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Syllabus

IMED 7104: Neural Stem Cells: Biology and Regenerative Medicine Applications

2019

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# COURSE DETAILS

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| **Course Title & Number:** | IMED7104: Neural Stem Cells: Biology and Regenerative Medicine Applications |
| **Number of Credit Hours:** | 1.5 |
| **Class Times & Days of Week:** | Wednesdays, 2:00-5:00pm, March 11 - April 22, 2019 |
| **Location for classes/labs/tutorials:** | 6th floor Basic Medical Sciences Building, Bannatyne Campus |
| **Pre-Requisites:**  **Course Co-Coordinators:**  **Voluntary Withdrawal** | Background knowledge in animal biology / Approval from the course coordinators  Dr. Soheila Karimi  [Soheila.Karimi@umanitoba.ca](mailto:Soheila.Karimi@umanitoba.ca)  Dr. Eftekhar Eftekharpour  [Eftekhar.Eftekharpour@umanitoba.ca](mailto:Eftekhar.Eftekharpour@umanitoba.ca)  Students should refer to the [Registrar’s Office](http://umanitoba.ca/student/records/leave_return/695.html) web page for more information concerning i) the last day to drop the class and receive 100% refund; and, ii) the last day to withdraw with no refund. |

# Instructor Contact Information

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| --- | --- |
| **Instructor(s) Name & Preferred Form of Address:** | **Dr. Soheila Karimi (Dr. Karimi)** |
| **Office Location:** | Rm 629-BMSB, 745 Bannatyne Ave |
| **Office Hours or Availability:** | Dr. Karimi will be available during the normal office hours (9-5). Appointments are mandatory prior to any meeting in person. |
| **Office Phone No.** | Dr. Karimi (204-272-3109) |
| **Email:** | [Soheila.karimi@umanitoba.ca](mailto:Soheila.karimi@umanitoba.ca)  Emails/phone calls will be returned within 24hrs. |
| **Contact:** | [Soheila.karimi@umanitoba.ca](mailto:Soheila.karimi@umanitoba.ca)  (preferred method of contact) |

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| --- | --- |
| **Instructor(s) Name & Preferred Form of Address:** | **Dr. Eftekhar Eftekharpour (Dr. Eftekharpour)** |
| **Office Location:** | Rm 631-BMSB, 745 Bannatyne Ave |
| **Office Hours or Availability:** | Dr. Eftekharpour will be available during the normal office hours (9-5). Appointments are required prior to any meeting in person. |
| **Office Phone No.** | Dr. Eftekharpour (204-789-3214) |
| **Contact:** | [Eftekhar.Eftekharpour@umanitoba.ca](mailto:Eftekhar.Eftekharpour@umanitoba.ca)  (preferred method of contact) |
| **Instructor(s) Name & Preferred Form of Address:** | **Dr. Benjamin Lindsey (Dr. Lindsey)** |
| **Office Location:** | Rm 134-BMSB, 745 Bannatyne Ave |
| **Office Hours or Availability:** | Dr. Lindsey will be available during the normal office hours (9-5). Appointments are mandatory prior to any meeting in person. |
| **Office Phone No.** | Dr. Lindsey (204-789-3781) |
| **Email:** | [Benjamin.lindsey@umanitoba.ca](mailto:Benjamin.lindsey@umanitoba.ca)  Emails/phone calls will be returned within 24hrs. |
| **Contact:** | [Benjamin.lindsey@umanitoba.ca](mailto:Benjamin.lindsey@umanitoba.ca)  (preferred method of contact) |

# Course Description

This course will discuss current concepts in Neural Stem Cells biology in the central nervous system including their development, fate specification and maintenance. Additionally, a major component of this course will discuss the therapeutic potential of these stem cells through cell transplantation as well as gene and drug delivery for treating a variety of neurological disorders including brain and spinal cord injuries, stroke, multiple sclerosis, neurodevelopmental and neurodegenerative disorders.

