

**San José State University**  
**Mechanical Engineering Department**  
**ME 195A, Senior Design Project I, Fall 2022**

**Course and Contact Information**

Instructor(s):	Section 01 (42541):Prof. Raghu Agarwal Section 02 (42542): Prof. Burford Furman Section 03 (42543) :Prof. Igor Tyukhov Section 04 (42544) Prof. Cydzik Section 05 (43361) Prof. James Mokri Section 06 (43887) Prof. Syed Zaidi Course coordinator: Prof. Vimal Viswanathan
Contact Information	Prof. Agarwal: office Engr 310D, <a href="mailto:raghu.agarwal@sjsu.edu">raghu.agarwal@sjsu.edu</a> Prof. Furman: office Engr 310G, <a href="mailto:burford.furman@sjsu.edu">burford.furman@sjsu.edu</a> , (408) 924-3817 Prof. Tyukhov: <a href="mailto:igor.tyukhov@sjsu.edu">igor.tyukhov@sjsu.edu</a> Prof. Cydzik: <a href="mailto:edward.cydzik@sjsu.edu">edward.cydzik@sjsu.edu</a> 650-954-7278 Prof. Mokri: <a href="mailto:james.mokri@sjsu.edu">james.mokri@sjsu.edu</a> , 831-238-2029 Prof. Zaidi: <a href="mailto:syed.zaidi@sjsu.edu">syed.zaidi@sjsu.edu</a> , 609-558-1227 Prof. Viswanathan: <a href="mailto:vimal.viswanathan@sjsu.edu">vimal.viswanathan@sjsu.edu</a> , 408-924-3841
Office Hours:	Prof. Agarwal: T TH 3:00 - 4:00 Prof. Furman: M 1315 – 1415 (in person); Tu 1330 – 1430 (by Zoom) or by appointment Prof. Tyukhov: TBD Prof. Cydzik: Mo and We 6:00 -7:00 via Zoom Prof. Mokri: W 1630 – 1730 (in person, Zoom or by appointment) Prof. Zaidi: Mondays: 2:00 pm to 4:00 pm (By appointment only)
Class Days/Time:	Wednesday, 1:30-4:15 pm (sections 1, 2, 3, and 5); Wednesday, 3:00 - 5:45 pm (sections 4 and 6)
Prerequisites:	ME 114, ME 154 and ENGR 100W (with grade C- or better in each) ME 195A&B sequence must be completed in the same academic year
GE/SJSU Studies Category:	Area S

**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, and experimentation including possible construction and testing.*

**Course Format**

**Technology Intensive, Hybrid, and Online Courses**

This class requires the use of Canvas, so you will need access to the internet. Most, if not all, assignments during the semester will require the use of a computer for word processing, spreadsheets, computational analysis, CAD drawings, etc. Electronic communication with your instructor and teammates is also required.

Recording Zoom Classes

This course or portions of this course (i.e., lectures, discussions, student presentations) may be recorded for instructional or educational purposes. The recordings will only be shared with students enrolled in the class through Canvas. The recordings will be deleted at the end of the semester. If, however, you would prefer to remain anonymous during these recordings, then please speak with the instructor about possible accommodations (e.g., temporarily turning off identifying information from the Zoom session, including student name and picture, prior to recording). Students are not allowed to record without instructor permission. Students are prohibited from recording class activities (including class lectures, office hours, advising sessions, etc.), distributing class recordings, or posting class recordings.

### Instructor Materials

Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

### **Faculty Web Page and MYSJSU Messaging**

*Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the [ME195 webpage](#) and/or on [Canvas Learning Management System course login website](#) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system through [MySJSU](#) on [Spartan App Portal](#) <http://one.sjsu.edu> to learn of any updates.*

### **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 relevant to mechanical engineering.

### **GE Learning Outcomes (GELO)**

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

1. 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.
2. Describe historical, social, political, and economic processes producing diversity, equality, and structured inequalities in the U.S.

3. 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).
4. Recognize and appreciate constructive interactions between people from different cultural, racial, and ethnic groups within the U.S. .

