

Syllabus

FOOD 3200: Baking Science and Technology
(Winter 2023)



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COURSE DETAILS

Course Title & Number:	FOOD 3200: Baking Science and Technology
Number of Credit Hours:	3 credit hours
Class Times & Days of Week:	Monday, Wednesday and Friday, 12.30 – 1.20 pm
Location for classes/labs/tutorials:	342, Ellis Building
Pre-Requisites:	CHEM/MBIO 2730 and CHEM 2740 or the former CHEM/MBIO 2770; or CHEM/MBIO 2700 (CHEM/MBIO 2701 and CHEM 2720 (CHEM 2721); or the former CHEM/MBIO 2360 (the former CHEM 2361). Please note: Guest lectures, quizzes and exams may be conducted online through UMLearn, therefore a computer will be needed

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Dr. Maneka Malalgoda Dr. Malalgoda
Office Location:	246 Ellis Building
Office Hours or Availability:	By appointment - Please email instructor to schedule a meeting Instructor will be available for questions after class (exceptions may apply)
Office Phone No.	204-474-9837
Email:	maneka.malalgoda@umanitoba.ca , instructor will respond to emails within 2 business days <i>Note:</i> All email communication must conform to the Communicating with Students university policy.
Contact:	Preferred form of contact is through email. Individual or group meetings need to be scheduled ahead of time through email

Course Description

U of M Course Calendar Description

The science and technology of transforming wheat into quality baked foods. Focus will be on the biophysical and biochemical basis for the functionality of intrinsic wheat constituents, e.g. starch, and gluten proteins, and extrinsic ingredients, e.g. yeast, chemical leaveners, fats, oxidants, enzymes and other improvers. Principles of product formulations and modern processing techniques used to add value to wheat as diverse foods will also be covered. Prerequisites: [(CHEM/MBIO 2730 and CHEM 2740) or the former CHEM/MBIO 2770] or [(CHEM/MBIO 2700 (CHEM/MBIO 2701) and CHEM 2720 (CHEM 2721)) or the former CHEM/MBIO 2360 (the former CHEM 2361)].

General Course Description

The science and technology of transforming wheat into a uniquely diverse array of quality baked food products such as pan and variety breads, cakes, biscuits, bagels, and flat breads will be studied. Focus will be on topics related to the chemistry and functionality of wheat constituents including starch, and gluten proteins in food systems, as well as other baking ingredients such as yeast, chemical leaveners, fats, oxidants, enzymes and other modern improvers; the inter-relationships among intrinsic and extrinsic factors will be a focus for discussion. Additionally, the course will provide details on the different quality requirements of flours for various products, the scientific and practical explanations for these differences, and the desired quality characteristics of the finished products themselves. The principles of product formulations and modern processing techniques used in adding value to wheat will also be discussed.

Course Goals

Upon completion of the course, students should be able to,

- discuss the importance of wheat in the global food industry
- determine associations between wheat chemistry and functionality
- describe how wheat milling works
- describe different products in the bakery industry
- discuss the role of essential and non-essential ingredients used in baking
- discuss the breadmaking process
- examine the importance of quality tests used in the bakery industry
- discuss the phenomenon of bread staling
- identify food safety related critical points in the bakery industry

Course Learning Objectives

The overarching objective of the course is to provide students an in-depth understanding of baking science and technology, starting from wheat chemistry and functionality, until food safety in the bakery industry.

Textbook, Readings, and Course Materials

Required textbook – not applicable

Supplementary readings – will be provided on UMLearn throughout the term. Reading material such as book chapter, articles from trade journals and scientific literature will be used.

Recommended or required materials (e.g. lab equipment, art supplies, computers, etc.) – Computer will be needed as quizzes, exams and guest lectures maybe conducted online through UMLearn

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

Course Technology

For course management, UMLearn will be used

You should check requirements for software (i.e., operating system, web browser, user programs), hardware (i.e., hard disk drive, graphic card, sound card, memory) & peripherals (i.e., webcam, microphone), subscriptions or plug-ins (i.e., Adobe Flash Player, QuickTime Player, Java) that might be needed for the course completion (specifically for quizzes, exams and guest lectures conducted online).

Please contact the Department or UM IST Service desk if you need assistance.

The use of technology or non-use of technology (i.e., tablets, cellphones, laptops, etc.) is allowed in the classroom. It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner).

Expectations: I Expect You To

- Attend classes and participate in discussions
- Submit assignments as required and present oral presentations on assigned dates
- Regularly check UMLearn for lecture material and reading resources
- Treat instructors and all students with respect

I will treat you with respect and would appreciate the same courtesy in return. See [Respectful Work and Learning Environment Policy](#).

I expect you to follow these policies around Class Communication, Academic Integrity, and Recording Class Lectures.

