San José State University
Department of Mechanical Engineering
ME 201 Project Planning, Section 01, Spring 2022

Course and Contact Information

Instructor:	Crystal Han
Office Location:	Zoom link provided on Canvas
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Office Hours:	Mondays 12 – 1 PM and Tuesdays 9:00 – 10:00 AM
Class Meeting Days/Time:	Mondays and Wednesdays 4:30-5:45 PM
Classroom:	Zoom link provided on Canvas
Prerequisites:	Good standing in the MSME program. Not available via Open University.

Course Format

This class is fully online and requires use of the Canvas learning management system (LMS), accessed via https://sjsu.instructure.com/. Successful completion of course requirements necessitates accessing the course website frequently. Technical support for Canvas is available at http://www.sjsu.edu/ecampus/. Important communications regarding this class may be sent via Canvas or to student email addresses listed in MySJSU, and thus each student is expected to maintain up-to-date contact information in both systems.

Course Description: https://catalog.sjsu.edu/preview_course_nopop.php?catoid=2&coid=8168

Preparation for independent projects, research investigations, and professional engineering proposals. Review of scholarly literature. Development of formal objective statements and research hypotheses. Planning and articulation of tangible deliverables, resources, tasks, and milestones. Note: This course satisfies graduate-level GWAR in this master's program.

Course Learning Outcomes

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

1. Perform a thorough literature search based on scholarly primary sources and write a professional literature review.
2. Develop a formal objective statement for a meaningful open-ended project or formulate a hypothesis for a contemporary research study in mechanical engineering.
3. Articulate specific and tangible deliverables that manifest an engineering solution or research evidence.
4. Develop a detailed project plan including structured tasks, available resources, significant milestones, and realistic timeline.
5. Write a comprehensive proposal for an independent engineering project or research investigation.
6. Conduct preliminary design, analysis, calculations, simulation, and/or feasibility study that contributes tangibly to meeting project objectives or interrogating a research hypothesis.

This MSME Program Educational Objectives (PEOs) that this course most directly addresses are:

- PEO #2: Professional and lifelong learning skills to be able to apply and extend theory to solve practical contemporary engineering problems.
- PEO #4: Strong verbal and written communication skills, including the ability to read, write and comprehend technical documents.
- PEO #5 (partially): Ability to think and work independently to perform design and in-depth analysis in solving open-ended mechanical engineering problems.

Required Reading

Selected reading will be assigned throughout the semester, which may include guide documents from ME faculty, articles from scholarly publications, and application notes.

Library and Writing Resources

The engineering librarian as listed at https://library.sjsu.edu/staff-directory/subject-librarians can provide faculty and students with research instruction and resources, as needed, in person and online through the library website http://library.sjsu.edu/. Research guides http://libguides.sjsu.edu/ are accessible for departments and subject areas, including a guide specific to mechanical engineering at http://libguides.sjsu.edu/me. Writing resources and individual session appointments are available through the Writing Center https://www.sjsu.edu/writingcenter/.

Course Requirements and Assignments

University policies relevant to syllabi are posted at https://www.sjsu.edu/curriculum/courses/syllabus-info.php. As stated, "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."

Participation Tasks: Throughout the semester there will be several participation tasks to promote active engagement, regularity, and accountability. Specific examples include assigned discussion posts, checkpoint assignments (e.g., tentative titles, list of prospective mentors), and peer review. Tasks may be in-class or online. Accordingly, it is important to attend class and to check Canvas regularly with no lapses of more than a few days.

Proposal Documents: A thorough and professionally prepared project proposal is the primary deliverable item for this course. There are three major components of the proposal: (1) Literature Review, (2) Project Plan, and (3) Preliminary Work Report. Each of these documents must be individual original work. Expectations will be communicated by separate documents for each assignment. This set of documents will be compiled, integrated, refined, and submitted as a Full Proposal at the end of the semester.

