Bioengineering 7071 Proposal Writing and Presentation
Spring Semester, 2017

Rob MacLeod

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Essentials

Designation: Bioengineering PhD program required course.

Requirements/prerequisites:

PhD students must be in their second year of the graduate program. This course is a requirement for students in the PhD program but not meant for MS students. Any MS student who does decide to participate must be in the Thesis MS program (rather than Course Option) and in the last year of their program. They must be prepared to propose a project that reflects their MS research project. MS Students in the Course-option MS program are not permitted in the class.

Class time and venue

Class times: Thursday, 3:00–4:20 PM
Classroom: WEB L114
Credits: 2 credit-hours

Instructors

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Text books:

- **Required**

- **Recommended supplements**, roughly in order of value.

Grading

The grade for the course will be based on writing assignments, review assignments, and practice presentations.

Lectures and assignments:

The Canvas website is the central location for course materials, assignments, announcements, and grades. Please check there often.

Background Information

Description

This is the second semester of a course whose goal is to prepare PhD students for relevant forms of scientific communication, especially written proposals and oral proposal presentations and defenses. The core elements of scientific writing will, of course, be useful in a broader range of settings, however, the course will include limited coverage of scientific articles or papers. Instead, it will focus on the preparation of a grant or thesis proposal. Similarly, the course will include many general concepts and practices of oral presentation but rather than conference presentations, will focus on the unique setting of the research proposal defense.

The course will be practice oriented with many opportunities to develop, present, and receive feedback and constructive criticism. Students will also participate in the review process and thus develop the skills of evaluating written and oral presentations. We will use examples from a range of disciplines with the recurring goal of identifying the elements that make presentations great.

The target audience for the course will be PhD students who are in at least their second year of training and thus should be preparing for the PhD proposal and proposal defense. Undergraduate students take the Thesis Writing and Communication course to begin the development of presentation skills; this course is not open to undergrads. MS students who are pursuing the research degree (i.e., not the course only MS options) are also rarely admitted and if so, the course expectations change somewhat to align with their program and future careers as engineers. The course is open to students from other, related departments, e.g., Mechanical, Electrical, and Materials Engineering, or the School of Computing. Students from other departments do best when their research has a biological or biomedical connection.

Course Goals

The general goal of this class is to improve scientific communication skills and to create a framework for ongoing improvement well beyond the class.
Specific Aims

A major component of the PhD program is the preparation of a research proposal, which includes both a written document and an oral presentation. The specific aims of this course support achieving these requirements through:

1. Developing general presentation and writing skills for scientific communication.
2. Learning the specific features, components, and style of a written research proposal.
3. Creating oral presentations that support the presentation of the research proposal and crafting the ability to defend it in a public setting.
4. Establishing and refining constructive criticism skills in order to evaluate scientific communication and suggest approaches to its improvement.

Learning objectives

1. Review and refine general skills in scientific writing.
2. Develop and practice specific skills in writing proposals, both in the context of the Bioengineering qualifying exam, thesis research proposal and, more generally, in the context of proposals for funding of scientific research.
3. Review and refine general skills in the oral presentation of scientific results.
4. Develop and practice specific presentation strategies for the context of proposing and defending research ideas and results, in the context of the Bioengineering qualifying exam and the PhD thesis defense.
5. Develop and practice reviewing skills for both written the oral presentations.