## Engineering

**ENG 198  Special Topics**  credit: 1 to 4 hours.

Subject offerings of new and developing areas of knowledge in engineering intended to augment the existing curriculum. See Class Schedule or college course information for topics and prerequisites. Approved for both letter and S/U grading. May be repeated in the same or separate terms if topics vary.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>62863</td>
<td>Lecture-Discussion</td>
<td>EA</td>
<td>08:00 PM - 08:50 PM</td>
<td>T</td>
<td>106B6 - Engineering Hall</td>
<td>Amos, J Brunet, M</td>
</tr>
<tr>
<td>63696</td>
<td>Lecture-Discussion</td>
<td>EB</td>
<td>09:00 AM - 09:50 AM</td>
<td>MW</td>
<td>106B3 - Engineering Hall</td>
<td>Amos, J Brunet, M</td>
</tr>
<tr>
<td>64748</td>
<td>Lecture-Discussion</td>
<td>FAS</td>
<td>03:30 PM - 04:50 PM</td>
<td>TR</td>
<td>253 - Mechanical Engineering Bldg</td>
<td>Orawiec, J</td>
</tr>
<tr>
<td>51198</td>
<td>Lecture-Discussion</td>
<td>GC1</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1214 - Siebel Center for Comp Sci</td>
<td>Bradley, J</td>
</tr>
</tbody>
</table>

- Credit Hours: 1 hours
- Technical Communication
- Instructor Approval Required
- Enrollment only for Engineering Ambassadors.

---

### Credit Hours: 1 hours
### Technical Communication
- Restricted to Engineering. Restricted to students with Freshman or Sophomore class standing.
- Meets 19-Jan-16 - 18-Apr-16.

Want to learn to share your passion and to inspire any audience about science and engineering? As engineers, you will impact the health, happiness and safety of our world. Learn the skills to communicate your enthusiasm. This class will concentrate on learning the skills for verbal communication, and the design of effective presentations. It will allow for multiple opportunities to practice what you learned in class.

### Credit Hours: 1 hours
### Undergrad Research Lab Safety
- Meets 14-Mar-16 - 04-May-16.

Essentials of safe laboratory practice. Topics include chemical, electrical, biological and radiation safety, waste disposal and fire hazards. Lecture and demonstration format. Essential for students who will perform undergraduate research in a laboratory.

### Credit Hours: 1 hours
### Grand Challenges Solar Energy
- Meets 15-Feb-16 - 04-May-16.

Grand Challenge 1: Make Solar Energy Economical - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Lecture-Discussion</th>
<th>Section</th>
<th>Time (PM)</th>
<th>Instructor</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>52556</td>
<td>Lecture-Discussion</td>
<td>GC2</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1109 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62486</td>
<td>Lecture-Discussion</td>
<td>GC4</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1109 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62488</td>
<td>Lecture-Discussion</td>
<td>GC6</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1109 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62489</td>
<td>Lecture-Discussion</td>
<td>GC7</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>106B6 - Engineering Hall</td>
</tr>
<tr>
<td>62490</td>
<td>Lecture-Discussion</td>
<td>GC8</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>106B6 - Engineering Hall</td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours
Grand Challenges Fusion
Meets 15-Feb-16 - 04-May-16.
Grand Challenge 2: Provide Energy from Fusion - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. [http://www.engineeringchallenges.org/cms/challenges.aspx](http://www.engineeringchallenges.org/cms/challenges.aspx)

Credit Hours: 1 hours
Grand Challenges Nitrogen
Meets 15-Feb-16 - 04-May-16.
Grand Challenge 4: Manage the Nitrogen Cycle - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. [http://www.engineeringchallenges.org/cms/challenges.aspx](http://www.engineeringchallenges.org/cms/challenges.aspx)

Credit Hours: 1 hours
Grand Challenges Infrastructure
Meets 15-Feb-16 - 04-May-16.
Grand Challenge 6: Restore and Improve Urban Infrastructure - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. [http://www.engineeringchallenges.org/cms/challenges.aspx](http://www.engineeringchallenges.org/cms/challenges.aspx)

Credit Hours: 1 hours
Grand Challenges Health
Meets 15-Feb-16 - 04-May-16.
Grand Challenge 7: Advance Health Informatics - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. [http://www.engineeringchallenges.org/cms/challenges.aspx](http://www.engineeringchallenges.org/cms/challenges.aspx)

