

NFS382
Professor Bibiana García-Bailo
Winter 2021

Vitamin and Mineral Metabolism Throughout the Life Cycle

Department of Nutritional Sciences
University of Toronto

NFS382: Vitamin and Mineral Metabolism Throughout the Life Cycle

Winter 2021

Lectures: Online synchronous delivery on Mondays (9-10am ET) and Wednesdays (9-11am ET), via Bb Collaborate. Recordings of each lecture will be posted after class. Recordings will be available on Quercus for the duration of the semester.

Virtual Office Hours: Mondays, 2pm – 3pm ET on Bb Collaborate, or by appointment.

Instructor: Dr. Bibiana García-Bailo
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Prerequisites: NFS284 - Basic Human Nutrition

Course Description:

Vitamins and minerals are essential for health throughout the life span. This course examines the metabolism of vitamins and minerals in the context of human development from infancy, childhood, adolescence, adulthood, reproduction and through to aging. Some emphasis in the course is placed on understanding the role of vitamins and minerals in disease prevention and pathogenesis.

Course Objectives:

- To gain knowledge of the metabolism of specific vitamins and minerals, and the role that they play in human health.
- To understand the dietary reference intakes (DRIs) for specific vitamins and minerals, and how these values were derived.
- To understand the current vitamin and mineral status of Canadians.
- To develop critical appraisal skills and attain a basic understanding of the principles of study design, so as to be able to assess research on vitamins and minerals.

Evaluation:

Discussion Posts.....	10%
(1% each, 10 posts total)	
(Due on Thursdays of weeks 1-4 and 7-12)	
Term Test.....	20%
(Feb 10 th)	
Article Critique First Draft.....	20%
(Due March 3 rd)	
Article Critique Peer Reviews.....	15%
(Due March 17 th)	
Article Critique Final Draft.....	10%
(Due March 31 st)	
Final Assessment Test.....	25%
(During final assessment period - TBA)	

Total	100%
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Materials:

Lecture Recordings:

This course, including student participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session. Course videos and materials belong to the course instructor, the University, and/or other source depending on the specific facts of each situation, and are protected by copyright. In this course, students are permitted to download session videos and materials for their own academic use, but they should not copy, share, or use them for any other purpose without the explicit permission of the instructor. For questions about recording and use of videos in which you appear, please contact the instructor.

Students may not create audio recordings of classes with the exception of those students requiring an accommodation for a disability, who should speak to the instructor prior to beginning to record lectures. Students creating unauthorized audio recording of lectures violate an instructor’s intellectual property rights and the Canadian Copyright Act. Students violating this agreement will be subject to disciplinary actions under the Code of Student Conduct. Course videos may not be reproduced or posted or shared anywhere other than the official course Quercus site and should only be used by students currently registered in the course. Recordings may be saved by students on their personal computer for personal use. Because

recordings will be provided for all lectures, students may not create additional audio or video recordings without written permission from the instructor. Permission for such recordings will not be withheld for students with accommodation needs.

Textbook (Recommended):

Advanced nutrition and human metabolism. Seventh edition. Boston, Massachusetts: Cengage Learning, 2016. Authors: Sareen S. Gropper, Jack L. Smith, and Timothy P. Carr. This textbook is available in hard copy and electronically through the UofT library system. For the electronic version, click the following link: <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>. You will be prompted to log in with your UTOR ID. Only one person at a time can check out the electronic version. The textbook is also available for purchase through the publisher, Amazon.ca and other retailers. While it is only recommended, this textbook is a great resource. If you plan to continue studies in nutrition, you may want to consider buying your own copy.

Required Readings:

Links to required readings are included in the Course Outline section of the syllabus and posted on Quercus. You will be prompted to log in with your UTOR ID to access the full text versions of research articles through PubMed. In addition, links to optional readings are also provided.

