



## Brescia School of Food and Nutritional Sciences

### FN 3342A - Advanced Food Science Fall 2025

#### Campus Supports

Western University is committed to a **thriving campus**. For help with:

- Both physical and mental health, go to [Wellness & Wellbeing](#)
- Studying with disabilities, go to [Accessible Education](#)
- Writing skills, go to the [Writing Support Centre](#)
- Learning skills and strategies, go to [Learning Development & Success](#)
- Contacting the ombudsperson, go to the [Office of the Ombudsperson](#)



Your course coordinator can also **guide you** to available campus resources and/or services.

#### Technical Requirements

稳定的互联网连接      笔记本电脑      计算器

#### Important Dates

Classes Begin	Reading Week	Classes End	Study day(s)	Exam Period
September 4	November 3–9	December 9	December 10	December 11–22

September 30, 2025, is National Day for Truth and Reconciliation and is a non-instructional day  
December 1, 2025: Last day to withdraw from a first-term half course without academic penalty

#### Contact Information

Course Coordinator/instructor	Contact Information	Office Hours
Lecturer: Sharareh Hekmat	hekmat@uwo.ca	By Appointment
Lab Instructor: Sharareh Hekmat	hekmat@uwo.ca	By Appointment
Lab Instructor: Latifeh Ahmadi	lahmadi@uwo.ca	By Appointment

Teaching Assistant(s)	Contact Information	Office Hours
TBD		

**NOTE:** All course information including grades, assignment outlines, deadlines, etc. are available via [OWL Brightspace](#). Download the Brightspace Pulse App to stay up-to-date on course communication and enable your notification settings within “Communications” in the top toolbar. Check the website regularly for course announcements. If you need assistance, visit [OWL Brightspace Help](#) or contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

### **Calendar Course Description (including prerequisites/anti-requisites):**

Selected processing methods and their effect on the nutritive value and acceptability of a product; properties and uses of carbohydrates, fats, and enzymes used in the food industry.

**Prerequisite(s):** [Chemistry 2003A/B](#) or [Chemistry 2213A/B](#) and Foods and Nutrition 2232.

*Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course, and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.*

**NOTE: If you wish to enroll in this course without the stated pre-requisite(s), you must obtain written approval from the course instructor. The approval should then be forwarded to your academic counsellor.**

### **Delivery Mode: Blended**

<b>Component</b>	<b>Date(s)</b>	<b>Time</b>
Lecture Section 200		
Lab Section 002		
Lab Section 003		

### **My Course Description**

Selected processing methods and their effect on the nutritive value and acceptability of a product; properties and uses of food carbohydrates, fats, and enzymes used in the food industry. Emphasis will be placed on the knowledge of processing methods and their effects on the nutritive values and acceptability of a product, the chemical properties, and the uses of carbohydrates, fat, and protein in food preparation and in the food industry. Food processing, chemistry, and analysis will be stressed in the food lab.

### **Learning Outcomes**

Upon successful completion of this course, you will be able to:

1. Recognize and appreciate the modern food technology used in food processing and food preservation.
2. Acquire information on food microbiology and safety.
3. Study the importance of carbohydrates, fat, and protein in product formation.
4. Demonstrate their acquired knowledge of food processing, food preservation, food microbiology, food safety, and food composition in written midterm and final exams.
5. Research, design, and conduct a questionnaire on an assigned food science topic as a group project.
6. Describe and discuss the questionnaire results through a group presentation and written report.

