ME 195A Senior Design Projects  
Fall 2016

Prerequisites: ME 114, ME 154 and ENGR 100W (with grade C- or better in each)

Co-requisite: ME 120 with good academic standing in the program and an approved major form

You must turn in a copy of your transcript with the prerequisites highlighted to your instructor before the drop deadline or you will be dropped from the class!!!

For students beginning continuous enrollment in Fall 2005 or later, completion of, or co-registration in, a 100W course is required for enrollment in all SJSU Studies courses.

To receive credit for GE Areas S and V, students must complete both Engr 195A and Engr 195B, each with a grade of C or better. In addition, they must complete their senior project course sequence and earn a grade of C or better in each course (ME 195A and ME 195B).

NOTE: ME 195A&B sequence must be completed in the same academic year

Credit Units: 3 units

Class hours: Wednesdays, 1:30 – 4:15 PM

Instructors/Meeting Room:  
Section 1 (48861): Prof. Raghu Agarwal, Room E135  
Section 2 (48862): Prof. Tai-Ran Hsu, Room E111 and 117  
Section 3 (48863): Prof. Eric Hagstrom (with Prof. Buff Furman) Engr 133 and 128 E. John St (between 3rd and 4th Streets)  
Section 4a (48864): Prof. Zaidi, Room E114a  
Section 4b (48864) Prof. Mokri, Room 192  
Section 5 (50352) Prof. Viswanathan, Room E141

Course coordinator: Prof. Tai-Ran Hsu (tai-ran.hsu@sjsu.edu)

Office hours: Check with instructors

COURSE DESCRIPTION:
First half of a one-year team project carried out under faculty supervisions. Project will proceed from problem definition to analysis, design and validation, experimentation including possible construction and testing.

Required Text: None
Grading (overall): A letter grade will be assigned to each student by the section instructor at the end of the semester and will be based on evaluation of the following course requirements:

- (25%) Delivery of at least three presentations on achievements and timely progress
- (15%) writing assignment and other assignments*
- (45%) End-of-semester report and accomplishments
- (15%) Individual performance evaluation

*5%, 3%, and 2% for writing assignments 1, 2, and 3 respectively. The remaining 5% is at the discretion of the individual instructor and may include monthly progress reports, quizzes, etc.

Work Area:
- **DO NOT** leave trash in the area. Hazardous materials are to be kept in safe containers.
- **DO NOT** leave equipment running unattended

Machine Shop Use
You must have passed ME 41 or have been checked out by our technician Roger Jue to receive access to the machine shop. Please see Lilly Wilderman in the ME office to fill out paperwork to get an access code. You MUST bring engineering drawings with you to use the machine tools in the shop.

Safety: **NO STUDENT IS PERMITTED TO WORK ALONE IN A WORK AREA WITH MACHINE TOOLS OR HAZARDOUS MATERIAL PRESENT.** Refer to the Safety Rules in your manual and posted in each Laboratory.

University Policies

Academic integrity
Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University’s Academic Integrity policy, located at http://www.sjsu.edu/senate/S07-2.htm, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy S07-2 requires approval of instructors.
Campus Policy in Compliance with the American Disabilities Act
If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) at http://www.drc.sjsu.edu/ to establish a record of their disability.

Course Goals
The overall goals for the course are to:

1. Provide senior students a capstone experience in design from concept to fabrication and validation of the final product.
2. Familiarize students with general industry practices, such as planning, scheduling, budgeting, part procurement, fabrication, assembly, and functional tests.
3. Develop students’ creative abilities in solving open-ended design problems.
4. Develop students’ engineering judgment as well as their confidence in making and accepting responsibility for design decisions.
5. Develop students’ oral and written communication skills necessary to describe the assumptions, methods, and results of engineering analysis, synthesis, and decision making associated with their design
6. Make students aware of the importance of teamwork in the design of products and provide them with an opportunity to develop team and leadership skills.
7. Develop students’ understanding of professional practices, as well as global, environmental, and societal issues.

Learning Objectives for ME 195A
By the end of the course each student should be able to:

Design Skills

1. Apply the complete product development process including:
   - Defining the problem/societal need, carrying out market study/economic and budget analyses
   - Developing a complete set of functional specifications the design solution must meet
   - Generating solution concepts
   - Selecting the most promising design concept using structured methodologies
   - Developing design models and/or drawings for prototype and final design components
   - Procuring, fabricating, and assembling prototype and final design hardware
   - Evaluating, testing, and analyzing prototype and final design components and systems
   - Identifying future modifications and improvements that could be made to the design based on test data
   - Writing a project report and making presentations

2. Develop a schedule, and meet schedule and budget constraints.
3. Interact effectively with vendors, suppliers, and shop personnel.

*Communication Skills*

4. Write high quality design reports (i.e., using correct language and terminology, correct technical information, and professionally prepared graphs and tables).