Neural stem cells play critical roles in the nervous system. This course offers essential knowledge for PhD students enrolled in Neural Stem Cells groups within the Regenerative Medicine Program. The course is also of high educational value for students at the new Neuroscience Research Program with focus on developmental neurobiology, and for other graduate students in all the basic sciences and clinical departments and programs at the Faculty of Health Sciences with relevant research focus.

Course material may be presented through the use of lectures, the use of student presentations, targeted examination of scientific literature, or the use of a combination of these approaches. For student presentations, the topics and bibliography to be covered will be determined by the instructor(s) and will depend on the specific research area of the student, as well as their academic background.

# Course Goals

The course is intended to introduce students to the field of neural stem cells and their application in regenerative medicine. It will also develop a skill set for exploring the scientific literature, summarizing and presenting ideas, and critically discussing topics relating to this course.

# Course Learning Objectives

Following this course, students should be able to:

1. Understand the general concept of stem, progenitor and progeny of neural stem cells.
2. Can specify location and general role of neural stem cells in health and disease conditions.
3. Identify the key techniques/molecular approaches in physiology and pathophysiology of neural stem cells
4. Understand the response of neural stem cells to injury and discuss the actual capacity/limitations of these cells for therapeutic purposes.
5. To know the current advances in the field of regenerative medicine. This will be assessed by student presentations.

# Textbook, Readings and Course Materials

This course will be offered through lectures based discussions. There is no required textbook for this course. Readings will be made available by the instructor(s). The class time will be divided into 70% lectures and 30% evidence based discussions. The topics will be selected prior to the lecture and the information will be distributed to the students via UM Learn portal.

# Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, uncles an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University’s Copyright Office website at <http://umanitoba.ca/copyright/> or contact [um\_copyright@umanitoba.ca](mailto:um_copyright@umanitoba.ca).

# Course Technology

As a student, you are assigned a University email account and are also entitled to a computer account for use of the computers on campus. You can set up these two accounts by going to: https://signum.umanitoba.ca/

The IMED7104 course is accessed through UM Learn using your JUMP login. To access the course in UM Learn, go to

1. https://universityofmanitoba.desire2learn.com/d2l/login

2. Enter your sign UM username and password.

3. Once you have logged in, click **IMED7104** under **My Courses.**

Laptops and/or handwritten notes should be used to supplement the slides for each lecture made available on UM Learn.

Cell phones **must** be shut off or silenced during lecture time. Cell phones, textbooks, notes and laptops are **not allowed** in the room during the final examination.

Specifically, it is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline “gaming” during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (©S Kondrashov. Used with permission).

# Expectations: We expect you to

1. The class is based on lectures and discussion, and therefore it is expected that all students will be actively involved in the discussion.
2. The interaction between the instructors and students are based on mutual respect. Students are expected to attend, and be punctual with respect to classes scheduled with instructor(s).
3. If a student is unable to attend a class, they should contact that instructor in advance of the scheduled time, with as much notice as possible.

We expect you to follow these policies around **Class Communication, Academic Integrity, and Recording Class Lectures.**

**Class Communication:**

Students are required to obtain and use your U of M email account for all communication between yourself and the university.

Please note that all communication between the course coordinator and students must comply with the electronic communication with student policy (<http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html>).

**Academic Integrity:**

Each student in this course is expected to abide by the University of Manitoba [Academic Integrity principles](http://crscalprod1.cc.umanitoba.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=300&chapterid=3762&topicgroupid=20190&loaduseredits=False). Always remember to reference the work of others that you have used. Also be advised that you are required to complete your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](http://umanitoba.ca/admin/governance/media/Student_Academic_Misconduct_Procedures_-_2016_09_01.pdf). Visit the [Academic Calendar](http://crscalprod1.cc.umanitoba.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=300&chapterid=3755&topicgroupid=20145&loaduseredits=False), [Student Advocacy](http://umanitoba.ca/student/resource/student_advocacy/cheating_plagiarism_fraud.html), and [Academic Integrity](http://umanitoba.ca/academicintegrity/) web pages for more information and support.

**Recording Class Lectures:**

Students need to obtain the instructor’s permission before recording a lecture. If approval granted, the recording made is strictly for the student’s personal use, and not to be distributed through any means. Course materials (both paper and digital) are for the participant’s private study and research only.

