



FNH 351: VITAMINS, MINERALS, AND HEALTH (Jan – Apr 2023)

LAND ACKNOWLEDGEMENT

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

INSTRUCTOR: Dr. Yvonne Lamers, Associate Professor in Human Nutrition and Vitamin Metabolism

CONTACT: Office hours: **Tuesdays, 11:30AM-1:30PM**, Dr. Lamers' office (FNH 245, 2205 East Mall)
For questions related to course content, you are encouraged to post your questions on the Piazza Discussion board, accessible through Canvas. TAs will participate as they are available.
E-mail: For confidential questions, you may write Dr. Lamers via **Canvas** Mail.

TEACHING ASSISTANTS: Niklas Tappauf, MSc; PhD Student, Human Nutrition
Kerry Scherbinsky; PhD Student, Human Nutrition
Kailee Wark; Graduate Student/Master in Nutrition and Dietetics Program

LECTURE TIME & LOCATION: Tuesdays & Thursdays, 2:00 PM - 3:30 PM
Aquatic Ecosystem RL **120**

CANVAS:

- The FNH 351 Canvas site will be used as an important learning and communication resource.
- **Outline course notes** will be posted on Canvas as option to easier follow the class. You are responsible for all materials covered in the class, whether it is included in the notes or not.
- Announcements will be posted on Canvas.
- Quizzes and case study assignments are to be completed on Canvas.
- You are strongly encouraged to check Canvas on a regular basis.

READING MATERIAL:

Textbook: highly recommended: Gropper SS, Smith JL, Carr TP (2021). *Advanced Nutrition and Human Metabolism*. 8th Edition. Cengage Learning. Copies of this book including earlier editions are placed on reserve in Woodward library, and are available for purchase online or through UBC bookstore.

Evidence-based resources including guidelines and healthcare professional factsheets/summaries:

- Dietary reference intake (DRI) guidelines by the Institute of Medicine: available online, e.g., <https://www.ncbi.nlm.nih.gov/books/NBK56070/> for calcium and vitamin D (2011). Others include the books on: phosphorus, magnesium, and fluoride (1997); thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline (1998); vitamin C, vitamin E, selenium, and carotenoids (2000); vitamin A, vitamin K, copper, iodine, iron, zinc, and others (2001).
- Office of Dietary Supplements / National Institute for Health (ODS/NIH): health professional factsheets for individual nutrients contain summary of DRIs and dietary sources for micronutrients, e.g., <https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/>

PREREQUISITES: You must have FNH 250 and one of BIOL 201 / BIOG 202 as pre-requisites.

CLICKER REQUIREMENT:

All students in FNH 351 are required to have an iClicker account registered to their name and Student ID. iClicker will be used for in-class activities, review questions, and participation marks.

COURSE CONTENT:

This course will cover the micronutrients (vitamins, minerals, and trace elements) required by humans. We will discuss sources of micronutrients; the digestion, absorption, transport, and metabolism of micronutrients; biochemical and physiologic functions of micronutrients; metabolic and health implications of micronutrient deficiencies; potential health implications of excessive intake; methods of status assessment; nutrient-nutrient interactions and examples of genetic variants associated with impaired micronutrient status and/or function.

LEARNING OUTCOMES/COURSE OBJECTIVES:

At the conclusion of this course, students should be able to:

1. List the metabolic functions of the micronutrients and explain how the micronutrients exert their physiological functions.
2. Explain the processes of digestion and absorption of the micronutrients.
3. Describe the ways in which the micronutrients are transported, stored, metabolized, and excreted by the body.
4. Critically evaluate and discuss various factors, including genetic and dietary factors, that affect micronutrient digestion, absorption, and metabolism.
5. Explain how inadequate and excessive intake of micronutrients can cause adverse effects to health.
6. Critically discuss possible nutrient-nutrient interactions.
7. Discuss the strengths and limitations of available methods for assessing the nutritional status of micronutrients in humans.