5. Give clear, informative, technically correct oral presentations using professionally prepared visual aids.

*Team Skills*

6. Work harmoniously and effectively on a team to complete a design project.

*Global and Societal Issues*

7. Describe historical, social, political, and economic processes producing diversity, equality, and structured inequalities in the U.S. (GE Area S LO #2)
   - Describe the global, social or cultural influences have led to a need for their projects.
   - Describe the effects of their projects on society locally and/or globally.
   - Evaluate and describe accurately the environmental impact of their projects.
   - Evaluate and describe accurately any environmental and economic tradeoffs of their projects.
   - Evaluate and describe accurately the health, safety, and economic tradeoffs of their projects and how the project affects quality of life for the public.

**COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>Wk. No.</th>
<th>Date</th>
<th>Place</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/24</td>
<td>E189</td>
<td><em>General session on Overview of ME 195A</em></td>
</tr>
<tr>
<td>2</td>
<td>8/31</td>
<td>Labs</td>
<td>Individual sessions on project descriptions and team organization</td>
</tr>
<tr>
<td>3</td>
<td>9/7</td>
<td>Labs</td>
<td>Individual sessions on project proposals by individual teams and approval by instructors</td>
</tr>
<tr>
<td>4</td>
<td>9/14</td>
<td>Labs</td>
<td>Individual Sessions</td>
</tr>
<tr>
<td>5</td>
<td>9/21</td>
<td>Labs</td>
<td>Project oral presentation No. 1.* Individual sessions</td>
</tr>
<tr>
<td>6</td>
<td>9/28</td>
<td>Labs</td>
<td>Project oral presentation No. 1.* Individual sessions</td>
</tr>
<tr>
<td>7</td>
<td>10/5</td>
<td>Labs</td>
<td>Individual Sessions</td>
</tr>
<tr>
<td>8</td>
<td>10/12</td>
<td>TBA</td>
<td>Seminar: Project Report Preparation</td>
</tr>
<tr>
<td>9</td>
<td>10/19</td>
<td>Labs</td>
<td>Project oral presentation No. 2.* Individual sessions</td>
</tr>
<tr>
<td>10</td>
<td>10/26</td>
<td>Labs</td>
<td>Project oral presentation No. 2.* Individual sessions</td>
</tr>
<tr>
<td>11</td>
<td>11/2</td>
<td>Labs</td>
<td>Individual Sessions, including discussion of individual writing assignments</td>
</tr>
<tr>
<td>12</td>
<td>11/9</td>
<td>Labs</td>
<td>Instructors Meeting – No formal sessions</td>
</tr>
<tr>
<td>13</td>
<td>11/16</td>
<td>Labs</td>
<td>Individual Sessions</td>
</tr>
<tr>
<td>14</td>
<td>11/23</td>
<td></td>
<td>Non-Instructional Holiday – no classes</td>
</tr>
<tr>
<td>15</td>
<td>12/30</td>
<td>Labs</td>
<td>Project oral presentation No. 3.* Individual sessions</td>
</tr>
<tr>
<td>16</td>
<td>12/6</td>
<td>Labs</td>
<td>Project oral presentation No. 3.*, planning for ME 195b. Individual sessions.</td>
</tr>
<tr>
<td></td>
<td>12/15</td>
<td></td>
<td>12:15 PM – Final Project Report Due (during scheduled final exam period)</td>
</tr>
</tbody>
</table>
*Your project instructor will choose which date to use for oral presentations.

**Important Notes:**

1. Each project team will make at least three oral presentations during the scheduled individual section meetings at times to be arranged by the section instructor. Each team member should take part in each oral presentation.

2. Students’ participation in scheduled individual and general sessions is mandatory unless you have a university-authorized excuse or have made advance arrangements with your instructor.

**General Education Meetings**

Students taking Engr 195a/b are required to have sessions with their senior project faculty during the off weeks of that class. There is one written assignment for each of these three sessions. These assignments are required for all ME 195a students. For the few students who are not enrolled in Engr 195a, it is encouraged that you attend these meetings since it will make the assignments easier. However, after the meetings enough materials will be posted on the ME 195a website that you will be able to complete the assignments without attending the meetings on 9/23 and 10/28.

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Location</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/23 12-1:15</td>
<td>Engr 189</td>
<td>Seminar: Impact of Technology on Society</td>
</tr>
<tr>
<td>10/28 12-1:15</td>
<td>Engr 189</td>
<td>Effect of Mobile Technology on Society</td>
</tr>
<tr>
<td>Week of 12/9</td>
<td>online</td>
<td>Use of Technology to Aid the Disabled</td>
</tr>
</tbody>
</table>

**NOTE**

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practical. Other course structures will have equivalent workload expectations as described in the syllabus.