



NUTR*3210 Fundamentals of Nutrition

Winter 2023

Section(s): C01

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 is the foundation course for the study of nutrition. The occurrence, uptake and metabolic role of nutrients will be discussed in relation to growth, reproduction and longevity in human subjects, domestic animals and other species.

Pre-Requisites: BIOC*2580

1.2 Course Description

Lectures: Tuesdays and Thursdays, 11:30am-12:50pm, Rozanski Hall (ROZH) 104

1.3 Timetable

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.

1.4 Final Exam

Currently scheduled for: Friday, April 21, 2023

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

2 Instructional Support

2.1 Instructional Support Team

Instructor: Dr. David Mutch
Email: dmutch@uoguelph.ca
Telephone: +1-519-824-4120 x53322
Office: ANNU 348

Office Hours:

- I will hold virtual office hours every Tuesday between 2:00pm - 3:00pm (on Zoom). No office hours will be held during the Winter Study Break.
- Only emails sent from an official University of Guelph email account will be answered.

2.2 Teaching Assistants

Teaching Assistant (GTA): James Smorenburg
Email: jsmorenb@uoguelph.ca

Office Hours:

- Contact by email to set up an appointment.
- Will hold weekly office hours for the group assignment (TBA)

3 Learning Resources

3.1 Required Resources

Courselink (Website)

- Note that lectures will **not** be recorded.
- Basic course material will be available on the Courselink website. I will be adding information in class (i.e., fill in the blanks) to supplement the basic course material. This additional information will be tested on both the midterm and final exams.

3.2 Additional Resources

Advanced Nutrition and Human Metabolism (Textbook)

- Title: Advanced Nutrition and Human Metabolism (5th and 6th Editions)

- Authors: Sareen S. Gropper and Jack L. Smith
 - There will be copies of these texts on reserve (both editions are suitable). It is not essential to buy this text and you will find that it goes beyond the level of detail that I teach in lecture and require you to know for examinations. If you want to purchase a copy of this textbook, then the 6th edition would be suitable and may be found used or ordered on Amazon. All the material required for the course will be presented in lecture and in the lecture notes, but the text may prove useful to further understand the lecture material. It will also be helpful for students continuing on to more advanced nutrition courses. The lectures follow the sequence of chapters in this text book, with chapters 1-3 covering material from prerequisite biochemistry (which you will need to remember!), chapters 4-8 covering macronutrients and energy metabolism, and chapters 9-13 covering micronutrients. If you find areas of disagreement between the text and lecture (which can happen), please email me for clarification.
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4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Define the compounds and elements of nutritional importance to human beings and animals and to show how they are digested and absorbed
 2. Document the metabolic fate of absorbed nutrients and describe the metabolic basis of their essentiality
 3. Illustrate the role of nutrients in integrated physiological and metabolic processes of intact humans and animals
 4. Describe the abnormalities exhibited by humans or animals ingesting diets containing either deficient or excessive quantities of specific nutrients or energy
 5. Develop an understanding of the complexities and limitations of collecting food records and the analysis of nutrients in an individual's diet
 6. Communicate a nutritional concept of your choosing in a manner that is suitable for the general public
 7. 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

How will the course be delivered? This course will be taught face-to-face in ROZ 104. Lectures will not be recorded. Attendance in class is essential for success in the course.

5.1 Lecture

~ 1 lecture

Topics: Welcome and Introduction to Nutrition

- Discussion of course objectives, organization and method of assessment
- Classes of nutrients and concept of dietary essentiality
- The importance of water

~ 1 lecture

Topics: Food/Feeds Composition Analysis

- Proximate analysis: Modern techniques applied to a longstanding scheme

~ 1 lecture

Topics: Major Types of Digestive Tracts in Animals

- Overview of digestive systems
- Digestibility

~ 1 lecture

Topics: Energy

- Partitioning of feed energy for maintenance and production: gross energy (heat of combustion), digestible energy, metabolizable energy
- Physiological fuel values and the chemical basis for the differences among macronutrients in terms of energy density
- Calorimetry: energy expenditure

~ 3 lectures

Topics: Carbohydrates, including Fibre

- Classification and structure
- Digestion and absorption in monogastric and ruminant animals
- Metabolism and function, importance of carbohydrates in metabolism

~ 3 lectures

Topics: Lipids

- Chemical structure of dietary lipids
- Essential fatty acids
- Digestion and intestinal absorption
- Metabolism, including the problem of transporting lipids in an aqueous medium

Topics: MIDTERM (during scheduled class time)

~ 3 lectures

Topics: Proteins

- Classification and properties
- Dietary essential amino acids
- Protein quality
 - evaluation methods
 - examples of some common feedstuffs
- Nitrogen metabolism in ruminants
- Digestion and absorption
- Metabolism and function
 - transamination and nitrogen excretion; utilization of carbon skeletons for energy

~ 1 lecture

Topics: Integrative Metabolism of Macronutrients

- Integrative metabolism of dietary carbohydrates, fats, and proteins in relation to nutritional status

~ 8 lectures

Topics: Vitamins and Minerals

- Characteristics of compounds classified as vitamins
- Classification of essential mineral elements:
 - 7 macrominerals, 10 trace minerals
- Dietary sources, known biochemical and physiological functions, deficiency and toxicity signs/symptoms:
 - Vitamin A and provitamin A
 - Vitamin K
 - Vitamin D and the macrominerals calcium and phosphorus

Vitamin E and the trace mineral selenium

Water-soluble vitamins:

Vitamin C, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, niacin, riboflavin, thiamin.

