FOOD BIOTECHNOLOGY - FALL 2024

FOOD 5102F

DEPARTMENT OF CHEMISTRY

--- COURSE OUTLINE ---

Instructor: Tyler Avis (he/him/his)
Food Science Program
Department of Chemistry and Institute of Biochemistry
Carleton University
How to address me: Tyler

Lectures: **In-person lectures/workshops**. Fridays, 9:35-12:25 AM, 209 Steacie Building

Contact: **Student hours (a.k.a. office hours):**

No set student hours
By appointment (in-person or virtual)

Office: 207G Steacie Building
Phone: 613-520-2600 x3121
Email: tyler.avis@carleton.ca

I can be reached by **email** at almost any time. When possible, I will reply promptly, usually the same day or the next morning.

WELCOME TO THE COURSE

General course description:

Developments in biotechnology related to food production and quality. The course will involve the field of **novel** biotechnological methods and science related to the production of food and the use of traditional food crops in other bio-industries such as biopharming and biofuel. Aspects of microbiology and genetic engineering will be involved. The course will be based on the construction of a food biotechnology-based research proposal on a subject selected by each student and approved by the instructor.

Topics may include:

1. Agricultural biotechnology relate to sustainable food production
2. Food biotechnology related to food loss and waste
3. Nutritional biotechnology related to added-value foods
4. Environmental biotechnology related to food production and processing

Learning Outcomes

Through this course, students will learn to:

1. Demonstrate understanding of food biotechnology topics and principles
    a. Become subject specialist on a topic of their choosing
    b. Participate in discussion on related topics
    c. Critically assess and question scientific findings

2. Apply principles of food biotechnology to a real-world issue
    a. Identify an issue/problem with current food production and processing practices
    b. Propose a potential solution to said issue/problem
    c. Critically and constructively assess feasibility of potential solutions

3. Critically evaluate literature for its ethical use
    a. Evaluate credibility of information sources
    b. Select appropriate references for intended ideas and arguments
    c. Apply proper principles of paraphrasing

4. Create a research proposal on a current topic of food biotechnology
    a. Propose and defend a project based on current scientific research
    b. Develop time management and independent think to a research proposal
    c. Demonstrate independent knowledge collection and scientific/intellectual creativity

5. Communicate scientific content to a scientific and a non-scientific audience
    a. Extract main ideas/message from scientific documents
    b. Translate main ideas/message for a non-scientific audience
    c. Tailor communication style to a non-scientific audience

Land Acknowledgement

At Carleton University, it is important that we acknowledge that the land on which we gather is the traditional and unceded territory of the Algonquin nation.

Inclusive Teaching

I am committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, class, etc. All students in the class, the instructor, and any guests should be treated with respect during all interactions.

Community Guidelines:

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity*. In our course, we will seek to behave with these values in mind:

	As students, we will…	As a teaching team, we will…
Honesty	• Honestly demonstrate our knowledge and abilities on assignments and exams • Communicate openly without using deception, including citing appropriate sources	• Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams • Communicate openly and honestly about the expectations and standards of the course through the syllabus, and with respect to assignments and exams
Responsibility	• Complete assignments on time and in full preparation for class • Show up to class on time, and be mentally/physically present • Participate fully and contribute to team learning and activities	• Give you timely feedback on your assignments and exams • Show up to class on time, and be mentally & physically present • Create relevant assessments and class activities
Respect	• Speak openly with one another, while respecting diverse viewpoints and perspectives • Provide sufficient space for others to voice their ideas	• Respect your perspectives even while we challenge you to think more deeply and critically • Help facilitate respectful exchange of ideas
Fairness	• Contribute fully and equally to collaborative work, so that we are not freeloading off of others • Not seek unfair advantage over fellow students in the course	• Create fair assignments and exams, and grade them in a fair, and timely manner • Treat all students equitably
Trust	• Not engage in personal affairs while on class time • Be open and transparent about what we are doing in class • Not distribute course materials to others without authorization	• Be available to all students when we say we will be • Follow through on our promises • Not modify the expectations or standards without communicating with everyone in the course
Courage	• Say or do something when we see actions that undermine any of the above values • Accept a lower or failing grade or other consequences of upholding and protecting the above values	• Say or do something when we see actions that undermine any of the above values • Accept the consequences (e.g., lower teaching evaluations) of upholding and protecting the above values

*This class statement of values is adapted from Tricia Bertram Gallant, Ph.D.

Mandatory texts and/or handouts: none

Mandatory required materials: a computer and an internet connection

Grade Breakdown:

Assessment	Weight	Tentative Date
Weekly progress reports/discussions	15%	Ongoing weekly
Preliminary research proposal*	20%	Nov 15
Presentation and defense of proposal*	20%	Nov 29
Examination of other students' proposals*	20%	Nov 29
Final research proposal*	25%	Dec 6

- To pass the course, a student **must** submit the above **four** items with an asterisk (*)
- There will be **no changes** (reweighting or any other modification) to this evaluation scheme

1. **Weekly progress report:** Students must discuss the advancement of their research proposals with the instructor (and the other students). Concrete evidence of progress (literature review, proposal outline, writing progress, etc.) is necessary. The progress report is meant not only as an evaluation tool, but also as a time to discuss the materials within the proposals with the instructor (and the other students) and to make sure the coursework is progressing at a steady rate.

