

Brescia School of Food and Nutritional Sciences

Food and Nutrition 3342A Advanced Food Science Fall 2024

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

(i	Stable internet connection	Laptop computer	Calculator
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Contact Information

 $Table\ 1: Course\ coordinator\ information$

Course Coordinator/instructor	Contact Information	Office Hours
Lecturer: Jessica White	jwhit44@uwo.ca	By Appointment
Lab Instructor: Fariba Shahmir	fshahmir@uwo.ca	TBD

Table 2: Teaching assistants' information

Teaching Assistant(s)	Contact Information	Office Hours
Laura Ugwuoke	lugwuoke@uwo.ca	
Sofia Culotta	sculott@uwo.ca	
Joyce Chang	jcha58@uwo.ca	
Sarah De Marinis	sdemarin@uwo.ca	

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 food 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

Table 3: Date and times of course components

Component	Date(s)	Time
Lecture Section 200		
Lab Section 002		
Lab Section 003		
Lab Section 004		

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 (Critical Thinking, Inquiry, and Analysis, Level 4)
- 2. Acquire information on food microbiology and safety (Critical Thinking, Inquiry, and Analysis, Problem Solving, Level 4)
- 3. Study the importance of carbohydrates, fat, and protein in product formation (Critical Thinking, Inquiry, Analysis, Problem-Solving, Level 4)
- Demonstrate their acquired knowledge of food processing, food preservation, food microbiology, food safety, and food composition in written midterm and final exams (Critical Thinking, Inquiry, and Analysis, Problem Solving, Level 4)
- 5. Research, design, and conduct a questionnaire on an assigned food science topic as a group project (Critical Thinking, Self-Awareness, and Development, Social Awareness and Engagement, Level 4)
- 6. Describe and discuss the questionnaire results through a group presentation and written report (Critical Thinking, Self-Awareness, and Development, Social Awareness and Engagement, Interpersonal Communication, Level 4)

Course Content and Schedule

Table 4: Course content and schedule

Week	Dates	Topic	Study material
1	Sept 5–8	NO CLASS	
		Introduction (In-Person). Lectures 1 and 2 (Food Safety and Microorganisms) videos and PPT will	
2	Sept 9–15	be posted on OWL. Microorganisms in Food, Bacteria growth, and morphology, Foodborne illnesses, Food spoilage and handling, Food microbiology, and fermentation, Classification of foodborne diseases, Food infection and intoxication, HACCP principles.	Class Exercises
3	Sept 16–22	Lecture 3 (Freezing and Concentration) video and PPT will be posted on OWL. Freezing and concentration, Chilling storage, Methods of freezing and concentration used in the food industry, Packaging materials, and Factors affecting freezing rate.	Class Exercises
4	Sept 23–29	Overview of Lectures 1, 2, and 3 (In-Person). Lecture 4, Parts 1-2 (Canning, Jams, and Jellies) videos and PPT will be posted on OWL. 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, Jams, and Jelly principles.	Class Exercises, Class Projects, Vegetarian Diet, Safety of Food Colour Additives, Vegetable Fermentation, Fruit Preservation, Ultrasound in Food Processing, Coffee Processing, etc. Class projects: 10 minute video submitted & posted on OWL for everyone to watch; individual project – 2 questions added to summary sheet
5	Sept 30 – Oct 6	NO CLASS	

Week	Dates	Topic	Study material
6	Oct 7–13	Lectures 5, 6, and 7 (Dehydration, Irradiation, and Browning Reactions) videos and PPT will be posted on OWL. Principles of dehydration, Heat transfer, Methods of drying used in the food industry, Drying rate, and Isotherm curve. Principles of food irradiation, labeling requirements, Application,	Class Exercises, Class Projects, Liquid Nitrogen, BPA in the Food Industry, Post-Harvest Technology, GMO's, Cannabis in the Food Industry, Impact of Consumer's Trends in Food Processing, etc.
7	Oct 14–20	and safety of irradiation. READING WEEK	N/A
8	Oct 21–Oct 27	Overview of Lectures 4-7 (In-Person). Lecture-PPT will be posted on OWL.	Class Projects, Designing Foods for Dysphagia, Food Waste Reduction, 3-D Food Printers, Effects of Climate Change on Food Supplies, Polychlorinated Biphenyls (PCB) in Food. Fish Smoking, etc.
9	Oct 28-Nov 3	Midterm Oct 28 (In-Person)	
10	Nov 4–10	Lecture 8 (CHO) video and PPT will be posted on OWL. CHO chemistry, Mono-Disaccharide structures, and functions. Disaccharide structures and functions, Sugar processing and hydrolysis, Reduction reactions, Sugar alcohols, Polysaccharide structures, and functions, and Browning reactions.	Class Exercises, Class Projects, Nitrate in Meat & Vegetables, Fast Food & Obesity link, High Pressure for Food Processing, Polyphenols in Foods, Indigenous Traditional Diet, Emulsification/Salad Dressings, Bio-Fuels (Food/Energy/Environmen t), etc.
11	Nov 11–17	Overview of Lecture 8 (In-Person). Lecture 9 (Fats and Lipids) video and PPT will be posted on OWL. 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, Class Projects, Kombucha Tea, Organic Foods, Antibiotics in Food Supplies, Chocolate Processing, Artificial Sweeteners, Food Nanotechnology, Factory Fish Farming, etc.

