

# FOOD 4001 for Winter 2025

## Food Quality Control

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.

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**Course Instructor:** Yaxi Hu

**How to address me:** Dr. Hu

**Gender Pronouns:** (she/her/hers)

**Email:** [yaxihu@cunet.carleton.ca](mailto:yaxihu@cunet.carleton.ca)

Note: Feel free to send me an email for anything you want to tell and/or ask me and I will try my best to respond within 48 h. If you would like to talk to me in person outside the office hours, please email to make an appointment.

**Student Hours:** Tuesday, 10:30-11:30

**Office Location:** Room 229, Steacie Building

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

**Class Times:** Tuesday, 11:35-2:25

**Prerequisites:** FOOD 2002 & 2003

**Preclusions:** N/A

**Department/Unit:** Chemistry

## Topics Covered and Learning Outcomes

*All students in the class, the instructor, and any guests should be treated with respect during all interactions. I will continually strive to create inclusive learning environments and would therefore appreciate your support and feedback.*

### Course Description

This course will provide a comprehensive overview of the core principles and practices in food quality control. Participants will acquire essential knowledge and skills needed to ensure the safety, integrity, and excellence of food products. Through a blend of theoretical insights and practical applications, participants will gain a deep understanding of and be able to perform the key elements involved in maintaining high-quality standards within the food industry.

## Topics to be Covered

Date		Lecture Content
Jan 7	Lecture 1	Introduction
Jan 14	Lecture 2	Hazards
Jan 21	Lecture 3	Prerequisite Programs
Jan 28	Lecture 4	SOP and Operational Records & Assignment 1
Feb 4	Lecture 5	HACCP Part 1_Preliminary Steps & Assignment 2
Feb 11	Lecture 6	HACCP Part 2_Principle 1&2 & Assignment 3
Feb 18		Reading Break
Feb 25	Lecture 7	HACCP Part 3_Principle 3-7 & Assignment 4
Mar 4	Lecture 8	Sampling for Quality Control
Mar 11	Lecture 9	Testing for Quality Control & Assignment 5
Mar 18	Lecture 10	SPC and 7 Quality Tools & Assignment 6
Mar 25	Lecture 11	VACCP & TACCP & Assignment 7
Apr 1	Lecture 12	Traceability and Recall
Apr 8	Lecture 13	Quality Control Beyond the Food Industry & Final Project

### Course level learning outcomes:

Upon successful completion of this course (lecture and lab), you will be able to

Learning Outcomes	This includes the ability to:
<b>LO1. Describe global and Canadian standards for food quality control</b>	<ul style="list-style-type: none"> <li>Identify different global and Canadian standards (e.g., Codex Alimentarius, GFSI, HACCP, Safe Food for Canadians Regulations, CFIA Food Safety Enhancement Program)</li> <li>Explain the scope and purpose for major standards</li> <li>Compare and contrast major standards, especially regarding to their application scenarios</li> </ul>
<b>LO2. Develop a food safety plan following HACCP principles</b>	<ul style="list-style-type: none"> <li>Differentiate prerequisite programs and HACCP</li> <li>Describe and explain the 7 principles of HACCP</li> <li>Recognize hazards and perform hazard analysis for specific food industry</li> </ul>

	<ul style="list-style-type: none"> <li>• Determine critical control points (CCP) and develop monitor and correction plans for each CCP</li> <li>• Validate and document HACCP plan details</li> </ul>
<b>LO3. Apply other tools for food quality control and management</b>	<ul style="list-style-type: none"> <li>• Design tests for quality control</li> <li>• Apply statistical tools and the 7 quality control tools to design, monitor and continually improve manufacturing processes and quality control programs</li> <li>• Compare HACCP, VACCP and TACCP</li> <li>• Design plans for traceability and recall</li> <li>• Enhance decision-making skills and develop an ability to apply analytical tools in true-to-life situations</li> </ul>
<b>LO4. Adopt a continuous improvement mindset in daily life</b>	<ul style="list-style-type: none"> <li>• Recognize the value of continuous improvement in various contexts, including daily life</li> <li>• Apply systematic improvement tools (e.g., PDSA cycle) for daily challenges</li> <li>• internalize systematic, improvement-oriented mindset into daily life</li> </ul>

## Assessments

### In-class activities:

In-class activities will be included in lectures to practice concepts that are taught and to obtain feedback. Participation for in-class tasks will also serve as attendance. Each lecture, in-class tasks will be graded as SAT/UNSAT. Active involvement in 9 out of 11 in-class tasks is required for full grades.

