Institute of Medical Science
UNIVERSITY OF TORONTO

MSC7000Y REGENERATIVE MEDICINE
2023-2024 Course Outline

CONTACT INFORMATION

Course Director: Dr. Sonya MacParland   email: sonya.mcparland@uhnresearch.ca
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COURSE PRE-REQUISITES

The course will be open to all qualified graduate students at the University of Toronto and in affiliated departments at Canadian Universities. These include but not limited to: Medical Sciences, Nursing, Biomaterials, and Biomedical Engineering, Pathology and Molecular Medicine, Immunology, and Medicine.
Students who register in this course must be doing research in the field of regenerative medicine.

COURSE STRUCTURE

Organ Failure and Transplantation
a) Heart, Lung, Liver, Kidney, Pancreas Failure including pathophysiology, human impact, and the implications for regenerative medicine
b) Current Approaches to Surgical Management of Organ Failure including transplant and non-transplant approaches
c) Evaluation of Health-Related Quality of Life and patient perspective
d) Transplantation ethics

Stem Cells, Repair and Regeneration
a) Stem Cells including Retinal, Muscle, Marrow, ESC, IPS, Islet, and Neural, and cell aging
b) Tissue Engineering
c) Genetic Engineering
d) CRISPR/CAS9

Clinical Trials and Translation
a) Nanotechnology
b) Gene Therapy
c) Immune Tolerance and engineering
d) Biomarkers and Assays
e) Spinal cord repair and regeneration
f) Fundamentals of Clinical Trials including translation of New Therapies from Bench to Bedside
g) Regenerative Medicine Ethics

Business of Regenerative Medicine
a) Regulation of Regenerative Medicine in Canada
b) Biomedical Research Commercialization
c) Intellectual Property (IP)
d) Global perspectives

Journal Club Sessions
There will be 3 (three) journal clubs held and facilitated by the teaching assistant. Students will be placed in groups to present an article as chosen by the course director and teaching assistant for discussion with students in the course.

LEARNING OUTCOMES

By the end of this course, you should be able to:

a. Understand the pathology of organ failures and limitations of current clinical care
b. Understand current strategies in regenerative medicine and reflect on their potential clinical application
c. Appreciate the path of a regenerative medicine strategy from bench to market to bedside

LECTURES

Students attending University of Toronto will attend in person classes located at the MaRS West Tower 9th floor, Transplant Innovation Centre conference room 9006. Students located across Canada will attend virtually over Zoom.

Students participating virtually must have access to the following:

✓ A computer or laptop or suitable device
✓ High-speed internet connection – test your connection at https://fast.com/ Failure to have a high speed connection will result in choppy/loss of video, audio or a combination of both.
✓ Chrome, Firefox, or Microsoft Edge
✓ Zoom meeting - if you have not used Zoom meeting before, please review their website for more details.

Notice of video recording and sharing (download and re-use prohibited)

This course, including your participation, will be recorded.

Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor.

For questions about recording and use of videos in which you appear, please contact your instructor.

COURSE COMMUNICATION

All course information is communicated to students through **Quercus**, in addition to the email address associated with the course. Students will use their UTORID to login. Students outside of the University of Toronto will be sent their UTORID and join instructions once registration is completed through the School of Graduate studies at the University of Toronto.

Email

At times, the course coordinator and/or teaching assistant may decide to send out important course information by email. To that end, all U of T students are required to have a valid U of T email address. You are responsible for ensuring that your U of T email address is set up AND properly entered in the ROSI system.
You can do that by using the following instructions:
To submit the information to activate your UTORid and password (see above), you will need to click the "Validate" button. Follow the instructions on the subsequent screens to receive your utoronto.ca address. Once you have your U of T email address, go to the ACORN (www.rosi.utoronto.ca), log in and update the system with your new U of T email address.

You can **check your University of Toronto email** account from
1. The Webmail home page https://weblogin.utoronto.ca/   Enter your UTORID and password
2. Email software installed on your computer, for example Microsoft Outlook or Mozilla Thunderbird. Visit the Help Desk at the Information Commons or call 416-978-HELP for help with setup.

Forwarding your utoronto.ca email to a Hotmail, Gmail, Yahoo or other type of email account is not advisable. In some cases, messages from utoronto.ca addresses sent to Hotmail, Gmail or Yahoo accounts are filtered as junk mail, which means that emails may end up in your spam or junk mail folder.
You are responsible for:
1. Ensuring you have a valid U of T email address that is properly entered in the ROSI system;
2. Checking your U of T email account on a regular basis.
It is YOUR responsibility to ensure you check Quercus and email account.
Activating your UTORid and Password
If you need information on how to activate your UTORid and set your password for the first time, please go to www.utorid.utoronto.ca. Under the "First Time Users" area, click on "activate your UTORid" (if you are new to the university) or "create your UTORid" (if you are a returning student), then follow the instructions.

New students who use the link to "activate your UTORid" will find reference to a "Secret Activation Key". This was originally issued to you when you picked up your Tcard at the library or emailed to you directly. If you have lost your Secret Activation Key you can call 416-978-HELP or visit the Help Desk at the Information Commons on the ground floor of Robarts Library to be issued a new one. **The course instructor will not be able to help you with this.** 416 -978-HELP and the Help Desk at the Information Commons can also answer any other questions you may have about your UTORid and password.

