BME 1477: Biomedical Engineering Project Design and Execution

1. Calendar Information

BME1477 is a course that aims to provide students with practical research and academic skills by:

1. Practicing fundamental research questioning, hypothesis generation, and research goals to define an individual research approach
2. Exploring project management and research planning to increase individual productivity
3. Comprehending the philosophy of research and ethical considerations pertaining to biomedical engineering to produce high quality research
4. Disseminating individual work in written and oral formats to translate individual knowledge and to share multidisciplinary research in creative ways

To achieve these aims, aspects of academic communication will be practiced through interactive workshops that cover literature searching, proposal writing, peer review, the visual display of information, and knowledge mobilization/translation. Throughout the semester, independent study will be centred on the student's own research topic with written, oral, and graphical communication; while teamwork will explore a multi-disciplinary project that encourages the translation of scientific knowledge to broader audiences. Students will develop these skills while learning how to position themselves and their research for employment purposes.

2. Learning Outcomes and Graduate Attributes

At the end of this course, you will be able to:

1. Apply literature search techniques to inform and support your research
2. Summarize your rationale for selecting specific research questions
3. Communicate the significance of your research persuasively
4. Create a research proposal suitable for graduate scholarship applications
5. Develop your peer review skills by providing and receiving critical feedback
6. Create scientific figures by visualizing concepts and quantitative data
7. Create short oral presentations in formats suitable for both broad and scientific audiences

3. Timetable

Day of the Week	Start Time	End Time	Location
Wednesday	12:00	14:00	BA1220

4. Course Instructors

Lead Instructor

Name	Email
Prof. Franklin	Dan.franklin@utoronto.ca

Communication Instructors

Name
Fiona Coll

5. Final Grade Determination

Component	Points
Literature Searching	
Literature Search Questions	5
Research Proposal	
Proposal Outline	5
Proposal Draft	5
Proposal Peer Review	5
Proposal Evaluations	10
Research Approach Presentation	
3MT Slide Draft and Story Outline	5
3MT Presentation Evaluation	15

Grade Notes

Deadlines may be subject to change during the course and each student must keep up to date with changes made on Quercus. Full points will be awarded for each component that meets all the requirements of each assignment or task. The instructor reserves the right to deduct points for submissions that are judged to have poor quality or significant deficiencies. The late policy (1 point deducted per day late) will be applied for components submitted after the deadlines listed.

6. Deliverables

Detailed instructions are provided on the Quercus course site for components of this course. All pre-class assignments are due before a class starts (i.e. 09:00) but other submissions have **deadlines of 23:59** on the dates listed in Quercus. Deadlines may be subject to change and will be updated on Quercus. The lateness penalty will be applied strictly as deadlines can be the difference between acceptance and rejection in graduate school.

Literature Searching

Tracking how you conduction literature searches will be of vital importance for your research career. Exemplary dedication to tracking your literature search history may be taken into consideration.

Research Proposal

The first main activity in this course is a series of assignments that culminate in a 1-page research proposal modelled on the NSERC CGS-M application format.

Research Approach Presentations

The second main activity in this course is a series of assignments that ends with a three-minute thesis symposium.

7. Course Policies

Academic Accommodations

Students with diverse learning styles and needs are welcome in this course. The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. For more information on services and resources available to students, please contact Accessibility Services at (416) 978-8060 or http://www.studentlife.utoronto.ca/as. Should you have a Letter of Accommodation, you shall notify the instructor within the first 3 weeks of the term to allow appropriate accommodations to be integrated into the course.

Lateness Policy

Deliverables received (considering the timestamp on Quercus only) after the posted deadline will be awarded a reduction of 1 point per day.

Deliverables will only be accepted through the Quercus learning management engine. You are encouraged to submit deliverables well before the deadline to ensure that you can verify your submission has been completed in Quercus. Examples of invalid reasons would include: situations related to computer or internet problems that result in late submissions (including computer crashes, local internet outages, or individual difficulties linking to Quercus), online submissions that were not executed properly by a student, a forgotten deadline, a lack of attention to a deadline date that was changed during the course, a student intended to submit at the deadline but was delayed, or a student submitted the deliverable in some other way that was not through Quercus.

Exceptions may be accommodated for valid reasons, that are out of a student's control, (some examples may be: severe personal illness, illness or death of a close family member, personal or family crisis, or other extenuating circumstances) and may be considered if in advance of the deadline. Exceptions will only be considered within seven days of the deliverable in question and include valid supporting documentation or rationale. The key is to have an open dialog (without sharing sensitive personal information) so that the instructor is aware of your challenges and has the time to make an accommodation.

Academic Integrity Message

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters **(**www.governingcouncil.utoronto.ca/policies/behaveac.htm**)** outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment.

In academic work:

- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see http://academicintegrity.utoronto.ca/).

Original Policy

Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (https://uoft.me/pdt-faq).

The purpose of using the Ouriginal tool in this course is to show students how to improve their work, should similarities to existing work be found. The Ouriginal tool will only be used for the

1-page research proposal draft and a student may opt out if they choose to do so (in which case the instructor must be notified at least a week prior to the deadline). While the above statement indicates that the Ouriginal platform is used to detect plagiarism, in this course it will only be used as an opportunity to learn how to reference source materials in the manner expected in graduate research.

Library Resources

University of Toronto Libraries provides access to a vast collection of online and print resources to faculty, staff, and students. Research help is available by phone, e-mail, chat, and in-person. (See Library website for more details: https://onesearch.library.utoronto.ca/). Your IBBME reference and instruction librarian, located at the Engineering & Computer Science Library is Michelle Spence (michelle.spence@utoronto.ca).