UM | Faculty of Agricultural and Food Sciences

Syllabus

FOOD 3010: Food Process I

(Winter 2021)

Department of Food and Human Nutritional Sciences

University of Manitoba

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COURSE DETAILS

Course Title & Number:	FOOD 3010 Food Process I
Number of Credit Hours:	3
Class Times & Days of Week:	Monday, Wednesday, Friday: 1.30 pm – 2.20 pm Lab Section: Wednesday 2.30 pm-5.25 pm
Location for classes/labs/tutorials:	Virtual classes Labs will be virtual and In-person (Ellis Building 216 – Pilot Plant). **Lab attendance is mandatory**
Pre-Requisites:	Any MATH course at the 1000 level

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Dr. Nandika Bandara The instructor will respond to any civil form of address such as first name, last name or Dr. etc
Office Location:	Virtual via UMLearn WebEx meetings
Office Hours or Availability:	Monday and Wednesday 10.00 am – 11.00 am, Other times by mutually agreed appointment.
Office Phone No.	204-272-1547 / 780-863-1114
Email:	Nandika.Bandara@umanitoba.ca (preferred method of communication) **All emails should contain FOOD 3010 at the subject line.**
Contact:	Email is the preferred method of communication. All emails will be answered within 24 hours. For urgent reasons, you can contact me by phone.

Course Description

U of M Course Calendar Description

The basic principles and practices of the major techniques used in food processing and preservation are covered. Emphasis is placed on heat transfer, thermal processing (canning), ultra-high temperature (UHT), aseptic processing, water activity, evaporation, drying, chilling, freezing, sanitation, and packaging. Also, poultry, egg, and fruit juice processing are presented. Critical issues in food regulations are introduced.

General Course Description

The fundamentals of current food processing techniques emphasizing heat and mass transfer, thermal processing, water, and heat removal methods will be covered. The importance of water content (water activity), sanitation, and packaging on food preservation and the effects of processing parameters on product quality are also discussed. This course is a foundational course for the Food Science discipline. However, it fits into the broader nutrition science program, Biosystem Engineering, Agriculture Engineering, Animal Science, Plant Science, Agronomy, and most agricultural disciplines, in particular agri-food programs.

Course Goals

- To review the evolution of the current food processing techniques as well as laws and regulations.
- To recognize and understand the principles of current food processing techniques.
- To identify the importance of water content and some other parameters (e.g. pH, total soluble solids), sanitation, and packaging on the quality, safety, and shelf-life of food products.
- To identify and have a clear idea of how raw material is converted to processed and palatable food (Farm to Fork Concept).

Course Learning Objectives

By the end of the course, the student should:

- Know the principles and current practices of processing techniques and the effects of processing parameters on product quality.
- Know the source and variability of raw food material and their impact on food processing operations.
- Know the principles that make a food product safe for consumption.
- Know the properties and uses of various packaging materials.
- Know the major parameters that limit the shelf life of foods.
- Identify the conditions, including sanitation practices, under which the important pathogens and spoilage microorganisms are commonly inactivated, killed, or made harmless in foods.
- Be able to apply and incorporate the principles of Food Science in practical, real-world situations and problems.
- Apply critical thinking skills to new situations.
- Commit to the highest standards of professional integrity and ethical values.
- Work and/or interact with individuals from diverse cultures.

Textbook, Readings, and Course Materials

Required textbooks: No primary textbook is required.

Supplementary Books (which provide appropriate background material for the course):

Fellows, P. (2000). Food Processing Technology, 2nd ed. CRC Press.

Ramaswamy, H S. & Marcotte, M. (2006). Food Processing, Principles and Applications. Taylor & Francis.

Karel, M. & Lund, D.B. (2003). Physical Principles of Food Preservation, 2nd ed. Marcel Dekker, Inc.

