



HHNS*6800 Research Frontiers in Integrative Biomechanics and Neurophysiology

Fall 2019
Section(s): C01

Department of Human Health and Nutritional Sciences
Credit Weight: 0.50
Version 1.00 - August 08, 2019

1 Course Details

1.1 Calendar 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.

1.2 Course Description

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.

1.3 Timetable

Course Lecture Schedule: Wed 1-3:50pm, Room SSC1304

Timetable is subject to change. Please see WebAdvisor for the latest information.

Week	Reading Topic	Skill Topic	Assessment
1	Visuomotor control of human movement	Effective scientific presentation - oral	
2	Visuomotor control of human movement	Broad themes from topic area	Oral (all) Peer assessment Self assessment
3	Sensory input and human movement	Peer review	Oral Peer assessment

			Self assessment
4	Sensory input and human movement	Human ethics guest speaker	Oral
			Peer assessment
			Self assessment
5	Pain and joint function with aging and disease	Effective scientific presentation - abstract	Oral
			Peer assessment
			Self assessment
6	Pain and joint function with aging and disease	Broad themes from topic area	Oral
			Poster IA
			Peer assessment
			Self assessment
7	Spinal biomechanics, injury and rehabilitation		Oral
			Poster IB
			Abstract (all)
			Peer assessment

			Self assessment
8	Spinal biomechanics, injury and rehabilitation	Broad themes from topic area	Oral Peer assessment Self assessment
9	Muscle mechanics with aging and disease	Animal ethics guest speaker	Oral Peer assessment Self assessment
10	Muscle mechanics with aging and disease	Broad themes from topic area	Oral Peer assessment Self assessment
11	Cartilage mechanobiology and osteoarthritis		Oral Poster IIA Peer assessment Self assessment

12	Cartilage mechanobiology and osteoarthritis	Broad themes from topic area Oral	Poster IIB
			Abstract (all)
			Peer assessment
			Self assessment

1.4 Final Exam

There is no final exam for this class.

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Andrea Clark
Email:	alclark@uoguelph.ca
Telephone:	+1-519-824-4120 x52134
Office:	ANNU 350
Office Hours:	Students are welcome to email the instructor to schedule an appointment at any time during the course if required.

3 Learning Resources

3.1 Required Resources

PDF papers and resource papers (Article)

A finalized reading list will be provided by instructor at the start of the semester

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should 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.

5 Teaching and Learning Activities

5.1 Lecture

Topics: **Lecture time activities**

During lecture time, students will be asked to:

1. give 10 minute oral presentations as required at a scientific conference.
2. present their posters in a pseudo scientific conference poster session.
3. give their peers feedback on oral and/or poster presentations.
4. participate in small and large group discussions on various topics.

6 Assessments

6.1 Marking Schemes & Distributions

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	2,5,6

7 Department of Human Health and Nutritional Sciences Statements

7.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

7.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: 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/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

7.3 Wellness

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.selfregulationskills.ca/>

8 University Statements

8.1 Email Communication

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

8.2 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 (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 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.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 Recording of Materials

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

8.8 Resources

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

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>
