

Course Outline – Food Analysis

General Information

Course #: 4435B
Section #: 001
Term: Winter
Year: 2024-25
Delivery: in-person

Instructor Information

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Office location:

Lab or Tutorial Instructor Information

Name: Adam Jordan
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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.

Pre-or Corequisite(s): Biology 1290B

Antirequisite(s): The former 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.

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 by writing concise laboratory reports and presenting their findings (Critical Thinking, Inquiry and Analysis, and Problem-Solving).

Integrated Competencies for Dietetic Education and Practice (ICDEP)

The ICDEP consist of 7 interrelated 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:

- 1) Failure to attend at least 75% of laboratories or studios will result in the laboratory or studio and an "incomplete" in the course. Completing the laboratory/studio will be necessary to receive credit in the course.
- 2) 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 due 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.
- 3) Participation and lab performance marks will be evaluated based on student attendance in the lab. If a student misses any lab session, he/she will lose participation grade. The reporting mark will also be calculated, constituting 50% of the total mark.

Copyright and Intellectual Property

PowerPoint lecture slides and notes, lists of readings, in-class activities, assignment guidelines, and other course materials are typically the intellectual property of the instructor. Unauthorized reproduction through audio or 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.

Use of Generative AI

The use of generative Artificial Intelligence (AI) tools, including but not limited to writing assistants (e.g., ‘ChatGPT’) and translation services (e.g., Google Translate). The use of generative AI tools when prohibited or in a way not specifically allowed is a scholastic offence and subject to the penalties for a scholastic offence outlined in the Academic Calendar.

Students may choose to use generative AI tools as they work through the assignments in this course; however, students are ultimately accountable for the work they submit. Any content produced by an AI tool must be cited appropriately, and the use of AI tools must be documented in an appendix for each assignment. The documentation should include what tool(s) were used, how they were used, and how they were incorporated into the submitted work.

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 one week following each laboratory session by 8:30 a.m.

Oral presentation

A presentation (approx. 15 minutes presentation and 5 minutes of questions and answers and discussion; total 20 minutes) at the assigned session will allow for discussion and promote critical thinking to students. The oral presentation includes a title, outline, introduction (history and terms definition), objective, body (method, result, 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
Participation and Lab Performance	11%	Ongoing	1,2,3,4
Lab Reports (9 x 6% Reports)	54%	One week following each lab session	1,2,3,4
Project Outline	5%	Feb 13, 2024	1,2,3,4
Group Project - Presentation	15%	March 26, 2024	1,2,3,4
Group Project- Written Report	15%	April 2nd ,2024	1,2,3,4

For exams held during the December and April examination periods, there is a single common make-up date during the first week of January for December exams and the first week of May for April exams for students eligible to write a special examination. The specific dates during those weeks will be available from the Registrar’s Office or the Hive.

Course Content

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 8th	Introduction and Lab Safety	
2	Jan 15th	<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
		-	
3	Jan 22nd	<u>III. Moisture Measurements</u> <ul style="list-style-type: none"> - Oven drying - Vacuum Oven drying - Microwave drying 	Technical Lab Report
4	Jan 29th	<u>II. Ash Measurements</u> <ul style="list-style-type: none"> -Water activity measurement -Ash determination by dry ashing 	Technical Lab Report
5	Feb 5th	<u>IV. Crude Fat Measurements</u> <ul style="list-style-type: none"> - Soxhlet 	Technical Lab Report
6	Feb 12th	<u>V. Nitrogen/Protein Measurements</u> <ul style="list-style-type: none"> - Kjeldahl method 	Technical Lab Report
	Feb 19th	Winter-break	-
7	Feb 26th	Determination of protein <ul style="list-style-type: none"> - Biuret method 	Technical Lab Report

8	March 5th	<u>VI. Physical Methods in Food Analysis</u> - Hydrometer - Specific gravity - Brix - Baume - Pycnometer - Refractometer - Polarimeter - Viscometer	Technical Lab Report
9	March 12th	<u>VII. Carbohydrate Analysis</u> - Total carbohydrate: phenol-sulfuric acid method - Starch crystals	Technical Lab Report
10	March 19th	<u>VIII. Thin-layer Chromatography (Separation of Fat)</u>	Technical Lab Report
11	March 26th	Group project Presentation	
12	April 2nd	Group project-Written report	

FHS Common Course Outline Attachment

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 [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 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 [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.

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. 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](#)

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 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://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).