

University of Guelph
BIOP*6950, Advanced Topics in Biophysics
Winter 2012

Class time: Tuesdays, 9-12 noon

Location: Science Complex 3310

Description: This course will emphasize basic concepts in biomechanics and physiology (in the area of aging) arising from key journal publications, and their impact on present day research trends.

Course instructors (order of presentation):

Dr. Lindsay Robinson	x. 52099	lrobinso@uoguelph.ca
Dr. Lori Vallis	x. 54589	lvallis@uoguelph.ca
Dr. Jeremy Simpson	x. 54998	jeremys@uoguelph.ca
Dr. John Srbely	x 52058	jrsbely@uoguelph.ca
Dr. Leah Bent	x.56442	lbent@uoguelph.ca
Dr. David Wright	x. 54934	dcwright@uoguelph.ca
Dr. Coral Murrant	x56173	cmurrant@uoguelph.ca

Format:

The course will be presented in 6 sections, each of 2 weeks duration, although the modules are interleaved, with one of the faculty instructors leading each section. Review articles on the section topic, together with a list of papers for oral presentation, will be provided by each instructor. The common theme between these areas will be: *“The biomechanics and physiology of Aging across the lifespan”*.

The following topics will be presented:

- Topic 1 – Sensory & Biomechanical transduction of information through skin; Aging – Dr. Leah Bent
- Topic 2 – Sarcopenia, obesity and aging – Dr. Lindsay Robinson
- Topic 3 - Central Sensitization (pain) and aging – Dr. John Srbely
- Topic 4 – Cardiorespiratory issues and aging- Dr. Jeremy Simpson
- Topic 5 – Microcirculation and aging- Dr. Coral Murrant
- Topic 6- Mitochondria Biogenesis and aging – Dr. David Wright

10-Jan-11	Introduction (course overview)	
17-Jan-11	Topic 1 - overview lecture	Dr. Leah Bent
24-Jan-11	Topic 2 - overview lecture	Dr. Lindsay Robinson
31-Jan-11	Topic 1 - student seminar	Dr. Leah Bent
7-Feb-11	Topic 2 - student seminar	Dr. Lindsay Robinson
14-Feb-11	Topic 3 - overview lecture	Dr. John Srbely
21-Feb-11	Reading Week -OFF	
28-Feb-11	Topic 3- student seminar	Dr. John Srbely
	Topic 4 – overview lecture	Dr. Jeremy Simpson
6-Mar-11	Topic 5 – overview lecture	Dr. Coral Murrant
13-Mar-11	Topic 6 – overview lecture	Dr. David Wright
	Topic 4 – student seminar	Dr. Jeremy Simpson
20-Mar-11	Topic 5 – student seminar	Dr. Coral Murrant
27-Mar-11	Topic 6 – student seminar	Dr. David Wright
3-Apr-11	Wrap up	

*Week of Feb 21 to 25: Reading Week

There will be one class time of roughly 2-3 hours each week. The first week of each topic will be devoted to lecture material and possibly experimental demonstrations of biophysical techniques (*overview lecture*). The second week will be spent on student seminars (*student seminar*).

Each topic instructor will assign one review paper and 3-5 discussion questions (based on the assigned review paper) that will help students prepare and think about the topic one week in advance of the Overview of Lecture for each topic. Students should come prepared to the Overview of Topic lecture with answers to these discussion questions. One week following each Overview of Topic lecture, formal written responses will be handed in for grading for **each** of the six different topic areas covered in the course, however the lowest mark will be dropped for each student for the purpose of final grade evaluation calculation.

Each student will give two **oral presentations** during the course based on one journal article in two different topic areas. One of these presentations can be in the section most closely related to their research area, and the other presentation will provide an opportunity to learn about a new area in more depth. These students will be responsible for preparing and presenting the appropriate material, and will also be **discussion leader**. To facilitate discussion in the class, the 'presenting student' will be required to prepare 3-5 discussion questions on their journal article and distribute these questions to their peers two days prior to their scheduled presentation date. These questions must also be forwarded to the topic instructor.

In conjunction with being the section leaders, the students must write a 4 page (double-spaced) **brief literature critique** outlining the strengths and limitations of one of the two research articles they presented and compare it with key articles in the literature. It is expected the critique will include *at least* five additional primary articles as references. The written critique is due one week following the related oral presentation.

Each oral presentation will make up 30% of the course grade, the written report based on one of these topic areas will make up 20% (due one week following the oral presentation). An additional 20% will be assigned for **written responses to discussion questions asked by course instructor presenters** and will be due **one week** following in each presenters' Overview of Topic lecture.

SUMMARY OF EVALUATION:

Oral paper presentation 1	30%
Oral paper presentation 2	30%
Literature critique	20%
Discussion questions	20% (drop lowest mark; 5% x 5 discussion question responses)
TOTAL	100%