## ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

## COURSE INFORMATION

| Course Title | Course Code Number | Credit Value |
|---|---|---|
| Advances in Human Nutrition | HUNU 550 | 3 |

**Lecture time and location:** Tuesdays & Thursdays, 12:30 PM - 2:00 PM
P. A. Woodward Instructional Resources Centre - Room B79

## PREREQUISITES

FNH 250 or equivalent. Introductory biochemistry (e.g. BIOL 201, BIOC 202, or equivalent).

## CONTACTS

| Course Instructor(s) | Contact Details | Office Location | Office Hours |
|---|---|---|---|
| Bruna Donatti Castro Falci | bruna.donatti@ubc.ca | FNH 324 | Mondays 11am-1pm<br>Wednesdays 11am-1pm<br>Or by appointment |

## OTHER INSTRUCTIONAL STAFF

None

## COURSE STRUCTURE

This course will consist of two 80-minute classes weekly, plus outside activities and online learning that is complimentary to course content and is to be done outside of class time.

Class participation through questions and contributing to discussions is strongly encouraged.

## LEARNING OUTCOMES

Upon completion of this course, students should be able to:

1. Understand the physical and chemical properties of macro- and micro-nutrients in major food sources;
2. Explain how macro- and micro-nutrients exert their functions under pathophysiological conditions;

3. Explain how macro- and micro-nutrients are digested, absorped, metabolized, transported, stored, and excreted from the body under pathophysiological conditions;
4. Discuss metabolic and biochemical bases of nutrient-nutrient interactions and their impact on health;
5. Discuss new advances in physiological functions, digestion, absorptions, and metabolism of macro- and micro-nutrients;
6. Discuss new advances in nutrient-gene interactions and their impact on macro- and micro-nutrient metabolism and physiological functions;
7. Explain how inadequate and excessive intake of macro- and micro-nutrients can cause adverse effects to health;
8. Understand and discuss new advances in energy metabolism and its regulation;
9. Explain how inadequate and excessive energy intake can cause adverse effects on health.

## COURSE TOPICS AND TENTATIVE SCHEDULE

| Date | Topic | Readings | Evaluation |
|---|---|---|---|
| 06-Sep | Introduction to the Course. Review. | Advanced Nutrition and Human Metabolism, Ch. 2 | |
| 08-Sep | Carbohydrate and Fiber | Advanced Nutrition and Human Metabolism, Ch. 3 & 4 | |
| 13-Sep | Carbohydrate and Fiber | Article for in class discussion 1 | In-class discussion 1 |
| 15-Sep | Carbohydrate and Fiber | Article for in class discussion 2 | In-class discussion 2 |
| 20-Sep | Lipids | Advanced Nutrition and Human Metabolism, Ch. 5 | |
| 22-Sep | Lipids | | |
| 27-Sep | Lipids | Article for in class discussion 3 | In-class discussion 3<br>Review activity 1 - *Released Sep 27, due Oct 4, 11 pm* |
| 29-Sep | Protein | Advanced Nutrition and Human Metabolism, Ch. 6 | |

| | | | |
|---|---|---|---|
| 04-Oct | Protein | Article for in class discussion 4 | In-class discussion 4<br>Review activity 2 - *Released Oct 4, due Oct 13, 11 pm* |
| 06-Oct | Integrated metabolism and regulation, and energy | Advanced Nutrition and Human Metabolism, Ch. 7<br>Article for in class discussion 5 | In-class discussion 5 |
| 11-Oct | Integrated metabolism and regulation, and energy | Article for in class discussion 6 | In-class discussion 6<br>*Review activity 3 - Released Oct 11, due Oct 20, 11 pm* |
| 13-Oct | Midterm review | | |
| 18-Oct | MIDTERM | | Midterm |
| 20-Oct | Nutrients for Blood Health | Advanced Nutrition and Human Metabolism, Ch. 10 (Vit K) & Ch. 13 (Iron) | |
| 25-Oct | Nutrients for Blood Health | Article for in class discussion 7 | In-class discussion 7<br>Case study 1 - *Released Oct 25, due Nov 1, 11 pm* |
| 27-Oct | Methyl Nutrients | Advanced Nutrition and Human Metabolism, Ch. 9 (Vit B12 and folate) | |
| 01-Nov | Methyl Nutrients | Dietary Reference Intakes: The Essential Guide to Nutrient Requirements (choline)<br>Article for in class discussion 8 | In-class discussion 8<br>Case study 2 - *Released Nov 1, due Nov 8, 11 pm* |
| 03-Nov | Vitamins and Energy Metabolism | Advanced Nutrition and Human Metabolism, Ch. 9 (B1, B2, B3, B5, B6, biotin) | |
| 08-Nov | Vitamins and Energy Metabolism | Article for in class discussion 9 | In-class discussion 9<br>Review activity 3 - *Released Nov 8, due Nov 15, 11 pm* |
| 10-Nov | READING WEEK | | |
| 15-Nov | Antioxidant Nutrients | Advanced Nutrition and Human Metabolism, Ch. 13 (Zinc, copper, selenium)<br>Article for in class discussion 10 | In-class discussion 10 |
| 17-Nov | Antioxidant Nutrients | Advanced Nutrition and Human Metabolism, Ch. 9 (Vit C) & Ch 10 (Vit A, Vit E)<br>Article for in class discussion 11 | In-class discussion 11<br>Review activity 4 - *Released Nov 17, due Nov 24, 11 pm* |

