



NUTR*4320 Nutrition and Metabolic Control of Disease

Winter 2023

Section(s): CO1

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 1.00 - January 05, 2023

1 Course Details

1.1 Calendar Description

This course provides a discussion of disorders of metabolism, either inherited or acquired, in which nutrition plays a major role in the etiology, pathogenesis, or treatment. The nutritional control of the affected metabolic pathways and the interaction of nutrition with exercise, drugs and gene therapy will be presented.

Pre-Requisites: NUTR*3210, (1 of BIOM*3200, HK*3810, ZOO*3210, ZOO*3620)

1.2 Course Description

This course deals with metabolic diseases most of which can be described in biochemical terms. These anomalies produce symptoms, or structural abnormalities, which impair the fitness, quality of life or potentially lead to death of the individual. The attention is focused on the mechanism(s) thought to participate in disease development, the affected metabolic pathways and the clinical manifestations which lead to disease symptoms. The role of nutrition both in prevention of disease development and as part of the therapeutic strategy to diminish symptoms or reverse pathology are examined along with classical treatment strategies involving lifestyle modification, drugs, and supplements provided as nutraceuticals or functional foods.

1.3 Timetable

Scheduled lecture times are Tues/Thurs 2:30 - 3:50 PM in THRN 1200.

***Please note the proposed course format, schedule or location for the Winter 2023 semester may change due to personnel, resource, and public health circumstances and

if conditions cannot be met to ensure the safety of our students and instructors. Continue to watch the Student Planning website as format information could be updated.

1.4 Final Exam

Exam Date and Location to be confirmed. Please see WebAdvisor for the latest information.

April 21, 2023 at 8:30am

2 Instructional Support

Lectures and exams (midterm and final exam) will be held IN PERSON.

Office hours will be held on Zoom.

2.1 Instructional Support Team

Instructor: Jennifer Monk
Email: jmonk02@uoguelph.ca

Office Hours:

- Weekly Office Hours will be held over Zoom on Fridays from 10:30am - 12:00pm.
- The same link to Zoom Office Hours will be used all semester and is posted on Courselink in the introduction announcement and under the Content Tab.
- Additional drop-in review sessions will be held over Zoom prior to the midterm and final exam. Times will be posted on Courselink in the weeks before the assessment dates. These extra office hours will use unique zoom links!

2.2 Teaching Assistants

Teaching Assistant (GTA): Anisha Mahajan
Email: anisha@uoguelph.ca
Office Hours: Anisha will be providing support for the Data Extraction Assignment and all questions about the assignment should be directed to her.

TA Office Hours (held over Zoom) specifically to support students working on the Data Extraction Assignment will be posted on Courselink throughout the semester. Look for announcements for dates, times and meeting links!

3 Learning Resources

There are NO required textbooks for this course, however, students are encouraged to review key concepts from the course pre-requisites or seek out additional background information to understand the course content if needed.

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Describe and understand how functional defects in metabolism can influence disease development and progression
2. Identify how the microbiota and various nutritional interventions influence host gut physiology, mucosal immune function and chronic disease susceptibility
3. Describe the interrelationship between dietary components, the gut microbiota and the intestinal epithelial barrier and understand the mechanisms through which modulating any of these factors could influence susceptibility to various chronic diseases
4. Identify the common mechanisms through which chronic inflammation can influence metabolic signaling, disease progression or susceptibility to opportunistic infection.
5. Compare and contrast different metabolic diseases to identify common mechanisms that could be susceptible to dietary and pharmaceutical interventions
6. Interpret data in graphic and tabular form in class discussions, case studies and exams, in order to assess how dietary components can influence microbiota and host intestinal function
7. Have improved scientific writing skills
8. Develop professional behaviours, including organizational skills, time management skills, the ability to work collaboratively and effectively in small groups and to integrate different perspectives and ideas to write a focussed literature review

