



IND 532: Current Techniques in Musculoskeletal Research  
Spring 2019  
Monday 12-12:50 pm, Locations below

**Course Co-Directors:**

**Danielle Benoit, PhD**

**benoit@bme.rochester.edu**

Associate Professor, Department of Biomedical Engineering, Chemical Engineering,  
Orthopaedics, Biomedical Genetics, Pathology  
Office 308 Goergen Hall  
Phone (585) 273-2698  
Office hours: Friday 10:30-11:30 am

**Alayna Loiselle, PhD**

**Alayna\_loiselle@urmc.rochester.edu**

Assistant Professor, Department of Orthopaedics  
Office 1.8564, Medical Center  
Phone (585) 275-7239  
Office hour: TBD

**Course website:** Blackboard

**Prerequisites:** Graduate standing or permission.

**Course description:**

This course provides an overview of several cutting-edge techniques that can be used to advance the trainees research program, and to familiarize students with several Core facilities and unique expertise within the University. Lectures address a range of topics, including tissue mechanics, small animal surgery techniques and URMCC core facilities. Lectures are designed for real time interaction, and student/fellows are encouraged to contribute to the discussion.

**Course Aims and Objectives:**

To learn about the research resources of the University of Rochester to support research with a focus on musculoskeletal applications. Note this course is a critical pedagogical feature of the long-standing T32 'Training in Musculoskeletal Research' and has been run as a 'seminar' for the past 10 years.

**Attendance:** Since this class is graded in part on participation, attendance is mandatory. Students are expected to arrive on time, fully attend and participate in ALL class sessions. Extenuating circumstances causing absence should be discussed with the instructor **before** the absence occurs, not post-facto. If you must miss a class, you can make it up by submitting a two-page paper on the topic for that day.

**Assessment and Grading Criteria:**

50% Attendance/participation

50% NIH style proposal aim 'Research Approach' section

**E-mail:** You should only use email as a tool to set up a one-on-one meetings with myself, Dr. Loiselle, or the course lecturers. Your message should include at least two times when you would like to meet and a brief (one-two sentence) description of the reason for the meeting. Emails sent for any other reason will not be considered or acknowledged. I strongly encourage you to participate in class discussion and ask questions during class. For more in-depth discussions, please plan to meet in person. Our conversations should take place in person rather than via email, thus allowing us to get to know each other better and fostering a more collegial and effective learning atmosphere (Courtesy of S.S Duvall, Salem College).

**Academic Integrity:** Academic integrity is a core value of the University of Rochester. Students who violate the University of Rochester University Policy on Academic Honesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since academic dishonesty harms the individual, other students, and the integrity of the University, policies on academic dishonesty are strictly enforced. For further information on the University of Rochester Policy on Academic Honesty, please visit the following website: [http://www.rochester.edu/college/honesty/docs/Academic\\_Honesty.pdf](http://www.rochester.edu/college/honesty/docs/Academic_Honesty.pdf)

Students in this course are expected to conduct themselves in an honest and ethical manner, as well as to respect the intellectual work of others. Students should complete all required readings and work on their own, though open discussions with others regarding course content and issues raised in the case studies is always encouraged. Any writing assignment completed in lieu of an approved absence must represent the student's own work, with any ideas or text taken from others being appropriated identified and cited.

**Accommodations for students with disabilities:** Students needing academic adjustments or accommodations because of a documented disability must contact the Disability Resource Coordinator for the school in which they are enrolled (see link below for contact information). <http://www.rochester.edu/eoc/DisabilityCoordinators.html>

**Lecture Schedule:**

<b><i>Date</i></b>	<b><i>Lecture Title</i></b>	<b><i>Presenter</i></b>	<b><i>Room</i></b>
Jan. 28	<b>Electron Microscopy</b>	Karen Bentley, MS	2-7534
Feb. 4	<b>Flow cytometry/CyTOF</b>	Ben Frisch, PhD	SRB 1412
<b>Feb. 11</b>	<b>CRISPR/Cas9</b>	<b>Joe Miano, Ph.D.</b>	<b>2-7536</b>
Feb. 18	<b>Biostatistics</b>	Christopher Beck, Ph.D.	2-7534
Feb. 25	<b>Small Animal Recovery Surgery</b>	Erin Hutteman	2-7534
Mar. 4	<b>In vivo Imaging Techniques</b>	Richard Bell	2-7544
Mar. 18	<b>Mouse Genetics</b>	Alayna Loiselle, Ph.D.	2-7534
Mar. 25	<b>Volumetric musculoskeletal imaging using ultrasound and other modalities</b>	Ron Wood, PhD	SRB 1412
Apr. 1	<b>Mass Spec &amp; Proteomics</b>	Mark Dumont, PhD	2-7534
<b>Apr. 8</b>	<b>Measuring Tissue Mechanics</b>	<b>Mark Buckley, PhD</b>	<b>2-7536</b>
Apr. 15	<b>Artificial Intelligence/Machine Learning</b>	Jack Teitel, Ph.D.	2-7534
Apr. 22	<b>Multiphoton Core/Confocal Microscopy</b>	Yurong Gao, Ph.D.	2-7534
Apr. 29	<b>Atomic Force Microscopy</b>	Whasil Lee, Ph.D.	1-7619 (Adolph)
May 6	<b>Bioinformatics</b>	John Ashton, Ph.D.	1-7619 (Adolph)