Week	Dates	Topic	Study material
12	Nov 18–24	Lecture 10 (Proteins and Enzymes) video and PPT will be posted on OWL. 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.	Class Exercises, Class Projects, Smart & Edible Food Packaging, Acrylamide, Artificial Meat & Meat Replacers, Freeze Dehydration, Low Calorie Cheese, Moringa, Alternative Protein (Insects/Pulses), etc.
13	Nov 25–Dec 1	Overview of Lectures 9-10 (In- Person). Lecture-PPT will be posted on OWL.	Class Projects, Food Allergies, Gut Micro-flora & Health, Kimchi, A2-milk, Antioxidants, Electrodialysis in Food Processing, Meat Fermentation, etc.
14	Dec 2-6	Lab Test Dec 2, will be during the regular lecture time in the classroom (In-Person).	

Course Materials You Must Acquire

- Lab Fees: \$50.00 per student
- Lab Coat
- Basic function calculator
- Hekmat, S. 2023. Advanced Food Science Laboratory Manual.
- Recommended online textbook: Damodaran, S., and Parkin, K.L. 2017, Fennema's Food Chemistry. 5th edition.

Assessments and Evaluation

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

Table 5: Assessments' details

Assessment	Format	Weight	Due Date	Flexibility	Learning Outcome
Midterm Test	Mixed format	32%	October 28, 2024	Not applicable ¹	1, 2, 4
Lab Test	Mixed format	16%	December 2, 2024	Not applicable ³	1, 2, 3
Lab Attendance	In-Person Labs	Not graded	Ongoing	Two lab experiments missed policy ⁴	1, 2, 3
Class Project/Presenta tion	Oral	12%	Throughout the semester	72-hour no late penalty ²	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 Midterm Test, and 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 this Midterm. 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 72 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. 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 <u>University Policy on Undergraduate Student Appeals</u> for more information

The table below outlines University-wide grade descriptors.

Table 6: University-wide grade descriptors

Letter grade	Number grade	Description
A+	90-100	One could scarcely expect better from a student at this level
Α	80-89	Superior work which is clearly above average
В	70-79	Good work, meeting all requirements, and eminently satisfactory
С	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. <u>Please don't ask me to do this for you; the response will be "please review the course outline where this is presented"</u>.

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 72 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 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.

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 <u>Academic Consideration – Undergraduate Students in First Entry Programs</u>

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 <u>without</u> supporting documentation. Note that supporting documentation is <u>always</u> 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 <u>designate</u> 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 any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, 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.

Accommodation for Religious Holidays

Students should review the policy for <u>Accommodation for Religious Holidays</u>. 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.

Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

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).

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. <u>All submitted work must reflect your own thoughts and independent written work.</u>

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

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 receive an automatic grade of 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 <u>explicitly</u> noted otherwise, you may <u>not</u> 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://remoteproctoring.uwo.ca.

Appealing a Grade Within this Course

You have the right to appeal any grade within this course. The grounds for a grade appeal may be one or more of: medical or compassionate circumstances, extenuating circumstances beyond the student's control, bias, inaccuracy, or unfairness. All grounds advanced in a request for relief must be supported by a clear and detailed explanation of the reasons for the request together with all supporting documentation.

Appeals generally proceed in this order:

- 1. Course instructor (informal consultation)
- 2. Department Chair (submission of written request)
- 3. The Dean of the Faculty (submission of written request)

In the case of perceived procedural unfairness, steps 2 and 3 are carried out within the Department and Faculty offering the course. In the case of extenuating medical or compassionate circumstances that impact on a grade, steps 2 and 3 are carried out within a student's Home Department and Faculty.

A request for relief against a mark or grade must be initiated with the instructor as soon as possible after the mark is issued. In the event that the instructor is not available to the student, or fails to act, or if the matter is not resolved satisfactorily with the instructor, a written request for relief must be submitted to the Chair of the Department within three weeks of the date that the mark was issued. In the case of a final grade in a course, the written request for relief must be submitted to the Chair of the department by January 31st (for first-term half courses) or June 30th (for second-term half courses or full-year courses