

Course Outline – FN4435B: Food Analysis

School of Food and Nutritional Sciences

General Information

Course #: FN 4435B
Section #: 530
Term: Winter
Year: 2022
Course Day and Time: Tuesday, 2:30PM-6:30PM
Course Location: BR-2006

Instructor Information

Name: Dr. L. Ahmadi
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The telephone number for office appointments: 519-661-2111, Ext. 28068
Office hours for students: By appointment
Office location: MRW 2009A

CA or Lab Instructor Information

Name: Tiffany Lam
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Special Circumstances

In the event of a COVID-19 resurgence during the course that necessitates the course moving away from in-person delivery, course content may be delivered online either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). There may also be changes to any remaining assessments at the discretion of the course instructor. In the event of a COVID-19 resurgence, detailed information about the impact on this course will be communicated by the Office of the Dean and by the course instructor.

Course Description

Promotes understanding of the fundamentals, procedures, and laboratory techniques of physical, chemical, and biochemical analyses (qualitative and quantitative) of foods. Emphasis on utilization and/or application in food science, public health, sanitation, foods, and nutrition.

Prerequisite(s): Biology 1290B

Antirequisite(s): Foods and Nutrition 2350A/B.

Corequisite(s): Foods and Nutrition 3342A/B.

Extra Information: 4 laboratory hours.

Required Course Materials

Ahmadi, L., 2022. Food Analysis-Laboratory Manual.

Lab Fee: \$45.00 per student

Optional Course Materials

1. Food Analysis, 4th Edition. S. Suzanne Nielsen (ed.) 2010. Springer.
2. Pearson's Chemical Analysis of Foods, 8th Edition. H. Egan, R.S. Kirk, and R. Sawyer, 1990. Longman Scientific and Technical
3. Food Analysis, Theory and Practice, Y. Pomeranz, and C.E. Meloan, 1987. Springer.

Learning Outcomes

By the completion of this course, the students should:

Understand the principles of food analysis by conducting various analytical techniques (Critical Thinking, Inquiry, and Analysis)

1. Learn various physical, chemical, and biochemical analyses of foods (Inquiry and Analysis).
2. Gain scientific knowledge of food composition (Critical Thinking, Inquiry, and Analysis).
3. Evaluate and discuss each experimental laboratory result (Critical Thinking; Inquiry and Analysis; and Problem Solving).
4. Be able to discuss and evaluate their experimental data through writing concise laboratory reports and presenting their findings (Critical Thinking; Inquiry and Analysis; and Problem Solving).

Brescia Competencies

Communication

The ability to exchange information and meaning across cultures, space, and time appropriately and correctly. This competency includes oral, written, interpersonal communication and the ability to use current or innovative media.

Critical Thinking

The ability to engage in thinking characterized by the rational, informed, independent, and open-minded exploration of issues, ideas, and events before accepting or formulating a conclusion.

Inquiry and Analysis

The ability to ask questions, examine issues, reach informed conclusions by breaking down complex problems, exploring evidence, and describing relationships among persons, things, or events.

Problem Solving

The ability to create and execute a strategy to answer a question or achieve a goal. Includes anticipating the consequence of a potential solution, selecting a plan among several alternatives, and deciding when an acceptable outcome has been reached.

Self-Awareness and Development

The ability to draw meaning, knowledge and value from honest and fair reflection and self-evaluation. Students can recognize their emotions, patterns of thinking, impact others and commit to personal growth.

Social Awareness and Engagement

The ability to respect and be open to diversity (e.g., cultural, religious, political) and social justice. Students take personal responsibility to actively and contribute to creating positive change in local, regional, national, or global communities and societies.

Valuing

The ability to make decisions or choose actions based on the consistent application of principles expressing fundamental values is accepted based on reason or spiritual insight.

ICDEP Competencies

The ICDEP were created by The Partnership for Dietetic Education and Practice (PDEP), a network of professionals from education, regulatory, and professional bodies/associations across Canada. There are 7 inter-related Domains (areas) of Practice Competencies: Food and Nutrition Expertise, Professionalism and Ethics, Communication and Collaboration, Management and Leadership, Nutrition Care, Population Health Promotion, and Food Provision.

For more information on ICDEP competencies please visit the [UWO OWL FN UNDERGRADUATE RESOURCES AND INFORMATION](#) site.

Teaching Methodology and Expectations of Students

Laboratory experiments, short lectures, discussions, assigned readings, laboratory reports, and presentations are methods used to obtain practical understanding, skills, and knowledge in food analysis.

