

University of Guelph
College of Biological Science
Department of Human Health and Nutritional Science

COURSE OUTLINE

**Research Frontiers in Integrative Biomechanics and Neurophysiology,
HHNS*6800 Fall 2017**

I) COURSE INFORMATION:

Professor:

Dr. Andrea Clark

Office: ANNU 329A

email: alclark@uoguelph.ca

Course description: This course will provide students with a breadth of knowledge and understanding across the research frontiers pursued by the integrative biomechanics and neurophysiology group. Students will be given opportunity to practice and improve oral and written communication skills and provide constructive feedback to their peers. Additionally, this class will engage students in dialogue around topics pertinent to designing and conducting successful experiments such as hypothesis generation and ethical and practical considerations.

Credit value: 0.5

Pre-requisites: none

Course Lecture Schedule: Wed 1 – 3:50pm; Room SSC3317

II) LEARNING GOALS AND RATIONALE:

The research pursued by the integrative biomechanics and neurophysiology group is disparate, spanning the whole body to cellular, young to old and healthy to pathological continuums. This diversity offers an opportunity for students to learn about and be involved in a wide range of research projects and creates fertile ground for collaboration. This course will expose all students to capstone research articles across the breadth of research frontiers pursued by the integrative biomechanics and neurophysiology group thus providing students with a broad base of knowledge and a foundation for fruitful collaborative conversation and research projects with their peers during their graduate studies.

In the graduate program, students will be asked to present their research work in various formats to various audiences. The most common of these formats are informal and formal oral presentations and conference abstracts and posters. This class will provide opportunities for students to learn about, practice and improve these presentation skills through weekly power point presentations and in class discussions, two poster and two abstract assignments. Importantly, students will give and receive peer feedback on presentations, and further receive feedback on the feedback they have given. This iterative process will allow students to identify their strengths and weakness in each presentation style in order to improve their effectiveness and also develop the skill and capacity of each student to give and receive constructive feedback.

During graduate studies, students will be expected to design and conduct an independent research project. Success in these tasks require some foundational skills including the generation of hypotheses and related specific aims, and the design and planning of experiments. Through the discussion and critique of published manuscripts in the fields of integrative biomechanics and neurophysiology, students will be asked to identify the hypotheses and specific aims of others and generate their own research questions based on the findings of these articles. Furthermore, by critiquing and comparing the design of studies across the research continuums outlined above, students will discuss the advantages and disadvantages of the various research approaches and the associated scientific, ethical and practical implications for experimental design.

Learning Outcomes:

By the end of this course students will be able to:

- 1) critically evaluate and comprehend published research across the frontiers pursued by the integrative biomechanics and neurophysiology group.
- 2) effectively present research through formal and informal oral communication individually and in groups.
- 3) effectively present research through written communication including poster and abstract formats.
- 4) understand and effectively apply the strengths of each oral and written communication form.
- 5) provide thorough and constructive feedback to their peers regarding oral and written communication.
- 6) appreciate the considerable scientific, ethical and practical considerations behind designing and conducting an effective research project and the competing priorities that often arise therein.

III) TENTATIVE SCHEDULE:

DATE	Reading Topic	Skill Topic	Assessment
Week 1	Visuomotor control of human movement	Effective scientific presentation - oral	
Week 2	Visuomotor control of human movement	Effective scientific presentation – poster Broad themes from topic area	Oral (5) Peer assessment Self assessment
Week 3	Sensory input and human movement	Peer review	Oral (3) Peer assessment Self assessment
Week 4	Sensory input and human movement	Human ethics (guest) Broad themes from topic area	Oral (2) Peer assessment Self assessment
Week 5	Pain and joint function with aging and disease	Effective scientific presentation - abstract	Oral (3) Peer assessment Self assessment
Week 6	Pain and joint function with aging and disease	Broad themes from topic area	Oral (2) Poster IA (8) Peer assessment Self assessment
Week 7	Spinal biomechanics, injury and rehabilitation		Oral (3) Poster IB (7) Abstract (15) Peer assessment Self assessment
Week 8	Spinal biomechanics, injury and rehabilitation	Broad themes from topic area	Oral (2) Peer assessment Self assessment
Week 9	Muscle mechanics with aging and disease	Animal ethics (guest)	Oral (3) Peer assessment Self assessment
Week 10	Muscle mechanics with aging and disease	Broad themes from topic area	Oral (2) Peer assessment Self assessment

Week 11	Cartilage mechanobiology and osteoarthritis		Oral (3) Poster IIA (8) Peer assessment Self assessment
Week 12	Cartilage mechanobiology and osteoarthritis	Broad themes from topic area	Oral (2) Poster IIB (7) Abstract (15) Peer assessment Self assessment

IV) RESOURCES:

PDF papers and resource papers.

V) ASSESSMENT:

integrative	Activity	Learning outcome addressed
25%	Oral presentation of assigned reading	1,2,4,6
25%	Creation of poster from assigned reading	1,3,4,6
25%	Creation of abstract from assigned reading	1,3,4,6
25%	Peer feedback/in class/after class exercises	2,3,6

VI) Course and University Policies

a. University Policies

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the graduate calendar for information on regulations and procedures for Academic Consideration: <https://www.uoguelph.ca/registrar/calendars/graduate/2015-2016/pdffiles/genreg.pdf>

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.csd.uoguelph.ca/csd/>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff

and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Graduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/graduate/2015-2016/pdffiles/genreg.pdf>

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly. E-mail is the official route of communication between the University and its students.

Drop Date

The last date to drop one-semester courses, without academic penalty, is the 40th class day. To confirm the actual date, please see the schedule of dates in the Graduate Calendar. For regulations and procedures for Dropping Courses, see the Graduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/graduate/2015-2016/sched/index.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:

<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>

b. INSTRUCTOR POLICIES:

Technology in the classroom

Feel free to bring your laptop to lectures, but only use it in a manner that will not disturb those around you. Please do not use your laptop for anything other than activities related to this physiology course. Turn your cell phones off, or put them on silent, and do not text-message during class.

VII) Campus Resources

If you are struggling to succeed academically:

- There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.
<https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention.
<https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.uoguelph.ca/~ksomers/>

If you have a documented disability or think you may have a disability:

- The Centre for Students with Disabilities (CSD) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: <https://www.uoguelph.ca/csd/>