2. **Preliminary research proposal:** In early November (date to be determined), each student is expected to supply the completed version of their preliminary research proposal for evaluation by the instructor and classmate(s). The report may **not** exceed twenty (20) double spaced pages. The preliminary (and final) proposal shall be crafted according to the guidelines supplied by the instructor.

3. **Presentation and defense of proposal:** In mid-November (date to be determined), each student will present their research proposal with PowerPoint support and defend their proposal following questioning by a committee formed by the instructor and one or more classmates. The presentations shall **not** exceed 15 min each. The question/defense period shall **not** exceed 30 min.

4. **Examination of other student proposals:** Each student will have the opportunity to read other student proposals and provide a short written report on its contents. In addition, the examining student will actively participate in questioning of other students during the defenses. **Constructive** criticism on your classmates' proposals is meant not only as an

evaluation tool for both the presenter and student evaluator, but also to share your personal scientific insight with the presenter.

5. **Final research proposal:** Following the defense of their proposals and receiving of comments following the defense, the student shall make appropriate corrections to their proposals and submit their final proposal for evaluation by the instructor.

Course Format: **1)** Brief lectures/presentations will be given by the instructor the first few courses of the term in order for students to understand the basic materials covered within the scope of Food Biotechnology and to give appropriate and up-to-date resources for preparation of their research proposals.

2) Once a week, students will meet in class with the instructor to gauge the progress of their research proposals and discuss any information that may be lacking in their proposal, questions students may have on the scientific content of their proposal, etc.

Lecture/workshop information:

Lecture material will be presented as PowerPoint slides. This material is for information purposes, to assist the student with preparation the term work in this course.

Teaching and learning activities, including lectures, workshop, discussions, presentations, etc., by both instructors and students, are copy protected and remain the intellectual property of their respective author(s). All course materials, including PowerPoint presentations, outlines, videos, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s).

Accommodations and Missed Term Work:

Accommodations

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, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline).

Missed Term Work

1. Missed term work without accommodation:

- Late term work will be penalized (i.e., lose) 10% per day. An assignment can no longer be submitted 5 days following its initial deadline.

2. Missed term work for short-term accommodation (5 days or less):

As per the Academic Consideration Policy, if students encounter extenuating circumstances that temporarily hinder their capacity to fulfil in-class academic requirements for a period that is five days or less, they can request academic consideration as per the following instructions:

- Contact your instructor(s) as soon as possible (e.g., by email) and normally no later than 24 hours after the submission deadline.

- Fill out this form: Online Academic Considering Coursework Form

- If granted, an extension of up to five days without penalty will be applied to the initial term work deadline.

- Complete and submit course work per academic consideration, if granted.

Extenuating circumstances are circumstances that:

- are beyond a student's control

- have a significant impact on the student's capacity to meet their academic obligations; and

- could not have reasonably been prevented

Please note that requests are not automatically approved. Approving and determining the accommodation remains at the discretion of the instructor.

3. Missed term work for longer term incapacitation (5 days or longer):

If you require accommodations for this course that are longer than the 5-day (short-term) period, please email me to discuss how/whether accommodation needs could be met for this course.

Academic Integrity

Academic Integrity is upholding the values of honesty, trust, respect, fairness, responsibility, and courage that are fundamental to the educational experience. Carleton University provides supports such as academic integrity workshops to ensure, as far as possible, that all students understand the norms and standards of academic integrity that we expect you to uphold. Your teaching team has a responsibility to ensure that their application of the Academic Integrity Policy upholds the university's collective commitments to fairness, equity, and integrity.
(Adapted from Carleton University's Academic Integrity Policy, 2021).

Examples of actions that do not adhere to Carleton's Academic Integrity Policy include:
- Plagiarism
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams

Please review the checklist linked here to ensure you understand your responsibilities as a student with respect to academic integrity and this course.

Sanctions for Not Abiding by Carleton's Academic Integrity Policy
A student who has not upheld their responsibilities under Carleton's Academic Integrity Policy may be subject to one of several sanctions. A list of standard sanctions in 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 follow the Carleton University Student Academic Integrity Policy. The Policy is strictly enforced and is binding on all students.

Statement on Generative AI usage (i.e., Chat CPT)

Moderate Use - Content Generation with Attribution

AI Use in this course: 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)

Documenting Use of AI: 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

Why have I adopted this policy? 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.

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 me**: Email and I will do my best to address your concern. If I am unable to address your concern, the next points of contact are the Chair of the Department of Chemistry, followed by the Office of the Dean of Science

Note: You can also bring your concerns to Ombuds services.

Assistance for Students

Academic and Career Development Services: http://carleton.ca/sacds/
Writing Services: http://www.carleton.ca/csas/writing-services/
Peer Assisted Study Sessions (PASS): https://carleton.ca/csas/group-support/pass/
Math Tutorial Centre: https://carleton.ca/math/math-tutorial-centre/
Science Student Success Centre: https://sssc.carleton.ca/