Collectively, these writing assignments are worth 75% of the course grade. The Full Proposal requires a minimum of 3000 words (approximately 12 pages) of body text, not including front matter, headings, figures, tables, references, or appendices. Proposal documents must follow professional writing standards. For ME 201, we will use SJSU thesis guidelines http://www.sjsu.edu/cgs/current-students/thesis-and-dissertation-information/.

Video Synopsis: Near the end of the semester, each student will compose a concise video-narrated synopsis of his or her proposal. In addition to providing closure, preparation of the synopsis has the benefit of developing thoughtful awareness of how to propose an endeavor with efficient verbal communication and concisely informative visual elements.

Preliminary Work: Each student is required to identify and begin applying distinct new engineering skills that are likely to contribute meaningfully to the project that is proposed. While some of these skills may have been introduced in prior coursework or industry experience, others might require substantial independent learning. In all cases the intent of this requirement is to customize practical skills for the unique needs of an open-ended project.

This class does not "teach" such diverse skills, but may provide helpful tutorial references and limited advice in some cases. Selection of applicable skills and scope should be guided by advice from prospective project advisors and are subject to instructor approval. Grading will be manifested as a combination of participation tasks and what is reported in the Preliminary Work Report. Some representative examples are listed below, but the list is not intended to be exhaustive.

- Sensor selection, interfacing, and calibration (e.g., strain gauges, thermocouples, load cells, ...)
- Actuator selection, interfacing, and testing (e.g., motors, solenoids, pneumatic cylinders, ...)
- Data acquisition system configuration and testing (e.g., analog vs. digital signals, amplifiers, filters, ...)
- Software coding (e.g., Python, MATLAB, C++, or otherwise...)
- Software-driven instrument control (e.g., microcontrollers, serial communication, ...)
- Experimental uncertainty analysis and error propagation
- Statistical design of experiments and analysis-of-variance (ANOVA)
- Data fitting and regression models
- Data file manipulation and image analysis (e.g., feature recognition, Fourier analysis, ...)
- Geometric dimensioning and tolerancing (GD&T)

Grading Information

The course grade is calculated from a weighted sum of all graded components as follows:
- 15% for Participation Tasks
- 20% for Literature Review
- 20% for Project Plan
- 20% for Preliminary Work Report
- 10% for Video Synopsis
- 15% for Full Proposal

This course is graded by letter grade. Percentage points correspond to letter grades as follows:
93.0-100 A | 90.0-92.9 A- | 87.0-89.9 B+ | 83.0-86.9 B | 80.0-82.9 B-
77.0-79.9 C+ | 73.0-76.9 C | 70.0-72.9 C- | 67.0-69.9 D+ | 63.0-66.9 D | 60.0-62.9 D- | 0-59.9 F

Peer Evaluation: Peer review is essential in scholarly work, and peer feedback is used frequently in this class. Much of your submitted work will be visible to classmates for open feedback. For some assignments, peer evaluation may be used for a portion of grading. Alternative options will be considered for compelling reasons, but arrangements must be requested and pre-approved in writing with ample time before corresponding deadlines (i.e., several days in advance).

Late Policy: Unless otherwise specified for a particular assignment, work that is submitted late will be accepted with reduced credit according to a depreciation rate of 2% for each late hour breached.

Exceptions: Any grading appeals or petitions must be communicated promptly in writing (or email). Exceptions will normally be evaluated at the very end of the semester in context with an individual's overall semester track record and all other exceptions class-wide. Special consideration for truly unavoidable and extenuating circumstances will depend on timeliness and supporting documentation (e.g., doctor's note, police report).

University Policies

In accordance with University Policy S16-9 http://www.sjsu.edu/senate/docs/S16-9.pdf, the following link contains university-wide policy information relevant to all courses, such as academic integrity, accommodations, and related concerns: https://www.sjsu.edu/curriculum/courses/syllabus-info.php.