Specific Course Policies:

Assignments are due at the time and date noted. **The mark will be reduced by 20%** on assignments submitted within seven (7) days of the scheduled time. Assignments submitted after seven days will **not** be accepted for marking, except with documentation to show a confirmed personal illness or a death in her/his immediate family.

Copyright and Intellectual Property

PowerPoint lecture slides and notes, lists of readings, in-class activities, assignment guidelines, and other components of the course materials are typically the instructor's intellectual. Unauthorized reproduction through audio-recording, video recording, photographing, sharing on social media, or posting on course-sharing websites is an infringement of copyright and is prohibited. Such action may be considered a Code of Conduct violation and lead to sanctions.

Evaluation

Writing a scientific lab report will be discussed at the beginning of the semester. Students will be provided with unknown samples and are expected to discuss the results and evaluate their data in the lab reports.

Lab reports are due 1 week after the laboratory session by 8:30 am .

Oral presentation

A presentation (approx. 15 minutes presentation and 5 minutes questions and answers and discussion; total 20 min) at the assigned session will allow for discussion and promote critical thinking to students. The oral presentation includes title, outline, introduction (history and terms definition), objective, body (method, result, a gap in knowledge), discussion, conclusion, suggestions for future work, and acknowledgment.

Written report

The essay includes the title page, abstract, introduction, relevant literature (result and discussion depend on your subjects), current gaps in knowledge, a suggestion for future work, conclusion, and references (12 pages, double spaced, except references).

Evaluation Breakdown:

Component	Weight	Date/ Deadline	Learning Outcome	Brescia Competencies
Participation and Lab Performance	10%	Ongoing	1,2,3,4	C, CT, IA, PS, SA & D
Lab Reports (9 x 6% Reports)	54%	One week following each lab session	1,2,3,4	C, CT, IA, PS, SA & D
Project Outline	6%	Feb 22, 2022	1,2,3,4	C, CT, IA, PS, SA & D
Group Project - Written Report	15%	March 22,2022	1,2,3,4	C, CT, IA, PS, SA & D
Group Lab Project Presentation	15%	March 29 and April 5 th ,2022	1,2,3,4	C, CT, IA,PS, SA & D and SA&E

Academic Accommodation

For course components worth 10% or more of the total course grade, please see the Academic Policies and Regulations section at the end of this course outline or consult the Academic Calendar.

For course components worth less than 10% of the total course grade, documentation is not required. Whenever possible, students should provide notification in advance of due dates or absences. If advance notification is not possible, the course instructor should be contacted within two business days.

Course Content

Topics will be covered in the order listed, and any dates listed are meant as a guideline.

Weekly Organizer:

Class/Topic	Date	Description	Assignments and/or Readings Due
		e.g., topic, content, associated readings, activities.	e.g., quiz, paper, group project, exam.
1	Jan.11	<u>I. Introduction to Food Analysis</u> <ul style="list-style-type: none">- Steps in Analysis;- Reliability of an analytical method- Performing the laboratory procedure- Calculating and interpreting the analytical data	Technical Lab Report
2	Jan.18	<u>II. Ash Measurements</u> <ul style="list-style-type: none">- Ash determination by dry ashing- Ash determination by wet ashing	Technical Lab Report
3	Jan.25	<u>III. Moisture Measurements</u> <ul style="list-style-type: none">- Oven drying- Vacuum Oven drying- Microwave drying- Water activity measurement	Technical Lab Report
4	Feb.1	<u>IV. Crude Fat Measurements</u> <ul style="list-style-type: none">- Soxhlet	Technical Lab Report
5	Feb.8	<u>V. Nitrogen/Protein Measurements</u> <ul style="list-style-type: none">- Kjeldahl- Biuret determination of protein	Technical Lab Report

6	Feb.15	<u>VI. Physical Methods in Food Analysis</u> <ul style="list-style-type: none"> - Spectroscopy in the UV-visible range - Hydrometer - Specific gravity - Brix - Baume - Pycnometer - Refractometer - Polarimeter - Viscometer 	Technical Lab Report Project Abstract
	Feb. 22	Reading Week	
7	Mar.1	<u>VII. Carbohydrate Analysis</u> <ul style="list-style-type: none"> - Total carbohydrate: phenol-sulfuric acid method - Starch crystals 	Technical Lab Report
8	Mar.8	<u>VIII. Thin-layer Chromatography (Separation of Fat)</u>	Technical Lab Report
9	Mar.15	<u>IX. Vitamins and Minerals</u> <ul style="list-style-type: none"> - Vitamin C, determined by the Indophenol method - Iron determination in meat using Ferrozine assay 	Technical Lab Report
10	Mar.22	Principles of HPLC	Project written report
11	Mar.29	Group project Presentation	

2021-22 BRESCIA UNIVERSITY COLLEGE ACADEMIC POLICIES AND REGULATIONS

1. POLICY REGARDING ACADEMIC ACCOMMODATION

The complete policy regarding [Accommodation for Illness - Undergraduate Students](https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12) can be found at https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12.

