“Social and Ethical Implications of Engineering”
Fall 2013 - LEAP 1501 – Sections 3-5, MWF
[Social Science Foundation, Fulfills ABET criteria]
First Semester of Engineering Sequence for General Education

Course Instructor
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Library Instructor
Adriana Parker
Marriott Library, 1726
801-585-9245
adriana.parker@utah.edu
Office Hours: By appointment only

Peer Advisors

<table>
<thead>
<tr>
<th>Peer Advisors</th>
<th>Section</th>
<th>Day/Time</th>
<th>Class Room</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wogai Mohmand</td>
<td>3</td>
<td>9:40-10:30</td>
<td>BEH S 107</td>
<td>801-949-3980</td>
<td><a href="mailto:wogaimohmand@gmail.com">wogaimohmand@gmail.com</a></td>
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<tr>
<td>Megan E. Stephanz</td>
<td>4</td>
<td>10:45-11:35</td>
<td>BEH S 113</td>
<td>801-201-1063</td>
<td><a href="mailto:u0539983@utah.edu">u0539983@utah.edu</a></td>
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<td>Elizabeth Radcliffe</td>
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<td>BEH S 107</td>
<td>801-725-6512</td>
<td><a href="mailto:u0781468@utah.edu">u0781468@utah.edu</a></td>
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Engineering-LEAP [E-LEAP] Course Description
“Social and Ethical Implications of Engineering,” LEAP 1501, provides you with an understanding of the role of ethics in the engineering profession by focusing on specific issues set out by the Accreditation Board for Engineering and Technology [ABET]: adhering to “...engineering standards and realistic constraints - economic, environmental, sustainability, ethical, health and safety, social and economic” and “an understanding of professional and ethical responsibility” (Criteria 3 (c) and (f) respectively, Criteria for Accrediting Engineering Programs 2013-2014, ABET, as articulated on Oct 27, 2012).

This semester, you will engage in a discussion of community by examining how the world of social sciences studies human institutions, cultures, and behaviors, and, in particular,

1 www.abet.org
you will apply the concepts to engineering ethics and decision-making processes in national and global communities.

This course prepares you to critically understand and appreciate the social and ethical implications of engineering and technology within the broader context of local and global societies and communities. It is through the help of critical readings/articles/essays and case studies that you will learn to identify these impacts. You will identify and understand professional and ethical responsibility based on codes of ethics statements from discipline specific professional organizations and societies. We will study a few engineering failures in order to integrate concepts of risk analysis into our discussion of ethics and professional responsibilities, especially as these failures relate to public health, safety, and whistle blowing. Such an integrated analysis will allow you to realize that ethics form the core of the engineering profession.

In order to understand the role of the engineer in local, national, and global settings, you will begin by asking:

- What is a society or community? How do engineers define a professional society? What is the purpose of professional engineering societies?
- How can engineers determine what is ethical while making decisions within different communities? Are traditional philosophical concepts about ethics applicable to engineering codes of ethics, or are there other ways to think about engineering ethics?
- What are some of the major questions and problems about communities studied by social scientists? What can engineers learn from social scientists and implement in dealing with other engineers, with corporations or government agencies, and with the public?
- How do social scientists study human behavior and institutions? What should engineers know about social and organizational theory?
- What role do social scientists play in our society in influencing public debate and public policy? How does this relate to the role of engineers as citizens and as technical advisors in shaping progress or changes in technology?
- How do social scientists and engineers analyze and respond to issues of globalization?

To understand the impact of engineering solutions in global and societal contexts, we will study concepts of local and global sustainability. We will examine the notion of **sustainable development** from the practicing engineer's perspective and ethical implications of issues such as globalization and rapid growth of information technology. You will explore your discipline specific discourse on sustainability and ultimately present your findings as a culmination of your semester-long learning. You will receive detailed instruction and guidance on how to present professionally.