Class Communication:

Example: You are required to obtain and use your University of Manitoba email account for all communication between yourself and the university. All communication must comply with the Electronic Communication with Student Policy:

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

Academic Integrity:

Example: Each student in this course is expected to abide by the University of Manitoba [Academic Integrity principles](#). Always remember to reference the work of others that you have used. Also be advised that

you are required to complete your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

Refer to specific course requirements for academic integrity for individual and group work such as:

- I. Group projects are subject to the rules of academic dishonesty;
- II. Group members must ensure that a group project adheres to the principles of academic integrity;
- III. Students should also be made aware of any specific instructions concerning study groups and individual assignments;
- IV. The limits of collaboration on assignments should be defined as explicitly as possible; and
- V. All work should be completed independently unless otherwise specified.

Recording Class Lectures:

Given the ease of audio and video recording and the tendency of some students to post the class lecture to the internet, the instructor should give some consideration as to whether or not they are comfortable with being recorded. A statement about copyright should be included here. Please note: if you are an UMFA member, you own your course content and, thus, the copyright to all your courses. If you are a sessional instructor, the university owns the course content and the copyright to the course.

Example: No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission {YOUR NAME.} Course materials (both paper and digital) are for the participant's private study and research.

Student Accessibility Services:

The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services
520 University Centre
Phone: (204) 474-7423
Email: Student_accessibility@umanitoba.ca

Expectations: You Can Expect Me To

- Develop a class schedule, organize guest lectures and present course relevant information
- Chair in-class discussions and presentations
- Evaluate and provide feedback on assignments, exams, and presentations (within 2 weeks of the due date/exam)
- Be available to address any course related questions or concerns - I will be available after every class (exceptions may apply). I will also be available for individual or group meetings – please email me ahead of time to schedule a meeting. I will also address any questions sent via email within 2 business days

CLASS SCHEDULE AND COURSE EVALUATION

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to [Section 2.8 of ROASS](#).

Class schedule: January 9 2023 – April 12 2023 (as of January 4th 2023)

Date	Class Content & Teaching Strategies
January 9 2023	Introduction and general information
January 11 2023	Introduction to wheat
January 13 2023	Wheat kernel structure and composition
January 16 2023	Wheat starch chemistry
January 18 2023	Wheat gluten protein chemistry and functionality I
January 20 2023	Wheat gluten protein chemistry and functionality II
January 23 2023	Wheat milling
January 25 2023	Wheat milling (lab demonstration)
January 27 2023	Wheat-based products – in class discussion
January 30 2023	Guest speaker
February 1 2023	Bread and the bakery industry
February 3 2023	Pan and specialty bread
February 6 2023	Introduction to different ingredients in baking
February 8 2023	Essential ingredients in baking
February 10 2023	Non-essential ingredients in baking I
February 13 2023	Non-essential ingredients in baking II
February 15 2023	Non-essential ingredients in baking II
February 17 2023	Yeast fermentation
February 20 2023	<i>University closed</i>
February 22 2023	<i>Winter term break</i>
February 24 2023	<i>Winter term break</i>
February 27 2023	Q & A, and in-class discussion related to mid term exam
March 1 2023	Mid term exam
March 3 2023	Breadmaking process
March 6 2023	Breadmaking process on an industrial scale
March 8 2023	Bread staling
March 10 2023	Guest speaker
March 13 2023	Quality tests in the baking industry I
March 15 2023	Quality tests in the bakery industry II
March 17 2023	Food safety in the bakery industry
March 20 2023	Novel ingredients in breadmaking – in class discussion
March 22 2023	Specialty bakery products
March 24 2023	Product development in the bakery industry – in class discussion
March 27 2023	Student presentation, Term paper due
March 29 2023	Student presentations
March 31 2023	Student presentations
April 3 2023	Student presentations

April 5 2023	Guest speaker
April 7 2023	University closed
April 10 2023	Q & A, in-class discussion related to final exam
April 12 2023	Make-up class

Evaluation		
Type of Assessment	Due Date	Value of Final Grade
Quizz (3 quizzes)	In class	10%
Mid term	March 1 2023	25%
Group presentations	In class	15%
Term paper	March 27 2023	20%
Final exam	TBD	25%
In class participation	In class	5%
		100%

Lab Expectations

N/A

Lab Schedule

N/A

Grading

Indicate your grading scale. A sample is given below that you can adjust to your course expectations.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	95-100	4.25-4.5	4.5
A	86-94	3.75-4.24	4.0
B+	80-85	3.25-3.74	3.5
B	72-79	2.75-3.24	3.0
C+	65-71	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

Voluntary Withdrawal

Last day to drop the class and receive 100% refund: January 20 2023

Winter term voluntary withdrawal deadline: March 22 2023

Please refer to the [Registrar's Office](#) web page for more information.

