

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

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

Course Director: Dr. L. Ahmadi  
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Office Hours: By appointment  
Class Time and Location: Tuesday, 10:30am-1:30pm in MRW-156

**Course Description:**

The purpose of this course is to understand the fundamentals, procedures, and techniques of physical, chemical and biochemical analyses of foods in qualitative and quantitative forms. Lectures will be presented in the lab to introduce the basic principles of methods and related techniques used in analysis of food products.

**Pre-requisites:**

The pre-requisites for this course are FN 2232, Chemistry 1301A/B or the former 1100A/B and Chemistry 1302A/B or the former 1200A/B

**Learning Objectives:** By the completion of this course the students should:

1. Understand the principles of food analysis by conducting various analytical techniques.
2. Learn various physical, chemical and biochemical analyses of foods.
3. Gain scientific knowledge of food composition.
4. Evaluate and discuss the experimental results of each laboratory technique.
5. Be able to discuss and evaluate their experimental data through writing concise laboratory reports and presenting their findings

**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**

- 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.

## **Course Contents:**

### **I. Introduction to Food Analysis**

- Steps in Analysis;
  - Sampling and preparation of a sample
  - 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. Standard Solution and Titratable Acidity and pH**

### **V. Crude Fat Measurements**

- Soxhlet

### **VI. Nitrogen/Protein Measurements**

- Kjeldahl
- Biuret determination of protein

### **VII. Physical Methods in Food Analysis**

- Spectroscopy in the UV-visible range
- Hydrometer
- Specific gravity
- Brix
- Baume
- Pycnometer
- Refractometer

- Polarimeter
- Viscometer

### VIII. Carbohydrate Analysis

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

### IX. Thin-layer Chromatography (Separation of Fat)

### X. 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. Late submission is deducted by 10% of the original mark except with documentation to show a confirmed personal illness or a death in her/his immediate family..

### MARKING:

Participation and Lab Performance	15%
Lab Reports (10 x 5)	50%
Individual Project/ Written Report	15%
Presentation of the Lab Project	20%
TOTAL	100%

### Lab Fee:

\$40.00 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.)

**DIVISION:** The policy of the Division of Food and Nutritional Sciences is as follows:

### **Policies**

- 1) Failure to attend at least 75% of laboratories or studios will result in failure in the laboratory or studio and an "incomplete" in the course. Successful completion of the laboratory/studio will be necessary in order to receive credit in the course.
- 2) 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 except with documentation to show a confirmed personal illness or a death

in her/his immediate family. 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) There will be no make-up mid-term test for a student who has missed a test, except with documentation to show a confirmed personal illness or a death in her/his immediate family.

### **Specific Course Policies:**

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.

## **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 on medical grounds 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. Appropriate academic accommodation will be determined by the Dean's Office in consultation with the student's instructor(s). 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 under the Medical Documentation heading of the following website: <https://studentservices.uwo.ca/secure/index.cfm> . If it is not possible to have an SMC completed by the attending physician/nurse practitioner, 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. All documentation is to be submitted to an Academic Advisor.

Whenever possible, requests for academic accommodation should be initiated in advance of due dates, examination dates, etc. Students must follow up with their professors and Academic Advisor in a timely manner.

The full statement of University policy regarding extensions of deadlines or makeup exams can be found at <http://www.westerncalendar.uwo.ca/2013/pg117.html>

### **2. ACADEMIC CONCERNS**

If you feel that you have a medical or personal problem 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 may not be considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult an 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, [www.registrar.uwo.ca](http://www.registrar.uwo.ca), for official dates). 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.*

The 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.

### **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.

### **4. POLICY ON CHEATING & ACADEMIC MISCONDUCT**

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. Students are urged to read the section on Scholastic Offences in the Academic Calendar. 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 Academic Misconduct in the Western Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Student Services Centre, 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 (see Scholastic Offence Policy in the Western Academic Calendar).

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.

#### **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 signed by the student must be sent to the Department Chair. If the response of the department is considered unsatisfactory to the student, she may then submit a signed, written appeal to the Office of the Dean. Only after receiving a final decision from the Dean may a student appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office, or you can consult an Academic Advisor. Students are advised to consult the section on Academic Rights and Responsibilities in the Western Academic Calendar.

### **6. PREREQUISITES AND ANTIREQUISITES**

Unless you have either the prerequisites for a course or written special permission from your 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 prerequisites.

Similarly, you will also be deleted from a class list if you have previously taken an antirequisite course unless this has the approval of the Dean. These decisions may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course because you have taken an antirequisite course.

## **7. SUPPORT SERVICES**

The Brescia University College Registrar's website, with a link to Academic Advisors, is at [http://www.brescia.uwo.ca/academics/registrar\\_services/index.html](http://www.brescia.uwo.ca/academics/registrar_services/index.html) . The Western Registrar's website is at <http://www.registrar.uwo.ca/index.cfm> . The website for the Student Development Centre at Western is at <http://www.sdc.uwo.ca/> . Students who are in emotional/mental distress should refer to Mental Health @ Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

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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.