Course Communications

Course announcements will be made via Quercus. It is the students' responsibility to ensure that they check the course website frequently for new announcements, as well as their university email inbox for messages from the instructor. Setting up email alerts for course announcements on Quercus is highly recommended.

In addition, an online student "lounge" is available on the course website for questions related to class content, tests, and assignments. Check the posts on the student lounge often, as your specific questions may have been answered already.

For questions of a personal nature, you can email the instructor privately. E-mail responses will be given within 24 hours during the workweek, and within 48 hours on weekends.

Course Work

Discussion Posts - Due by 11:59pm ET on Thursdays of weeks 1-4 and 7-12, via Quercus

Each discussion post is worth 1%, for a total of 10% of the final grade. The first discussion post will entail introducing yourself to the rest of the class. For every post after that, you will be required to write **one** multiple choice or true/false question focusing on the content covered in

the lectures or required readings from specific weeks. You will be evaluated on the complexity of the question that you write and accuracy of the answer. You are NOT required to answer the questions submitted by your peers and you will not be evaluated on any answers that you give to others' questions, but feel free to try! Writing these "peer quiz" questions is meant as a tool for you to review each week's material, and seeing the questions that others write on the discussion board can also help you assess your own knowledge in preparation for tests.

Term Test – FEBRUARY 10th, during class time

The term test (20% of final mark) will take place on February 10th. It will start at 9:10am and finish at 10am ET, and it will be taken on Quercus. The test will include all the material covered through February 8th, including lectures and required readings. *This will be an open-book test. You can use your own notes, lecture presentations and required readings to help you answer the questions. However, you must take the test individually, without help from anybody else.*

It is each student's responsibility to ensure that they are available to take the test at the scheduled time. If you foresee a scheduling conflict, you must contact the instructor **at least one week before the test** to discuss potential accommodations.

Article Critique Assignment – Due March 3rd, 17th, and 31st, via Quercus

Students will be required to complete a critique of an assigned research article using the strategies and knowledge reviewed in class. You can discuss your assignment with other students, but you are required to write your own essay alone, using your own words.

The goal of this assignment is to exercise your critical thinking and written communication skills by evaluating research on a specific micronutrient. These skills are essential, no matter what path you follow in your academic and professional life. To further enhance your learning experience, an educational tool called PeerScholar will be part of the article critique assignment. PeerScholar allows students to assess each other's work as well as their own, to reflect on the usefulness of the peer reviews they receive, and to incorporate the feedback they receive into the final draft of their project so they can improve their mark. We will discuss the specifics of PeerScholar and the article critique assignment on **Week 2** of the course. The assignment will consist of three components:

- Article critique first draft (20%) – **DUE MARCH 3rd, VIA QUERCUS**
- Article critique peer reviews (15%) – **DUE MARCH 17th, VIA QUERCUS**
- Article critique final draft (10%) – **DUE MARCH 31st, VIA QUERCUS**

Note that your mark will not be based on the peer reviews that you receive from other students. However, you will be evaluated on the quality of the peer reviews that you provide

for others. Your mark for each component of the assignment will be determined by the teaching assistant responsible for your assignment.

Turnitin

Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.

All students are expected to either submit the article critique to Turnitin, which is voluntary, or provide an alternative. Assignments uploaded to Quercus will automatically be submitted to Turnitin, after you indicate agreement with the Turnitin service. If you do not wish to submit through Turnitin, please contact the instructor to discuss an alternate method.

Final Assessment Test – To be scheduled during Final Assessment period (April 13th – 23rd).

The final assessment test (25% of final mark) will take place during the Final Assessment period (exact schedule to be announced). It will be taken on Quercus. It will last two hours. The test will include all the material covered from February 22nd to the last day of class, including lectures and required readings. *This will be an open-book test. You can use your own notes, lecture presentations and required readings to help you answer the questions. However, you must take the test individually, without help from anybody else.*

It is each student's responsibility to ensure that they are available to take the test at the scheduled time. If you foresee a scheduling conflict, you must contact the instructor **at least one week before the test** to discuss potential accommodations.

