

BRESCIA UNIVERSITY COLLEGE

SCHOOL OF FOOD AND NUTRITIONAL SCIENCES

Foods & Nutrition 3342A **Advanced Food Science** **Section 530**

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

Classes: Wednesday, 2:30-5:30PM in BR-201(Sec 530)
Laboratories: Thursdays, 8:30-11:30AM (Sec 531) or Wednesday, 8:30AM-11:30AM (Sec 534) or Tuesdays, 8:30AM-11:30AM (Sec 532) or Mondays, 8:30-11:30AM (533).

Prerequisite (s): Chemistry 2003A/B or 2213A/B and Food and Nutrition 2232
Registration in the BSC Foods and Nutrition programs.

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.

STRESS: 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 uses of carbohydrate, fat and protein in food preparation and in the food industry, and the pros and cons of food additives. Food analysis is stressed in the food lab.

APPROACH: Lectures (in-class and/or on-line), visual aids, discussions, assigned readings and lab experience are all methods used to acquire a knowledge and understanding in certain areas of food and food analysis.

LEARNING OBJECTIVES:

Upon successful completion of this course, students will be able to demonstrate the Brescia Competencies of Communication, Critical Thinking, Inquiry and Analysis, Problem Solving,

Engagement and Valuing. In addition, students will be able to:

- 1) Recognize the modern food technology used in food processing and food preservation (Valuing, Problem Solving)
- 2) Acquire information on food microbiology and food safety (Inquiry and Analysis)
- 3) Explain the importance of carbohydrate, fat and protein in product formation (Critical Thinking)
- 4) Demonstrate their acquired knowledge of food processing, food preservation, food microbiology, food safety and food composition in written midterm and final exams (Inquiry and Analysis; Problem Solving)
- 5) Research, design and conduct a questionnaire on an assigned food science topic as a group project (Interpersonal Communication; Inquiry and Analysis)
- 6) Describe and discuss the questionnaire results through a group presentation and written report (Valuing; Problem Solving)

TEXT (Required): 1. Hekmat, S. 2016. Advanced Food Science Laboratory Manual.

TEXTS (Optional in Brescia Library)

1. Damodaran, S. and Paraf, A. 1997. Food Proteins and their Applications.
2. Mazza, G. 2002. Functional Foods: Biochemical and Processing Aspects.
3. Satin, M. 2006. Food Irradiation: A Guidebook. 2nd ed.
4. Barbosa-Canovas, G. V. 1995. Food Preservation by Moisture Control.
5. Akoh, C. C. and Min, D. B. 2008. Food Lipids, Chemistry, Nutrition and Biochemistry.
6. Zapsalis, C. and R. A. Beck. 1986. Food chemistry and Nutritional Biochemistry. Framingham, Massachusetts. John Wiley & Sons Inc.

7. Cliver, D.O. 2002. Foodborne Disease. San Diego, Calif.
8. Sim, D. S., S. Nakai and Guenter, W. 1999. Egg Nutrition and Biotechnology.
9. Whitaker, J. R. 1994. Principles of Enzymology for Food Sciences.
10. Vieira, E. R. 1997. Elementary Food Science, New York: Van Nostrand Reinhold.

TOPICS:

Food Microbiology and Safety: Fermentation, Food Spoilage, Food Poisoning

Food Processing: Canning, Refrigeration, Freezing, Dehydration, Radiation

Food Chemistry: Carbohydrate, Protein, and Fat Chemistry

Course Website (OWL Sakai)

The course website (<http://owl.uwo.ca> , “FN3342A”) will be our primary method of communication with students. All students in this course need to use OWL to access resources used in this course. All related information (syllabus, lecture material, exam details, schedule of lecture and lab topics, announcements, etc.) will be posted on OWL.

ASSIGNMENTS:

Lab research project and lab reports will be discussed at the beginning of the semester.

MARKING:

Midterm Test (Oct. 25, 2017)	25%
Lab Test (Dec. 6, 2017)	16 %
Group Lab Project (Nov 27-30)	13 %
Lab report (TBD)	6 %
Final Examination (TBA)	40 %
TOTAL	100%

LAB FEES:

\$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:

- 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. 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.

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.

DESCRIPTION

1. **FOOD PROCESSING AND ITS EFFECT ON THE NUTRITIVE VALUE OF FOOD:**
 - a) Keeping quality of food, spoilage agents, food and micro-organisms.
 - b) Canning - history, acid and low-acid foods, pH-temperature relationship, heat penetration, canning methods, spoilage of canned foods, effects of canning on nutrient retention of canned foods.
 - c) Jelly and related products - gel formation, pectin substances, types of pectin, roles of essential ingredients in gel formation, jelly failure and possible causes.
 - d) Freezing - effects of freezing on micro-organisms in food, freezing process and methods, pre-treatment of food, physical and chemical changes during freezing, storage and thawing, effect of freezing on the nutrient retention in frozen food.
 - e) Dehydration - changes in food during drying, selection of drying methods and freeze-dehydration, dehydration of coffee, tea, fruits and fruit juice products, and dry milk products, influence of drying on food acceptability and nutrient retention.
 - f) Radiation - discovery, radioactive decay, unit of radiation, ionizing radiation, radiation effect on micro-organisms and nutrients of food, wholesomeness and

acceptability of radiation-stabilized food.

2. **FOOD PROTEINS:**

Type, structure and classification of amino acids and protein, chemical and physical properties of protein, determination of protein in food, meat protein, soy protein and microbial protein.

3. **FOOD CARBOHYDRATES:**

Classification, chemistry, structure of cellulose and hemicellulose, crude fibre, browning reaction, sweeteners and sweetness, natural vegetable gums.

4. **FOOD FATS:**

Chemistry, properties, processing of fat, commercial fats and oils, rancidity, antioxidants.

5. **FOOD ENZYMES:**

Distribution of enzymes in food materials, factors affecting enzymatic activity, use of enzymes in food processing, enzymatic browning.

6. **FOOD ADDITIVES:**

Classification, functions, applications, safety for use, health protection and food laws in Canada.

2017-18 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. Documentation shall be submitted as soon as possible to the student's Academic Advisor indicating the period of illness and when the student should be able to resume academic responsibilities. 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. 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 from: 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.

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 policy on requesting accommodation due to illness can be viewed at:
<http://westerncalendar.uwo.ca/2017/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, <http://brescia.uwo.ca/academics/registrar-services/> or the list of official dates <http://westerncalendar.uwo.ca/2017/pg7.html>). 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 (<http://westerncalendar.uwo.ca/2017/pg130.html>)

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

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 Web site:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

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 (<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 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 Student Academic Appeals under Academic Rights and Responsibilities in the Western Academic Calendar (<http://westerncalendar.uwo.ca/2017/pg112.html>).

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 (http://www.uwo.ca/univsec/pdf/academic_policies/exam/evaluation_undergrad.pdf and http://www.uwo.ca/univsec/pdf/academic_policies/exam/finalgrades.pdf).

6. PREREQUISITES

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 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 Mental_Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

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.