5 Teaching and Learning Activities

5.1 Outline of Course Content

Subject to Change

- ABNORMALITIES OF CARBOHYDRATE AND AMINO ACID METABOLISM
 - Lactase deficiency/lactose intolerance
 - Discussion of osteoporosis
 - Celiac disease
- THE GUT MICROBIOTA
 - Introduction and background
 - Effect of the microbiota on host metabolism and immune function
 - Introduction to diseases associated with epithelial barrier permeability
- DISEASES WITH MULTIPLE METABOLIC DEFECTS
 - Osteoporosis
 - Obesity
 - Type 2 Diabetes
 - Inflammatory bowel disease
 - Cancer and obesity-associated cancer
 - Inflammatory competence and opportunistic infections

5.2 Important Dates

- January 10, 2023 – First Class
- February 20-24, 2023 – Winter Break – NO CLASSES
- March 2, 2023 - Midterm Exam (during scheduled lecture time)
- March 10, 2023 – Data Extraction Assignment Due to the Dropbox before 11:59pm (week 8 of the semester; one assignment submitted per group)
- March 17, 2023 - Self-Assessment & Reflection Due to the Dropbox before 11:59pm (week 9 of the semester; EVERY student must complete this independently)
- April 6, 2023 – Last Class
- Final Exam – April 21, 2023 at 8:30am. Location to be announced. Check Webadvisor for any changes to the final exam schedule. If a change occurs Dr. Monk will make announcements and send reminders!

6 Assessments

6.1 Assessment Details

Midterm Exam (35%)

Due: Thu, Mar 2, During Class Time (2:30 - 3:50pm)

Learning Outcome: 1, 2, 3, 4, 6, 7

Course content assessed: First half of the course only.

This exam will be completed IN PERSON during scheduled class time.

An alternate midterm exam will be available for students who miss the in person midterm exam and only the alternate midterm exam will use Respondus Lockdown Software with the webcam and microphone enabled. Please review the section of the course outline regarding the use of Respondus for further information.

Final Exam (35%)

Date: Fri, Apr 21, 8:30 AM, TBD

Learning Outcome: 1, 2, 3, 4, 5, 6, 7

Course content assessed: the last half of the course (i.e., content NOT tested on the midterm exam).

This is a 2 hour final exam that will be held in person on the University of Guelph campus with the location to be announced at a later date.

The final exam date, time and location will be confirmed when the information is provided by the Registrar's Office.

Data Extraction Assignment (30%)

Due: see due date notes below, Submit to the Dropbox

Learning Outcome: 1, 6, 7, 8

Full details are posted on Courselink with Assignment Instructions and Rubrics.

Students are strongly encouraged to work on the assignment throughout the semester versus leaving the assignment to the days before the due date.

Note - there are two components of this assignment:

- Data Extraction Assignment (Due March 10, 2023 by 11:59 pm to the Dropbox in Courselink)

- Self-Assessment & Reflection (Due March 17, 2023 by 11:59 pm to the Dropbox in Courselink)

6.2 Optional Research Study Participation

Students in NUTR*4320 will be invited to participate (by email and by an announcement posted on Courselink) in a research study comprised of two online surveys to be completed

at the start and end of the semester. Participation is voluntary and the course instructor and teaching assistant will not be involved with the research study until after the submission of the final grades in the course.

Students who complete the first online survey will be awarded 2% bonus marks added to their midterm exam grade. Alternatively, students who do not wish to participate in the research project but would still like to receive the 2% bonus marks added to their midterm grade can complete Alternate Assignment #1.

Students who complete the second online survey will be awarded 2% bonus marks added to their final exam grade. Alternatively, students who do not wish to participate in the research project but would still like to receive the 2% bonus marks added to their final grade can complete Alternate Assignment #2.

Details about the online surveys will be posted as an announcement on Courselink and emailed to the class by a member of the research team that is not the course instructor or the teaching assistant.

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6.3 Assessments in NUTR*4320

Assessments in this course (midterm and final exam) will be administered in person without the use of Respondus.