### **Course Learning Outcomes (CLO)**

By the end of the course each student should be able to:

#### *Design Skills*

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

#### *Self, Society, and Equality in the US*

7. Describe how his or her identity and social interactions have been shaped by mobile technology (GELO 1)
8. Analyze how his or her engineering projects can produce diversity, equality, and structured inequalities in the U.S. (GELO 2)
9. Discuss how technology helps to promote greater equality and social justice in the U.S. among the disabled. (GELO 3)
10. Describe how mobile technology can promote constructive interactions between people from different cultural, racial, and ethnic groups within the U.S., OR how mobile technology widens the divide between from different cultural, racial, and ethnic groups within the U.S (GELO 4)

### **Required Texts/Readings**

#### **Textbook**

*None*

## Other Readings

*Links to additional online readings will be posted online.*

## Course Requirements and Assignments

ME 195A involves extensive work in teams. You will be working with your team to define your project and its specifications and go through the phases of design. Successfully completing ME 195B means that you need to have a complete, optimized design at the end of ME 195A. Scheduling and spreading out your work evenly throughout the semester is a very important. You must attend all Wednesday sessions. Assignments are described on the next page.

## Proposal and Progress Reports

The project proposal outlines the deliverables and specifications for your project. Follow the guidelines on the ME 195 website unless otherwise noted by your instructor. Progress reports may be required by individual instructors, and they will provide you with information about required format and due dates.

## Presentations

Three group presentations are scheduled throughout the semester. All team members must present and be prepared to answer questions. Guidelines are shown on the [ME 195 website](#).

## Individual Writing Assignments

These are assignments based on the seminar/online modules sessions. They are required of all students in ME 195A. Note that each assignment is worth 5% of your total grade, but you **MUST** complete all three individual writing assignments with a minimum of 60% on each to pass the class. Assignment details are posted on Canvas. Students are encouraged to take a look at good example papers from last year as well as the grading rubric before beginning writing. Assignments must be submitted via Canvas. “Turnitin.com” will be used to check for plagiarism.

***Note:** Any paper that contains significant spelling and/or grammar errors will be returned to you and not graded. Correct use of English is a fundamental requirement for your papers to be graded. If errors in English makes it difficult for a grader to understand your sentences, or excessively slow down the grader to mark your technical errors, your paper will be returned to you for further work on its English, and your grade for the paper will be deferred until it is resubmitted with corrected English. If your assignment is returned for an excessive number of grammatical errors, you will be allowed to rewrite and resubmit it within two weeks of the original return date. If not resubmitted by the end of two weeks, you will receive a zero (0) for the writing assignment. If your grade for an assignment is lower than 70%, as an option you will be allowed to rewrite it. You must resubmit it within two weeks of the original return date from the grader. In that case, the max grade you will be able to get for your particular rewrite is 85%.*

*Late submissions will receive a scoring deduction of 5% per week late. So, for example, if you miss the Canvas submission deadline, you will immediately lose 5% of the maximum score. If it takes you more than one week later to turn in your assignment, then you will lose another 5%, and so on. Word to the wise... turn your assignments in before the deadline!*

## Final report (Final Evaluation)

Start your final report early (Week 6). Unless otherwise noted by your instructor, the final report should follow the format included in the “ME 195B Final Report Evaluation Rubric” shown on the course website. ME 195A reports typically go through Chapter 4. Your final report should incorporate and discuss appropriate engineering standards/codes for your project. Consult your instructor to see which sections he or she wants you to complete. The final report serves as your final evaluation for the course, per university policy.

## Individual Performance/Participation Evaluation

Your instructor will give you a score for your individual team contributions. Items that factor into this score may include team meeting participation, performance in presentations, individual contributions to the final report, and an individual performance evaluation form that each team member must complete. Your instructor will let you know which form to complete.

## Expected time commitment

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 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 practica. Other course structures will have equivalent workload expectations as described in the syllabus.