CLASS FORMAT:

Classes consist of lectures and review of case studies. The course notes will be an outline of the slides used in the lecture and will be posted on Canvas. Class participation is encouraged. If you wish to do well in this course, it is important to attend all the lectures. If you miss a lecture, it is **your** responsibility to get the notes from another student in the class.

EVALUATION:

1. Online review quiz	2%
2. Online quizzes (4 @ 5% each)	20%
3. Case studies (4 @ 5% each)	20%
4. Midterm exam (in class; on March 02, 2023)	25%
5. Final exam (date to be announced)	30%
6. Class participation (assessed by Clicker)	3%

Online review quiz: The review quiz will test your understanding of basic concepts in nutrition that will serve as a foundation for the material covered in this course. The questions will be multiple-choice and you will have 30 minutes to complete the quiz. More information about the material tested will be discussed in the first week of class. The quiz will be available on **Tuesday, January 10, from 2PM to Tuesday, January 17, 11AM**. You must complete the quiz within this time frame; there will be no make-up quiz. In the event where a student must miss the quiz with a valid excuse, e.g., doctor's note, the corresponding mark will be allocated to the final.

Online quizzes: Five quizzes will be held on Canvas. The quiz format is multiple-choice and true/false. Only the marks of the best four quizzes will count towards the final mark. Quizzes will be announced in class and on Canvas. Quizzes must be completed within the given time frame; there will be no make-up quizzes. In the event where a student must miss a quiz with a valid excuse, e.g., doctor's note, for the entire quiz time frame, the corresponding mark will be allocated to the final.

Case studies: Case studies will be posted on Canvas and must be submitted on Canvas by 11:00AM on the dates provided on Canvas and in class. A tentative schedule can be found on the last page of the syllabus. Case studies will be reviewed in class, and, therefore, case studies must be completed within the given time frame and late case studies will not be accepted. There will also be no make-up case studies. In the event where a student must miss a case study with a valid excuse, e.g., doctor's note, for the entire time frame of the assignment, the corresponding mark will be allocated to the final.

Midterm and final examinations: The examinations will test all lecture material posted on Canvas and presented and discussed in class. Both the midterm and final examinations include multiple choice, true/false, and short-answer questions. In the event where a student must miss the midterm due to illness, the student is required to inform the instructor at the earliest possible time and submit a valid doctor's note within 72 h from the time that the midterm is held. There will be no make-up midterms. If a student must miss the midterm with a valid excuse, e.g., a doctor's note, the marks will be allocated to the final.

Class participation will be assessed by Clicker through questions at the beginning of and/or during lectures. Students will receive all 3 marks for participation of >80%, 2 of 3 marks for participation of 65-80%, 1 of 3 marks for participation of 50-65% and 0 of 3 marks for participation of <50%.

STUDENT RESPONSIBILITIES:

1. Attend class. You are expected to come prepared to listen, take notes and participate in class.
1. Be on time for class and ensure that your cellphone is turned off. Avoid leaving and returning to class unless it is essential - other students find this disruptive. No chatting, social media, or course unrelated activities during class, as this is distractive for you, your peers and the instructor.
2. Review the course material and related course chapters of the textbook. Test yourself. Looking at the material multiple times and trying to recall (not just read) will help solidify your understanding. Use the quizzes and case studies as study tools. The quizzes and case studies are the best way for you to apply your knowledge and prepare for the exams.
3. Use the resources available to you (instructor, textbook, Canvas site) to enhance your learning experience. Take advantage of the Piazza discussion board. There are almost 100 students in this

course. If you have a question, chances are that someone else will have the same question, and you will both benefit from a discussion. One of the TAs will be monitoring the discussion board, but students are expected and encouraged to answer each other's questions first.

4. Find ways to apply the concepts to your own lives and connect them with concepts learned in other courses. Being invested in the course will help you learn and increase motivation for studying. Ask questions if you don't understand something.
5. Do your own work and acknowledge others' ideas and work. Failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action.

