E125 | ETHICS, ENGINEERING, AND SOCIETY
Spring 2014, 3 units

LECTURE – TuTh 2:00 - 3:00

Dr. Raluca Scarlat, rscarlat@nuc.berkeley.edu
Office hours: Tu - 1:00-2:00 (or by appointment), 4151 Etcheverry Hall

DISCUSSION SECTIONS
Courtney Grant - Tu 3:00-4:00 (102), Wed 2:00-3:00 (104) | Office hours: Th 11:00-12:00
Hugo Wagner - Tu 3:00-4:00 (101), Th 3:00-4:00 (103) | Office hours: Th 4:00-5:00
The GSIs' office hours will be held in 4176 Etcheverry.

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: https://piazza.com/berkeley/fall2013/e125/home
   Take time to get familiar with it and consider adding a photograph to your profile – this will really help us to learn names.
2. There is a Class Blog (http://engineeringethics.edublogs.org/), which will contain additional resources for the course, as well as serve as a venue for extending class conversations beyond the class time.
3. 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.

4. 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 for off-campus access to journal articles.
5. Edublogs (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. All of the grading will be done directly on your edublog.
6. Todaysmeet (https://todaysmeet.com/E125) will enable you to submit comments and questions during lecture. You access the link from your computer and smart phones. The submissions can be anonymous, if you prefer.

DISCUSSION SECTIONS

You are expected to attend all discussion sections. Details about the discussion section will be provided by your GSI.

ASSIGNMENTS AND EVALUATION

Participation (20% of your final grade)

Students are expected to attend and participate in each class. 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, and short-response assignments. These 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.

Absences

You are allowed to make up two missed lectures or discussion sessions; you will need to (1) inform your GSI that you will miss lecture or discussion section, and (2) contribute to the class blog discussion for the class that you miss. Additional absences (no more than three) can be made up by attending other related on-campus lectures; contact your GSI to make arrangements for this.

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 will be evaluated holistically and is based on six assignments that you will submit throughout the semester.

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 uploaded on 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/).

The honor system applies for all work and activities related to this class, and academic honesty is necessary. Please refer to The Berkeley Code of Student Conduct (http://sa.berkeley.edu/code-of-conduct)

DATE	TOPIC	READINGS (To be done before class)	Class activities and ASSIGNMENT DEADLINES
01/21 Week 1	Introduction		
01/23	The Changing Role of the Engineer	Bateson, *"Ecology and Flexibility in Urban Civilization."* Steps to an Ecology of Mind. University of Chicago Press (1972).	**DUE – Critical Reflection 1, on Bateson**
01/28 Week 2	Critical Thinking, Peer Review and Normative Argumentation	Baillie, C. 2009. Engineering and Society: Working Towards Social Justice, Part I: Engineering and Society. *Chapter, 1. "Introduction"* Textbook (*ET&E*), Chapter 4	
01/30	Defining Engineering, and Educating Engineers	Pawley, Alice. 2009. Universalized Narratives: Patterns in How Faculty Members Define "Engineering." *Journal of Engineering Education* Oct. 309–319. Committee on the Engineer of 2020. 2005. *Educating the Engineer of 2020 –Executive Summary.*	**DUE – Critical Reflection 2, on Pawley**
02/04 Week 3	The Responsibility of Engineers	*ET&E* Chapter 1	
02/06	The Responsibility of Engineers & Codes of conduct	*ET&E* Chapter 2	**DUE - Learning Proposal**
02/11 Week 4	Entrepreneurship and Innovation	Hanekamp, "Business Ethics of Innovation." Friedman, "The Social Responsibility of Business is to Increase Its Profits".	Guest lecture : Bernt Wahl
02/13	Normative Ethics	*ET&E* Ch 3	**DUE – Short response on entrepreneurship and innovation lecture and readings** **DUE 02/14 - Interviewee name**
02/18 Week 5	Normative Ethics	TBD	
02/20	Philosophy of Technology	TBD	**DUE – Critical Reflection 3, Normative Ethics (see assignment description)**

DATE	TOPIC	READINGS (To be done before class)	Class activities and ASSIGNMENT DEADLINES
02/25 Week 6	Case study: Nuclear spent fuel geologic disposal		In-class movie: *Into Eternity* (see discussion questions)
02/27	Philosophy of Technology	Optional Reading,: Baillie, *Philosophy of Technology*, Chapter 5	**DUE - Individual interview write-up**
03/04 Week 7	Interview Presentations		**DUE - Mid-semester evaluation**
03/06	Case Study: Fire Retardants	Kirschner and Blum, *The Defeat of the Candle Flame Ignitition Requirement* Additional resource: Chicago Tribute News Articles (Parts One through Four) http://media.apps.chicagotribune.com/flames/index.html	Guest lecture by Mike Kirschner
03/11 Week 8	Risk and Decision Making	Kaplan and Garrick, "On The Quantitative Definition of Risk." *Risk Analysis*, Vol. I , No. I , 1981.	**DUE - Critical Reflection 4, on Kaplan and Garrick**
03/13	Risk and Decision Making	*ET&E* Ch 8	
03/18 Week 9	Global ethics	Downey, G. et al. 2006. The Globally Competent Engineer: Working Effectively with People Who Define Problems Differently. *Journal of Engineering Education.*	
03/20	Communication		In-class exercise: why is it important to communicate about values?
04/01 Week 10	Design	*ET&E* Chapter 6 – *Ethical Questions in the Design of Technology*	In-class Design Exercise
04/03	Design		In-class Design Exercise
04/08 Week 11	Engineering and emotions	Roeser, S. 2012. Emotional Engineers: Toward Morally Responsible Design. *Science and Engineering Ethics*, 18(1):103–115.	**DUE - Critical Reflection 5, on Roeser**
04/10	Engineering and emotions		Guest Lecture – Professor William Kastenberg

DATE	TOPIC	READINGS (To be done before class)	Class activities and ASSIGNMENT DEADLINES
04/15 Week 12	Art and Engineering	TBD	
04/17	Group project presentations		**DUE – Group project report**
04/22 Week 13	Regulation and Policy	TBD	
04/24	Regulation and Policy		
04/29 Week 14	Sustainability, Environmental Justice, Environmental Ethics	*ET&E* Ch 10	
05/01	Summary		
RRR Week			
Finals Week			**DUE – Final Reflection and e-portfolios**