

San José State University
College of Engineering, Department of Biomedical Engineering
BME 280, Graduate Research Studies, Fall 2022

Course and Contact Information

Instructor(s):	Alessandro Bellofiore
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Office Hours:	Monday, 1:00 – 2:00PM
Class Days/Time:	N/A
Classroom:	N/A
Prerequisites:	Classified graduate standing, or instructor consent

Course Description

Supervised individual research or directed studies for graduate students. Students work with faculty mentors on research-oriented projects, including comprehensive critical literature reviews, development of new testing or analysis methodologies, experimental or numerical investigations. Course credit: 1–3 units.

Course Format

Supervision class.

Course Learning Outcomes (CLO)

Graduate Research Studies through a research project related to the field of Biomedical Engineering enables the student to develop in depth knowledge and skills to complement academic coursework and help achieve the program learning outcomes.

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

1. **apply** theoretical and scientific knowledge to a specific project relevant to Biomedical Engineering;
2. **review** and **evaluate** critically the peer-reviewed literature relevant to the research project;
3. **design** and **develop** experimental or computational methods to answer engineering questions in the field of Biomedical Engineering;
4. **collect** and **analyze** data from experiments or numerical simulations;
5. **communicate** the essential theories, scientific applications, and ethical considerations related to Biomedical Engineering.

Required Texts/Readings

Required textbook

This class does not have a required textbook.

Recommended readings

To be determined by the student and faculty mentor.

Other technology requirements: iClicker

To be determined by the student and faculty mentor.

Library Liaison

Anamika Megwalu

Phone: (408) 808-2089

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Course Requirements and Assignments

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 three hours per unit per week) for instruction, preparation/studying, or course-related activities, including but not limited to internships, labs, and clinical practice. Other course structures will have equivalent workload expectations as described in the syllabus. More details about student workload can be found in [University Syllabus Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) at <http://www.sjsu.edu/senate/docs/S16-9.pdf>.

The graduate research study can be quite varied in topic/activities and can include:

- Working with a faculty member on a research project
- Review of literature on relevant topic(s)
- Research project which culminates in a paper

To enroll in this course, students must:

- Complete the BME 280 registration form, in consultation with their faculty mentor;
- Submit the completed BME 280 form to the course coordinator **at least one week prior to the last date to add**. The course coordinator will review for approval. Upon approval, staff will process the paperwork and give the student an add code for BME 280.

During the graduate research study, students are expected to:

- Dedicate at least 45 hours for each unit of credit to the completion of the study;
- Communicate with their faculty mentor in a timely manner;
- Submit a minimum two pages' monthly progress report in memo format that describes what has been done in relation to the goals set at the start of the semester, shows collected data in relevant format including data analysis and calculations, discussion of what the results mean, and describes in detail any issues that occurred along with what was or will be done to solve those issues;

Final Examination or Evaluation

To complete the graduate research study, students must:

- Submit a graduate research study report (see guidelines below) by the deadline set by the faculty mentor;
- Make one final presentation at the end of the semester and submit the presentation material to the faculty mentor. The presentation format can be varied as long as it is mutually agreed between faculty mentor and student.
- Complete of at least 80% of monthly goal. The project goal should be modified by the student in consultation with the faculty mentor in case of delay in achieving monthly goal.
- Check that they have completed all elements outlined in the BME 280 registration form. Everything must be completed on or before the last day of class, in order to receive credit.

Graduate Research Study Report Guidelines for Projects

- *Cover Page*: Project Title; Your Name; Semester of Project
- *Introduction and specific aims* (minimum 1 page): provide a brief description of the graduate research study and objectives;
- (if applicable) *Literature review*: a critical review of the relevant scientific papers, organized by topic;
- (if applicable) *Methodology and protocols*: a detailed description of materials, protocols and analyses developed for the graduate research study;
- (if applicable) *Results and discussion*: a detailed description of all the results obtained from experiments or numerical simulations, including graphs and tables as appropriate, as well as a critical review of the study objectives, hypotheses and assumptions in light of the results obtained;
- *Reflection/Analysis* (minimum 2 pages): This section conveys your reflections at the conclusion of the project. This portion of the paper should answer the question ‘so what’? In what ways did you, and the people you worked with benefit from your work? What did you learn? What was the impact on you? In addition, this is where you convey in what ways you were able to connect theory with practice.
- *Appendix*: all the monthly progress reports, summarizing activities, experiences, and hours worked.

Grading Information

Determination of Grades

The Graduate Research Studies course is graded as Credit or No Credit (CR/NC). Credit is given when all requirements listed above have been met and a positive evaluation has been submitted by the faculty mentor to the course coordinator. The course is repeatable for degree credit up to two times (i.e. maximum 3 units of degree credit will be allowed for this class).

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

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.

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Course Schedule

To be determined by the student and faculty mentor.