Policy on Missed Tests, Late Submissions and Re-Read Requests

Missing the discussion posts, term test or final assessment test without a compelling reason will result in a grade of zero. Compelling reasons might include illness, personal distress, family emergency, or other unforeseen circumstances. Compelling reasons must be supported by documentation or verbal explanation (all discussions are confidential).

There are no make-ups for the discussion posts.

If you miss the term test (worth 20%) for a compelling reason, you can choose one of the following options:

- Take an oral test given by the instructor at a different time,

- Write a 500-word essay on a topic assigned by the instructor, OR
- Re-weigh the final assessment to be worth 45% of your final grade.

If you miss the final assessment (worth 25%) for a compelling reason, you can choose one of the following options:

- Take an oral test given by the instructor at a different time, OR
- Write a 500-word essay on a topic assigned by the instructor.

Late submission of the article critique first draft (20%), peer reviews (15%), or final draft (10%) will result in a 10% reduction of the grade per overdue day, unless there is a compelling reason for the lateness. If you anticipate that you will be unable to meet the deadline for any of the assignments, please contact the instructor **at least one week before the due date** to request an extension.

Re-read requests must be made in writing by emailing the instructor, detailing where the marks were wrongfully deducted and explaining why you should have received more marks. Be aware that your mark may go up, down, or stay the same.

COURSE OUTLINE

WEEK 1: Jan 11-13th

Topics:

- Course introduction
- Dietary reference intakes (DRIs)
- Prevalence of vitamin and mineral inadequacies in Canada
- Digestion

Reading:

Required:

Barr, S. I. Introduction to Dietary Reference Intakes. Applied Physiology, Nutrition, and Metabolism;31(1):61–65 (2006). <https://cdnsiencepub.com/doi/pdf/10.1139/h05-019>

Shakur, Y., et al. A comparison of micronutrient inadequacy and risk of high micronutrient intakes among vitamin and mineral supplement users and nonusers in Canada. Journal of Nutrition 2012;142(3):534-40. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/22298574/>

Optional:

Barr, S.I. Is the 2019 Canada's Food Guide Snapshot nutritionally adequate? Applied Physiology, Nutrition, and Metabolism;44(12):1387-90 (2019). <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/31657222/>

Murphy, S et al. History of Nutrition: The Long Road Leading to the Dietary Reference Intakes for the United States and Canada. Advances in Nutrition;7(1):157–168 (2016). <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/27180379/>

Textbook Chapter 2: The Digestive System: Mechanism for Nourishing the Body.

<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Introductions – DUE JANUARY 14th, 11:59pm ET. Worth 1%

Introduce yourself to the class! You can tell us your name, your major(s), foods you love/hate, fun facts about you, etc. What are you hoping to get out of this class? What have been some of your favourite assignments and topics throughout your time at UofT? Are you part of any clubs or student groups at the university that you would like to let us know about?

WEEK 2: Jan 18-20th

Topic: Article critique assignment

- How to assess scientific literature
- Introduction to PeerScholar

Reading/Media:

Required

Young YM and Solomon MJ. How to Critically Appraise an Article. Nature Clinical Practice Gastroenterology and Hepatology;6(2):82-91, 2009. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/19153565/>

“Student Introduction to PeerScholar.” <https://www.youtube.com/watch?v=PMCpXUqGLIA>

Recommended

Lappe, J et al. Effect of Vitamin D and Calcium Supplementation on Cancer Incidence in Older Women. Journal of the American Medical Association 317(12) 2017. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/28350929/>

Discussion Board Activity: Week 1 Peer Quiz – DUE JANUARY 21st, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 1 and Week 2. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 3: Jan 25-27th

Topic: Folate

Reading/Media:

Required

Colapinto C et al. Folate status of the population in the Canadian Health Measures. Canadian Medical Association Journal 183(2):E100-6, 2011. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/21149516/>