An alternate midterm exam will be made available for students who are unable to write the midterm exam during the scheduled time. **Only the alternate midterm exam will use Respondus Lockdown software with the microphone and web cam enabled.** The decision to use Respondus for the alternate midterm exam in NUTR*4320 is to accommodate students and to avoid further scheduling conflicts or challenges and the need to write an alternate midterm exam will apply to a limited number of students in the course.

Note: The instructor is aware of the University Administration's position on the use of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation, which are permitted in the Winter 2023 semester. maestro.uoguelph.ca/list/jc87gfpb/221205E/80dj69ion2p3.vib?a0=1064

Your instructor is committed to an equitable and accessible assessment experience and is willing to discuss any concerns regarding the use of Respondus for the alternate midterm exam with any students. As per the Provosts announcement accommodation requests to not

use Respondus must be made to the instructor 3 business days before the scheduled alternate midterm exam.

7 Course Statements

7.1 Copyright Notice

All content within this course is copyright protected. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course, or have been copied under an exception or limitation in Canadian Copyright law. The fair dealing exemption in Canada's Copyright Act permits students to reproduce short excerpts from copyright-protected materials for purposes such as research, education, private study, criticism and review, with proper attribution. Any other copying, communicating, or distribution of any content provided in this course, except as permitted by law, may be an infringement of copyright if done without proper license or the consent of the copyright owner. Examples of infringing uses of copyrighted works would include uploading materials to a commercial third party web site, or making paper or electronic reproductions of all, or a substantial part, of works such as textbooks for commercial purposes. Students who upload to CourseLink copyrighted materials such as book chapters, journal articles, or materials taken from the Internet, must ensure that they comply with Canadian Copyright law or with the terms of the University of Guelph's electronic resource licenses.

7.2 Use of Respondus Lockdown Software

Assessments in this course (midterm and final exam) will be administered in person without the use of Respondus.

An alternate midterm exam will be made available for students who are unable to write the midterm exam during the scheduled time. Only the alternate midterm exam will use Respondus Lockdown software with the microphone and web cam enabled. The decision to use Respondus for the alternate midterm exam in NUTR*4320 is to accommodate students and to avoid further scheduling conflicts or challenges.

Note: The instructor is aware of the University Administration's position on the use of Respondus Lockdown software and other online monitoring platforms that use artificial intelligence for remote invigilation, which are permitted in the Winter 2023 semester and recognizes that this will apply to a limited number of students in the course. **Your instructor is committed to an equitable and accessible assessment experience and is willing to discuss any concerns regarding the use of Respondus for the alternate midterm exam with any students. As per the Provosts announcement accommodation requests to not use Respondus must be made 3 business days before the scheduled alternate midterm exam date.**

Respondus LockDown Browser is a locked browser that prevents you from printing and copying; using other operating software; using search engines (e.g., going to another URL);

communicating via instant messaging; and it blocks non-web-related software (e.g., Adobe PDF, Microsoft Word).

Respondus Monitor is a companion application for LockDown Browser that uses webcam and video technology to ensure academic integrity during online exams. The software captures video during the exam and allows the instructor to review the video once the exam is completed.

In order to use Respondus LockDown Browser and Monitor, you must meet the following technical requirements so that you can take the practice test and midterm exam:

1. Operating Systems: Windows 10, 8, 7; Mac OS X 10.10 or higher.
2. Memory: Windows 2 GB RAM; Mac 512 MB RAM.
3. For Mac users: Safari must function properly on the computer.
4. Mac users must have Adobe Flash Player installed to Safari, even if a different browser is normally used.
5. Functioning webcam and microphone. The webcam and microphone can be built into your computer or can be the type that plugs in with a USB cable. (You will be required to do an environment scan of your room, so please ensure you can move your computer, laptop or webcam for this scan.)
6. A broadband Internet connection. It is recommended that you access the Internet via a wired connection.

If you have any concerns about meeting system requirements, contact CourseLink Support. They will work with you to find alternative solutions or make alternative arrangements.

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>)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

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, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. 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

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campusess/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campusess/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