Credit Hours: 1 hours
Grand Challenges Medicine
Meets 15-Feb-16 - 04-May-16.
Grand Challenge 8: Engineer Better Medicines - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. [http://www.engineeringchallenges.org/cms/challenges.aspx](http://www.engineeringchallenges.org/cms/challenges.aspx)
challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Type</th>
<th>Lecture Room</th>
<th>Time</th>
<th>Faculty</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>62491</td>
<td>Lecture-Discussion</td>
<td>GC9</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>106B3 - Engineering Hall</td>
</tr>
<tr>
<td>62492</td>
<td>Lecture-Discussion</td>
<td>GCA</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1105 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62493</td>
<td>Lecture-Discussion</td>
<td>GCB</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1105 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62494</td>
<td>Lecture-Discussion</td>
<td>GCC</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1304 - Siebel Center for Comp Sci</td>
</tr>
<tr>
<td>62496</td>
<td>Lecture-Discussion</td>
<td>GCD</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>1304 - Siebel Center for Comp Sci</td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours
Grand Challenges Brain
Meets 15-Feb-16 - 04-May-16.

Grand Challenge 9: Reverse-Engineer the Brain - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx

Credit Hours: 1 hours
Grand Challenge Nuclear Terror
Meets 15-Feb-16 - 04-May-16.

Grand Challenge 10: Prevent Nuclear Terror - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx

Credit Hours: 1 hours
Grand Challenges Cyberspace
Meets 15-Feb-16 - 04-May-16.

Grand Challenge 11: Secure Cyberspace - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx

Credit Hours: 1 hours
Grand Challenge Virtual Rlty
Meets 15-Feb-16 - 04-May-16.

Grand Challenge 12: Enhance Virtual Reality - Based on the National Academy of Engineering's 14 identifiable grand challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer. http://www.engineeringchallenges.org/cms/challenges.aspx
Grand Challenges Learning  
Meets 15-Feb-16 - 04-May-16.  
Grand Challenge 13: Advance Personalized Learning - Based on the National Academy of Engineering's 14 identifiable grand  
challenges, this course will enhance your ability to stimulate the critical thinking skills and project development surrounding these  
challenges, which have the potential to make a global impact. Together with fellow students and a faculty advisor, you focus  
on a subset of the listed challenge for this section to enhance your ability to address real world problems as an engineer.  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Lecture-Discussion</th>
<th>Time</th>
<th>Day</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>53645</td>
<td>Lecture-Discussion</td>
<td>JS1</td>
<td>T</td>
<td>1302 - Siebel Center for Comp Sci</td>
<td>Ravaioli, U</td>
</tr>
<tr>
<td></td>
<td></td>
<td>04:00 PM - 04:50 PM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Credit Hours: 2 hours  
James Scholars course.  
Restricted to Engineering.

The World of Nanotechnology. Nanotechnology is an emerging interdisciplinary field with great potential for scientific innovation. 
There are, however, many misconceptions generated by popular fiction and the media. This course will provide a survey of the field 
with information on careers in nanotechnology as well as opportunities for undergraduate research on campus. In addition to the 
lectures, students will experiment with a variety of on-line tools and will work on team projects and independent study assignments. 
This course is reserved for freshman James Scholar students in the College of Engineering and it fulfills the freshman honors 
requirement.  
Restricted to James Scholars Program students.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Lecture-Discussion</th>
<th>Time</th>
<th>Day</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>53646</td>
<td>Lecture-Discussion</td>
<td>JS2</td>
<td>M</td>
<td>1304 - Siebel Center for Comp Sci</td>
<td>Ravaioli, U</td>
</tr>
<tr>
<td></td>
<td></td>
<td>04:00 PM - 04:50 PM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Credit Hours: 2 hours  
James Scholars course.  
Restricted to Engineering.

Introduction to Research. Research is a wonderful way to fulfill honors requirements. The purpose of this course is to introduce 
students to research methodologies, to survey the outstanding opportunities available in the College of Engineering, and to help 
plan for an upper-class honors contract including research. In addition to the lectures, students will also work on team projects and 
independent study assignments. This course is reserved for freshman James Scholar students in the College of Engineering and it 
fulfills the freshman honors requirement.  
Restricted to James Scholars Program students.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Lecture-Discussion</th>
<th>Time</th>
<th>Day</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>51367</td>
<td>Lecture-Discussion</td>
<td>SAF</td>
<td>TR</td>
<td>106B3 - Engineering Hall</td>
<td>Orawiec, J</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:30 PM - 01:50 PM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Credit Hours: 1 hours  
Undergrad Research Lab Safety  
Meets 19-Jan-16 - 11-Mar-16.  
Essentials of safe laboratory practice. Topics include chemical, electrical, biological and radiation safety, waste disposal and fire 
hazards. Lecture and demonstration format. Essential for students who will perform undergraduate research in a laboratory.