## Grading Information

A letter grade will be assigned to each student by the section instructor at the end of the semester and will be based on the evaluation of the following course requirements:

- (5%) Project proposal and progress reports as required
- (25%) Delivery of at least three presentations on achievements and timely progress
- (15%) Individual writing assignments (three total)
- (40%) Final report and semester achievements
- (15%) Individual performance/participation evaluation

## Grade Distribution

<i>Grade</i>	<i>Percentage</i>
<i>A</i>	<i>93 to 100%</i>
<i>A minus</i>	<i>90 to 92.9%</i>
<i>B plus</i>	<i>87 to 89.9 %</i>
<i>B</i>	<i>83 to 86.9%</i>
<i>B minus</i>	<i>80 to 82.9%</i>
<i>C plus</i>	<i>77 to 79.9%</i>
<i>C</i>	<i>73 to 76.9%</i>
<i>C minus</i>	<i>70 to 72.9%</i>
<i>D plus</i>	<i>67 to 69.9%</i>
<i>D</i>	<i>63 to 66.9%</i>
<i>D minus</i>	<i>60 to 62.9%</i>

## Notes about Grading:

1. No extra credit will be made available.
2. Unless otherwise noted, no late work will be accepted except for the final report, which will be penalized by lowering the report grade according to the rules established by each section instructor.

## Classroom Protocol

It is expected that each team member will be present in class each week, working with his or her team. Missing or coming late to team meetings without an approved excuse will result in lower grades on the individual performance/participation evaluation. Each team member must participate in each oral presentation or else he/she will receive a grade of "0" for that presentation. The only exceptions are university-authorized excuses, such as being ill with a note from a doctor, or if arrangements were made in advance with the instructor.

## University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo) (<http://www.sjsu.edu/gup/syllabusinfo>), which is hosted by the Office of Undergraduate Education. Make sure to visit this page to review and be aware of these university policies and resources.

## ME 195A Senior Design Project I Course Schedule, Fall 2022

*Schedule is subject to change with fair notice via email. Assignments are due by 11:59 pm unless otherwise noted.*

Week	Date	Topics, Readings, Assignments, Deadlines	Assignments Due
1	Aug 24	<b>General session</b> for an overview of ME 195A/B and project topics. A meeting with individual section instructors. <b>Location: Eng 189 for seminar @ 3pm</b>	
2	Aug 31	<b>Seminar:</b> Working in Teams: How to Make your Project Successful with Efficient Teamwork Speaker: Dr. Vimal Viswanathan ( <b>Location: Eng 189 @3pm</b> ) Individual sessions on project descriptions and team organization	
3	Sept 7	Individual sessions on project proposals	Proposal + Teamwork plan due 9/7
4	Sept 14	Individual sessions Discussion on technical presentations with your instructor	
5	Sept 21	<b>Seminar:</b> GE requirements (Society & Technology) Speaker: Dr. Nicole Okamoto ( <b>Location: Eng 189 @3pm</b> ) Discussion on equality and social justice issues in individual sessions	Intro/Lit Review/ Objectives/Specs/ References mini-report due 9/21
6	Sept 28	Individual sessions Note: Get started on your final report!	
7	Oct 5	Project oral <b>presentation #1</b> Individual session	Indiv. Writing Assignment 1 due 10/3 (Monday)
8	Oct 12	Individual sessions: Project Report Preparation discussion	
9	Oct 19	<b>Seminar:</b> GE requirements – The effect of mobile technology on face-to-face communication Speaker: Dr. Buff Furman ( <b>Location: Eng 189 @3pm</b> )	
10	Oct 26	Individual sessions	Indiv. Writing Assignment 2 due 10/24 (Monday)
11	Nov 2	Individual sessions.	
12	Nov 9	Project oral <b>presentation #2</b>	
13	Nov 16	Individual sessions	Indiv. Writing Online Module Assignment (#3) due 11/16 (Wed)
14	Nov 23	Non-instructional day (campus open, but no class)	
15	Nov 30	Project oral <b>presentation #3</b>	
16	Dec 6 Last day	Final project report and individual performance evaluation forms due by Dec 6 (Tuesday) at midnight	12/6 (Tues)