**Learning objectives for LEAP 1501**
At the end of the semester you should be able to
1. Assess the social and ethical implications of creation and constructions of technology and its uses in the United States, in other nations, and in a global setting by using social science methods of inquiry

2. Acquaint yourself with the LEAP learning community, one in which students know each other, the E-LEAP faculty members, peer mentors, and the College of Engineering faculty

3. Acquire a more sophisticated knowledge of library technologies
   a. By being introduced to databases in the social sciences, applied sciences and engineering
   b. By being introduced to research methodologies specific to their discipline
   c. By learning how to evaluate internet sources

4. Develop sophisticated writing and oral communication strategies which allow the student to:
   a. Demonstrate critical thinking skills in crafting written and oral assignments
   b. Analyze professional communication skills
   c. Assess levels of technical expertise in audiences
   d. Use quantitative information in visual aids such as graphs and charts
   e. Integrate library resources into a final, team-based research project

5. Learn team building skills
   a. By practicing leadership skills in teams
   b. By negotiating task assignments
   c. By evaluating the outcomes of team projects

6. Explore a variety of campus activities and organizations in order to become part of the larger University community

Required Course Materials
There is no text assigned to this course; you are required to read the course materials listed below. **Note that if I find a relevant or a useful article/reading I reserve the right to include that reading as part of your required reading during the semester.** All the readings are available online on Canvas as pdf documents. Links to video recordings are available on Canvas as well; you are required to login using your UNID and password. You will be required to watch the video during class time, unless otherwise advised.

2, pp.22-27, Summer. 1995.

Recommended Course Materials

Audiovisual Materials Used in Class

Whatever reading is listed for a particular day should be done BEFORE you come to class on that day.

### Assignments and Grades

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Short Assignments</td>
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<tr>
<td>Homework assignments</td>
<td>30</td>
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<tr>
<td>Library quizzes</td>
<td>25</td>
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<tr>
<td>Interview with an Engineer - Newsletter</td>
<td>10</td>
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<tr>
<td>Midterm Exam</td>
<td>25</td>
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<tr>
<td>Memo Response – Social and ethical implications of technology</td>
<td>20</td>
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<tr>
<td>Student conference presentation</td>
<td>140</td>
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<tr>
<td>Team Memo 1: Articulate research topic/Research proposal</td>
<td>10</td>
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<tr>
<td>Team Memo 2: Explain Science and Technology; Industry connection</td>
<td>10</td>
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<tr>
<td>Team Memo 3: Evaluate technology and explain sustainability connection</td>
<td>10</td>
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<tr>
<td>Team Memo 4: Explain Ethics and policy implication</td>
<td>10</td>
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<tr>
<td>Mandatory Team Meeting with Librarian – Presentation</td>
<td>5</td>
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<tr>
<td>Mandatory meeting with PA with Presentation and Report draft</td>
<td>10</td>
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<tr>
<td>PowerPoint Presentations - Consultations with Instructor</td>
<td>10</td>
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<td>Presentation evaluations</td>
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<tr>
<td>Team presentations [30 min. max.]</td>
<td>50</td>
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<tr>
<td>Final report</td>
<td>15</td>
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<td>Total</td>
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Grades are assigned by points and percentages.

<table>
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<tr>
<td>70-73%</td>
<td>C-</td>
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<tr>
<td>67-69%</td>
<td>D+</td>
</tr>
<tr>
<td>64-66%</td>
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2 Assignments and due dates are subject to change with notice.
Assignments
- Late assignments will not be accepted; they cannot be made up.
- Team assignments are precisely team assignments. By definition they demand that a team collectively invests effort and submits the assignment for a grade. If you miss a team meeting in-class and/or a library class, you will lose one letter grade on that corresponding team assignment.
- You must attend all five-library sessions and must contribute to your team research project to receive credit. Library sessions are designed to aid and assist you in successfully completing your team research project. Attendance at library classes is mandatory as are teamwork class sessions. If you miss a library session, you will be ineligible to make up the library quiz/assignment assigned for that class.

Paper Responses and other major assignments
- Directions for major assignments (interview, papers, student conference, and final report) will be distributed in written form and available on Canvas after they are explained in class.
- Please note: I do not accept late major assignments. Unless you make prior arrangements; an assignment left in my mailbox is not on time, even if it is there on the assigned day.

Extra Credit Points
You may earn up to five (5) extra credit points during the semester, if you attend/participate in any of the following:
- Any two engineering activities OR
- Any two LEAP activities OR
- Any two activities/tasks that you can relate to the issues/cases/themes we discuss in class. You need to check with me first.

