

E125: ETHICS, ENGINEERING, AND SOCIETY
LECTURE - MW 1:00 - 2:00, 3109 Etcheverry
DISCUSSION - F 1:00 - 2:00, 3107 Etcheverry
Fall 2013, 3 units

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COURSE DESCRIPTION

How can we identify and analyze ethical issues in engineering? This course provides an introduction to how theories, concepts, and methods from the humanities and social science can be applied to ethical problems in engineering. Assignments involve a combination of group and independent research projects that are designed to *empower students* to engage in engineering ethics issues. Students will have opportunities to contribute novel findings to the emerging academic field of engineering ethics while building their analytical and communication skills.

OBJECTIVES

- Identify and analyze ethical issues in science and engineering
- Apply theoretical and conceptual tools from the humanities and social sciences to engineering problems
- Understand professional responsibilities
- Lead and contribute to ethics discussions
- Develop communication and presentation skills
- Work effectively in a multidisciplinary group
- Engage in peer review
- Assess and direct one's own learning

LOGISTICS

1. Piazza will be our main course tool. Take time to get familiar with it and consider adding a photograph to your profile – this will really help us to learn names.
2. The course textbook is available through Amazon, which also provides options to borrow the book for the semester and/or purchase a Kindle version:

Van de Poel, I. and Royakker, L. 2011. *Ethics, Technology, and Engineering: An Introduction*. Wiley Blackwell.

3. Links to all of the additional readings are in the resources section of Piazza. It is important that you follow the links and download your own material while you are on the Berkeley campus. If you are off-campus, consult the library website about installing VPN, for off-campus access to journal articles.
4. [Edublogs](http://edublogs.org) (edublogs.org) will be used to create individual ePortfolios. The content of your ePortfolio is secure and private and can only be viewed by the instructors.
5. In addition to your individual ePortfolio, there is a [Class Blog](#) (<http://engineeringethics.edublogs.org/>), which will contain additional resources for the course.

DISCUSSION SECTIONS

Fridays are technically reserved for discussion. You will not have additional readings assigned on Fridays, but you are expected to come prepared to discuss the readings from that week.

The majority of the **ETHICS IN THE NEWS** presentations will take place on Fridays. You are required to attend Friday discussion (see more details about participation below).

ASSIGNMENTS AND EVALUATION

Participation (20% of your final grade)

Students are expected to attend and participate in each class. **You are not permitted to miss any classes.** (If you need to miss a class because of sickness, or some other reason, you need to consult with the instructor.) The class involves discussion and interaction with classmates both inside and outside of class.

Students' participation grade will be determined by their presence, effort, contributions to discussions, and by performance on in-class assignments. Assignments are marked with a check for completion (and are not given any sort of numeric or letter grade). Assignments are designed as an opportunity for students to assess their learning and also for the instructor to assess her teaching.

You will also conduct self-evaluations of your participation at different points during the semester. Your self-evaluation will consider if and how you are meeting the objectives that you set in your learning proposal.

ePortfolios (80% of your final grade)

All of the assignments in E125 build together to form a portfolio. Instead of a final exam, you will submit a final "**ePortfolio**" that communicates your unique ethical perspective. Throughout the semester you will work on building your ePortfolio as a digital repository for your work in E125, but also as a resource that will allow you to reflect on your learning. Most importantly, your ePortfolio will help you to imagine and represent your future role as an engineer in society.

Your [final ePortfolio](http://engineeringethics.edublogs.org/2013/04/04/learning-portfolios-and-eportfolios/) will be evaluated holistically and is based on six assignments that you will submit throughout the semester. (<http://engineeringethics.edublogs.org/2013/04/04/learning-portfolios-and-eportfolios/>)

ePortfolio Content	80%
Learning Proposal	8%
Critical Reflections	16%
Interviews	8%
Group Assignment	16%
Ethics in the News	8%
Summary Reflection	24%

Detailed instructions for how and when to complete each assignment are provided in separate documents (located in the Homework section of Piazza).

Read the class blog to learn more about [why we are making ePortfolios](http://engineeringethics.edublogs.org/2013/04/02/why-eportfolios-and-engineering-ethics/) (<http://engineeringethics.edublogs.org/2013/04/02/why-eportfolios-and-engineering-ethics/>).