Students who have long-term or chronic medical conditions which may impede their ability to complete academic responsibilities should seek Academic Accommodation through Student Accessibility Services (https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_10).

Personal commitments (e.g., vacation flight bookings, work schedule) which conflict with a scheduled test, exam or course requirement are **not** grounds for academic accommodation.

Students who experience an illness or extenuating circumstance sufficiently severe to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

1. Submitting a **Self-Reported Absence** form provided that the conditions for submission are met;
2. For medical absences, submitting a **Student Medical Certificate (SMC)** signed by a licensed medical or mental health practitioner;
3. For non-medical absences, submitting **appropriate documentation** (e.g., obituary, police report, accident report, court order, etc.) to their Academic Advisor. Students are encouraged to contact their Academic Advisor to clarify what documentation is acceptable.

Requests for Academic Consideration Using the Self-Reported Absence Portal

Students who experience an unexpected illness or injury or an extenuating circumstance of 48 hours or less that is sufficiently severe to render them unable to meet academic requirements should self-declare using the online Self-Reported Absence portal. This option should be used in situations where the student expects to resume academic responsibilities within 48 hours. Note that the excused absence includes all courses and academic requirements within the up to 48 hours, it is not intended to provide an excused absence from a single course while students fulfill their academic responsibilities in other courses during that time.

The following conditions are in place for self-reporting of medical or extenuating circumstances:

1. Students will be allowed **a maximum of two self-reported absences** between September and April and one self-reported absence between May and August;
2. The duration of the absence will be for a maximum of 48 hours from the time the Self-Reported Absence form is completed through the online portal, or from 8:30 am the following morning if the form is submitted after 4:30 pm;
3. The excused absence will terminate prior to the end of the 48 hour period if the student undertakes significant academic responsibilities (writes a test, submits a paper) during that time;
4. Self-reported absences will **not** be allowed for scheduled final examinations; midterm examinations scheduled during the December examination period; or for final lab examinations scheduled during the final week of term;
5. Self-report absences may **not** be used for assessments worth more than 30% of any course;
6. Any absences in excess of 48 hours will require students to present a Student Medical Certificate (SMC), or appropriate documentation;
7. Students **must** communicate with their instructors **no later than 24 hours after the end of the period covered by the Self-Reported Absence form** to clarify how they will fulfil the academic expectations they may have missed during the absence.

Request for Academic Consideration for a Medical Absence

When a student requests academic accommodation (e.g., extension of a deadline, a makeup exam) for work representing 10% or more of the student's overall grade in the course, it is the responsibility of the student to provide

acceptable documentation to support a medical or compassionate claim. All such requests for academic accommodation **must** be made through an Academic Advisor and include supporting documentation.

Academic accommodation for illness will be granted only if the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete their academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated.

The following conditions apply for students seeking academic accommodation on medical grounds:

1. Students must submit their Student Medical Certificate (SMC) along with a request for relief specifying the nature of the accommodation being requested no later than two business days after the date specified for resuming responsibilities. An SMC can be downloaded from http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf ;
2. In cases where there might be an extended absence or serious issue, students should submit their documentation promptly and consult their Academic Advisor for advice during their recovery period;
3. Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, scheduled tests or examinations, and other academic requirements;
4. Students **must** communicate with their instructors **no later than 24 hours** after the end of the period covered by the SMC to clarify how they will fulfil the academic expectations they may have missed during the absence;
5. Appropriate academic accommodation will be determined by the Dean's Office/Academic Advisor in consultation with the course instructor(s). Academic accommodation may include extension of deadlines, waiver of attendance requirements, arranging Special Exams (make-ups), re-weighting course requirements, or granting late withdrawal without academic penalty.

The [full policy on requesting accommodation due to illness](#) can be viewed at:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12

2. ACADEMIC CONCERNS

If you feel that you have a medical or personal challenge that is interfering with your work, contact your instructor and Academic Advisor as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. Retroactive requests for academic accommodation on medical or compassionate grounds are not normally considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult your Academic Advisor (https://www.brescia.uwo.ca/enrolment_services/academic_advising/index.php). If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines; please refer to <http://brescia.uwo.ca/academics/registrar-services/> or the list of official sessional dates in the Academic Calendar (<http://www.westerncalendar.uwo.ca/SessionalDates.cfm?SelectedCalendar=Live&ArchiveID=>).