# Expectations: You Can Expect Me To

The lecturers will use a variety of learning resources. These may include slides, instructive videos. The links/ or info regarding these will be posted to the IMED7104 course page, which can be found in UM Learn. It is recommended that students review each lecture prior to attending class. In some cases certain learning resources will not be posted. This is at the discretion of the session leader for good reasons such as copyright law, enhancement of class discussions, etc.

Please do not hesitate to contact the course director or a session instructor if you have any questions or comments about the course. A quick question and answer can often save a lot of work. We are here to help you.

# CLASS SCHEDULE AND COURSE EVALUATION

The schedule will be determined by the instructor(s). The classes are 3 hours per week (tentatively Wednesdays 2-5pm) for 7 weeks (March 11-April 22).

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| --- | --- | --- | --- |
| **Week** | **Session** | **Lecture** | **Instructor** |
| 1 | 1+2  Wednesday  March 11, 2019  2-4:45 pm | Introduction to neural stem cell development and differentiation | Dr. Lindsey |
| Neural stem cell plasticity and epigenetic/genetic regulation | Dr. Lindsey |
| 2 | 3+4  Wednesday  March 18, 2019  2-4:45 pm | Role of microenvironment in regulation of neural stem cell properties in the mammalian brain and spinal cord | Dr. Karimi |
| Regenerative properties of endogenous neural stem cells in the mammalian brain and spinal cord in homeostasis and injury | Dr. Karimi |
| 3 | 5+6  Wednesday  March 25, 2019  2-4:45 pm | Regenerative properties of adult neural stem cells in non-mammalian vertebrates | Dr. Lindsey |
| Neural stem cells protocols and methods | Dr. Eftekharpour |
| 4 | 7+8  Wednesday  April 1, 2019  2-4:45 pm | Development of Neural stem cell-based therapies for brain and spinal cord repair | Dr. Karimi |
| Sources of neural stem cells for clinical applications (e.g. embryonic and fetal derived NPCs, cell programming and iPS technology), and | Dr. Karimi |
| 5 | 9+10  Wednesday  April 8, 2019  2-4:45 pm | Neural stem cells for gene and drug delivery to the central nervous system | Dr. Eftekharpour |
| Current status of neural stem cells trials for neurotrauma and neurodegenerative disorders | Dr. Eftekharpour |
| 6 | 11+12  Wednesday  April 15, 2019  2-4:45 pm | Interactive student presentations/discussions | Drs. Karimi and Eftekharpour |
| Interactive student presentations/discussions | Drs. Karimi and Eftekharpour |
| **Final Exam** (April 22, 2019, 2-4:45 pm) | | | |

# Course Evaluation Methods

* The course will be composed of 10 didactic lectures and 2 student led literature discussions that are given in 6 classes over 6 weeks. Each class is composed of 2 sessions. Final exam will be held on week 7.
* Students will be evaluated in their performance in:

Final Exam at the end of session 12: 75%

Student presentations: 25%

# Grading Scale

|  |  |  |
| --- | --- | --- |
| Letter Grade | Percentage out of 100 | Final Grade Point |
| A+ | 90-100 | 4.5 |
| A | 80-89 | 4.0 |
| B+ | 75-79 | 3.5 |
| B | 70-74 | 3.0 |
| C+ | 65-69 | 2.5 |
| C | 60-64 | 2.0 |
| D | 50-59 | 1.0 |
| F | Less than 50 | 0 |

# ASSIGNMENT DESCRIPTIONS

The students will be assigned a topic of their interests in the context of neural stem cells related basic or translational research. The details regarding each student’s presentation will be discussed individually and clear guidelines will be provided for each student.

