San José State University
Department of Electrical Engineering
EE 198A, Senior Design Project I, All Sections, spring 2017

Instructor: David Wahlgren Parent
Office Location: ENGR 355
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Email: david.parent@sjsu.edu
Office Hours: https://booknow.appointment-plus.com/363qlt82/
Class Days/Time: F 10am-12:45pm (Lab)
Classroom: ENGR 345
Prerequisites: EE Senior in good standing, ENGR 100W with a C or better, EE120, EE122, and EE128 with a C- or better

Co-requisites (These courses allow you to learn some of the skills required to do a real design. These are suggested, not required):
1. Analog Circuit design: 124, 223, 129, 174
4. Integrated Circuit: 129, 166
5. MEMS: 129, 169
6. Electromagnetic microwave: 172
7. Control/ Power Systems: 130, 132

Course Description
Team Design Project Proposal, Business Plan, Oral Design Presentations of the initial phases of the Design Project, a written and oral defense of the proposed Design Project. Global and Social Issues in Engineering. Individual written reports on Professional Development plans. GE Area: S when taken as part of EE major sequence.

Prerequisite: EE Senior in good standing in Major, ENGR 100W (with grade of "C" or better), EE100W, EE120, EE122, and EE128 (with grades of "C-" or better).

Passage of the Writing Skills Test (WST) or ENGL/LLD 100A with a "C or better" (C- not accepted), completion of Core General Education and upper division standing are prerequisites to all SJSU studies courses. Completion of, or co-registration in,

Corequisite: ENGR 195A

Misc/Lab: Lab 3 hours.

Note: Meets GE Areas S and V when course is taken in combination with: EE 198B, ENGR 195A and ENGR 195B
Course Goals and Student Learning Objectives

Upon successful completion of this course, students will be able to:

1. Design a system, device or component (c,k)
2. Fabricate a system, device or component (c,k)
3. Test a system, device or component(c,k)
4. Work in a team (d)
5. Research an Electrical Engineering topic (i)
6. Estimate the ethical implications of an engineering project (f)
7. Write individual engineering reports (g)
8. Write final Engineering Team reports (g)
9. Orally present Engineering ideas and results (g,h)
10. Prepare a literature review (i,j)
11. Prepare a five year plan for to achieve professional goals (i,j)

GE/SJSU Studies Learning Outcomes (LO), if applicable

Upon successful completion of this course, students will be able to:

- GELO1: Describe how identities (i.e. religious, gender, ethnic, racial, class, sexual orientation, disability, and/or age) are shaped by cultural and societal influences within contexts of equality and inequality;
  - ENGR 195A Reflection Paper 1 (500 words): Discuss and provide examples of how your identities (i.e., religious, gender, ethnic, racial, class, sexual orientation, disability and/or age, among others) are shaped by cultural and societal influences within contexts of equality and inequality.
  - EE 198A 5 Year Plan: Based upon your response to Engr 195A Testimony 1, consider your identity as a future engineer. How is your identity as an engineer shaped by cultural and societal influences within contexts of equality and inequality? (500 words)
- GELO2: Describe historical, social, political, and economic processes producing diversity, equality, and structured inequalities in the U.S.;
  - ENGR 195A Reflection paper 2 (750 words): Consider technological innovations in your field and describe an example of how one such innovation has either increased or decreased social justice and inequality in the U.S. Be explicit about how these outcomes manifest. Or, students may analyze a website online that is dedicated to social or environmental justice and address these same questions. Finally, discuss how your current or past projects have or will contribute to social and/or environmental justice in the United States.
  - EE 198A Oral Presentation: Using the case studies provided in ENGR195A, describe how your project address a social issue in the U.S.
- GELO3: Describe social actions which have led to greater equality and social justice in the U.S. (i.e. religious, gender, ethnic, racial, class, sexual orientation, disability, and/or age).
ENGR 195A Reflection paper 2 (750 words): Consider technological innovations in your field and describe an example of how one such innovation has either increased or decreased social justice and inequality in the U.S. Be explicit about how these outcomes manifest. Or, students may analyze a website online that is dedicated to social or environmental justice and address these same questions. Finally, discuss how your current or past projects have or will contribute to social and/or environmental justice in the United States.