Academic integrity

Your own commitment to learning, as evidenced by your enrollment at San José State University and the University's Academic Integrity Policy (https://www.sjsu.edu/senate/docs/F15-7.pdf), requires you to be honest in all your academic course work. Faculty members are required to report all alleged violations of the Academic Integrity Policy to Student Conduct and Ethical Development. Instances of academic dishonesty will not be tolerated. Originality checking via Turnitin is enabled to help you ensure that you are not inadvertently plagiarizing. Information on how to view Turnitin findings is available at https://help.turnitin.com/feedback-studio/canvas/plagiarism-framework/student/student-category.htm *Plagiarism will result in a grade of F or worse*.

Academic Technology Requirements

Students are required to have an electronic device (laptop, desktop or tablet) with audio. Campus-level resources for technology needs (including equipment loans) are described at https://www.sjsu.edu/learnanywhere/equipment/.

Recording Policy

Students are prohibited from recording class activities (including class lectures, office hours, advising sessions, etc.), distributing class recordings, or posting class recordings.

Materials created by the instructor for the course (lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. University Policy S12-17 https://www.sjsu.edu/senate/docs/S12-7.pdf 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 who require special accommodations or assistive technology due to a disability to notify the instructor.

Statement by Writing Center

The San José State University Writing Center offers a variety of resources to help students become better writers, and all of our services are free for SJSU students. Our mission is to enhance the writing skills of SJSU students so they can communicate clearly in any setting (informal, academic, or professional). We accomplish this goal through creating original writing resources, offering workshops, and conducting one-on-one and small-group tutoring sessions.

The SJSU Writing Center has two locations: We conduct drop-in tutoring sessions in Clark Hall, Suite 126; we conduct scheduled appointments on the second floor of the MLK Library. We also offer online tutoring sessions using the Zoom web conferencing platform. All appointments can be made online at sjsu.mywconline.com.

All our writing tutors have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment, register for a workshop, or to refer to the numerous online resources offered through the Writing Center, visit the Writing Center website at http://www.sjsu.edu/writingcenter.

Course Schedule

Subject to change with fair notice via announcement in class or notification via Canvas. <u>Class members should reserve all regular periods for synchronous (online) attendance</u>. However, some class meetings may be set aside as open writing support sessions or split into smaller groups for more focused attention.

Dates	Topic	<u>Approximate</u> distribution of deadlines (actual deadlines specified in Canvas)
1/26	Introduction and course logistics	
1/31 2/2	Faculty research profiles and representative topics Literature searching and primary sources	List of keywords
2/7 2/9	Effective literature reading Literature citation management	Proof of literature search initiation
2/14 2/16	Plagiarism and copyright infringement Organizing and writing literature reviews	Literature review outline with citations
2/21 2/23	Objective statements and research hypotheses Articulating tangible and specific deliverables	Draft of objective statements or research hypotheses
2/28 3/2	Evaluation metrics Common flaws in grammar and writing style	List of deliverables and evaluation metrics
3/7 3/9	Visual representation of data Applying engineering theory and technical skills	**Draft of literature review**
3/14 3/16	Feedback and refinement of literature review Project implementation planning	**Literature Review**
3/21 3/23	Self-directed learning and preliminary work selection Open working time and writing support session	**Draft of Project Plan**
3/28 3/30	Spring break	
4/4 4/6	Feedback and refinement of project plan Open working time and writing support session	**Project Plan**
4/11 4/13	Preliminary work deliverables Open working time and writing support session	**Draft of preliminary work report**
4/18 4/20	Artifact, data, and document management Open working time and writing support session	**Preliminary Work Report**
4/25 4/27	Feedback and refinement of preliminary work report Open working time and writing support session	**Draft of Video Synopsis content**
5/2 5/4	Feedback on video synopsis Presentation best practices	**Video Synopsis**
5/9 5/11	Preparation for MSME project and thesis Video Synopsis peer evaluation	List of potential committee members
5/16	Video Synopsis peer evaluation	**Full Proposal**

All class members are expected to reserve the university-designated final exam time: **Monday, May 23rd from 2:45 PM to 5:00 PM**. The period may be used for Video Synopsis presentations and peer evaluation.