



HK*4600 Applied Human Kinetics II - DRAFT

Winter 2019

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.75

Version 1.00 - November 13, 2018

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-Requisite(s): HK*3600

Restriction(s): 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

Lectures:

Lectures will be Monday, Wednesday and Friday from 1:30-2:20 in MLCN 102

Laboratories:

Laboratories will be run in JTP 208A at the following times;

Day	Time
Tuesday	11:30-2:20
Tuesday	2:30-5:20
Thursday	11:30-2:20
Thursday	2:30-5:20

1.4 Final Exam

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

2 Instructional Support

2.1 Instructor(s)

Stephen Brown

Email: shmbrown@uoguelph.ca
Telephone: +1-519-824-4120 x53651
Office: ANNU 335
Office Hours: By appointment or drop-in.

Jamie Burr

Email: burrj@uoguelph.ca
Telephone: +1-519-824-4120 x52591
Office: HHNS Annex 263

Office Hours:

Office hours by appointment

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;

TBA - tba@uoguelph.ca (Head TA)

TBA- tba@uoguelph.ca

TBA - tba@uoguelph.ca

TBA - tba@uoguelph.ca

Second 6 weeks;

TBA - tba@uoguelph.ca (Head TA)

TBA - tba@uoguelph.ca @uoguelph.ca

TBA - tba@uoguelph.ca @uoguelph.ca

TBA - tba@uoguelph.ca @uoguelph.ca

3 Learning Resources

3.1 Required Resource(s)

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 Resource(s)

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, Sandy Auld, Telephone: (519) 824-4120, ext. 56606, E-mail: sauld@uoguelph.ca, Fax: (519) 821-5236.

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

Topic(s):

Course outline

Note: You must hand in two lab reports (#1 and #3-4 combined) in the first half of the course.

You must hand in two labs (#6 and #8) in the second half of the course.

Week	Lecture/Lab Topic
Week 1: Jan 7-11	Lecture – Respiratory physiology, ventilation and pulmonary pressure
Week 2: 14-18	Lecture – Cardiac electrophysiology and disease. LAB 1 – Respiratory laboratory (required)
Week 3: 21-25	Lecture - Regulation of cardiac output in relationship to exercise LAB 2 – ECG as a clinical tool (required)
Week 4: Jan 28-Feb 1	Lecture – Regulation of oxygen delivery to muscle LAB 3 – Determination of cardiac output

Week	Lecture/Lab Topics
<p align="center">Week 5: Feb 4-8</p>	<p>Lecture – Regulation of blood pressure</p> <p>LAB 4 – The influence of core temperature on cardiac output (Lab report required due Feb 11, 2014)</p>
<p align="center">Week 6: Mon 11, Wed 15</p>	<p>Lecture – Guest lecture from a professional sports physiologist and review</p> <p>LAB 5 – Understanding the regulation of blood pressure (Labs 1-3 report due Feb 18, 2014)</p>
<p align="center">MID-TERM</p>	<p align="center">Fri Feb. 15th in class</p>
<p align="center">Reading Week (February 18-22)</p>	
<p align="center">Week 7: Feb 25-Mar 1</p>	<p>Lecture - Biomechanics: What are the physical principles that regulate human performance, injury, growth and development?</p>
<p align="center">Week 8: March 4-8</p>	<p>Lecture - EMG, muscle force, and power</p>
<p align="center">Week 9: March 11-15</p>	<p>Lecture - Impulse-momentum, power, and injury</p> <p>LAB 6 - EMG measures of muscle force and power (report required)</p>
<p align="center">Week 10: March 18-22</p>	<p>Lecture - Inverse dynamics: how do we measure forces within the body?</p> <p>LAB 7 - Analyses of jump performance (report due)</p>
<p align="center">Week 11: March 25-29</p>	<p>Lecture - Mechanical energetics of human movement</p> <p>LAB 8 - Inverse dynamics to predict joint forces</p>

Week	Lecture/Lab Top
	injury in a) stoop vs squat lift (
Week12: April 1-5	Lecture - Overview of Principles LAB 9 - Mechanical power (La
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%)	60%
Midterm Exam (80 minutes)	20%
Final Exam (2 hours)	20%

6.2 Assessment Details

Lab Reports (0%)

4 lab reports X ____% - 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 (0%)

Date: Sat, Feb 16

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 5% 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.uoguelph.ca/~ksomers/>

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>

9.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate 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>

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.

More information can be found on the SAS website

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

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>