You should consult with the course instructor and the Academic Advisor who can help you consider alternatives to dropping one or more courses. *Note that dropping a course may affect OSAP eligibility and/or Entrance Scholarship eligibility.*

3. ABSENCES

Short Absences: If you miss a class due to a minor illness or other problems, check your course outline for information regarding attendance requirements and make sure you are not missing a test or assignment. Cover any readings and arrange to borrow notes from a classmate. Contact the course instructor if you have any questions.

Please note that for asynchronous online courses, attendance or participation requirements maybe different than for synchronous or in-person courses.

Extended Absences: If you have an extended absence, you should contact the course instructor and an Academic Advisor. Your course instructor and Academic Advisor can discuss ways for you to catch up on missed work, and arrange academic accommodations if appropriate and warranted.

It is important to note that the Academic Dean may refuse permission to write the final examination in a course if the student has failed to maintain satisfactory academic standing throughout the year or for too frequent absence from the class or laboratory (http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_68).

4. SCHOLASTIC 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:

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20.

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. Note that such offences include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. Students are advised to consult the section on Scholastic Discipline for Undergraduate Students in the Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Academic Dean's Office, or the Registrar. A claim that "you didn't know it was wrong" is not accepted as an excuse.

The penalties for a student guilty of a scholastic offence (including plagiarism) include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

Plagiarism:

Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence.

All required 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 for such checking 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 The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked Tests/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. Software currently in use to score computer-marked multiple-choice tests and exams performs a similarity review as part of standard exam analysis.

5. PROCEDURES FOR APPEALING ACADEMIC EVALUATIONS

All appeals of a grade must be directed first to the course instructor. If the student is not satisfied with the decision of the course instructor, a written appeal is to be sent to the School Chair. If the response of the Chair is considered unsatisfactory to the student, they may then submit a written appeal to the Office of the Dean. If the student is not satisfied with the decision of the Dean, they may appeal to the Senate Review Board Academic (SRBA), if there are sufficient grounds for the appeal and if the matter falls within the jurisdiction of the SRBA. For information on academic appeals consult your Academic Advisor or see the Student Academic Appeals – Undergraduate in the Academic Calendar

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_14.

Note that final course marks are not official until the Academic Dean has reviewed and signed the final grade report for the course. If course marks deviate from acceptable and appropriate standards, the Academic Dean may require grades to be adjusted to align them with accepted grading practices.

6. PREREQUISITES

Unless you have either the prerequisites for a course or written Special Permission from the Dean to enroll in it, you will be removed from the 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 prerequisite(s).

7. SUPPORT

Support Services

The Brescia University College Registrar's website, with a link to Academic Advisors, is at <http://brescia.uwo.ca/academics/registrar-services/> . Students can access supports through Brescia's Student Life Centre (<http://brescia.uwo.ca/life/student-life/>) and Learning Skills Services at Western (<https://www.uwo.ca/sdc/learning/>)

Mental Health and Wellness

Students may experience a range of issues that can cause barriers to your learning, such as increased anxiety, feeling overwhelmed, feeling down or lost, difficulty concentrating and/or lack of motivation. Services are available to assist you with addressing these and other concerns you may be experiencing. You can obtain information about how to obtain help for yourself or others through **Health & Wellness at Brescia** (https://brescia.uwo.ca/student_life/health_and_wellness/index.php) and **Health and Wellness at Western**, http://uwo.ca/health/mental_wellbeing/index.html.

Sexual Violence

All members of the Brescia University College community have a right to work and study in an environment that is free from any form of sexual violence. Brescia University College recognizes that the prevention of, and response to, Sexual Violence is of particular importance in the university environment. Sexual Violence is strictly prohibited and unacceptable and will not be tolerated. Brescia is committed to preventing Sexual Violence and creating a safe space for anyone in the Brescia community who has experienced Sexual Violence.

If you or someone you know has experienced any form of Sexual Violence, you may access resources at https://brescia.uwo.ca/safe_campus/sexual_violence/index.php .

Portions of this document were taken from the Academic Calendar, the Handbook of Academic and Scholarship Policy, and the Academic Handbook of Senate Regulations. This document is a summary of relevant regulations and does not supersede the academic policies and regulations of the Senate of the University of Western Ontario.