ASSIGNMENT DESCRIPTIONS

Go to UMLearn and review folder on assignments

Referencing Style

APA format

Students are encouraged to use reference management software such as EndNote or Mendeley

Assignment Feedback

Formative and summative feedback will be provided electronically or in class. Feedback will be provided based on the evaluation rubrics for each assignment

Assignment Extension and Late Submission Policy

Late assignments:

Assignment Due Dates: Unless otherwise stated, due dates are provided in the course schedule. Points will be reduced by 10% of the value of the assignment for each day the assignment is late.

Note: Be aware of the folders assigned for each assignment in UMLearn; if you use a different folder by mistake that will be your responsibility to upload the assignment in the right folder and it will be marked as late. Email submissions will not be accepted.

Presentations:

If a student cannot present on the schedule date due to unforeseen circumstances, they should inform the instructor as soon as possible to obtain accommodation for their request

Group Work Policies: You are expected to complete group work in a professional fashion.

Important note: in the case of having group activities, they are scheduled from the beginning of the semester, therefore, students missing the activities will have deducted marks (15% out of the total), unless they have major reasons justifying their absence, such as health issues or compassionate reasons. This also applies to group work, if a group member is failing to meet with their group, group members should inform the instructor as soon as possible. The student must also provide written evidence such as a Doctor's note if he/she is continuously missing group work.

We will use the time in the classroom for group discussions. Therefore, students must be there to add their contributions at that time and to excessive and acquire team work skills, and also to discuss strategies for further discussions.

Make up exams or absence:

Attendance is essential to student success in this course. Make-up exams, assignments or absence on required days will be given only with the professor's permission.

Arrangements should be made with the professor for excused absences or in the case of missed exams or in-classroom activities

Note: If the student misses the midterm, due to health or family tragedy reasons (compassionate reasons), in order to ensure fairness to all students, the instructor will request documentation (written) sustaining such reasons. The date to write the missed exam will be at convenience of the instructor's time, therefore the student should write the exam the date and time designated by the instructor. In the case of final exams, be advised that only the Dean's Office, not individual instructors or

Departments, are in a position to grant deferred examinations.

UNIVERSITY SUPPORT OFFICES & POLICIES

Academic support available to students:

Writing and Learning Support

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at: <http://umanitoba.ca/student/academiclearning/>

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 205 Tier Building.

University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject: <http://bit.ly/WcEbA1> or name: <http://bit.ly/1tJ0bB4>. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: <http://bit.ly/1sXe6RA>. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries' homepage: www.umanitoba.ca/libraries.

Mental health support available to students:

For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis

services as well as individual, couple, and group counselling. *Student Counselling Centre:*
<http://umanitoba.ca/student/counselling/index.html>
474 University Centre or S207 Medical Services
(204) 474-8592

Student Support Case Management

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team.

Student Support Intake Assistant <http://umanitoba.ca/student/case-manager/index.html>
520 University Centre
(204) 474-7423

University Health Service

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.

University Health Service <http://umanitoba.ca/student/health/>
104 University Centre, Fort Garry Campus
(204) 474-8411 (Business hours or after hours/urgent calls)

Health and Wellness

Contact our Health and Wellness Educator if you are interested in [peer support from Healthy U](#) or information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault.

Health and Wellness Educator <https://umanitoba.ca/student/health-wellness/welcome-about.html>
britt.harvey@umanitoba.ca

Live Well @ UofM

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:

<http://umanitoba.ca/student/livewell/index.html>

A notice with respect to copyright:

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community. Visit <http://umanitoba.ca/copyright> for more information.

University and Unit policies, procedures, and supplementary information available online:

Your rights and responsibilities

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.
- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

Respectful Work and Learning Environment

http://umanitoba.ca/admin/governance/governing_documents/community/230.html

Student Discipline

http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html and,

Violent or Threatening Behaviour

http://umanitoba.ca/admin/governance/governing_documents/community/669.html

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:
http://umanitoba.ca/admin/governance/governing_documents/community/230.html
More information and resources can be found by reviewing the Sexual Assault site <http://umanitoba.ca/student/sexual-assault/>

- For information about rights and responsibilities regarding **Intellectual Property** view the policy [https://umanitoba.ca/governance/sites/governance/files/2021-06/Intellectual Property Policy - 2013_10_01 RF.pdf](https://umanitoba.ca/governance/sites/governance/files/2021-06/Intellectual_Property_Policy_-_2013_10_01_RF.pdf)

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site <http://umanitoba.ca/faculties/>

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations <http://umanitoba.ca/academic-advisors/>

Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns.

<http://umanitoba.ca/student/advocacy/>

520 University Centre

204 474 7423

student_advocacy@umanitoba.ca