## Course Content and Schedule

<b>Date</b>	<b>Monday</b>	<b>Wednesday</b>	<b>Friday</b>
<b>Sept. 5</b>			Introduction
<b>Sept. 8-12</b>	<b>Lectures 1</b> (Food Safety and Microorganisms) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Microorganisms in Food, Bacteria growth, and morphology, Food-borne illnesses, Food spoilage and handling.	Class Exercises will be posted <b>on OWL</b> .
<b>Sept. 15-19</b>	<b>Lectures 2</b> (Food Safety and Microorganisms) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Food microbiology, and fermentation, Classification of food-borne diseases, Food infection and intoxication, HACCP principles.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Post-harvest technology, Genetically Modified Organisms, the impact of consumers' demands and trends on food processing, etc. Class projects: 10-minute video submitted & posted on OWL for everyone to watch; individual project – 2 questions added to summary sheet
<b>Sept. 22-26</b>	<b>Lecture 3</b> (Freezing and Concentration) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Freezing and concentration, Chilling storage, Methods of freezing and concentration used in the food industry, Packaging materials, and Factors affecting freezing rate.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Liquid Nitrogen, Cannabis in the food industry, BPA in the food industry, etc.
<b>Sept. 29- Oct. 3</b>	<b>Lecture 4, Parts 1</b> (Canning Principles) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Canning principles, Food classification, D, F, Z, values used in the food industry, Purpose, and type of heat processing, Heat penetration, Spoilage of canned foods.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Designing Foods for Dysphagia, Food Waste Reduction, 3-D Food Printers, Effects of Climate Change on Food Supplies, Polychlorinated Biphenyls (PCB) in Food. etc.
<b>Oct. 6-10</b>	<b>Lecture 4, Part 2</b> (Jams, and Jellies) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Canning Principles, Jams, and Jelly principles.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Kombucha Tea, High- Pressure food processing, Nitrate in Meat, Food Nanotechnology, Organic Foods, etc.
<b>Oct. 13-17</b>	Thanksgiving	<b>Test 1 (In-Person)</b>	Class Projects will be posted <b>on OWL</b> . Smart and edible food packaging, Acrylamide, Artificial meat, meat replacers, etc.

Oct. 20-24	<b>Lectures 5</b> (Dehydration Principles) video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Principles of dehydration, Heat transfer, Methods of drying used in the food industry, Drying rate, and Isotherm curve.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Food allergies, Gut microflora and health, Ultrasound in food processing, etc.
Oct. 27-31	<b>Lectures 6, and 7</b> (Irradiation, and Browning Reactions) videos and PPT will be posted <b>on OWL</b> .	<b>Overview Lectures</b> Principles of food irradiation, labeling requirements, Application, and safety of irradiation. Browning Reactions.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Antibiotics in food supplies, Aflatoxins and Molds in the Food Supplies, etc.
Nov. 3-7	<b>Fall Reading Week</b>	<b>Fall Reading Week</b>	<b>Fall Reading Week</b>
Nov. 10-14	<b>Lecture 8 (CHO)</b> video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> CHO chemistry, Mono-Di-saccharide structures, and functions. Disaccharide structures and functions, Sugar processing and hydrolysis, Reduction reactions, Sugar alcohols, Polysaccharide structures, and functions, and Browning reactions.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Smart and edible food packaging, Artificial meat, meat replacers, etc.
Nov. 17-21	Online Help Session	<b>Test 2 (In-Person)</b>	Class Projects will be posted <b>on OWL</b> . Acrylamide, Artificial Sweetening agents, etc.
Nov. 24-28	<b>Lecture 9 (Fats and Lipids)</b> video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Fats and lipid chemistry, Fatty acids structures and functions, Fat classification and deterioration, Major fats and oils, Processing of fats and oils, Polymorphism of fats.	Class Exercises and Class Projects will be posted <b>on OWL</b> . Alternative proteins (Insects/chickpeas/pulses), Factory fish farming, Biofuels (food, energy, environment), etc.
Dec. 1-5	<b>Lecture 10 (Proteins and Enzymes)</b> video and PPT will be posted <b>on OWL</b> .	<b>Overview Lecture</b> Protein chemistry, Structures, and functions, Proteins in food, Protein processing, Denaturation, Hydrolysis, Oxidation and Reduction reactions, Protein analysis, pH, and PKa concepts. Enzymes used in the food industry, Enzyme kinetics, Structures and functions, Enzyme classification, and Enzyme inhibitors.	<b>Lab Test (In-Person)</b>

## Course Materials You Must Acquire and Their Costs

- Lab Fees: \$50.00 per student
- Lab Coat: \$21.00
- Basic function calculator: \$15.00
- Hekmat, S. 2025. Advanced Food Science Laboratory Manual: \$16.00
- Recommended online textbook: Damodaran, S., and Parkin, K.L. 2017, Fennema's Food Chemistry. 5<sup>th</sup> edition.

