Revision Date: October 1, 2021

ME Undergraduate Research Program

School of Mechanical Engineering

Course title (Limit 30 characters)

Semester (e.g., Spring 2022) Credit hours (typically 2-3 credits)

Faculty advisor name (print) Signature Date

Student name (print) Signature Date

Objective

Studies show that undergraduate students who engage in research are more likely to graduate, more likely to go on to graduate school, and have more successful careers after graduation. This program aims to help undergraduate students to discover first-hand how research contributes to the advancement of human knowledge; to experience a change of pace from formal classroom activities, and to gain skills applicable to both research and non-research careers.

Outcomes

Undergraduate research enriches an undergraduate student's experiential learning experience. Participation in research, scholarship, or creative activity helps the development of a range of skills beyond formal classroom learning. Through the participation in research, undergraduate students will be able to[1]:

- Develop a research question, problem, or design;
- Apply basic principles and knowledge found in the literature related to the research question;
- Develop a research proposal to address or resolve a specific research question or problem;
- Apply and evaluate methodology throughout the project;
- Collect, interpret, and critique data to resolve a research question or evaluate a design;
- Communicate research findings; and
- Appreciate what the process of scientific research entails.

Minimum Expectations of Students

- Attend all scheduled meetings arranged by faculty advisor/mentor and come prepared to communicate project status and any help needed from the faculty advisor/mentor.
- Prepare and present a final oral presentation to faculty advisor/mentor.
- Prepare and submit a final 1-page written report to faculty advisor by the date specified by the faculty advisor.
- Allocate 10-12 hours per week for three research credits (approximately 4 hours per week for each credit).

Minimum Expectations of Faculty Advisors

- Conduct the initial meeting with student by the Friday of the first two weeks of each semester. The purpose of the meeting is to make introductions and review project requirements.
- Clearly communicate project requirements and deliverables to the student.
- Schedule at least bi-weekly project review meetings for student and his/her mentor (yourself or designated graduate student, or postdoc).
- Ensure student has access to all necessary resources to successfully complete the project. (e.g. software, shared drive access, etc.)
- Act as a coach to stimulate undergraduate to high performance levels.
- Ensure student conduct their work in a professional and disciplined manner.
- Provide constructive and timely feedback on student performance.
- Schedule and participate in students' final oral presentation.

[1] https://sfp.caltech.edu/students/summer_requirements/learning-outcomes