Other trace minerals:

Iron, copper, cobalt, zinc, iodine, fluoride, magnesium, manganese.

- Metabolic Integration

5.2 Important Dates

- JANUARY 9 (Mon): First day of the W22 semester
- FEBRUARY 14 (Tues): Midterm @ 11:30am (in class)
- FEBRUARY 20 – 24: WINTER BREAK (no classes or office hours)
- MARCH 7 (Tues): Individual Dietary Nutrient Assessment Report due (submitted on Courselink Dropbox)
- MARCH 28 (Tues): Group Infographic Assignment due (submitted on Courselink Dropbox)
- APRIL 4 (Tues): Peer Evaluations due
- APRIL 21 (Fri): Final Exam (Location TBD)

6 Assessments

The midterm and final exam will consist of multiple choice, true/false and data interpretation questions. The questions are designed to probe understanding of concepts and mechanisms, and will present some scenarios for interpretation.

Important note: There are separate exams for Section 1 and the DE section for NUTR*3210, as the courses are structured differently.

6.1 Assessment Details

Midterm Exam (30%)

Date: Tue, Feb 14, 11:30 AM, In Class

- If you are ill for the midterm or have a conflict, please contact me before the scheduled midterm to make alternative arrangements (the sooner you contact me,

the better). I will do my best to accommodate you. If you contact me after the midterm (i.e., after 11:30am on Tuesday, Feb 14th, 2023), then no alternate midterm will be offered to you.

- If you don't write the midterm exam, the final exam will be worth 70%.
- An alternate weighting of 20% Midterm / 50% Final will be automatically applied and each student will receive the higher of the two final grades.
- Learning Outcomes associated with this assessment: 1, 2, 3, 4

Individual Dietary Nutrient Assessment Report (15%)

Date: Tue, Mar 7, 11:59 PM, Reports are to be submitted on Courselink Dropbox

- Students will be required to complete a nutrient intake analysis on either themselves or a friend/family member using a free online software.
- Details about this Report will be provided in Class and on Courselink.
- Each student will submit their report through Dropbox on Courselink by 11:59pm on Tuesday, March 7th. A penalty of 10% will be applied every 24 hours after this due date and time.
- The Report will comprise 15% of your final grade.
- Learning Outcomes associated with this assessment: 1, 2, 3, 4, 5

Group Assignment (10%)

Date: Tue, Mar 28, 4:00 PM, Infographic to be submitted on Courselink Dropbox

- Students will form groups of three. Student groups will be made directly on Courselink, which will help facilitate Peer Evaluation. If you don't join a group by a certain date (TBA), then you will be randomly placed into a group by the Instructor. Groups will be required to develop a 1-page Infographic about a nutrient. Note that your Infographic could be designed for a human health endpoint or an animal health endpoint. Short videos about the "do's and don'ts" of Infographic design will be posted on Courselink. A grading rubric will be provided to students on Courselink.
- Groups will have ~4 weeks to complete the Infographic. If a group does not have any contact (post on Courselink, email, Facebook chat, etc) with a group member by Thursday, March 16th, please email Dr. Mutch to let him know. Students who do not connect with their group by this date will automatically receive 50% of the mark obtained by the group on the Infographic. For example, if a group receives 16/20 on the Infographic, then the student who didn't contact their group by the deadline will receive 8/20.
- Infographics will be submitted through your group Dropbox on Courselink by 4pm on Tuesday, March 28th. 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 10% of your final grade.
- Learning Outcomes associated with this assessment: 1, 2, 3, 4, 6, 7

Peer Evaluation (5%)

Date: Tue, Apr 4, 11:59 PM, Online PEAR software

- Students in a group will evaluate each other with regards to their ability to work effectively within a team. Groups will generally consist of 3 students; therefore each student will be required to complete 2 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 11:59pm on Tuesday, April 4th. Students who do not complete peer evaluations by this time will automatically receive a grade of 0, irrespective of what your group member gives you as a grade.
- The Peer Evaluation will comprise 5% of your final grade.
- The Peer Evaluation grade will be given **per student**, not per group.
- Learning Outcomes associated with this assessment: 6, 7

Final Exam (40%)

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

- Final Exam is cumulative (i.e., the entire course), but weighted so that approximately 70% of the exam is on material covered after the midterm exam.
- If you don't write the midterm exam, the final exam will be worth 70%.
- An alternate weighting of 20% Midterm / 50% Final will be automatically applied and each student will receive the higher of the two final grades.
- Learning Outcomes associated with this assessment: 1, 2, 3, 4

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, 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>

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/>

7.4 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>)

7.5 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.

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>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

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

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-amisconduct.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>

8.9 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.

8.10 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).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

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

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