



HK*4600 Applied Human Kinetics II

Winter 2021

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.75

Version 1.00 - January 06, 2021

1 Course Details

1.1 Calendar Description

The objective of this course is to expand on the introductory laboratory practices developed in HK 3600 Applied Human Kinetics I. Students will examine the functioning of a human body at rest and in motion, while learning clinical and advanced laboratory techniques. The students will be introduced to the underlying concepts of various physiological and biomechanical measures in lecture. Subsequently, the principles from the lecture will be used to make direct measures in the laboratory, with an emphasis on understanding exercise physiology, clinical testing practices, and integrative approaches to studying human movement. Students will be asked to critically analyze the laboratory measures and findings, and to integrate the lecture and laboratory material in formalized laboratory reports.

Pre-Requisites:

HK*3600

Restrictions:

Restricted to students in Human Kinetics.

1.2 Course Description

The objective of this course is to expand on the introductory laboratory practices developed previously in HK3600. Students will examine the functioning of a human body at rest and in motion, while learning clinical and advanced laboratory techniques. The students will be introduced to the underlying concepts of various physiological and biomechanical measures in lecture, similar to the format of HK 3600. The principles from lecture will then be used to make direct measures in the laboratory, with an emphasis on understanding exercise physiology, clinical testing practices, and integrative approaches to studying human movement. Students will be asked to describe the laboratory measures and findings, and to integrate the lecture and laboratory material in formalized laboratory reports.

1.3 Timetable

Lecture: Classes will be held online (Zoom) with a set time for M, W, F - 1:30-2:20 PM. Some exceptions may be made, allowing students to view course material on their own schedule

when direct online interaction is not required.

Laboratories: All material will be based on the understanding and application of lab techniques / equipment for teaching labs normally held in JT Powell Building - rooms 2236 and 2237. In the event that physical distancing must be maintained and face-to-face labs cannot occur, lab techniques, demos and representative data will be pre-recorded and moved online, as is appropriate for the course content.

Section 0101: Tuesday – 10:00 PM – 12:50 PM

Section 0102: Tuesday - 2:30 PM - 5:20 PM

Section 0103: Wednesday - 2:30 PM - 5:20 PM

Section 0104: Thursday – 10:00 AM – 12:50 PM

Section 0105: Thursday – 2:30 PM – 5:20 PM

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Jamie Burr
Email:	burrj@uoguelph.ca
Telephone:	+1-519-824-4120 x52591
Office:	HHNS Annex 263
Office Hours:	Office hours by appointment (or during open hours on Friday during class)

Instructor:	Stephen Brown PhD
Email:	shmbrown@uoguelph.ca
Telephone:	TBD
Office:	ext. 53651 (Office)
Office Hours:	Office hours by appointment (or during open hours on Friday during class)

2.2 Teaching Assistants

To arrange an appointment with your TA, please email or speak with him/her in laboratory. There are 8 different TAs for this class, please check which week it is in the course for the appropriate TA contact.

First 6 weeks;

Chris Pignanelli (Head TA) - cpignane@uoguelph.ca

Alexandra Coates (Assistant Head TA) - acoate01@uoguelph.ca

Christian Cheung - ccheun05@uoguelph.ca

Pete Barbeau - pbarbeau@uoguelph.ca

Brienne Stairs - bstair01@uoguelph.ca

Second 6 weeks;

Devon Frayne -dfrayne@uoguelph.ca (Head TA)

Alex Noonan - noonana@uoguelph.ca

Keli Grant - kgrant07@uoguelph.ca

Liam Armstrong-Harper - larmst07@uoguelph.ca

3 Learning Resources

3.1 Required Resources

Courselink (Website)

This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the Courselink page for HK*4600. Please check it regularly.

Undergraduate Calendar (Website)

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/>

is the source of information about the University of Guelph's procedures, policies and regulations, which apply to undergraduate programs. It can be found at the link above.

3.2 Recommended Resources

Exercise Physiology: Theory and application to fitness and performance (Textbook)

There is no required textbook, however Exercise Physiology: Theory and application to fitness and performance textbook is recommended if additional background understanding is required.

Powers SK, and ET Howley. Exercise Physiology: Theory and application to fitness and performance. 7 th , 8 th, or 9th Edition. McGraw-Hill, Toronto, 2009, 2012, 2015.

3.3 Campus Resources

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

- make an appointment with a program counsellor in your degree program.

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.

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.
- Student Health Services is located on campus and is available to provide medical attention.
- 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.

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.