To receive the credit for the options listed above, please write a 250-word report on the activity – What, When, Where, Who, Why and So What - in an email to your instructor on Canvas. The last date for submission to receive credit is November 27, 2013.

LEAP 1060: To receive credit for LEAP 1060, “Methods and Technologies for Library Research,” a 1-unit course you need to attend all ten-library instruction sessions during 2013-2014 academic year [5 during Fall 2013 and 5 during Spring 2014 semesters] and get a passing grade for all ten quizzes/assignments. You will be eligible for this credit if you continue with E-LEAP in the Spring-2014 semester. I will provide you with more information as we approach Spring-14 semester registration.

Canvas: We will be using Canvas to promote discussion and learning. I will post this syllabus on Canvas, along with your grades, assignments and announcements. You are
required to submit your assignments to Canvas by the due date/time. Please note that I will NOT be handing out paper copies of assignments. All assignments will be posted on Canvas and available electronically. In addition, you will maintain contact with your team for the final project by posting to your team’s discussion topic, and you can access your grades and get copies of the major assignments after they have been distributed in class. **Note that participation and use of Canvas is required for this course.** Log in on a regular basis to check for postings from the Peer Advisor and me.

Please note: Canvas is a public space and is owned by the University of Utah. When you are posting responses there, please follow commonly accepted rules of decorum and courtesy as you would in the classroom while responding to questions and interacting with other students, the peer advisor and the instructor.

**Classroom Policies**

**Reading:** Reading assignments will average about 20-50 pages for many class periods. Because we have so much material to discuss in any given class period, and class will consist largely of discussion rather than lecture, you must come prepared by having done the reading in a thoughtful, responsive manner. Read the texts with critical skepticism, i.e., to identify the main ideas presented, to weigh and evaluate these ideas with an open mind, and to be prepared to share your responses about what you've read.

**Attendance:** I expect regular, full-time, on time class attendance and participation. Note that attendance is mandatory on days:

1. **You have library instruction**
2. **You work in teams in class**

These days are indicated on the course schedule. Missing these classes would entail a loss in a letter grade on the corresponding assignment and repeated absences will result in your loss of a team membership and thereby final presentation as well.

**Plagiarism:** Claiming or suggesting that words or ideas of others are your own is a form of cheating. The University's policy on cheating is clear: plagiarism is appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit.” It is theft. Punishment for plagiarism is an automatic NC [no credit for the course] and further disciplinary action may be taken.

**Contacting the instructor or peer advisor**

My office hours and office location are listed on the first page of this syllabus. Just come to see me to make an appointment if my office hours are not convenient. I look forward to meeting with you if you have any questions or just want to come by to share some additional ideas about the text or the discussions. Your peer advisor will give you a separate sheet with contact information.
## Course Schedule

[Subject to change with notice]

### Week 1
**Contextualizing Engineering and Technology within Social Sciences**

- **Aug 26 [M]**
  - Introduce course; distribute syllabus; Peer Advisor introductions

- **Aug 28 [W]**
  - E. Babbie, “An introduction to inquiry”; Find reading on Canvas; Interview with an Engineer assigned today

- **Aug 30 [F]**
  - E. Babbie, “The nature of causation – Find reading on Canvas; Homework-1 assigned and available on Canvas

### Week 2
**Social Context of Engineering**

- **Sept 2 [M]**
  - Labor day – No class

- **Sept 4 [W]**
  - R. L. Whelchel, “Is technology neutral; Find article on Canvas;

- **Sept 6 [F]**
  - J. M Wetmore, “Amish technology: Reinforcing values and building community”; Find article on Canvas; Homework-2 assigned and available on Canvas

### Week 3
**Engineering Failures – Three Mile Island Case**

- **Sept 9 [M]**
  - Wrap up Social context of engineering; Start watching video in class, “Meltdown at Three Mile Island” [1999]

- **Sept 11 [W]**
  - Read, J. R. Herkert, “Technology policy and ethical issues,” and C. E. Harris, “Explaining disasters: A case for preventive ethics” Find readings on Canvas

- **Sept 13 [F]**
  - In-class case analysis and discussion; Homework-3 assigned and available on Canvas; Individual Memo assigned today

### Week 4
**Engineering Failures - A Global Context – Bhopal Gas Tragedy**

- **Sept 16 [M]**
  - D. Murphy-Medley, “Exportation of risk: The case of Bhopal”

- **Sept 18 [W]**
  - T. Donaldson, “The ethics of global risk” Find article on Canvas; In-class case analysis and discussion;

- **Sept 20 [F]**
  - Wrap up Three Mile Island and Bhopal Gas Tragedy cases and review for Midterm; Homework-4 assigned and available on Canvas

### Week 5
**Engineering Failures – The Challenger Explosion**

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3 Deadlines, due dates and times will be included in the assignment.