EE 198A Reflection paper 1: Describe how the push for a lead free standard in electronic products (RoSH) increased social justice in the US. (500 words)

GELO4: Recognize and appreciate constructive interactions between people from different cultural, racial, and ethnic groups within the U.S.

Engr 195A Reflection Paper 3 (500 words): Students will read excerpts from Ernest Callenbach’s Ecotopia. Students will apply this reading to their current lived experience in the U.S. Beyond fulfilling the S-LO4, students will address the specific course learning objective “identify, compare, and contrast how local community organizations, groups, and agencies address social issues relevant to the environment and quality of life in the Santa Clara Valley” by comparing one element in our current society to Callenbach’s described society.

Course Content Learning Outcomes

- The students are able to apply knowledge and skills acquired in earlier coursework to identify, formulate, and propose a sound solution to an engineering problem (c,k)
- The students have an understanding of ethics, social implication of engineering, and the need for life-long-learning (i,f)
- The students can function in teams and can communicate effectively. (g)
- The students can describe and use industry standards (c)

Topics:

- Engineering ethics.
- Social implications of Engineering.
- Team work and life-long learning
- Communication skills
- Career objectives and interviewing
- Industry standards

ABET outcomes

The letters in parentheses in the course learning objectives refer to ABET criterion 3 outcomes satisfied by the course. These are listed below as a reference:
(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 the impact of engineering solutions in a 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 the techniques, skills, and modern engineering tools necessary for engineering practice
(l) Specialization in one or more technical specialties that meet the needs of companies
(m) Knowledge of probability and statistics, including applications to electrical engineering
(n) Knowledge of advanced mathematics, including differential and integral equations, linear algebra, complex variables, and discrete mathematics
(o) Basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components

Required Texts/Readings

Textbook
NA

Other Readings

Classroom Protocol

Cell Phones:
Students will turn their cell phones off or put them on vibrate mode while in class. They will not answer their phones in class. Students whose phones disrupt the course and do not stop when requested by the instructor will be referred to the Judicial Affairs Officer of the University.
Computer Use:
In the classroom, students are allowed to use computers only for class-related activities. These include activities such as taking notes on the lecture underway, following the lecture on Web-based PowerPoint slides that the instructor has posted, and finding Web sites to which the instructor directs students at the time of the lecture. Students who use their computers for other activities or who abuse the equipment in any way, at a minimum, will be asked to leave the class and will lose participation points for the day, and, at a maximum, will be referred to the Judicial Affairs Officer of the University for disrupting the course. (Such referral can lead to suspension from the University.) Students are urged to report to their instructors computer use that they regard as inappropriate (i.e., used for activities that are not class related).

Academic Honesty:
Faculty will make every reasonable effort to foster honest academic conduct in their courses. They will secure examinations and their answers so that students cannot have prior access to them and proctor examinations to prevent students from copying or exchanging information. They will be on the alert for plagiarism. Faculty will provide additional information, ideally on the green sheet, about other unacceptable procedures in class work and examinations. Students who are caught cheating will be reported to the Judicial Affairs Officer of the University, as prescribed by Academic Senate Policy S04-12.
“"You are responsible for understanding the policies and procedures about add/drops, academic renewal, withdrawal, etc. found at http://www2.sjsu.edu/senate/S04-12.pdf

• Expectations about classroom behavior; see Academic Senate Policy S90-5 on Student Rights and Responsibilities.

• As appropriate to your particular class, a definition of plagiarism, such as that found on Judicial Affairs website at http://www2.sjsu.edu/senate/plagarismpolicies.htm

• “If you would like to include in your paper any material you have submitted, or plan to submit, for another class, please note that SJSU’s Academic Integrity policy

Dropping and Adding
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html. Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/ . Students should be aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy
Outcome Assessment (Grading):
• Credit/No Credit Skill-audit exam. There are two exams. One is a practice exam and the other one counts for credit. Both are in canvas.
• **Area S** (10%) Students must pass this part of the course with a 74% to receive Area S GE credit.
  o 10% Where do I want to be in 5 years and how am I going to get there? Consider your identity as a future engineer. How is your identity as an engineer shaped by cultural and societal influences within contexts of equality and inequality? (GELO1)
  o Reflection paper 1: Describe how the push for a lead free standard in electronic products (RoSH) increased social justice in the US. (500 words) (GELO3)
    ▪ Articles:

• 5% Seminar Participation. You must attend:
  o Each 198A meeting
  o EE198B final project on the conference day.
  o One Silicon Valley Leader Symposia in room 189, (every Thursday from 12 to 1pm for details go to [http://www.engr.sjsu.edu/speakers/](http://www.engr.sjsu.edu/speakers/)
  You can make up the presentations with extra 198B or EE297/299 presentation sessions. You will have to submit one paragraph describing what you learned at each symposium. (Individual)

• 35% Written Final Proposal. Your proposal will be judged by your project advisor and one other EE faculty member. (Group)¹

• 10% Business Plan – This Plan must be approved by the Coordinator and outside evaluators before the project may continue (Group)

• 20% Adviser Evaluation (Individual)

• 20% Oral presentation (Area S). Your presentation will be judged by your project advisor, one other EE faculty member (Group)
  o Describe how your project address a social issue in the U.S.

There are no I grades given for “running out of time”.
All assignments will be turned in on Canvas
All assignments will be graded according to the rubrics provided in Canvas.

¹ Note: You will not receive the group grade, if you have not participated in the group work.
Grading Percentage Breakdown

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
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<tbody>
<tr>
<td>94% and above</td>
<td>A</td>
</tr>
<tr>
<td>93% - 90%</td>
<td>A-</td>
</tr>
<tr>
<td>89% - 87%</td>
<td>B+</td>
</tr>
<tr>
<td>86% - 84%</td>
<td>B</td>
</tr>
<tr>
<td>83% - 80%</td>
<td>B-</td>
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<tr>
<td>79% - 77%</td>
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</tr>
<tr>
<td>76% - 74%</td>
<td>C</td>
</tr>
<tr>
<td>73% - 70%</td>
<td>C-</td>
</tr>
<tr>
<td>69% - 67%</td>
<td>D+</td>
</tr>
<tr>
<td>66% - 64%</td>
<td>D</td>
</tr>
<tr>
<td>63% - 60%</td>
<td>D-</td>
</tr>
<tr>
<td>below 60%</td>
<td>F</td>
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</tbody>
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University Policies

Academic Integrity

Students should know that the University’s Academic Integrity Policy is available at http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require 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 website for Student Conduct and Ethical Development 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 in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 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 DRC (Disability Resource Center) to establish a record of their disability.

Course Schedule

Table 1 Course Schedule (Subject to change with fair notice as announced by instructor in class)
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>EE198A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/27/2017</td>
<td>Group Organization</td>
</tr>
<tr>
<td>2</td>
<td>2/3/2017</td>
<td>Group Organization</td>
</tr>
<tr>
<td>3</td>
<td>2/10/2017</td>
<td>How to do References</td>
</tr>
<tr>
<td>4</td>
<td>2/17/2017</td>
<td>Ethics and team work</td>
</tr>
<tr>
<td>5</td>
<td>2/24/2017</td>
<td>Area S</td>
</tr>
<tr>
<td>6</td>
<td>3/3/2017</td>
<td>Engineering Standards</td>
</tr>
<tr>
<td>7</td>
<td>3/10/2017</td>
<td>Meet with advisor</td>
</tr>
<tr>
<td>8</td>
<td>3/17/2017</td>
<td>Meet with advisor</td>
</tr>
<tr>
<td>9</td>
<td>3/24/2017</td>
<td>Meet with advisor</td>
</tr>
<tr>
<td>10</td>
<td>3/31/2017</td>
<td>No Class: Spring Break</td>
</tr>
<tr>
<td>11</td>
<td>4/8/2017</td>
<td>Admitted Spartan Day</td>
</tr>
<tr>
<td>12</td>
<td>4/14/2017</td>
<td>Area S</td>
</tr>
<tr>
<td>13</td>
<td>4/21/2017</td>
<td>Oral Presentations</td>
</tr>
<tr>
<td>14</td>
<td>4/28/2017</td>
<td>Oral Presentations</td>
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<td>15</td>
<td>5/5/2017</td>
<td>Oral Presentations</td>
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<tr>
<td>16</td>
<td>5/12/2017</td>
<td>EE198B Presentations</td>
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<tr>
<td></td>
<td></td>
<td>(Area S)</td>
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</tbody>
</table>