Optional

Cornelia Ulrich. The relationship between micronutrients and nutrigenomics/epigenetics. American Society of Nutrition Meeting 2017
<http://ondemand.nutrition.org/console/player/36138?mediaType=slideVideo&>

Naderi N and House J. Recent developments in folate nutrition. Adv Food Nutr Res 2018;83:195-213. doi: 10.1016/bs.afnr.2017.12.006. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/29477222/>

Textbook Chapter 9: Water-Soluble Vitamins (ONLY Folate section and Chapter 9 Perspective).
<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 3 Peer Quiz – DUE JANUARY 28th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 3. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 4: Feb 1-3rd

Topics: Vitamin B₁₂, choline

Reading:

Required

MacFarlane AJ et al. Vitamin B12 and homocysteine status in a folate-replete population: results from the Canadian Health Measures Survey. American Journal of Clinical Nutrition 94(4):1079-1087, 2011. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/21900461/>

Leermakers ET et al. Effects of choline on health across the life course: a systematic review. Nutrition Reviews 73(8): 500-522. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/26108618/>

Optional

Torsvik I et al. Cobalamin supplementation improves motor development and regurgitations in infants: results from a randomized intervention study. American Journal of Clinical Nutrition 98(5):1233-40, 2013. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/24025626/>

Masih S et al. Pregnant Canadian women achieve recommended intakes of one-carbon nutrients through prenatal supplementation but the supplement composition, including choline, requires reconsideration. *Journal of Nutrition* 145:1824-1834, 2015. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/26063067/>

Textbook Chapter 9: Water-Soluble Vitamins (ONLY Vitamin B₁₂ section). <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 4 Peer Quiz – DUE FEBRUARY 4th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 4. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 5: Feb 8-10th – TERM TEST ON FEBRUARY 10th, FROM 9:10am to 10am ET. WORTH 20%

Topic: Iron

Reading:

Required:

Cooper M et al. Iron sufficiency of Canadians. *Health Reports* 23(4): 3-10, 2012. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/23356044/>

Health Canada Prenatal Nutrition Guidelines for Health Professionals - Iron Contributes to a Healthy Pregnancy. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/iron-fer-eng.pdf

Optional:

Baker RD et al. Diagnosis and Prevention of Iron Deficiency and Iron-Deficiency Anemia in Infants and Young Children (0–3 Years of Age). *Pediatrics* 126(5): 1040 -1050, 2010. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/20923825/>

Textbook Chapter 13: Essential Trace and Ultratrace Minerals (ONLY Iron section and Chapter 13 Perspective). <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

WEEK 6: Feb 15-17th – **READING WEEK – NO CLASS**

WEEK 7: Feb 22-24th

Topic: Zinc, iodine

Reading:

Required:

Lowe, N. Assessing zinc in humans. Current Opinion in Clinical Nutrition and Metabolic Care, 19(5), 321–327. 2016. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/27348152/>

Iodine status of Canadians, 2009 to 2011 <http://www.statcan.gc.ca/pub/82-625-x/2012001/article/11733-eng.htm>

Optional:

Textbook Chapter 13: Essential Trace and Ultratrace Minerals (ONLY Zinc and Iodine sections). <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 7 Peer Quiz – DUE FEBRUARY 25th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false questions focusing on the content covered **in the lectures or required readings** from Week 7. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 8: March 1-3rd

Topics: Fluoride, vitamin D – **ARTICLE CRITIQUE FIRST DRAFT DUE MARCH 3rd, 11:59pm ET. Worth 20%**

Reading:

Required:

Health Canada: Fluoride in Drinking Water, <https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/fluorides-human-health.html>

Whiting SJ et al The vitamin D status of Canadians relative to the 2011 Dietary Reference Intakes: an examination in children and adults with and without supplement use. American Journal of Clinical Nutrition 94: 128-135, 2011. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/21593503/>

Optional:

Manson J et al. Vitamin D deficiency – Is there really a pandemic? New England Journal of Medicine. 2016;375(19):1817-1820.

