



## NUTR\*3360 Lifestyle Genomics

Fall 2019

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 1.00 - September 04, 2019

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## 1 Course Details

### 1.1 Calendar Description

This course explores how genes and lifestyle choices (in particular diet and exercise) interact to affect cell and tissue function, and impact human health. These concepts will be examined through in-depth discussions of common metabolic diseases. The course is designed to highlight the integrative and inter-connected cellular, molecular, and physiological mechanisms underlying these conditions.

**Pre-Requisites:** BIOC\*2580, BIOL\*1080, MBG\*2040

**Restrictions:** Registration in BSCH.HK and BSCH.NANS (major or minor).

### 1.2 Timetable

Lectures: Mon / Wed / Fri, 12:30pm-1:20pm, ALEX 200

\* Note that the Monday, October 14th class is cancelled for Thanksgiving. The make-up class will be held on Friday, November 29th.

### 1.3 Final Exam

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

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:**

David Mutch

**Email:**

dmutch@uoguelph.ca

**Telephone:**

+1-519-824-4120 x53322

**Office:** ANNU 348

- Office Hours:**
- Immediately after class
  - or Email me for appointment

\* Only emails sent from an official University of Guelph email account will be answered.

## 2.2 Teaching Assistants

**Teaching Assistant:** Chenxuan (Kira) Wang  
**Email:** chenxuan@uoguelph.ca  
**Office:** ANNU 308

- Office Hours:**
- Contact by email to set up an appointment.
  - Will hold weekly office hours for the major class assignment (tba)
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## 3 Learning Resources

### 3.1 Required Resources

**Courselink (Website)**

<https://courselink.uoguelph.ca>

There is no textbook for this course. Basic course material will be available on Courselink. I will be adding information in class to supplement the notes provided on Courselink. This additional in-class information will be tested on both the midterm and final exams. The PDFs posted on Courselink are provided to support the in-class material and facilitate discussions.

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Understand the principle concepts of genetics, epigenetics and the 'omic' sciences as they are integrated into the emerging scientific discipline of lifestyle genomics, and be able to apply this knowledge to define how nuclear, mitochondrial, and microbial genomes contribute to metabolic disease.
2. Demonstrate an understanding of how molecular and cellular events can mediate

how lifestyle factors influence tissue function, and how this contributes to the development of metabolic diseases.

3. Integrate the variables of diet and exercise into problems related to lifestyle genomics.
  4. Develop problem solving and critical thinking skills by applying and integrating principle concepts in case studies / discussions of different metabolic diseases.
  5. Effectively communicate ideas and arguments in graphic and written form in class, assignments, and exams.
  6. Interpret data in class, assignments and exams in order to assess how the body responds to lifestyle challenges.
  7. Communicate a lifestyle genomics concept of your choosing in a manner that is suitable for the general public
  8. Develop professional behaviors, including the reconciliation of different perspectives, social skills to work effectively in teams, the ability to provide feedback and accept peer critique
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## 5 Teaching and Learning Activities

This course will consist of 12 weeks of lectures (3 lectures per week, each lasting 50 minutes). An overview of the course content will be provided on Counselink (web link indicated below). However, students should recognize that these notes are provided primarily as a structural draft for the lectures. For students to acquire the necessary information to succeed in this course they will be required to attend all lectures. In addition, review papers from the current scientific literature and popular press articles will provide background reading for the lectures and will be made available as PDFs on the course website. Students are expected to read all papers and any additional background reading they think is necessary.

### 5.1 Course Overview

This course is roughly structured into the weekly modules; however, the modules are highly integrative.

#### Approximate # of Lectures Module Title

1 Course Introduction – Setting the Stage

4 The Genetics of Obesity

3	Epigenetics and Developmental Origins of Disease
3	Role of the Hypothalamus in Energy Balance
1	IN CLASS DISCUSSION OF CASE STUDY
4	Gut Bacteria: The little guys have a big impact
1	IN CLASS MIDTERM
3	Signals from the Gut
3	Regulating Hepatic Glucose Production
6	Adipose Tissue – Where the Problems Begin?
3	Skeletal Muscle and Insulin Sensitivity
1	(if time permits) Sleep, Circadian Rhythm, and Obesity
1	Review Class

## 5.2 Attendance Expectations

Since lecture content will be assessed in the midterm and final exam, it is strongly encouraged that students attend all lectures. The structural overview of lectures will be made available on the website and students who have missed classes will need to interact with their fellow students to obtain the material. While appointments can be made to discuss course content with the instructor or TA, do not contact us requesting lecture notes for missed lectures.