ACADEMIC HONESTY:

Academic honesty is a core value of scholarship. Cheating and plagiarism (including both presenting the work of others as your own and self-plagiarism), are serious academic offences that are taken very seriously in the Faculty of Land and Food Systems. By registering for courses at UBC, students have initiated a contract with the University that they will abide by the rules of the institution. It is the student's responsibility to inform themselves of the University regulations.

Definitions of Academic Misconduct can be found on the following website:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959#10894>

Studying with others or discussing issues with them is completely legitimate and is encouraged; however, collaborating with others while completing case studies or quizzes is not, nor is informing others of what the questions were. Both providing this information to someone else, or using that information, are considered cheating and would constitute academic misconduct. Please be aware that plagiarism or cheating of any kind will be cause for "no credit" on the assignments and possible failure in the course.

INFORMATION FOR STUDENTS IN THE DIETETICS MAJOR:

This course, like all required courses in the Dietetics Major, contributes to coverage of the Integrated Competencies for Dietetic Education and Practice (ICDEP). All students in the Dietetics Major should refer to the Mapping of Curriculum to ICDEP page (<http://dietetics.landfood.ubc.ca/about/mapping-of-curriculum-to-icdep/>) on the dietetics website to familiarize themselves with the requirements.

ASSISTANCE AVAILABLE TO STUDENTS:

You are strongly encouraged to meet with the instructor during office hours if you have questions, comments, or suggestions for the course.

You can post questions about course content and logistics on the Piazza discussion board for your fellow students and TAs: <https://piazza.com/ubc.ca/winterterm22023/fnh3510022022w2>.

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No audio and no video recordings are permitted in this course.

ADDITIONAL POLICIES:

The final exam will be governed by the relevant university policies. Exams will be re-marked upon receiving a written request. The outcome of the re-marking can go either way.

Use of cellphones, smart watches, or other electronic devices for use of a clock, i.e., to seeing the time, is not permitted during exams.

COURSE TOPICS AND TENTATIVE SCHEDULE

DATE	TOPICS	ASSESSMENT
<i>Jan 10</i>	Introduction – Vitamins and Minerals, and FNH 351; Review: Digestion/absorption and Dietary Reference Intakes	Review Quiz <i>released Jan 10, due on Jan 17</i>
<i>Jan 12 – Jan 19</i>	Nutrients for Blood Health – Iron and Vitamin K	Case Study 1 <i>released Jan 19, due on Jan 26 11AM</i> Quiz 1 <i>released Jan 19, due on Jan 26 11AM</i>
<i>Jan 24 – Feb 7</i>	Methyl Nutrients – Folate, Vitamin B12, and Choline	Case Study 2 <i>released Feb 2, due on Feb 9 11AM</i> Quiz 2 <i>released Feb 2, due on Feb 9 11AM</i>
<i>Feb 9 – Feb 16</i>	Vitamins and Energy Metabolism – Vitamin B6, Riboflavin, Thiamin, Niacin, Pantothenic acid, and Biotin	Quiz 3 <i>released Feb 9, due on Feb 16 11AM</i>
<i>Feb 19 and 21</i>	<i>Midterm Break – NO CLASS</i>	
<i>Feb 26</i>	Iodine and other select minerals and trace elements	
<i>Mar 2</i>	Midterm Exam	
<i>Mar 7 – Mar 23</i>	Antioxidant Nutrients – Zinc, Copper, Vitamin C, Vitamin E, Selenium and Vitamin A	Quiz 4 <i>released Mar 16, due on Mar 23 11AM</i> Case Study 3 <i>released Mar 23, due on Mar 30 11AM</i>
<i>Mar 28 – Apr 11</i>	Nutrients for Bone Health – Vitamin D, Calcium, Phosphorus and Magnesium	Quiz 5 <i>released Apr 6, due on Apr 13</i> Case Study 4 <i>released Apr 6, due on Apr 13 11AM</i>
<i>Apr 13</i>	Review lecture – topics selected by instructor and proposed by students	