4 Recommended reading for this segment can be found at this url: [http://news.bbc.co.uk/2/hi/south_asia/8392206.stm](http://news.bbc.co.uk/2/hi/south_asia/8392206.stm)
Sept 23 [M]  Midterm-Exam – In-class and Closed Book


Sept 27 [F]  C. E. Harris, “Explaining disasters: A case for preventive ethics” Find reading on Canvas;

Week 6  Engineering Ethics and Professionalism/Guest Speaker Visit
Sept 30 [M]  C. B. Fleddermann, “Professionalism and code of ethics,” Find reading on Canvas; Homework-5 assigned and available on Canvas

Oct 2 [W]  Revisit Challenger explosion case; Case analysis and discussion;

Oct 4 [F]  Introduce student conference and final report; Form teams; “Learn to work with teams effectively; *Attendance mandatory today*

Week 7  Library Instruction and Team Work
Oct 7 [M]  First Library Class; Team Memo-1 Articulate research topic/Research proposal and team contract; *Attendance mandatory today;* Library quiz-1 assigned and available on Canvas

Oct 9 [W]  Teams work in class; Teams identify research topic and articulate research proposal; Articulate team contract; *Attendance mandatory today*

Oct 11 [F]  Teams work in class; Teams identify research topic and articulate research proposal; Articulate team contract; Post team memo-1 along with edited PowerPoint slides by 11:50pm, Oct 13, 2013 on Turnitin tool on Canvas; *Attendance mandatory today*

Week 8  Fall Break – No classes

Week 9  Engineering and Sustainability
Oct 21 [M]  Second Library Class; Team Memo-2 Explain science and technology of their research topic and identify industry connection; *Attendance mandatory today;* Library quiz-2 assigned and available on Canvas

Oct 23 [W]  Teams work in class on team memo-2. *Attendance mandatory today*

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5 Recommended readings for this week:


Oct 25 [F]  Teams work in class on team memo-2. Post team memo-2 along with edited PowerPoint slides by 11:59pm, Oct 27, 2013 on Turnitin tool on Canvas; **Attendance mandatory today**

**Week 10**  
Oct 28 [M]  **Teamwork/Engineering and Sustainability**

Oct 28 [M]  Guest Speaker Visit; Introduction to Sustainability


**Week 11**  
Nov 4 [W]  **Teamwork/Library Instruction/Guest Speaker Visit**


Nov 6 [W]  Guest Speaker Visit; Wrap up *Engineering and Sustainability* segment today.

Nov 8 [F]  **Third Library Class:** Team : Memo-3 Research to evaluate if the technology selected by the team is sustainable: Is your technology *clean, cleaning or cleaner?* **Attendance mandatory today:** Library quiz-3 assigned and available on Canvas

**Week 12**  
Nov 11 [M]  **Teamwork and Library Instruction**

Nov 11 [M]  Teams work in class on team memo-3; **Attendance mandatory today**

Nov 13 [W]  Teams work in class on team memo-3. Post team memo-3 along with edited PowerPoint slides by midnight, Nov 4, 2012 on Turnitin tool on Canvas; **Attendance mandatory today**


**Week 13**

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6 Recommended reading for this week:


Nov 18 [M] **Fourth Library Class;** Team Memo – 4: Explain ethics and policy implication of team’s research technology **Attendance mandatory today;** Library quiz-4 assigned and available on Canvas

Nov 20 [W] Teams work in class on team memo-4. **Attendance mandatory today**
B. C. Field, “Environmental policy: Concepts and issues,” Find reading on Canvas;

