

FOOD 4202 Winter 2025

MICRONUTRIENTS AND HEALTH

We, the people of the Faculty of Science at Carleton University, acknowledge that our campus is located on the traditional, unceded territories of the Algonquin Anishinabeg people. Miigwetch for your hospitality and stewardship of this territory and the teachings that come from it. We are grateful for this land, the air that we breathe, and the water that sustains us all as well as for the animals, plants and other living beings: these enable us to research, teach, mentor, support, study, and learn. We recognize our responsibility to our natural environment and to reconciliation with Indigenous peoples.

Course Instructors: Véronic Bézaire

Heather MacDonald

How to address me: Véronic

How to address me: Heather

Gender Pronouns: (she/her/hers)

Gender Pronouns: she/her

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Office Location: Room 319, Steacie Building

Office Location: Room 238 MacOdrum Library

Class Location: Please check Carleton Central for the room location.

Class Times: Tuesdays, 8:35 to 11:25

Best Ways to be in Touch: in class, via Brightspace email

Student Hours: as requested, by meeting

Prerequisites: BIOC/BIOL 2200 and 3rd or 4th year standing

Department/Unit: Chemistry

Learning Outcomes and Topics Covered

We cultivate a safe and welcoming atmosphere where students feel comfortable taking risks and learning from making mistakes. We promote collaborative learning experiences that allow students to work together, share ideas, and learn from one another. By fostering teamwork and peer engagement, we create a community where diverse perspectives enrich the learning process.

Course level learning outcomes:

1. Demonstrate research skills
 - a. Initiate research by developing a research question and eligibility criteria to address a specific research gap
 - b. Find and generate needed information using systematic review searching and screening approaches
 - c. Evaluate the credibility of information using quality assessment tools
 - d. Organize information and data to reveal patterns and themes
2. Interpret and describe traditional roles of nutrients in health and disease
 - a. Interpret micronutrient metabolic pathways
 - b. Describe mechanisms of action of specific nutrients
 - c. Synthesize interactions between nutrients
3. Assess novel roles of nutrients in health and disease
 - a. Critically analyze strength of evidence of systematic reviews on novel roles of nutrients
 - b. Describe fundamental ideas and mechanisms of actions for nutrients in novel roles
 - c. Perform and write systematic review to inform others on current state of knowledge of various nutrients in novel roles

Topics to be Covered

DATE	THEME	RESOURCES	PRE-CLASS ACTIVITIES	IN-CLASS ACTIVITIES	ASSIGNMENTS
JAN 07		Overview		Search engine, references	
JAN 14	Blood health	Micronutrients slides		Q&A 1	Micronutrients Integration 1 Mon JAN 20 @ 11h30
JAN 21		SR - Overview	SR1 Reading Annotation Mon JAN 20 @ 11h30	SR1 Worksheet	
JAN 28	Energy metabolism	Micronutrients slides		Q&A 2	Micronutrient Integration 2 Mon FEB 03 @ 11h30
FEB 04		SR - Q, search terms, criteria	SR2 Reading annotation Mon FEB 03 @ 11h30	SR2 Worksheet	
FEB 11	Bone Health	Micronutrients slides		Q&A 3	Micronutrient Integration 3 Mon FEB 24 @ 11h30
FEB 18	Winter Break				
FEB 25		SR – Study design, appraisal	SR3 Reading annotation Mon FEB 24 @ 11h30	SR3 Worksheet	
MAR 04	Antioxidants	Micronutrients slides		Q&A 4	
MAR 11	SR Project	SR - Title & Abstract screening	SR4 Reading annotation Mon MAR 10 @ 11h30	Title & Abstract screening Mon MAR 17 @ 11h30	
MAR 18		SR - Full-text screening		Conflicts, FT screening Mon MAR 24 @ Noon	
MAR 25		SR - Data abstraction		Conflicts, Data abstraction Mon MAR 31 @ Noon	
APR 01		SR – Synthesis		Career activity/skills Synthesis, PRISMA checklist	
APR 08		SR - Final touches, career activity/skills			SR Report Sat APR 26 @ 10 PM

Assessments

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage material on a consistent basis. The course and assessments were designed with these principles in mind.

There are different pieces to this course. Follow the class schedule in this document and the Brightspace calendar to help organize your time. Don't be shy to ask questions. We are in this together.

Grade Breakdown

COMPONENT	GRADE VALUE	DATE
MICRONUTRIENT INTEGRATION	36% as 3 x 12%	Jan 20, Feb 03, Feb 24
SYSTEMATIC REVIEW ANNOTATIONS	20% as 4 x 5%	Jan 20, Feb 03, Feb 24, Mar 10
IN-CLASS Q&A, WORKSHEETS	10% as 10 x 1%	Each class
SYSTEMATIC REVIEW REPORT	34%	Apr 26

Micronutrients Integration – This assessment contributes to learning outcomes 2a, b, c. You will complete a Micronutrient Assignment for blood health, energy metabolism, and bone health. The assignment will require integration of information from several micronutrients and pathways. Summary assignments will be assessed for quality.

