the OSU Schedule of Classes.

Course Values Statement

I am dedicated to establishing an inclusive learning environment that values all students' experiences. Therefore, disrespectful and demeaning statements, attitudes, and behaviors based on age, ability, color/ethnicity/race, gender identity/expression, immigration status, marital/parental status, military/veteran's status, national origin, political affiliation, religious/spiritual beliefs, sex, sexual orientation, socioeconomic status will not be tolerated.

Students with Disabilities

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD 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 SSD should contact SSD immediately at 737-4098.

Course Outline:

Week 1-2

Objectives of the course

Personal responsibility

READING: Harris, Pritchard and Rabins, pp. 1-6

- Video: “Do unto others”

Introduction to ethical theories

READING: Kant, I. Good will, duty, and the categorical imperative, from Fundamental Principles of the Metaphysics of Morals. Translated by T.K. Abbott (1898).

Bentham, J. The Principle of Utility, from The Principles of Morals and Legislation, 1789.

Mill, J.S. Utilitarianism, London, NY: Longman, 1907.

Guin, U. *The Ones Who Walk Away From Omelas*, in New Dimensions 3, 1997.

Rachels, J. The ethics of virtue, in Elements of Moral Philosophy, 2nd Ed., New York: McGraw-Hill Inc., 1986.

- Kantian absolutism
- Utilitarianism
- Virtue ethics
- Application of the three ethical theories discussed in class

Week 3

Professional responsibility and code of ethics

READING: Harris, Pritchard and Rabins, pp. 7-20

Davis, M. Three myths about codes of engineering ethics, *IEEE Technology and Society Magazine*, Fall 2001, pp 8-14.

Whitbeck, C. *The basis and scope of professional responsibility*, Cambridge University Press, Cambridge, UK, 1998.

- What makes an occupation a profession
- Values inventory
- Compose a code

Ethics assessments

READING: Harris, Pritchard and Rabins, pp. 21-38

Whitbeck, C. *Ethics as design: doing justice to ethical problems*, Cambridge University Press, Cambridge, UK, 1998.

- Case analysis

Assign and discuss milestone interviews

Week 4

Conflicts of interest

READING: Harris, Pritchard and Rabins, pp. 21-38

- Video: “The Challenger”

Midterm exam

Disseminate topic for case study

- Weeks 5-6** *Risk and safety*
READING: Harris, Pritchard and Rabins, pp. 39-50
- Responsibility for public health and safety*
Truthfulness and reliability; Loyalty and dissent
READING: Harris, Pritchard and Rabins, pp. 51-68
- Video: “Incident at Morales”
- Engineers from industry*
 Guest Speaker
- Week 7** *Midterm exam*
- Emerging issues for the profession*
READING: Harris, Pritchard and Rabins, pp. 69-80
 Universal licensure? : Taking a stand
- Week 8** *Production of chemicals*
 Video: “Trade Secrets”
- Use of animals in research and training*
ASSIGNMENT: Laboratory Animal Training Association's modules due
- Week 9** *Environmental ethics*
READING: Whitbeck, C. *Responsibility for the environment*, Cambridge University Press, Cambridge, UK, 1998.
 Vesilind, P.A, Gunn, A.S. *The search for an environmental ethics by extending the moral community*, Cambridge University Press, Cambridge, UK, 1998
 Woodhouse, E.J., Curbing overconsumption: challenge for ethically responsible engineering, *IEEE Technology and Society Magazine*, Fall 2001, pp 23-30.
- Philisophical approaches
 - Video: “Affluenza”
 - What is the engineer’s responsibility?
- Week 10** *Proprietary information, patents and biotechnology*
READING: Whitbeck, C. *Credit and intellectual property*, Cambridge University Press, Cambridge, UK, 1998.
 Guest Speaker: Rich Polley, Klarquist Sparkman Campbell Leigh & Whinston, LLP, Portland
- Course wrap-up*