Nov 22 [F] Teams work in class on team memo-4. Post team memo-4 along with edited PowerPoint slides by 11:59pm, Nov 24, 2013 on Turnitin tool on Canvas; **Attendance mandatory today**

**Week 14**

**Team Preparation for Final Presentations**

Nov 25 [M] Guest Speaker Visit

Nov 27 [W] **Fifth Library Class;** Teams consult with librarian in class and Teams work on PowerPoint presentations in class; **Attendance mandatory today;** Library quiz-5 assigned and available on Canvas. Post presentations with notes on Canvas team discussion thread; Due dates are dependent on the day of your presentation and are available in the table below

Nov 29 [F] Thanksgiving Holiday – No class

**Week 15**

**Final Presentations for Final Presentations**

Dec 2 [M] Preparing and delivering technical presentations, “How to make effective presentations?” In class lecture demonstration; Introduce Team Presentation Guidelines – Prepare to consult with instructor and PA and get credit

Dec 4 [W] Teams work in class to review presentations with Librarian/Peer Advisor/Faculty; **Attendance mandatory today**

Dec 6 [F] Teams work in class to review presentations with Librarian/Peer Advisor/Faculty; **Attendance mandatory today**

**Week 16**

**Final Presentations**

Dec 9 [M] Team presentation

Dec 11 [W] Team presentation

Dec 13 [F] Team presentation

**Week 17 – Finals Week – Final Presentations Continued**

**Section 3 only** – Wednesday, December 18 – between 8:00 am – 10:00 am
- 2 Team presentations
- Team final reports due today [15 pts]
Section 4 only – Friday, December 20, between 10:30 am – 12:30 pm
- 2 Team presentations
- Team final reports due today [15 pts]

Section 5 only – Thursday, December 19, between 10:30 am – 12:30 pm
- 2 Team presentations
- Team final reports due today [15 pts]

LIBRARY VISIT AND CORRESPONDING TEAM ASSIGNMENTS AND DEADLINES

<table>
<thead>
<tr>
<th>Lib visit date</th>
<th>Team assignment information</th>
<th>Teamwork in class</th>
<th>Due date</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit 1 Oct 7</td>
<td>Team Memo-1 Articulate research topic, Write research proposal</td>
<td>Oct 7, 9, &amp; 11</td>
<td>Oct 13 at 11:59pm</td>
<td>10</td>
</tr>
<tr>
<td>Visit 2 Oct 21</td>
<td>Team Memo-2 Explain science and technology of their research topic and identify industry connection</td>
<td>Oct 21, 23 &amp; 25</td>
<td>Oct 27 at 11:59pm</td>
<td>10</td>
</tr>
<tr>
<td>Visit 3 Nov 8</td>
<td>Team Memo-3 Research to evaluate if the technology selected by the team is sustainable</td>
<td>Nov 8, 11 &amp; 13</td>
<td>Nov 15 at 11:59pm</td>
<td>10</td>
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<tr>
<td>Visit 4 Nov 18</td>
<td>Team Memo-4: Explain ethics and policy implication of team’s research technology</td>
<td>Nov 18, 20 &amp; 22</td>
<td>Nov 24 at 11:59pm</td>
<td>10</td>
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<tr>
<td>Visit 5 Nov 27</td>
<td>In-class workshop with Librarian</td>
<td></td>
<td>Deadlines dependent on presentation dates.</td>
<td>5</td>
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Due dates for Draft Presentations-Assignment are as follows:

<table>
<thead>
<tr>
<th>Teams Presenting on</th>
<th>Draft Presentations [worth 10 points] Due on</th>
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<tbody>
<tr>
<td>Dec 9, 2013</td>
<td>Dec 2, 2013 by 8:00am on Canvas Tool</td>
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<tr>
<td>Dec 11, 2013</td>
<td>Dec 4, 2013 by 8:00am on Canvas Tool</td>
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<tr>
<td>Dec 13, 2013</td>
<td>Dec 6, 2013 by 8:00am on Canvas Tool</td>
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<tr>
<td>Dec 18, 2013</td>
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<tr>
<td>Dec 19, 2013</td>
<td>Dec 11, 2013 by 8:00am on Canvas Tool</td>
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<tr>
<td>Dec 20, 2013</td>
<td>Dec 13, 2013 by 8:00am on Canvas Tool</td>
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