## Assessments and Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weight	Due Date	Flexibility	Learning Outcome
Test 1	Mixed format	16%	Oct. 15, 2025	Not applicable	1, 2, 4
Test 2	Mixed format	16%	Nov. 19, 2025	Not applicable <sup>1</sup>	1, 2, 4
Lab Test	Mixed format	16%	Dec. 5, 2025	Not applicable <sup>3</sup>	1, 2, 3
Lab Attendance	In-Person Labs	Not graded	Ongoing	Two lab experiments missed policy <sup>4</sup>	1, 2, 3
Project/Presentation	Oral	12%	Throughout the semester	48-hour no late penalty <sup>2</sup>	1, 2, 5, 6
Final Exam	Mixed format	40%	TBD (check final exam schedule)	Not applicable	1, 2, 3, 4

### Notes:

1. This assessment is considered central to the assessment of learning outcomes in this course. Accordingly, students must provide documentation for any absence from this evaluation. If you miss this evaluation, you must complete the makeup assessment. The makeup assessment is an extension of the Test so you will need to present documentation for this assessment, should you need to miss it. Please note that there is only one makeup assessment for the Test. Students approved to miss the makeup will have the weight of this assessment transferred to the final exam. Students must not provide medical or compassionate documentation to the instructor.
2. Students are expected to submit this assignment by the deadline listed. Should extenuating circumstances arise, students are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. No Academic Consideration is required for this extension. Students submitting their assessment beyond the extended deadline will receive a penalty of 1% per hour. Academic Consideration requests may be granted only for extenuating circumstances that began before the deadline and lasted longer than the extension. Students must not provide medical or compassionate documentation to the instructor.
3. This assessment is considered central to the assessment of learning outcomes in this course. If you miss this evaluation, you must complete a make-up test that will be provided by your instructor and must be completed within an agreed upon timeframe.
4. This course has a total of 8 lab experiments. You must attend and complete 6/8 lab experiments. Successful completion of the laboratory component will be necessary in order to receive credit for the course. There will be no make-up labs. Please note that some lab days contain 2 lab experiments whereas other days only contain 1 – this is specified in the lab schedule.

## General information about assessments

- All assignments are due at 23:59 EST unless otherwise specified.
- Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0.
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days.
- Any grade appeals on term work must be initiated with the instructor within 3 weeks of the grade being posted. See the [University Policy on Undergraduate Student Appeals](#) for more information.

The table below outlines University-wide grade descriptors.

Letter grade	Number grade	Description
A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

### Rounding of Grades (for example, bumping a 79 to 80%)

This is a practice some students request. The final grade documented is the grade that you have achieved. There is no rounding to the next grade level, or 'giving away' of marks. Please don't ask me to do this for you; the response will be "please review the course outline where this is presented".

### Information about late or missed assessments:

- Students are expected to submit this assignment by the deadline listed. Should extenuating circumstances arise, students are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. No Academic Consideration is required for this extension. Students submitting their assessment beyond the extended deadline will receive a penalty of 1% per hour. Academic Consideration requests may be granted only for extenuating circumstances that began before the deadline and lasted longer than the extension. Students must not provide medical or compassionate documentation to the instructor.

### Course-specific conditions:

- Students must attend in-person laboratories and cannot miss more than (2) lab experiments without accommodation.
- Laboratory activities provide diverse hands-on experiences and expose students to learning about and working with different foods, which prepares them to work in any food and nutrition field. During food labs, students are required to prepare, process, store, and dispose of any type of food product, including **dairy, eggs, meat, fish, and poultry**, according to safe-food-handling principles and regulations. Further, students are required to clean and sanitize, according to regulations and best practices, all pots, dishware, utensils, and surfaces that have come in contact with **all food products**. Personal beliefs and practices which conflict with these course requirements are **not** grounds for academic accommodation.

Students in accredited Food and Nutrition programs are expected to meet the Practice Competencies in the Integrated Competencies for Dietetic Education and Practice and/or the Competencies of the Canadian Society of Nutrition Management. Students must demonstrate, prior to graduation, that they can perform the required tasks. For example, students must demonstrate food preparation techniques and participate in the storage and disposal of food. This ensures that graduates will be able to meet the dietary needs of others, provide client-centered care, and effectively and safely manage food service operations.

**INC (Incomplete Standing):** If a student has been approved by the Academic Advising Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Advising to carry a full course load for the term the incomplete course work is scheduled.

**SPC (Special examination):** If a student has been approved by the Academic Advising Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. If the class has a makeup exam, the student is expected to write the makeup exam. If the class doesn't have a makeup exam or the student misses the makeup exam for reasons approved by the Academic Advising Office, the student will write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Types of Examinations](#) policy.