QUERCUS – University of Toronto LEARNING MANAGEMENT SYSTEM
Logging into the course portal website
Like many other courses, MSC7000Y uses Quercus for its course website. To access the MSC7000Y website, or any other Quercus-based course website, go to the University of Toronto login page at http://q.utoronto.ca and login using your UTORid and password. Once you have logged in using your UTORid and password, look for the **Courses** module, where you'll find the link to the MSC7000Y course website along with the link to all your other courses.

Student's guide to Quercus

EVALUATION

Grading scheme for examinations, assignments
 Specific criteria are below:

(a) Evaluation methods:

Assignments (2)	20%
Take-home Midterm Exam (1)	25%
Final Project Presentations	40%
Abstract (5%) / Symposium (35%)	
Participation and Attendance	15%

(b) Evaluation Breakdown:
Canadian Students

First Term Assignment (essay)	10%
Mid Term Take home exam	25%
Second Term Assignment	10%
Final Abstract	5%
Final Presentation (Symposium)	35%
Participation/Attendance	15%

(c) Criteria for assessing participation:
   i) In class attendance for students.
   ii) Participation in discussions, journal club, and questions during lectures.

(d) Important Dates - Evaluation Deadlines:

Assignment 1:	November 4, 2023
Mid Term Exam (Take Home)	December 16, 2023
Assignment 2 (Dragon's Den)	January 25, 2024
Final Exam Project Title	March 8, 2024
Final Exam Abstract	March 20, 2024
Final Exam Oral Presentation – Symposium	April 17-19, 2024

(e) Responsibility of each evaluator (includes TA's):
Each faculty member will deliver a lecture providing an overview of the assigned topic. Select sessions will be dedicated to discussion in which participation is required. Students will be given the opportunity to email questions directly to the faculty member for further discussion. Grading standards will be set by a committee of faculty members and all assignments will be graded by either the teaching assistant and/or faculty members or combination of both.

FINAL EXAM PRESENTATION - SYMPOSIUM

It is a requirement that students attend the <u>entire</u> duration of the Symposium from April 17 - 19, 2024.
Local supervisors of students are encouraged to attend the symposium to support their students. If they should not be available, a <u>suitable</u> mentor (Post-Doctoral fellow or senior research colleague) familiar with the research project can represent them.

All assignments and exams are to be submitted through Quercus except for the final
presentation, which are oral presentations.

ACADEMIC INTEGRITY

Ouriginal is the institutional plagiarism detection tool. 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 website (*https://uoft.me/pdt-faq*).

ACADEMIC MISCONDUCT

From the Code of Behaviour on Academic Matters:

> *It shall be an offence for a student knowingly:*
> *(d)　　to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism. Wherever in the Code an offence is described as depending on "knowing", the offence shall likewise be deemed to have been committed if the person ought reasonably to have known.*

U of T Syllabus Language – Use of Generative AI in Assignments

Generative Artificial Intelligence (AI), and specifically foundational models that can create writing, computer code, and /or images using minimal human prompting, are proliferating and becoming ubiquitous. This includes not only GPT-4 (and its siblings ChatGPT and Bing), but many writing assistants that are built on this or similar AI technologies. There are now hundreds of these systems that are readily available. AI assistants are becoming more proficient at:
• Creating an outline for a paper, or bullet points and graphics for slides.
• Writing longer coherent prose in multiple languages.
• Providing explanations or ideas for a literature review with mostly accurate citations.
• Summarizing longer articles, text, or a corpus of texts.
• Suggesting a response to a question, such as on a short answer or multiple-choice test, or for a discussion board posting.
• Translating text more accurately.
• Creating computer code in multiple languages.
• Assisting users with formulas inside applications such as Excel.

These are only a few examples. Many AI assistant applications give the user a choice of templates (e.g.,email, essay, memo, plan) and a choice of tone to tailor the generated text to the user's need. We strongly encourage you to familiarize yourself with the type of functionality these systems offer and to have a conversation with your class about these technologies, in addition to including language about these technologies on your syllabus. You may also find this FAQ helpful which contains up to date information on use of the technology, including the institutional stance on detectors. We recognize that some instructors may want to allow, or even encourage, their students to use these technologies, and others may want to prohibit their use. The following suggested statements are intended to help you shape the message you provide to your students on a course syllabus and/or on assignment instructions to reinforce a shared understanding of what is, and is not, allowed. These statements may be applicable for both graduate and undergraduate level courses

Can use Generative AI in certain instances or specific ways
CAN be used to:
- Brainstorm ideas for Journal Clubs and Dragon's Den (Assignment 2)
- Further enhance understanding of a topic in the course
- Assisting in researching a topic for Essay (Assignment 1) and Midterm Exam

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CANNOT be used to:
- Assist in writing the Essay (Assignment 1) and the Midterm Exam

Students may use artificial intelligence tools for conducting research but the final submitted assignment must be original work produced by the individual student alone.

LATE SUBMISSION OF WORK

Overdue assignments: a deduction of **10% of a grade per day for five days,** after which a **grade of zero** is assigned. Students must contact the education coordinator *as soon as possible* if they anticipate they will not be able to meet a deadline (at minimum within 48 hours of the deadline of assessment). The student may request special consideration based on health problems or other personal circumstances. Course directors have the right to extend evaluation deadlines at their own discretion in such circumstances.

EVALUATIONS

Students will evaluate all lectures through an anonymous survey web-link via SurveyMonkey. At the end of the course, an overall course evaluation will be provided to students to complete in the same manner

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