Larousse, J. & Brown, B. (1997). Food Canning Technology. Wiley - VCH Inc.
Heldman, D.R. & Hartel, R.W. (1997). Principles of Food Processing. Chapman and Hall.
Potter, N.N. (1995). Food Science. 5th Edition. Chapman and Hall.
Lewis, M.S. (1987). Physical Properties of Foods and Food Processing Systems. VCH Publishers.
Lopez, A. (1987). A Complete Course in Canning and Related Processes, 12th ed. Book I Basic Information on Canning and Related Processes. Book II and Book III. The Canning Trade Inc.
Jelen, P. (1985). Introduction to Food Processing. Reston Publishing Co.
Green, J.H. & Kramer, A. (1979). Food Processing Waste Management. Section II In Process Modifications. AVI Publishing Co.
Stumbo, C. (1973). Thermobacteriology in Food Processing 2nd ed. Academic Press

Using Copyrighted Material

Please respect copyright. Copyrighted content used in this course is appropriately acknowledged and used according to copyright laws and University guidelines. Copyrighted works, including those created by the instructor, 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 umcopyright@umanitoba.ca.

Course Technology

All course materials (PDF file of handouts and Lab manual) will be available to registered students through the UMLearn website (https://universityofmanitoba.desire2learn.com/d2l/login) prior to class. The general University of Manitoba policy is that all technology resources are to be used in a responsible, efficient, ethical, and legal manner.

Expectations: I Expect You To

- Attend the classes regularly and punctually.
- Attend the discussions actively and answer questions I may ask. I do not expect you to get the correct answer, but your participation would be very beneficial for the interests of all of us. Active class participation I worth 3% Marks from the final grade.
- **Lab attendance is compulsory.**
- Use your laptop or tablet in the class for course-related purposes but not interrupt the others.
- Treat you with respect and would appreciate the same courtesy in return.
- Follow the policies around Class Communication, Academic Integrity, and Recording Class Lectures.
- Not to leave the class before it ends unless there is an emergence to which you must attend. Leaving a class before the end is disrespectful to your instructor and disruptive towards your fellow students.
- Not to use your cell phone in class and turn your cell phone off or set onto vibration mode.
- 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:
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:
https://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html

Academic Integrity:
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 serious disciplinary action. Visit the Academic Calendar, Student Advocacy, and Academic Integrity web pages for more information and support.

Specific course requirements for academic integrity for individual and group work:

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 will work on assignments with provided lab data (for each group), but need to submit an individual lab report.
IV. All work should be completed independently unless otherwise specified.

Recording Class Lectures:
The instructor and the University of Manitoba hold copyright over the course materials, presentations, and lectures that form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from Dr. Nandika Bandara. Course materials (both paper and digital) are for the participant's private study and research only.

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

In-class revisions and reviewing of course work will be conducted as we complete different course sections.
I will be available 5 minutes before and after the class time to discuss any questions or comments.
I will respond to your email related to class within 24-48 hr.

CLASS SCHEDULE AND COURSE EVALUATION

The schedule provided below is subject to change at the instructor's discretion, but such changes are subject to Section 2.8 of the – ROASS- Procedure.

Complete Mark Allocation for Course (Students can expect to have marks for both quizzes, Midterm test, and 2 lab reports before the Voluntary Withdrawal date, March 31, 2021)

Midterm test[a]	25%
10-15 min quizzes[b], 2@6%	12%
Lab Reports [c] (5@ ~ 5%*) *Refer to table below for precise % value	25%
Final Examination (all lecture sections, 3 hr)[d]	35%
Discussion and active class participation	3%
Total	100%

[a]Midterm test is tentatively scheduled on Mar 08th

[b]Quizzes are tentatively scheduled on Feb 03rd and Mar 29th

[c]Lab reports are due 2 weeks after the laboratory session according to schedule and instructions below. The penalty for late submission is a deduction of 10%/day of the original mark. Refer to the LAB SCHEDULE below for due dates.

[d]Final exam date will be set by the Registrar's Office.