## **Academic Policies and Statements**

### **Support Services**

There are various support services around campus and these include, but are not limited to:

1. Academic Support and Engagement - <http://academicsupport.uwo.ca>
2. Wellness and Well-being - <https://www.uwo.ca/health/>
3. Registrar's Office - <http://www.registrar.uwo.ca/>
4. Ombuds Office - <http://www.uwo.ca/ombuds/>

The websites for Registrarial Services (<http://www.registrar.uwo.ca>), and the same for affiliated university colleges when appropriate, and any appropriate Student Support Services (including the services provided by the USC listed here: <http://westernusc.ca/services/>) and the Student Development Services, should be provided for easy access.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://www.uwo.ca/health/>) for a complete list of options about how to obtain help.

### **Statement on Gender-Based and Sexual Violence**

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at: [https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

### **Statement on Harassment and Discrimination**

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All students, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [Non-Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35). Any student,

staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's Human Rights Office. Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

### **Student Code of Conduct**

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed and set out the disciplinary procedures that the University will follow. For more information, visit <https://www.uwo.ca/univsec/pdf/board/code.pdf>

### **Absence from Course Commitments**

Students must familiarize themselves with the Policy on [Academic Consideration – Undergraduate Students in First Entry Programs](#)

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request at the [central academic consideration portal](#). Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes), when there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period), or when timed assessments (e.g., quizzes) are available over an extended period of time (e.g., when you are given a 72 hour time period to start – and finish – the assessment).

Please note that academic considerations in this course are granted by the academic advisors in your home unit and implemented by the instructor of this course in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the [Student Medical Certificate](#) or, where that is not possible, equivalent documentation by a health care practitioner. If your absence relates to accommodations that are already supported by [Accessible Education](#), please work with your accessible education counsellor regarding your missed course work.

### **Accommodation for Religious Holidays**

Students should review the policy for [Accommodation for Religious Holidays](#). Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

### **Special Examinations**

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting

documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examination dates. The Faculty of Health Sciences has set School-specific dates for these Special Examinations. Please speak with your instructor about the date on which the Special Examination for this course will be held.

### **Scholastic Offences**

Scholastic offences are taken seriously and students are directed to read the policy on [Scholastic Discipline for Undergraduate Students](#).

### **Plagiarism**

Student work is expected to be original. Plagiarism is a serious academic offence and could lead to a zero on the assignment in question, a zero in this course, or your expulsion from the university. You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging that the work belongs to him/her. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. All papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com ([www.turnitin.com](http://www.turnitin.com)).

### **Use of Artificial Intelligence for the Completion of Course Work**

Within this course, you may only use artificial intelligence tools (e.g., "ChatGPT") in ways that are specifically authorized by the course instructor. All submitted work must reflect your own thoughts and independent written work.

### **Re-submission of Previously Graded Material**

Without the explicit written permission of the instructor, you may not submit any academic work for which credit has been obtained previously, or for which credit is being sought, in another course or program of study in the University or elsewhere.

### **Use of Statistical Pattern Recognition on Multiple Choice Exams**

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

### **Accessibility Statement**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#). If you think you may qualify for ongoing accommodation (e.g. separate room to write exams, flexibility with deadlines, etc.) that will be recognized in all your courses, we encourage you to visit [Accessible Education](#) for more information.

### **Correspondence Statement**

The centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner. Students are further expected to attend to announcements presented through Brightspace, and to read emails generated in this way.

## Use of Electronic Devices

### During Exams

Unless you have medical accommodations that require you to do so, or explicit permission from the instructor of the course, you may not use any electronic devices (e.g., cell phones, tablets, cameras, smart glass, smart watches, or iPods) during ANY tests, quizzes, midterms, examinations, or other in-class evaluations. **These devices MUST either be left at home or with your belongings at the front of the room. They MUST NOT be at your test/exam desk or in your pocket. Any student found with a prohibited device will be referred for investigation of a Scholastic Offence, per the policy listed above. The typical first-offence penalty for possession of a prohibited device is zero on the test or exam.**

### During Lectures and Tutorials

Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class.

### Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.

### Contingency Plan for an In-Person Class Pivoting to 100% Online Learning

In the event of a situation that requires this course to pivot to online content delivery, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on Brightspace for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

### Online Proctoring

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remote-proctoring.uwo.ca>.

### Academic Appeals and Scholastic Offences

Students can file a **request for relief from academic decisions** if the request is based on one or more grounds listed in the policy. Students can read more about the policy [here](#) and a link to the procedures is listed in the Support Services sections of this document.

Students may **appeal** some academic and scholastic disciplinary decisions by a Dean or their designate, to the Senate Review Board Academic (SRBA). Students can read more about the policy [here](#) and a link to the procedures is listed in the Support Services section of this document.