Course Description

ENGR 2200 Evaluating Innovation: Fixtures, Fads, and Flops: 3 credit hours
This course introduces foundational theories used to critically analyze the success of consumer products and other technological innovations. Case studies are utilized to exhibit the interactions between innovation and society. Critical thinking skills are emphasized.

Course Attributes: This course is a critical thinking seminar and a Science and Technology in Society course.

Course Meeting Times and Instructor Information

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<tr>
<th>Section</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Instructor</th>
<th>Email</th>
<th>Office</th>
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<tbody>
<tr>
<td>106</td>
<td>TTh</td>
<td>3:30 - 4:45 pm, Lever 014</td>
<td>Sarah J. Grigg, Ph.D, MBA</td>
<td><a href="mailto:sarahg@clemson.edu">sarahg@clemson.edu</a></td>
<td>Lever 109</td>
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Important Course Dates

Please note this course utilizes the full-term calendar. A full academic calendar is available at the following link, but below are the summarized important dates for Fall 2016.

⇒ First day of class ..........................................................Wednesday, August 17
⇒ Last day to add a (full term) course ..........................................................Tuesday, August 23
⇒ Last day to drop course without receiving a W on your academic record .................Tuesday, August 30
⇒ Midterm grade deadline ..................................................................................Friday, October 7
⇒ Last day to withdraw from course ....................................................................Friday, October 24
⇒ Fall Break .......................................................................................................Monday & Tuesday, November 7 – 8
⇒ Thanksgiving Break .........................................................................................Wednesday – Friday November 23 - 25
⇒ Last day of class .............................................................................................Friday, December 2
⇒ Final exam ......................................................................................................Tuesday, December 6

Office Hours

My office is on the first floor of the Lever dorm in Lever 109. I will be available for drop-in office hours:

Tuesdays 1:30 pm – 3pm

Wednesdays 4:30pm – 6:00pm

If these times do not work with your schedule, please email me for a one-on-one appointment. In general, I have an open door policy. If I am in my office and available, I'll be happy to help if you stop by.

Required Course Textbooks and Materials

⇒ Required Textbook:

⇒ Laptop
  o Windows: Microsoft Office 2013 (Word, PowerPoint, Excel)
Grade Distribution
This course uses a point system for assessment purposes. The total number of possible points in the class is 1000 points. The distribution of points is shown below. Your percentage score is simply your points earned / points possible.

- **Assignments (50%)**
  - California Critical thinking pre & post-tests 15 points (30)
  - Discussion Board (DB) Assignments 10 points (100)
  - Critical Thinking Essays 15 points (150)
  - Lesson Quizzes 10 points (100)
  - Disruptive Innovation Discussion Boards 15 points (120)

- **Exams** (50%)
  - First Exam 150 points
  - Second Exam 150 points
  - Final exam 200 points

**Late Policy:** Late work will not be accepted.

\[ A=900-1020 \quad B=800-900 \quad C=700-800 \quad D=600-700 \quad F=0-600 \]

Assignments will serve as artifacts exhibiting critical thinking and will be used in the evaluation of the CT² program and may be evaluated for Critical Thinking Research initiatives. If you do not want your work included in the data set used for research, contact your instructor in writing at sarahg@clemson.edu.

**Late Policy**
Some assignments may be submitted late up to the first exam on which the material will be tested. Please refer to the course schedule and / or individual assignment requirements for actual late deadlines and availability. If an assignment is submitted late, it may be penalized up to 25%.

**Return of Graded Work**
For work submitted on paper or using Blackboard, work will be graded with feedback available within one week of the assignment due date. For exams, grades will be posted the Monday after the examination.

**Bonus Opportunities**
A bonus of up to 2% of your final grade may be earned by completing approved bonus activities. These activities will be posted to Blackboard as they become available. Bonus points are only applicable to students who end the course with a final course grade of 70 or higher; bonus points may not be used to raise a failing grade to passing.

**Exam Schedule**

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<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
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<tr>
<td>Exam 1</td>
<td>Tuesday, September 27</td>
<td>In class</td>
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<tr>
<td>Exam 2</td>
<td>Thursday, November 3</td>
<td>In class</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Friday, December 9</td>
<td>11:30 am-2:00 pm</td>
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Exams will be completed on BlackBoard on your computer. You will be allowed one 3.5 x 5 inch handwritten note card (front and back). Additional electronic devices (e.g., Apple watch, cell phone) are not allowed and must be stored before the exam begins. You will not be allowed to access the hardcopy textbook or the online materials during the exams.

All students who require Accessibility Accommodations are required to complete an Exam Planning Form using the link provided on Blackboard by the deadline listed on the course schedule to request appropriate accommodations for a given term.

The schedule, policies, procedures and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and / or to ensure better student learning.
Course Objectives

The main goals of the General Engineering Program are to 1) prepare students for the rigor of future engineering classes, 2) provide students with a solid foundation of basic engineering skills, and 3) introduce students to the different engineering majors and career options.

At the completion of this course, the student should be able to:
1. Use critical thinking to formulate judgments of innovations
2. Evaluate sources of information based on intellectual standards of reasoning
3. Utilize intellectual standards of reasoning to self-evaluate recommendations
4. Research past and present scientific or technological innovations
5. Critically analyze product success
6. Evaluate the impact of society and culture on product success or failure
7. Recognize disruptive technologies and their impact on society
8. Evaluate alternative solutions to multidimensional challenges
9. Extrapolate information from case studies to make predictions for emerging technologies
10. Understand the various roles of engineers in the product development process
11. Better understand the ethical responsibilities of the engineer.
12. Communicate technical information effectively

Students may vary in their competency levels on these abilities. You can only expect to acquire these abilities only if you honor all course policies, complete all assigned work in good faith and on time, and meet all other course expectations.

ABET Competencies

This course is designed to satisfy the following ABET Competencies. For more information, please refer to http://www.abet.org.

Engineering programs must demonstrate that their graduates have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand impact of engineering solutions in global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use techniques, skills, and modern engineering tools necessary for engineering practice
Topical Outline

Distribution of content coverage in this class include:

- **Critical Thinking – 20%**
  - Elements of reasoning
  - Intellectual standards
  - Heuristics and decision making

- **Innovation Mindset – 20%**
  - Human-centered design thinking
  - Product development process
  - Innovation (change) style

- **Evaluating Innovation Success – 20%**
  - Product Life Cycle
  - Market/Situation Analysis
  - Technology Adoption / Diffusion of innovation

- **Societal Factors and Implications – 20%**
  - Disruptive Innovations
  - Hierarchy of human needs
  - Environmental impact

- **Professional Communication – 10%**
  - Critical analysis of innovation and innovative technologies (written and presented)
  - Objectively engage in group discussions

- **Course Mechanics and Assessment – 10%**
  - California Critical Thinking Tests (2)
  - Module Quizzes (10)
  - Exam