Date	Class Content & Teaching Strategies	Required Readings or any Pre-class Preparation	Evaluation		
			Type of Assessment	Due Date	Value of Final Grade
	Major concepts to be covered				
Jan 18	Introduction	Course outline			
Jan 20	Evolution in Food Processing	Course notes in UM Learn			
Jan 22	Food Safety and Regulations	"			
Jan 25	Sauerkraut Fermentation				
Jan 27	Apple Juice Processing				
Jan 29	Potato Processing				
Feb 01	Egg Processing				
Feb 03	Egg Processing – Continued **Quiz 1 – End of the class**		**Quiz 1**	**03 Feb 2021**	**6%**
Feb 05	Heat Transfer				
Feb 08	Heat Transfer (Continued)				
Feb 10	Heat Transfer (Continued)				
Feb 12	Thermal Processing				
Feb 15	**Louis Riel Day – No classes**				
Feb 17	**Winter break – No classes**				
Feb 19	**Winter break – No classes**				
Feb 22	Thermal Processing – Continued				
Feb 24	Thermal Processing – Continued				
Feb 26	Thermal Processing – Continued				
Mar 01	UHT aseptic processing				

Mar 03	UHT aseptic processing - Continued				
Mar 05	UHT aseptic processing – Continued/ **Review of materials**				
Mar 08	**Midterm Exam**		**Midterm Exam**	**08 Mar 2021**	**25%**
Mar 10	Water Activity				
Mar 12	Water Activity – Continued				
Mar 15	Water Activity – Continued				
Mar 17	Evaporation				
Mar 19	Evaporation – Continued				
Mar 22	Drying				
Mar 24	Drying – Continued				
Mar 26	Chilling Technology				
Mar 29	Chilling Technology – Continued **Quiz 2 – End of the class**		**Quiz 2**	**29 Mar 2021**	**6%**
Mar 31	Freeze Technology				
Apr 02	**Good Friday – No Classes**				
Apr 05	Freeze Technology – Continued				
Apr 07	Food Packaging				
Apr 09	Food Packaging – Continued				
Apr 12	Sanitation				
Apr 14	Sanitation – Continued				
Apr 16	**Review of the class material**				
			Class participation	**-**	**3%**
TBD	Final Exam (cumulative) (Date will be set by Registrar's office)		**Final exam**	**To be Decided**	**35.0%**
			Lab Reports	**See lab schedule**	**25.0%**
			Total		**100%**

Important Information about Evaluation Procedures

- There are no makeup quizzes, if absent for a quiz without a proper physician note or substantiated and compelling personal matter documented in writing, the quiz mark = 0. If a valid excuse is provided within 24hrs after the quiz, the value of the quiz mark to be added to the next following term test or final exam.
- Suppose a student is absent for the midterm test and provides a proper physician note or written explanation of a substantiated and compelling personal matter. In that case, a makeup test will be scheduled as soon as possible. Otherwise, a mark of 0 will be applied.
- If you are a student with a disability, please contact Student Accessibility Services (SAS) for 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 http://umanitoba.ca/student/saa/accessibility/, 520 University Centre, phone: 204-474 7423, email: Student_accessibility@umanitoba.ca

Lab Expectations

Any communication related to the lab section of the course has to be primarily directed to the lab TA. If you need further clarifications on the lab section, you can reach me using my email (preferred method of communication - Nandika.Bandara@umanitoba.ca)

- Technicians and Lab TAs will treat you with respect and would appreciate the same courtesy in return. You are expected to comply with all lab rules and regulations as stipulated in the Lab Manual which is posted on UM Learn.
  ***NOTE**: First in-person lab starts on January 27th 2021. "Before the first laboratory, you are required to complete and pass (with a mark of at least 80% and correct responses to a few critical questions) the WHMIS safety assessment quiz available through UM Learn. You may take this test as many times as is necessary to pass."
- The overall goal is to give students practical experience in food processing and effectively work in groups. The labs for this course are group projects that require students to in-person or virtually attend the labs they are registered for. **There will be a total of 25% of the final grade given for labs.** The lab manual will be available on UM Learn.
- **Virtual/ in-person lab attendance is mandatory** (there are no makeup labs). 100% of the mark allocated to a lab will be deducted if absent without a physician note or documentation of a compelling personal matter. For virtual labs, UM Learn automatically records the login information. Students are not allowed to handover lab reports without attending the virtual lab.
- Students will work in groups as assigned for labs, but each student will submit his/her own report. Any evidence of plagiarism in lab reports (e.g. whether from another lab partner, or group, or lab report from previous courses) will result in "0" mark, and the matter will be subject to disciplinary action in accordance with university policy on academic misconduct.

