



Department of Bioengineering

UNIVERSITY OF COLORADO
DENVER | ANSCHUTZ MEDICAL CAMPUS

Master's Project Guidelines

Master's Project Purpose

The Master's Project provides a means for both practical applications of the knowledge and skills obtained through classwork and extended, in-depth work on a focused project. Through the Master's Project, students have opportunities to gain experience in specific areas of interest or career development. Such work may not fall within the scope of a standard thesis and may include design and prototyping, FDA regulatory analysis, software development, patent and intellectual property analysis, or work associated with entrepreneurship or startup company efforts, among others. The Master's Project may also involve work performed at a biomedical company.

Requirements

1. A student who pursues the Master's Project must complete 30 credit hours: 21 credit hours of Bioengineering Graduate Core plus 9 credit hours elective. In 9 credit hours elective, the student must complete at least 3 credit hours of Master's Project work.
2. The student must select a project advisor and convene a project committee (see below) prior to embarking on the Master's Project.
3. Once the advisor and committee have been selected, the student must provide a report on the progress of the Master's Project to his/her project committee at least once each term. This allows for a mechanism to discuss the status of the Master's Project, obtain feedback from the committee, and troubleshoot any issues. The student is expected to discuss the feedback with the project advisor and amend the project if necessary.
4. To finish the project, the student must give a final project defense to the committee, submit a final written project report to the committee, and receive approval for the report from the committee. It is recommended that a close-to-final version of the report be submitted to each committee member at least 2 weeks in advance of the presentation date to allow sufficient time for review and feedback.

The Master's Project Advisor, the Academic Advisor, the Committee and the Project

1. The Master's Project Advisor provides primary research guidance and mentorship to the student, and assumes managerial responsibility for the student. Typically, the Project Advisor also provides the resources for the student to undertake the project, which may include lab/working space, any instruments, computers, software, or other technical equipment needed to accomplish the project, and any funding if previously agreed upon between the Project Advisor and the student. The Master's Project Advisor chairs all committee meetings, and must be a faculty member of good standing in the graduate school at CU Denver.
2. The Academic Advisor assumes responsibility for academic advising of the student. He/She must be a member of the BIOE Core Faculty – see attached list of current core faculty. He/She may serve as the Master's Project Advisor.
3. The Committee must consist of at least 3 members, and must include the Project Advisor and the Academic Advisor. All members must have good standing with the graduate school at CU Denver.
4. The student, in consultation with his/her Project Advisor, is responsible for selecting an appropriate Project topic, an overall plan of work, and a time schedule for completion.

5. To complete the Master's degree in timely fashion (2 years), it is recommended that the selection of a Master's Project Advisor be made by the end of the first year. Faculty lead complex lives with varied time commitments; please plan accordingly.

Proposal for the Master's Project

1. The student is required to submit a proposal to the project advisor and committee for the Master's Project as early as possible but no later than the semester before the student's anticipated final term. The student is encouraged to consult with the committee members as he/she works through the details of the project.
2. The proposal must contain an introduction to the problem, a statement of the problem, significance and impact, the aims of the project, a description of the methods, and a realistic project time line listing key milestones. The student may need to revise specific elements of the timeline or proposal based on feedback from the committee.
3. The Project Advisor may decide to convene a formal committee meeting to review and approve the project proposal. All members of the committee and the student must be present in person or through video conference. It is the student's responsibility to coordinate scheduling such that all required members will be present. The student should provide a copy of the proposal to each committee member at least two weeks before the formal committee meeting.
4. At the end of the meeting, the committee may approve the proposal as is, may approve with minor changes, or may ask for substantial changes. If the committee asks for substantial changes, the committee may impose a further requirement for the student to re-present the proposal. The student is responsible for ensuring that all recommended changes are made and confirming committee approval.
5. With the approval of the Project Advisor, the student may proceed with the project without a formal committee meeting. However, the student and Project Advisor must understand that approval from all committee members is required for final completion of the project.
6. Projects that may generate new intellectual property (IP) in the form of patents, copyrighted software, or other information that may have commercial value should be discussed with a faculty member who has experience in these areas (ex: Prof. Robin Shandas). In some cases, the student and Project Advisor may need to discuss the project with the Technology Transfer Office at CU Denver.

Project involving Human Subjects

1. The Master's Project involving human research subjects must conform to all aspects of human subjects research policy for CU Denver. No human subjects research can be undertaken without proper Institutional Review Board (IRB) approval. Note that IRB review and approval may take a substantial (several months) amount of time.

Final Process

1. The student's final meeting with their committee will serve as the project exam. The student must provide all members of the committee with a close-to-final version of his/her project report at least 2 weeks prior to the final meeting. The student must give a final 1-hour presentation to the committee during this final meeting. The final committee meeting must include all committee members either in person or by video conference. The student is responsible for setting a date in consultation with all the committee members and reserving a room for the meeting.
2. In the final meeting, the student will present significance and background of the project, innovation, aims of the project, a description of the methods, results, error analysis, and future direction. The student should be prepared to answer questions around any aspect of the project including background information/knowledge, research context, and competing work, and should be prepared to defend the approach, analysis and conclusions.

3. At the end of the presentation, the committee members will evaluate the project and make following decisions.

- The committee approves the project, which includes the presentation and the written report, unconditionally.
- The committee approves the project on a conditional basis. It is the committee's responsibility to provide the student with all conditions required for approval, as well as a time-frame to complete the conditions. It is the student's responsibility to ensure he/she understands the conditions clearly. Final approval will be pending until all conditions are fulfilled to the satisfaction of the committee. Note that the student must finish all requested work by published University deadlines to earn the MS degree.
- Fail.