# UNIVERSITY SUPPORT OFFICES & POLICIES

**Student Accessibility Services:**

The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services (SAS)](http://umanitoba.ca/student/saa/accessibility/) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations.  Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services

520 University Centre

Phone: (204) 474-7423

Email: [Student\_accessibility@umanitoba.ca](mailto:Student_accessibility@umanitoba.ca)

*Student Accessibility Services* <http://umanitoba.ca/student/saa/accessibility/>

**University of Manitoba Libraries (UML)**

**As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject:** [**http://libguides.lib.umanitoba.ca/**](http://libguides.lib.umanitoba.ca/) **or name:** [**http://libguides.lib.umanitoba.ca/c.php?g=298476&p=1993454**](http://libguides.lib.umanitoba.ca/c.php?g=298476&p=1993454)**. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following**[**http://libguides.lib.umanitoba.ca/c.php?g=298526**](http://libguides.lib.umanitoba.ca/c.php?g=298526)**. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries’ homepage:www.umanitoba.ca/libraries**

**Copyright**

Please respect copyright. We will use copyrighted content in this course. The coordinator will upload all materials for students, and in doing so will ensure that the content used is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University’s Copyright Office website at <http://umanitoba.ca/copyright/> or contact [um\_copyright@umanitoba.ca](mailto:um_copyright@umanitoba.ca).

**Academic Integrity:** You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the Academic Integrity regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/>

View the [Student Academic Misconduct](http://umanitoba.ca/admin/governance/media/Student_Academic_Misconduct_Procedures_-_2016_09_01.pdf) procedure for more information.

**Respectful Work and Learning Environment**  
The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner.

**Policy websites**:

**University Governance:** <http://umanitoba.ca/admin/governance/governing_documents/community/230.html>  
**Student Discipline** <http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html>

**Violent or Threatening Behaviour** <http://umanitoba.ca/admin/governance/governing_documents/community/669.html>

**Your rights and responsibilities**  
As a student you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The[Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html)is one important source of information. View the sections University Policies and Procedures and General Academic Regulations. If you have questions about your grades, talk to your instructor. There is a process for term work and final grade appeals. Note that you have the right to access your final examination scripts. See the [Registrar’s Office website](http://umanitoba.ca/registrar/) for more information including appeal deadline dates and the appeal form.

Contact [Student Advocacy](http://umanitoba.ca/student/advocacy/) if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns. Location: 520 University Centre, 204-474-7423, student\_advocacy@umanitoba.ca.

**Writing and Learning Support:** The [Academic Learning Centre (ALC)](http://umanitoba.ca/student/academiclearning/) offers services that may be helpful to you throughout your academic program. Students are invited to access the resources available on the ALC web page, make an appointment with a writing or study skills tutor, and/or attend workshops in order to further develop academic strengths and skills in writing, learning and research. These services are free for U of M students. Location: 201 Tier Building, 204-480-1481.

**Student Counselling Centre (SCC)**  
Contact [SCC](http://umanitoba.ca/student/counselling/index.html) if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. Student Counselling Centre, 474 University Centre or S207 Medical Services, (204) 474-8592

**Student Support Case Management (SSCM)**  
Contact the [Student Support Case Management](http://umanitoba.ca/student/case-manager/index.html) team if you are concerned about yourself or another student and don’t know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team. Student Support Intake Assistant, 520 University Centre, (204) 474-7423

**University Health Service**  
Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation. [University Health Service](http://umanitoba.ca/student/health/), 104 University Centre, Fort Garry Campus, (204) 474-8411 (Business hours or after hours/urgent calls)

**Health and Wellness**  
Contact our [Health and Wellness Educator](http://umanitoba.ca/student/health-wellness/welcome.html) if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault. Health and Wellness Educator, [Katie.Kutryk@umanitoba.ca,](mailto:Katie.Kutryk@umanitoba.ca,) 469 University Centre, (204) 295-9032

**Live Well @ UofM**  
For comprehensive information about the full range of health and wellness resources available on campus, visit the [Live Well](http://umanitoba.ca/student/livewell/index.html) website.

For 24/7 **mental health support**, contact the **Mobile Crisis Service** at 204-940-1781.

If you experience **sexual assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting.  
The Sexual Assault policy may be found at: <http://umanitoba.ca/admin/governance/governing_documents/community/230.html>

More information and resources can be found by reviewing the sexual assault site <http://umanitoba.ca/student/sexual-assault/>