Hollis BW, Wagner CL, Howard CR, Ebeling M, Shary JR, Smith PG, et al. Maternal Versus Infant Vitamin D Supplementation During Lactation: A Randomized Controlled Trial. Pediatrics. 2015;136:625-34. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/26416936/>

Textbook Chapter 14: Nonessential Trace and Ultratrace Minerals (ONLY Fluoride section) and Chapter 10: Fat-Soluble Vitamins (ONLY Vitamin D section). <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 8 Peer Quiz – DUE MARCH 4th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 8. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 9: March 8-10th

Topics: Calcium, phosphorus and magnesium

Reading:

Required:

Weaver CM et al. Calcium, dairy products and energy balance in overweight adolescents: a controlled trial. American Journal of Clinical Nutrition 94 (5): 1163-1170, 2011. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/21918216/>

Optional:

Calvo M and Lamberg-Alardt C. Phosphorus. Advances in Nutrition. 6: 860-862, 2015. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/26567206/>

Magnesium – Fact Sheet for Health Professionals
<https://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/>

Textbook Chapter 11: Major Minerals (entire chapter, including Perspective section).

<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 9 Peer Quiz – DUE MARCH 11th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 9. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 10: March 15-17th – ARTICLE CRITIQUE PEER REVIEWS DUE MARCH 17th, 11:59pm ET. Worth 15%

Topics: Vitamin C, and vitamins A and E

Reading:

Required:

Langlois K et al. Vitamin C status of Canadian adults: Findings from the 2012/2013 Canadian Health Measures Survey. Health Reports 2016 27(5):3-10. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/27192205/>

Optional:

Bjelakovic G et al. Antioxidant supplements for prevention of mortality in health participants and patients with various diseases. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD007176. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/22419320/>

Lykkesfeldt J et al. Vitamin C. Advances in Nutrition 5:16-18, 2014. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/24425716/>

Debelo, H., Novotny, J. A., & Ferruzzi, M. G. Vitamin A. Advances in Nutrition, 8(6), 992–994, 2017. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/29141980/>

Traber MG and Manor M. Vitamin E. Advances in Nutrition, 2012;3(3):330-1. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/22585906/>

Iddir M et al. Strengthening the Immune System and Reducing Inflammation and Oxidative Stress through Diet and Nutrition: Considerations during the COVID-19 Crisis. Nutrients

2020;12(6):1562. doi: 10.3390/nu12061562. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/32471251/>

Textbook Chapter 9: Water-Soluble Vitamins (ONLY Vitamin C section) and Chapter 10: Fat-Soluble Vitamins (Vitamin A and Vitamin E section and Chapter Perspective).

<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 10 Peer Quiz – DUE MARCH 18th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 10. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 11: March 22-24th

Topic: Vitamin E (continued), selenium, vitamin K

Reading:

Required:

Shearer MJ et al. Vitamin K nutrition, metabolism, and requirements: current concepts and future research.

Optional:

Akbari S, Rasouli-Ghahroudi AA. Vitamin K and Bone Metabolism: A Review of the Latest Evidence in Preclinical Studies. Biomed Res Int. 2018;2018:4629383. <https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/30050932/>

Textbook Chapter 10: Fat-Soluble Vitamins (ONLY Vitamin E and Vitamin K sections) and Chapter 13: Essential Trace and Ultratrace Minerals (ONLY Selenium section).