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|---|---|---|---|
| 22-Nov | Blood Health and Methyl Nutrients Quiz | | In-class quiz |
| 24-Nov | Nutrients for Bone Health | Advanced Nutrition and Human Metabolism, Ch. 11 & Ch 10 (Vit D) | |
| 29-Nov | Nutrients for Bone Health | Article for in class discussion 12 | In-class discussion 12<br>*Case study 3 - Released Nov 29, due Dec 6, 11 pm* |
| 01-Dec | Trace minerals | Advanced Nutrition and Human Metabolism, Ch. 13 & Ch 14<br>Article for in class discussion 13 | In-class discussion 13 |
| 06-Dec | Water and electrolytes – sodium, potassium and chloride | Advanced Nutrition and Human Metabolism, Ch. 12 | |

## LEARNING ACTIVITIES

This class involves a variety of learning activities, including self-directed reading, lectures, group discussion, case studies, and group research projects. Students are required to read assigned chapters of the textbook / journal articles prior to attending the class. Lectures are primarily designed to highlight concepts and principles and to answer any questions, which have arisen from self-directed reading. Main concepts and principles are reinforced through review activities, in-class discussion, case studies, and a mini research project.

## LEARNING MATERIALS

Canvas will be used as the online learning platform for the course. Lectures and cases will be posted in advance to class on the "Modules" page of the course Canvas site.

**REQUIRED LEARNING MATERIALS**:

- **Textbook:**
  Gropper SS, Smith JL, Carr TP (2022). **Advanced Nutrition and Human Metabolism**. 8th Edition. Cengage Learning
  This textbook is available for purchase through the UBC Bookstore. Older versions are also suitable to the course. The ebook can be accessed through the UBC Library, although only 3 users are permitted at a time. A hardcopy has also been placed on reserve in Woodward library.

- **Readings for case studies** may include journal articles. Web-links for access to the journal articles will be posted on Canvas in the case study descriptions.

- **Additional readings:**
  - Dietary reference intake (DRI) publications by the Institute of Medicine. These books are available in the Reference Section for Nutrition, Woodward Library, and include DRIs for: thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline (1998); calcium, phosphorus, magnesium, vitamin D, and fluoride (1997); calcium and vitamin D (2011); vitamin C, vitamin E, selenium, and carotenoids (2000); vitamin A, vitamin K, arsenic, boron, chromium, cooper, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium and zinc (2001);
  - Journal articles specified in the course slides as additional resources.
  - Frayn, K.N. (2010) **Metabolic Regulation – A Human Perspective**. 3rd Edition. Wiley.

## LEARNING RESOURCES

1. UBC library, including both print and online collections (http://www.library.ubc.ca/)
2. PubMed (https://www.ncbi.nlm.nih.gov/pubmed)

## ASSESSMENTS OF LEARNING

| ASSESSMENT | DATE | Option A (% of final grade) | Option B (% of final grade) | Option C (% of final grade) |
|---|---|---|---|---|
| In-class discussion | Throughout the term | 20 | 20 | 20 |
| Review quiz | 22-Nov | 10 | 10 | 10 |
| Case studies (3 cases - 5% each) | Throughout the term | 15 | 15 | 0 |
| Review activities | Throughout the term | 0 | 15 | 0 |
| Midterm | 11-Oct | 20 | 10 | 25 |
| Final exam | TBA | 35 | 30 | 45 |
| ***TOTAL*** | | ***100*** | ***100*** | ***100*** |

You may decide how your final mark will be calculated: Think about what will be best for you (consider your own learning, your interest level, your schedule, and your other commitments this term). The option A is the standard one. It will promote learning and success for the majority of students, but please take a few moments to decide what would work best for you.

Communicate me of your decision by email at bruna.donatti@ubc.ca before 11:59 PM on Monday, September 19. No changes will be permitted after that date. If you wish to have your final grade calculated using the Option A, no email is required to confirm this – the Option A values will be used for all students who have not specified otherwise.

**In-class discussions**

Every student will be responsible for leading/facilitating a discussion based on the assigned reading(s) for that class. For in-class discussion, students will be paired by the instructor. 1 student will be the facilitator and 1 will be the note taker. The facilitator will bring a list of questions that are based on the assigned readings. The note taker is then expected to submit a brief summary of the discussion at the next class. Both facilitator and note taker will then peer review each other's work. The summary will be available for the other students. All students are expected to have read the required reading and to participate in the discussion. Students will be evaluated for their engagement, and professional and respectful conduct in class including punctuality, and respectful discussions.

**Case studies**

During selected lectures, the instructor will present a mini case study. Two of these case studies will be completed in groups of 2-3, and one will be completed individually. Students must remain in the same groups throughout the term. Students are expected to work collaboratively on each of the case studies, as these are critical skills building towards the practice education year.

**Review activities**

The review activities will test your understanding of the course material and identify areas that require further review. They are composed of multiple choice, short answer, and open-ended questions. The review activities will be available on Canvas on the dates outlined on the syllabus.

**Midterm and Final exam**

Exams are cumulative and are based on readings and class discussions. Exams will be composed of multiple choice and short answer questions only. More information will be provided in class.

## UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of

academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on **the UBC Senate website.**

## OTHER COURSE POLICIES

*Attendance and participation of in-class discussion and case study.* Attendance and participation of in-class discussion and research seminar are mandatory for this course.

*Due Date for research report*. The due date for your group's research report is strictly implemented. A deduction of 5% will be imposed for each day of late submission.

*Late and missed assessments.* Review activities and case studies must be completed by the deadlines indicated in the course schedule. There will be no late or make-up review activities or case studies. Case study answers will be reveals on the day they are due, and, therefore, late submissions will not be accepted. In the event where a student must miss a review activity or case study with a valid excuse, the corresponding mark will be allocated to the final exam.

*Final grades policies:* Final grades will be rounded to the nearest whole number. Only grades within 0.5 of the next whole number will be rounded up (eg. 75.5 becomes 76, 75.4 is 75%). Grade changes will only be permitted if there is a calculation error.

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