

January 2019

**BRESCIA UNIVERSITY COLLEGE  
SCHOOL OF FOOD AND NUTRITIONAL SCIENCES**

**Food & Nutrition 2350B  
Laboratory Methods in Food Science  
Section 530**

Course Director: Dr. L. Ahmadi  
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Office Hours: By appointment

Class Time and Location: Monday, 8:30AM-11:30 AM in MRW-156

**Course Description:**

Promotes understanding of laboratory techniques to identify microorganisms in foods. Emphasis on selected methods and their utilization and/or application in food science, public health, sanitation, foods and nutrition.

**Pre-requisites:**

**Prerequisite(s):** Foods and Nutrition 1030E, Biology 1290B. Registration in the Food Science and Technology module or by permission of the Division.

**Corequisite(s):** Foods and Nutrition 2232.

**Learning Objectives:**

By the completion of this course, the students should:

1. Understand the principles of food analysis by conducting various analytical techniques (Critical Thinking, Inquiry and Analysis)
2. Learn various physical, chemical and biochemical analyses of foods (Inquiry and Analysis) .
3. Gain scientific knowledge of food composition (Critical Thinking, Inquiry and Analysis).
4. Evaluate and discuss the experimental results of each laboratory technique (Critical Thinking; Inquiry and Analysis; and problem Solving).
5. 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).

**APPROACH:** Laboratory experiments, short lectures, discussions, assigned readings, laboratory reports and presentations are all methods used to obtain practical understanding, skills and knowledge in the area of food analysis.

**Textbook** (Optional)

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

**TEXT (Required)**

- Ahmadi, L. 2019. Laboratory Methods in Food Science, Manual.

**Course Contents:**

**I. Introduction to Food Analysis**

- Steps in Analysis;
  - Reliability of an analytical method
  - Performing the laboratory procedure
  - Calculating and interpreting the analytical data

**II. Ash Measurements**

- Ash determination by dry ashing
- Ash determination by wet ashing

**III. Moisture Measurements**

- Oven drying
- Vacuum Oven drying
- Microwave drying
- Water activity measurement

**IV. Crude Fat Measurements**

- Soxhlet

**V. Nitrogen/Protein Measurements**

- Kjeldahl
- Biuret determination of protein

**VI. Physical Methods in Food Analysis**

- Spectroscopy in the UV-visible range
- Hydrometer
- Specific gravity
- Brix

- Baume
- Pycnometer
- Refractometer
- Polarimeter
- Viscometer

### **VII. Carbohydrate Analysis**

- Total carbohydrate: phenol-sulfuric acid method
- Starch crystals

### **VIII. Thin-layer Chromatography (Separation of Fat)**

### **IX. Vitamins and Minerals**

- Vitamin C, determination by Indophenol method
- Iron determination in meat using Ferrozine assay

**ASSIGNMENTS:** 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 laboratory session.**

#### **Oral presentation**

A presentation (approx. 20 minutes presentation and 5 minutes questions and answers and discuss them; total 20 min) at the assigned session will allow for discussion and promoting critical thinking to students. Oral presentation includes: title, outline, introduction (history and terms definition), objective, body (method, result, gap in knowledge) and discussion, conclusion, any suggestion for future work, and acknowledgement.

#### **Written report**

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

#### **MARKING:**

Participation and Lab Performance	15%
Lab Reports (10 x 5)	50%
Abstract of the project (due: Feb 11)	5%
Individual Project/ Written Report (due: March 25)	15%
Presentation of the Lab Project (due: April 1)	15%
TOTAL	100%

#### **Lab Fee:**

\$45.00 per student  
(A receipt for payment of laboratory fees must be submitted to the instructor by the end of the third week of classes in order to continue in the course.)

## **Specific Course Policies:**

Assignments are due at 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.

For mark components of 10% or higher, any student who misses these requirements can request accommodation from the academic counsellors on medical or non-medical grounds with proper documentation submitted. The academic counsellors will then make the request for accommodation to the faculty as necessary.

## **2018-19 BRESCIA UNIVERSITY COLLEGE ACADEMIC POLICIES AND REGULATIONS**

### **1. POLICY REGARDING MAKEUP EXAMS AND EXTENSIONS OF DEADLINES**

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 her academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated.

Students must submit their documentation 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. 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. Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. Appropriate academic accommodation will be determined by the Dean's Office/Academic Advisor in consultation with the student's instructor(s). Academic accommodation may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, arranging Special Exams or Incompletes, re-weighting course requirements, or granting late withdrawals without academic penalty

Please note that 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.

A UWO Student Medical Certificate (SMC) is required if a student is seeking academic accommodation on medical grounds. This documentation should be obtained at the time of the initial consultation with the physician/nurse practitioner or walk-in clinic. A SMC can be downloaded from:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf) . The student must request documentation sufficient to demonstrate that her ability to meet

academic responsibilities was seriously affected. Please note that under University Senate regulations documentation stating simply that the student “was seen for a medical reason” or “was ill” is not adequate to support a request for academic accommodation.

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](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. If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines (refer to the Registrar's website, <http://brescia.uwo.ca/academics/registrar-services/> or the list of official sessional dates in the Academic Calendar, see the Sessional Dates tab at <http://www.westerncalendar.uwo.ca/index.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.

**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](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](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, she may then submit a written appeal to the Office of the Dean. If the student is not satisfied with the decision of the Dean, she may appeal to the Senate Review Board Academic (SRBA), if there are sufficient grounds for the appeal. For information on academic appeals you can 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](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/> . The website for the Student Development Centre at Western is <http://www.sdc.uwo.ca/> .

### 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 learn more about mental health and wellness at Brescia at <http://brescia.uwo.ca/life/mental-health-wellness/>. Students who are in emotional/mental distress should refer to Health and Wellness at Western, [http://uwo.ca/health/mental\\_wellbeing/index.html](http://uwo.ca/health/mental_wellbeing/index.html), for information about how to obtain help for yourself or others.

### 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 <http://brescia.uwo.ca/life/sexual-violence/>.

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.