Lab Schedule*

Date	Lab Content & Teaching Strategies	Required Readings or Pre-Class Preparations	Lab report	
			Due Date	Value of Final Grade
Jan 20	No lab session			
Jan 27	**Sauerkraut Lab** (Natural fermentation) - **Virtual lab for the whole class**	Lab Manual	Feb 10	5%
Feb 03	Canning – Group 1 (2.30pm – 4.00pm)	Lab Manual	Feb 17	5%
	Canning – Group 2 (4.15pm – 5.45pm)	Lab Manual	Feb 17	
Feb 10	No lab session			
Feb 17	No lab – Reading Week			

Feb 24	Canning – Group 3 (2.30pm – 4.00pm)	Lab Manual	Mar 10	5%
	Canning – Group 4 (4.15pm – 5.45pm)	Lab Manual	Mar 10	
Mar 03	Apple Juice Lab – Group 1 (2.30pm – 4.00pm)	Lab Manual	Mar 17	5%
	Apple Juice Lab – Group 2 (4.15pm – 5.45pm)	Lab Manual	Mar 17	
Mar 10	Apple Juice Lab – Group 3 (2.30pm – 4.00pm)	Lab Manual	Mar 24	5%
	Apple Juice Lab – Group 4 (4.15pm – 5.45pm)	Lab Manual	Mar 24	
Mar 17	Drying Lab (Drying curve) - **Virtual lab for the whole class**	Lab Manual	Mar 31	5%
Mar 24	French Fry Lab – Group 1 (2.30pm – 4.00pm)	Lab Manual	Apr 07	5%
	French Fry Lab – Group 2 (4.15pm – 5.45pm)	Lab Manual	Apr 07	
Mar 31	French Fry Lab – Group 3 (2.30pm – 4.00pm)	Lab Manual	Apr 14	5%
	French Fry Lab – Group 4 (4.15pm – 5.45pm)	Lab Manual	Apr 14	
Apr 7 & 14	No lab sessions			

* A complete lab schedule, your assigned groups with exact times and location of in-person labs for each group will be posted in UMLearn. The lab schedule may slightly change to accommodate infrastructure requirements.

Grading

Letter Grade	Percentage out of 100	Final Grade Point
A+	90-100	4.5
A	80-89.9	4.0
B+	75-79.9	3.5
B	66-74.9	3.0
C+	61-65.9	2.5
C	56-60.9	2.0
D	50-55.9	1.0
F	Less than 50	0

Voluntary Withdrawal

The last day to drop the class and receive 100% refund is 29th January 2021. And the last day to withdraw with no refund (voluntary withdrawal) is 31st March 2021. Students who did not drop the course by the VW deadline would be assigned a final grade. However, withdrawal courses will be recorded on the official transcript. Please refer to the Registrar's Office web page for more information.

Referencing Style

Assignments should use the APA reference style as outlined in the text: American Psychological Association. (2009). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.

Assignment Extension and Late Submission Policy

Lab reports/ Hand-Ins are generally due 2 weeks after the laboratory session according to schedule and instructions. The penalty for late submission is a deduction of 10% per day of the original mark. Refer to LAB SCHEDULE for due dates. UM Learn submission of assignments is the accepted method of handing over the assignment.

UNIVERSITY SUPPORT OFFICES & POLICIES

The Schedule "A" provides information on university support offices and policies available for students during the academic terms.

Schedule "A"

Section (a) re: A list of academic supports available to Students, such as the Academic Learning Centre, Libraries, and other supports as may be appropriate:

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.

Section (b) provides information regarding mental health resources that are available at University of Manitoba:

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/faculties/education/current/474.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-supports/health-wellness/university-health-service
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 http://umanitoba.ca/student-supports/health-wellness

Contact Health and Wellness Educator 204-295-9032 or britt.harvey@umanitoba.ca for more information.

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

Section (c): 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.

Section (d): A statement directing the student to University and Unit policies, procedures, and supplemental information available on-line:

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 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/student-supports/academic-supports/academic-integrity. 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-supports/sexual-violence-support-and-education

- For information about rights and responsibilities regarding **Intellectual Property** view the policy
  https://umanitoba.ca/admin/governance/governing_documents/community/235.html

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-supports/academic-supports/academic-advising
520 University Centre
204 474 7423
http://umanitoba.ca/student-supports/academic-supports/student-advocacy