Academic honesty is necessary. Plagiarism and cheating of any kind will not be tolerated. Please refer to [The Berkeley Code of Student Conduct](http://sa.berkeley.edu/code-of-conduct) (<http://sa.berkeley.edu/code-of-conduct>)

DATE	TOPIC	READINGS (To be done before class)	Class activities and ASSIGNMENT DEADLINES
8/30 Disc. Section 0	Introduction		- Hand out syllabus - Set up Edublogs account - Sign up for ethics in the news - Micro-macro survey
09/04 Week 1	The Changing Role of the Engineer	Bateson, <i>"Ecology and Flexibility in Urban Civilization."</i> Steps to an Ecology of Mind. University of Chicago Press (1972).	- Film: <i>Into Eternity</i> DUE – critical reflection 1 (on Bateson)
9/06 Disc. Section 1	The Changing Role of the Engineer		- Film: <i>Into Eternity</i>
09/9 Week 2	Critical Thinking	Baillie, C. 2009. Engineering and Society: Working Towards Social Justice, Part I: Engineering and Society. <i>Chapter, 1. "Introduction"</i>	- Go through syllabus - Critical reflections
09/11 Week 2	Defining Engineering, and Educating Engineers	Pawley, Alice. 2009. Universalized Narratives: Patterns in How Faculty Members Define "Engineering." <i>Journal of Engineering Education</i> Oct. 309– 319. Committee on the Engineer of 2020. 2005. <i>Educating the Engineer of 2020 –Executive Summary.</i>	- Discuss learning proposal - Pawley worksheet DUE – critical reflection 2 (on Pawley and <i>Into Eternity</i>)
Disc. Section 2			Concept mapping in groups: What is engineering? Where does ethics fit?
09/16 Week 3	The Responsibility of Engineers	Textbook (<i>ET&T</i>) Chapter 1 – <i>The Responsibility of Engineers</i>	- Take up concept maps: Would you make any changes based on your readings? - Work in small groups to create lists of ethical problems that involve engineering - What do you need to be able to solve these problems? DUE - Learning Proposal
09/18 Week 3	Engineering and Risk	<i>ET&T</i> Chapter 8 – <i>Ethical Aspects of Technical Risks</i>	
Disc. Section 3			
09/23 Week 4	Engineering and Risk	TBD	DUE – Critical Reflection 3 (reading TBD)
09/25 Week 4	Traditional Ethical Approaches	<i>ET&T</i> Chapter 3 – <i>Normative Ethics</i>	- What is ethics? - Discuss interview assignment
Disc. Section 4			

DATE	TOPIC	READINGS (To be done before class)	Class activities and ASSIGNMENT DEADLINES
09/30 Week 5	Traditional Ethical Approaches	<i>ET&T</i> Chapter 2 – <i>Codes of Conduct</i>	Film: <i>Henry's Daughters</i>
10/02 Week 5	Beyond Utilitarianism	Riley, D. (2011). Hidden in Plain View: Feminists Doing Engineering Ethics, Engineers Doing Feminist Ethics. <i>Science and Engineering Ethics</i> .	DUE - Critical Reflection 4 (on Riley)
Disc. Section 5			
10/07 Week 6	ePortfolios	Introduction to ePortfolios (Course goal: build a portfolio that communicates your perspective about engineering, ethics, and society)	DUE - Submit name of interviewee
10/09 Week 6	TBD		
Disc. Section 6			
10/14 Week 7	Engineering and emotions	Roeser, S. 2012. Emotional Engineers: Toward Morally Responsible Design. <i>Science and Engineering Ethics</i> , 18(1):103–115.	DUE - Critical Reflection 5 (on Roeser)
10/16 Week 7	Philosophy of Technology	Vermaas et al., <i>A Philosophy of Technology</i> . Chapter 1 & 3 – Technical Artifacts; Ethics and Designing	Concepts from philosophy Concepts from history Concepts from sociology
Disc. Section 7			
10/21 Week 8	Interview Presentations		DUE - Interview summaries
10/23 Week 8	Interview Presentations		
Disc. Section 8			
10/28 Week 9	Design	<i>ET&T</i> Chapter 6 – <i>Ethical Questions in the Design of Technology</i>	
10/30 Week 9	Art and Engineering	TBD	DUE - TBD
Disc. Section 9			

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11/04 Week 10	Global ethics	Downey, G. et al. 2006. The Globally Competent Engineer: Working Effectively with People Who Define Problems Differently. <i>Journal of Engineering Education</i> .	Introduction to group projects
11/06 week 10	Group Assignment		
Disc. Section 10			
11/11 Week 11	HOLIDAY		
11/13 Week 11	Case Studies	**Stay tuned – Case Study readings will be assigned closer to the date	
Disc. Section 11			
11/18 Week 12	Case Studies		
11/20 Week 12	Case Studies		
Disc. Section 12			
11/25 Week 13	Case Studies		
11/27 Week 13	Making a Contribution	Sharing Group Assignments	DUE - Group Assignment - Final Write-up
Disc. Section 13			
12/02 Week 14	Making a Contribution	Sharing Group Assignments	
12/04 Week 14	Being Ethical	Committee on the Engineer of 2020. 2005. Educating the Engineer of 2020 –Executive Summary.	
12/06 Disc. Section 14			
12/09- 12/13 RRR week			DUE - Summary Reflection and E-Portfolios
12/16- 12/20 Finals Week			