If you have any concerns about the ethics of this course program, please contact the University of Guelph ethics officer, Katelyn Wadleigh , Telephone: (519) 824-4120, ext. 56606, E-mail: kwadleig@uoguelph.ca

4 Learning Outcomes

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Perform and interpret functional respirometry tests
2. Perform and interpret basic 12-lead EKG traces
3. Determine cardiac output, and understand the relationships between cardiac output, heart rate, stroke volume and total peripheral resistance in healthy and diseased individuals
4. Recognize how exercise and hydration alters the relationships between cardiac output, heart, stroke volume and total peripheral resistance.
5. Have a working knowledge of peripheral skeletal muscle fatigue, and the ability to directly determine high and low-frequency fatigue
6. Further develop familiarity with EMG, including the use of frequency analysis to evaluate muscle fatigue.
7. Apply mechanical principles (inverse dynamics, energetics, tissue mechanics) in the evaluation of human movement and tasks (e.g. occupational and clinical).
8. Understand and apply concepts in the evaluation of standing balance and gait.
9. Apply your working knowledge of key techniques used in human physiology and biomechanics testing and evaluation to the study of human health
10. Work effectively as part of a small group
11. Critically evaluate empirical data, and incorporate data into scientific reports that test hypotheses

5 Teaching and Learning Activities

5.1 Lecture

Topics:

WEEK	Lecture/Lab Topic
WEEK 1: JAN 11-15	Lecture – Respiratory physiology, and regulation of ventilation and pulmonary pathologies
WEEK 2: JAN 18-22	Lecture – Cardiac electrophysiology in health LAB 1 – Respiratory laboratory (Lab report required)
WEEK 3: JAN 25-29	Lecture- Regulation of cardiac output and relationship to exercise intensity

	LAB 2 – ECG as a clinical tool (Lab 1 report due)
WEEK 4: FEB 1-5	Lecture – Regulation of oxygen delivery to skeletal muscle (<i>Guest Lectures</i>)
	LAB 3 – Determination of cardiac output
WEEK 5: FEB 8-12	Lecture – Regulation of blood pressure
	LAB 4 – The influence of core body temperature on cardiac output
	(Lab report required combining labs 3 and 4)
READING WEEK (FEB 15-19)	No class or lab
WEEK 6: FEB 22-26	Lecture – Guest lecture from a clinical exercise physiologist and review
	LAB 5 – Understanding the regulation of blood flow
	(Labs 3/4 report due)
MID-TERM	
WEEK 7: MARCH 1-5	Lecture - Biomechanics: What, why, how? Conditions that regulate human movement, performance, growth and development
WEEK 8: MARCH 8-12	Lecture - EMG
	Lecture - Impulse-momentum
WEEK 9: MARCH 15-19	LAB 6 - EMG measures of muscle fatigue (Lab report required)
	Lecture - Inverse dynamics: how to estimate forces on the body
WEEK 10: MARCH 22-26	LAB 7 - Analyses of jump performance (Lab report required)
	Lecture - Mechanical energetics of human movement
WEEK 11: MARCH 29-APRIL 2*	LAB 8 - Inverse dynamics to predict the likelihood of injury in a stoop vs squat lift (Lab report required)
	Lecture - Overview of Principles, Review
WEEK 12: APRIL 5-9	LAB 9 - Mechanical power (Lab 8 report due)
Week 13: April 12	Makeup for Friday, April 2 Class
FINAL EXAM	TBA

6 Assessments

6.1 Marking Schemes & Distributions

Methods of Assessment:

Form of Assessment	Weight (% final grade)
Lab Reports (4 lab reports x 15% - Learning Outcomes 1-10)	60%
Midterm Exam (50 minutes - Learning Outcomes 1-4)	20%
Final Exam (2 hours - Learning Outcomes 5-9)	20%

General statement for assessments:

Online assessments in this course will be administered using Respondus Lockdown software with the microphone and web cam enabled.

Note:

This course currently plans to use Respondus Lockdown software for some assessments. Your instructors are aware that some students have expressed concerns about the use of this exam invigilation software. The University Administration is currently evaluating the matter of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation. Your instructors are committed to an equitable and accessible assessment experience and will adapt, based on guidance provided.

6.2 Assessment Details

Lab Reports (60%)

4 lab reports X 15 % - Lab reports are due the following week at the beginning of your lab section. Late lab reports without a valid documented reason are penalized 10% per day up to 5 days, after which the lab is marked as zero.

LABs #1, #3-4 (combined), #6 and #8 are mandatory to hand in. These are handed in at the beginning of lab time, ONE WEEK following the lab.

Midterm #1 (20%)

Date: Fri, Feb 26, 1:30 PM

Final Exam (20%)

Date: TBD, TBA

7 Course Statements

7.1 Course Teaching / Learning Approach

The course comprises a combination of lectures, applied labs and tutorials. You will perform a series of 9 labs. The emphasis of the course is on applied techniques that are relevant to those of you considering applied or research careers in human biomechanics, clinical exercise testing, ergonomics, occupational therapy, physiology, physiotherapy, sports injury rehabilitation, paramedics, medicine, chiropractic's, etc. The general skills you obtain will also provide you with the ability to work in groups and successfully troubleshoot challenges in other work environments.

The key concepts and theory underlying each lab will be presented in a series of lectures, such that this material is presented to you in the week preceding the lab. The lecture material, and the labs, will be posted on the HHNS website and D2L.

Please read the lab before coming to class. It is also expected that you are familiar with the lab procedures and progression prior to your lab.

7.2 Grading

If you are absent from classes during the semester, you will be expected to make up missed lecture and laboratory material on your own. Assignments handed in late will be penalized 10% for every day that it is late.

8 Department of Human Health and Nutritional Sciences Statements

8.1 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](#)

8.2 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>

8.3 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/>

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

9 University Statements

9.1 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.

9.2 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>

9.3 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>

9.4 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.

9.5 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>

9.6 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>

9.7 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.

9.8 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>

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

9.10 Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or

winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.