<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 11 Peer Quiz – DUE MARCH 25th, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false questions focusing on the content covered **in the lectures or required readings** from Week 11. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the

questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 12: March 29-31st **ARTICLE CRITIQUE FINAL DRAFT DUE MARCH 31st, 11:59pm ET. Worth 10%**

Topics: Sodium, potassium, chloride

Reading:

Required:

Hendriksen MAH et al. Potential effect of salt reduction in processed foods on health. American Journal of Clinical Nutrition 99:446-453, 2014. <https://pubmed.ncbi.nlm.nih.gov/myaccess.library.utoronto.ca/24335058/>

CBC Market Place (March 2013): The Great Salt Shakedown

<http://www.cbc.ca/marketplace/episodes/2012-2013/the-great-salt-shakedown>

Optional:

Overwyk KJ et al. Dietary Sodium Intake and Health Indicators: A Systematic Review of Published Literature between January 2015 and December 2019. Advances in Nutrition 2020;11(5):1174-1200. <https://pubmed.ncbi.nlm.nih.gov/myaccess.library.utoronto.ca/32449929/>

Textbook Chapter 12: Water and Electrolytes (ONLY Sodium, Potassium, and Chloride sections and Chapter Perspective). <https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/search.action?query=+ADVANCED+NUTRITION+AND+HUMAN+METABOLISM>

Discussion Board Activity: Week 12 Peer Quiz – DUE APRIL 1st, 11:59pm ET. Worth 1%

On the discussion board, write **one** multiple choice or true/false question focusing on the content covered **in the lectures or required readings** from Week 12. You will be marked on the question that you submit to the discussion board. You are NOT required to answer the questions submitted by your peers, but feel free to try! You will only be evaluated on the complexity of the question that you write and accuracy of the answer.

WEEK 13: April 5-7th

Topics:

- Vitamin and mineral supplements – What's the evidence?
- Review for final assessment test

Reading/Media:

Required:

Vitamins and Supplements: Magic Pills (Fifth Estate Broadcast Date: November 20, 2015).
<http://www.cbc.ca/fifth/episodes/2015-2016/vitamins-and-supplements-magic-pills>

Sesso H. Evidence on positive and null outcomes from RCTs of multivitamin interventions. American Society of Nutrition Meeting 2017
<http://ondemand.nutrition.org/console/player/36139?mediaType=audio&>

Marra and Bailey. Position of the Academy of Nutrition and Dietetics: Micronutrient Supplementation. Journal of the Academy of Nutrition and Dietetics 2018; 118: 2162-2173.
<https://pubmed-ncbi-nlm-nih.gov.myaccess.library.utoronto.ca/30366569/>

FINAL ASSESSMENT TEST – To be scheduled during Final Assessment period (April 13th – 23rd).

Students with Disabilities or Accommodation Requirements

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting <http://www.studentlife.utoronto.ca/as/new-registration> . Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructor will not reveal that you are registered with AS.

Academic Integrity

All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Plagiarism—representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program—is a serious offence that can result in sanctions. Speak to the instructor for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at <http://www.writing.utoronto.ca> . Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and

expectations. For more information, please see <http://www.artsci.utoronto.ca/osai> and <http://academicintegrity.utoronto.ca>.

Religious Accommodations

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of cultural and religious traditions. The instructor will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (such as a test or in-class assignment) due to a religious observance, please let the instructor know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

Specific Medical Circumstances

What should I do if I cannot attend class (in-person or remote) and it is affecting my academic work?

Students who are absent from class for any reason (e.g., COVID, other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the online absence declaration. The declaration is available on [ACORN](#) under the Profile and Settings menu. Students should also advise their instructor of their absence.

Resources & supports

If you or someone you know is in distress and there is an immediate risk, call 911.

The following includes supports available to students on all three campuses:

- [U of T St. George \(Downtown Toronto\)](#)
- [U of T Scarborough](#)
- [U of T Mississauga](#)

Additionally, students have access to [U of T My Student Support Program](#) (My SSP) | 1-844-451-9700 24/7. Outside of North America, call 001-416-380-6578. This program provides culturally-competent mental health and counseling services in 146 languages for all U of T students.

Accommodation for non-medical reasons

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to the instructor or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or

accommodation. They may be able to provide you with a College Registrar's letter of support to give to your instructor, and importantly, connect you with other resources on campus for help with your situation.