## 5.3 Important Dates

- SEPT 6 (Fri): First Lecture in ALEX 200 (12:30pm – 1:20pm)
- OCT 4 (Fri): In class discussion of Case Study
- OCT 11 (Fri): Case Study Report Due (in class)

- OCT 14 (Mon): No class – Thanksgiving Monday
  - OCT 23 (Wed): Midterm Examination (in class)
  - NOV 22 (Fri): Group Assignment Due (in class)
  - NOV 27 (Wed): Peer Evaluation must be completed before midnight
  - NOV 29 (Fri): Last day of class (rescheduled from Thanksgiving Monday)
  - DEC 4 (Wed, 2:30 - 4:30pm): Final Examination (location to be announced)
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## 6 Assessments

### 6.1 Methods of Assessment

	% of Final Grade	Due Date	Learning Objective
Case Study Report	5%	October 11	5, 6, 7, 8
Midterm Exam	30%	October 23 (in class)	1, 2, 3, 4, 5, 6
Group Assignment	15%	November 22	3, 4, 5, 6, 7, 8
Peer Evaluation	5%	November 27	8
Final Exam	45%	TBD	1, 2, 3, 4, 5, 6

### 6.2 CASE STUDY REPORT

On Friday, October 4 we will have an in-class discussion about a case study on childhood obesity. Students are expected to read the case study and a related PDF article prior to this class (materials will be posted on Counselink). Students will be required to form groups of **four** for the written report. The report will consist of answers to 4 of the 6 questions provided in the case study. The report will be graded for (i) the appropriate use of peer-reviewed published primary research and review articles to support answers (between 5 – 10 PubMed references), (ii) logical presentation of ideas (i.e., readability), and (iii) grammar & punctuation. The assignment should not exceed 3 pages (not including references). Use only single-sided, double-spaced, type-written text with Arial 11-point font, numbered pages and 2 cm margins. Make sure the names of the students and student numbers are clearly indicated on a cover page (which is in addition to the 3 page limit) of the Report. Case Study Reports will be **due in class on Friday, October 11<sup>th</sup>**. A penalty of 10% will be applied every 24 hours after this due date and time. The Case Study Report grade will be given per group, not per student. The Case Study Report will comprise 5% of the final grade.

## 6.3 GROUP ASSIGNMENT

Students will form groups of **four** (shortly after the Thanksgiving weekend). Student groups will be made directly on Counselink, which help facilitate Peer Evaluation. If you don't join a group yourself, you will randomly be placed into a group by the Instructor. Details regarding the assignment will be provided at the beginning of the semester. Assignments will be **due on November 22<sup>nd</sup>**. A penalty of 10% will be applied every 24 hours after this due date and time. The Group Assignment grade will be given per group, not per student. The Group Assignment will comprise 15% of the final grade.

## 6.4 PEER EVALUATION

(Related to Group Assignment) Students in a group will evaluate each other with regards to their ability to work effectively within a team. Groups will generally consist of 4 members; therefore each student will be required to complete 3 peer evaluations. Peer evaluations will remain confidential and will not be handed back to students. One evaluation will take ~5 minutes to complete. Peer evaluations will be performed online through PEAR (Peer Evaluation, Assessment, and Review) and must be completed **before midnight on November 27<sup>th</sup>**. Students who do not complete peer evaluations by this time will automatically receive a grade of 0, irrespective of what your group members give you as a grade. The Peer Evaluation grade will correspond to the average grade given by your group members. Grades will be given per student, not per group. The Peer Evaluation will comprise 5% of the final grade.

## 6.5 MIDTERM EXAM

The midterm will cover material in the first half of the course, up to and including Friday, October 18th. The midterm will be written in class and will consist of true/false, data interpretation and short answer questions. Any students not writing the midterm (without prior consent from the course instructor) will receive zero on the midterm. The Midterm Exam will comprise 30% of the final grade.

## 6.6 FINAL EXAM

The final exam will assess the students understanding of all course content and their ability to integrate and apply the various concepts presented during the semester. The final exam will be composed of true/false, data interpretation, short answer and long answer questions. This Final Exam will comprise 45% of the final grade.

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# 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, mathematics/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>

### **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.

More information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

## **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-misconduct.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>

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