



NUTR*3360 Lifestyle Genomics

Fall 2020

Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 1.00 - September 08, 2020

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

Virtual (Remote) Lectures: Mon / Wed / Fri, 12:30pm-1:20pm

** Note that the Monday, October 12th class is cancelled for Thanksgiving. The make-up class will be held on Friday, December 4th.*

1.3 Final Exam

The final exam will be a take-home exam. The exam will be released to students on Friday, Dec 11 @ 9am on Courselink. Students will then have 72 hours to complete the take-home exam. Final exams must be submitted via Dropbox (in Courselink) before 9am on Monday, Dec 14.

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: • I will hold virtual office hours every Wednesday afternoon between 2-3pm (on Zoom)

* 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 Hours: • Details will be made available to students on Courselink when virtual office hours for the group project are set later in the semester.

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

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 (PDF articles) during lectures to supplement the notes provided on Courselink. This additional in-class information will be tested in course assessments. The PDFs posted on Courselink are provided to support the lecture materials and facilitate discussions.

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 studies / discussions of different metabolic diseases.
 5. Effectively communicate ideas and arguments in course assessments.
 6. Interpret data during lectures and course assessments 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 Courouselink prior to each virtual lecture. Students should recognize that PDF 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 watch 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

How will the course be delivered? This course will be taught remotely through an online platform, and is roughly structured into the weekly modules. However, the modules are highly integrative.

Is there a face-to-face component that is required to be successful in this course? No.

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 |
| 4 | Gut Bacteria: The little guys have a big impact |
| 3 | Signals from the Gut |
| 3 | Regulating Hepatic Glucose Production |
| 6 | Adipose Tissue – Where the Problems Begin? |
| 3 | Skeletal Muscle and Insulin Sensitivity |
| 1 | Course Review |

5.2 Attendance Expectations

Since lecture content will be assessed in the quizzes and exams, it is mandatory that students watch all lectures (either live or the recordings that will be made available to you within 24 hours of a live lecture).

5.3 Important Dates

- SEPT 11 (Fri): First Lecture
 - SEPT 30 (Wed): Quiz #1 (Respondus)
 - OCT 12 (Mon): Thanksgiving Monday - no lecture
 - OCT 23 (Fri): Quiz #2-Part A (Respondus)
 - OCT 26 (Mon): Quiz #2-Part B (Take-home due)
 - NOV 13 (Fri): Group Assignment Due
 - NOV 18 (Wed): Peer Evaluation of Group Members Due
 - NOV 20 (Fri): Quiz #3 (Respondus)
 - DEC 11 (Fri): Take-home Final Exam given to students
 - DEC 14 (Mon): Take-home Final Exam due
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6 Assessments

6.1 Methods of Assessment

| | <u>% of Final Grade</u> | <u>Due Date</u> | <u>Learning Objective</u> |
|------------------------------------|-------------------------|-----------------------|---------------------------|
| Quiz #1 | 15% | Sept 30 | 1, 2, 3, 4, 5, 6 |
| Quiz #2-Part A | 15% | Oct 23 | 1, 2, 3, 4, 5, 6 |
| Quiz #2-Part B | 5% | Oct 26 (given Oct 23) | 1, 2, 3, 4, 5, 6 |
| Group Assignment | 15% | Nov 13 | 3, 4, 5, 6, 7, 8 |
| Group Assignment - Peer Evaluation | 5% | Nov 18 | 3, 4, 5, 6, 7, 8 |
| Quiz #3 | 15% | Nov 20 | 1, 2, 3, 4, 5, 6 |
| Final Exam (Take-Home) | 30% | Dec 14 (given Dec 11) | 1, 2, 3, 4, 5, 6 |

7 Course Statements

7.1 Office Hours

I will hold virtual office hours every Wednesday afternoon between 2-3pm (on Zoom)

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.