Systematic Review Annotations – This learning activity contributes to learning outcomes 3a, b. For each theme you will read a systematic review related to a novel nutrient role. You will use the social annotation tool *Perusall* to access and discuss the reading with your peers before class. Systematic Review Annotations in Perusall will be graded for quality.

In-class Q&A – This learning activity contributes to learning outcomes 2a, b, c. A series of questions related to traditional functions of micronutrients are integrated in lectures. As part of your learning, you will work in groups during class time to research and draft answers to the questions in a shared document. Q&A are assessed for completion.

In-class Worksheets - This learning activity contributes to learning outcomes 1a, b, c, d. You will work in groups to complete the worksheets in class and practice the necessary steps to conduct a systematic review.

Altogether, in-class Q&A and Worksheets will be graded as SAT/UNSAT for a given day. Ten (10) of twelve (12) days of in-class learning activities need to be completed throughout the term.

SR Report – This learning activity and assignment will be led by Librarian Heather MacDonald. It will contribute to learning outcomes 1c, d, 3a, b, c. As a class, we will apply the necessary steps to update an existing systematic review on a specific topic. Some of the work will be carried out in class and will need to be completed after class in time for our next session together. These activities will contribute towards your in-class engagement. You will write the systematic review and submit an individual report of the updated review. You will submit your assignment on Brightspace on the date indicated in the class schedule and be assessed for quality.

Late and Missed Work Policies

Late Work

A 48h grace period is available for one Micronutrient Integration assignment of your choice.

Systematic review annotation deadlines are firm since the annotations are discussed in class. Annotations can be submitted in advance.

Late submissions for In-class Q&A and worksheets learning activities are considered UNSAT. Flexibility is built-in as learning activities for ten of twelve (10 to 12) weeks are needed for full marks.

For everything else, a 20% deduction per 24h will be applied for up to 72h, after which a grade of zero will be assigned. For short term extenuating circumstances, please submit the [academic considerations form](#) for my review. The form may be declined.

Missed Work

Short-term (5 days or less): For short term extenuating circumstances, please submit the [academic considerations form](#) for my review. The form may be declined.

Long-term (> 5 days): For long term extenuating circumstances, please submit the [longer-term accommodation](#) form for my review. The form may be declined.

Learning Material(s) and Other Course/Lab-Related Resources

Students are not required to purchase textbooks or other learning materials for this course.

Technology Checklist –

- An internet-enabled computer (laptop/desktop); available in class (213 Tory)

Websites/Applications –

- [Covidence](#) for systematic review (SR) assignment (Carleton subscription)
- [Perusall](#) to promote asynchronous exchange of ideas on specific readings (free subscription); The code for our course in Perusall is: **BEZAIRE-HY7LE**.

Options exist for students who do not have access to these resources. Options include [financial aid from Carleton](#), inexpensive options for technology (Best Buy refurbished products, Kijiji), & single workspaces available for student use on campus.

Academic Accommodations and Regulations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website (<https://students.carleton.ca/course-outline/>).

Statement on Chat GPT/Generative AI usage

Students may use AI tools for sharing ideas, clarifying challenging concepts, or getting started on projects. Some acceptable uses include:

- Brainstorming ideas (e.g., generating essay topics with ChatGPT, using Microsoft Word's Smart Lookup to find inspiration and related topics)
- Creating outlines (e.g., using AI to structure an essay or presentation flow, using Microsoft Word's Outline View with AI suggestions)
- Providing definitions or explanations of complex concepts (e.g., using AI to explain a difficult theory, e.g., using Microsoft Word's Researcher tool to find relevant information)

It is necessary to document your use of AI in this course, using the following guidelines:

- Clearly identify and cite AI-generated text (e.g., 'The following paragraph was generated by ChatGPT/Microsoft Word's Researcher tool')
- Review, edit, and ensure accuracy and originality of final submissions
- AI-generated content should not exceed 30% of the total assignment length

This policy supports the use of AI as a supplementary tool, helping students develop ideas and structure their work while emphasizing the importance of transparency and personal engagement with the content. AI can be used for inspiration and foundational support and can encourage students to critically assess and refine AI-generated material.

Statement on Academic Integrity

Students are expected to uphold the values of academic integrity, which include fairness, honesty, trust, and responsibility. Examples of actions that compromise these values include but are not limited to plagiarism, accessing unauthorized sites for assignments or tests, unauthorized collaboration on assignments or exams, and using artificial intelligence tools such as ChatGPT when your assessment instructions say it is not permitted.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in [Carleton University's Academic Integrity Policy](#). A list of standard sanctions in the Faculty of Science can be found [here](#).

Additional details about this process can be found on [the Faculty of Science Academic Integrity website](#).

Students are expected to familiarize themselves with and abide by [Carleton University's Academic Integrity Policy](#).

Student Rights & Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the [7 Rights and Responsibilities Policy](#) for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If a concern arises regarding this course, **your first point of contact is Véronic**: Email or drop in during student hours and I will do my best to address your concern. If I am unable to address your concern, the next points of contact are (in this order):

Note: You can also bring your concerns to [Ombuds services](#).

