

Musculoskeletal Health Research A – Biomedical and Bioengineering Concepts (MSK9000)

DRAFT - Course outline for Fall 2020



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

1. Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone



Working webcam

2. Course Overview and Dates:



Delivery Mode	Dates	Time
Online (synchronous)	Tuesdays & Thursdays	4:00 to 5:30 PM

3. Contact Information



Admin Contact	Contact Information
Samantha Mundy	CMHRuwo@uwo.ca
Course Coordinator	Contact Information
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Instructors	Contact Information
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4. Course Description

This is a graduate level half-course developed for the Collaborative Training Program in Musculoskeletal Health Research. These are transdisciplinary programs involving trainees from all realms of musculoskeletal research, including biomedical, clinical, engineering, health services and population health research.

OBJECTIVES

Specific core concepts have been identified with which all MSK trainees should be knowledgeable. These concepts have been integrated into two half-courses:

- *Musculoskeletal Health Research A: Biomedical and Bioengineering Concepts (MSK 9000)*
- *Musculoskeletal Health Research B: Fundamental Concepts in Clinical and Health Services Research (MSK 9100)*

Material in both courses is taught at a level so that it is accessible by all participants (*i.e.* aimed at the non-specialist). For example, concepts in molecular biology are described at a level understandable by engineering graduate students. Similarly, engineering principles are presented so that they are clear to a graduate student in the biological sciences. The goal is to provide trainees from a variety of backgrounds with a common base of knowledge in musculoskeletal research concepts and terminology. By the end of these courses, students will be able to discuss musculoskeletal research with their peers from other disciplines, understand seminars on a broad range of musculoskeletal research topics, and comprehend publications from all realms of musculoskeletal research (biomedical, clinical, engineering, health services and population health research).

5. Course Content & Schedule



- Asynchronous course material will be available through OWL
- Synchronous course lectures will be held Tues/Thurs 4-5:30 pm via Zoom

Schedule - Fall term 2020

Musculoskeletal Health Research A – Biomedical and Bioengineering Concepts (MSK 9000)

Introduction to Biomedical and Bioengineering Concepts

Tues Sept 15	Introduction to cells and macromolecules	Séguin
Thurs Sept 17	Joint cells and tissues; Intro to MSK diseases	Séguin
Tues Sept 22	Introduction to Bioengineering concepts	Hosein

Thurs Sept 24 Special Topic: Scientific Communication for Lay Audiences TBD

Musculoskeletal Genetics

Tues Sep 29	Introduction to genetics	Beier
Thurs Oct 1	Genomics and proteomics, genetic animal models	Beier

Musculoskeletal Physiology

Tues Oct 6	Skeletal development and growth	Dixon/Grol
Thur Oct 8	Endocrinology and bone remodeling	Dixon/Grol

Oct 12-16 Lay Abstracts Due – Peer Review/Scoring

Tues Oct 20	Midterm Exam	60 min (TBD)
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Bioarcheology

Tues Oct 27	Introduction to Bioarchaeology	Nelson
Thurs Oct 29	Methods of Analysis in Bioarchaeology	Nelson

Biomechanics

Tues Nov 3	Anatomy of the joint, force analyses and kinematics	Johnson
Thur Nov 5	Mechanical properties of MSK tissues and implants	Ferreira

Tues Nov 10 Special Topic: Tips for scientific writing for a lay audience TBD

Biomaterials and Tissue Engineering

Tues Nov 17	Tissue engineering and regenerative medicine	Hamilton
Thur Nov 19	Metals, alloys, polymers and scaffolds	Rizkalla

Nov 26 Lay Article Due

Final exam

Tentative: Thur Dec 10	90 min	(TBD)
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6. Evaluation

Assessment	Format	Weighting	Date
Online quizzes (via OWL)	Multiple choice / short answer	15%	Throughout term
Lay abstract (with peer review)	Written assignment	10%	Oct 12-16
Midterm test	Short / long answer	25%	Oct 20 (tentative)
Lay article	Written assignment	15%	Nov 26
Final Exam	Short and long answer	35%	Dec 10 (tentative)

The midterm test and final exam will consist of short answer questions based on lecture materials, any information posted on OWL, as well as one long-answer essay format question.

The final exam is cumulative, but with emphasis on the material taught after the midterm.

Online quizzes will be posted on OWL following each module, and remain active for 1 week. Questions will be based on the lecture materials. Quizzes are designed to be open book, but must be completed by each student individually.

The structure and objectives of written assignments are posted on OWL.

Western Academic Policies and Statements

Absence from Course Commitments

[Policy on Academic Consideration for Student Absences](#)

In the interest of the health and safety of students and health care providers, you are no longer required to seek a medical note for absences this term. If you are unable to meet a course requirement due to illness you should use the [Illness Reporting Tool](#). This tool takes the place of the need to submit a medical note and the Self-Reported Absence System formally used by undergraduate students.

You are required to self-report every day that you are ill and unable to complete course commitments. Details about when you should submit missed work, the format of the missed work can be found in the Section 7. Evaluation above. Students should communicate promptly with their instructor and use this tool with integrity.

Accommodation for Religious Holidays

The policy on Accommodation for Religious Holidays can be viewed [here](#).

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

Academic Offenses

"Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#).

Correspondence Statement

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and [Turnitin.com](#).

Cell Phone and Electronic Device Policy (for in-person tests and exams)

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks **WILL NOT** be bumped to the next grade or GPA, e.g. a 79 will **NOT** be bumped up to an 80, an 84 **WILL NOT** be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

Support Services

The following links provide information about support services at Western University.

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)