### Assignments 1-7:

There will be 6 assignments to allow you to practice the approaches and tools used for food quality and safety control. Detailed plan can be found in the schedule table below.

You will have **one week including ~1.5 hours during lecture** to finish each assignment. The deadlines are specified on the table below and have been added on Brightspace for each assignment.

The assignments will involve mock case studies to get you prepared for real world scenarios that could happen in the food industry; and scientific articles introducing novel trends in the field of food quality control measures.

**DO NOT USE AI tools** to help you finish the assignments. Answers generated from AI tools are easily identifiable and will result in reduced mark.

### Final Project: Applying Continuous Improvement Principles

Students will identify a repetitive challenge in their academic, professional, or personal lives and apply the PDSA (Plan-Do-Study-Act) cycle to systematically address and improve the situation. **TWO PDSA cycles** will be applied on the challenge of selection and students will compare the results of the two cycles, as well as evaluating the impact of iterative

adjustments. This project emphasizes critical thinking, problem-solving, the integration of a continuous improvement mindset, fostering lifelong learning and growth, as well as gaining practical experience in applying the PDSA cycle. A report describing each step of the two PDSA cycles, including a reflection on lessons learned will be handed in by the deadline identified on the table below. Detailed description of the project will be found in separate files.

**DO NOT USE AI tools** to help you finish the assignments. Answers generated from AI tools are easily identifiable and will result in reduced mark.

### Grade Breakdown

COMPONENT	GRADE VALUE	DUE DATE
ASSIGNMENT 1	12.5 %	Feb 4 <sup>th</sup>
ASSIGNMENT 2	12.5 %	Feb 11 <sup>th</sup>
ASSIGNMENT 3	12.5 %	Feb 18 <sup>th</sup>
ASSIGNMENT 4	12.5 %	Mar 4 <sup>th</sup>
ASSIGNMENT 5	10 %	Mar 18 <sup>th</sup>
ASSIGNMENT 6	10 %	Mar 25 <sup>th</sup>
ASSIGNMENT 7	10%	Apr 1 <sup>st</sup>
FINAL PROJECT	15%	Apr 22 <sup>nd</sup>
IN-CLASS ACTIVITIES	5%	

### Late and Missed Work Policies

#### Late Work

*Late submission of each assignment will result in losing 50% a day out of each assignment until a zero mark is reached.*

### Learning Material(s) and Other Course Related Resources

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

#### Useful websites on food quality control:

- CFIA Food Safety for Industry: <https://inspection.canada.ca/food-safety-for-industry/eng/1299092387033/1299093490225>
- CFIA Preventive Control: <https://inspection.canada.ca/eng/1297964599443/1297965645317>
- FDA Guidance & Regulation (Food and Dietary Supplements): <https://inspection.canada.ca/eng/1297964599443/1297965645317>

- FDA Current Good Manufacturing Practices for Food and Dietary Supplements: <https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/current-good-manufacturing-practices-cgmps-food-and-dietary-supplements>
- FDA Hazard Analysis Critical Control Point: <https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/hazard-analysis-critical-control-point-haccp>

Additional resources will be provided in class

## 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/>).

### Minimal use of ChatGPT & generative AI – Basic Assistance Only

**AI Use in this course** Students may use AI tools for basic word processing and formatting functions, including:

- Grammar and spell checking (e.g., Grammarly, Microsoft Word Editor)
- Basic formatting and design suggestions (e.g., Microsoft Word’s formatting tools, PowerPoint Design editor)

**Documenting AI Use** It is not necessary to document the use of AI for the permitted purposes listed above. If you have questions about a specific use of AI that isn’t listed above, please consult your instructor.

**Why have I adopted this policy?** This policy ensures that student voices and ideas are prioritized and authentically represented, maintaining the integrity of the work produced by students while allowing basic support to enhance clarity, correctness, layout, and flow of ideas. The goal of adopting a limited use of AI is to help students develop foundational skills in writing and critical thinking by practicing substantive content creation without the support of AI.

As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

### 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.

### **Mental Health and Wellness:**

As a student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. For more information, please consult <https://wellness.carleton.ca/>.

### **Student Concerns**

If a concern arises regarding this course, **your first point of contact is me**: 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.

**Assistance for Students**

Writing and Learning Support: <https://carleton.ca/csas/support/>

Peer Assisted Study Sessions (PASS): <https://carleton.ca/csas/pass/>

Math Tutorial Centre: <https://carleton.ca/math/math-tutorial-centre/>

Science Student Success Centre: <https://sssc.carleton.ca/>