Syllabus

FOOD 4260: Water Management for Food Processing (Winter 2025)



TABLE OF CONTENTS

COURSE DETAILS	3
INSTRUCTOR CONTACT INFORMATION	3
COURSE DESCRIPTION	3
COURSE GOALS	4
COURSE LEARNING OBJECTIVES	4
TEXTBOOK, READINGS, AND COURSE MATERIALS	
USING COPYRIGHTED MATERIAL	
COURSE TECHNOLOGY	5
EXPECTATIONS: I EXPECT YOU TO	
EXPECTATIONS: YOU CAN EXPECT ME TO	6
CLASS SCHEDULE AND COURSE EVALUATION	6
LAB EXPECTATIONS	9
LAB SCHEDULE	
GRADING	11
VOLUNTARY WITHDRAWAL	11
ASSIGNMENT DESCRIPTIONS	11
REFERENCING STYLE	
ASSIGNMENT FEEDBACK	11
ASSIGNMENT EXTENSION AND LATE SUBMISSION POLICY	
UNIVERSITY SUPPORT OFFICES & POLICIES	12

COURSE DETAILS

Course Title & Number: FOOD 4260 Water Management in Food Processing

Number of Credit Hours: 3

Class Times & Days of Week: Mondays, Wednesdays 10:00 AM - 11:15 AM

Lab Section: Monday 2.30 pm-5.25 pm

Location for

In person lectures and lab sessions will be conducted at designated

classes/labs/tutorials: locations.

Classes: J.H Ellis Building Room 344 Labs: J.H Ellis Building Room 241

Remote lectures via UMLearn WebEx will be conducted in case of

instructor's unavailability due to illness or other reasons.

Pre-Requisites: No prerequisite

Instructor Contact Information

Instructor(s) Name & Dr. Chamila Nimalaratne

Preferred Form of Address: Instructor will respond to any civil form of address such as first

name, last name or Dr. etc

Office Location: Room 244, Ellis Building (Email to schedule an appointment)

Office Hours or Availability: Wednesdays 1:00 PM - 2:00 PM; Other times by appointment.

Office Phone No. 204-474-6287

780-966-1320 (mobile)

Email: Chamila.Nimalaratne@umanitoba.ca (preferred method of

communication)

All emails should contain FOOD 4260 at the subject line

Contact: Email is the preferred method of communication. Instructor may

respond to your emails outside the regular working hours (8 am - 5 pm), but not guaranteed. All emails will be answered within 24-48

hours.

Course Description

The course is devoted to the management of water and wastewater in the food process industry. The roles of water in food processing, recycle and reuse opportunities, treatment options for water and wastewater are presented. The course discusses water stewardship in relation to food processing, water and wastewater regulations and implications for HACCP and ISO. Water and wastewater management as it relates to sustainability in food processing is discussed. Laboratory sessions are designed for the student to become familiar with Standard Methods for the Examination of Water and Wastewater.

General Course Description

Importance of water management in the food industry and sustainable use of water will be discussed in this course. Major emphasis will be given to understand effective water use and re-use systems and technologies used in the food industry.

Course Goals

- 1. Be familiar with the acceptable standards of water quality parameters
- 2. Understand the principles and techniques available for quality testing of water and wastewater
- 3. Know methods of selecting appropriate water testing methods
- 4. Understand the importance of water as a scarce resource and identify the ways of sustainable use of water

Course Learning Objectives

At the end of the course, students should:

- 1. Learn proper water and wastewater management in food processing
- 2. Be aware of water and wastewater laws and regulations that govern the food industry.
- 3. Become familiar with the terms water stewardship and food industry sustainability.
- 4. Understand the roles of water in food process applications.
- 5. Become aware of opportunities to conserve, recycle, reuse water.
- 6. Learn treatment options for water and wastewater.
- 7. Be aware of water and wastewater implications for HACCP and ISO
- 8. Be familiar with analytical test procedures for the analyses of water and wastewater.
- 9. Understand the principles behind analytical techniques for water and wastewater.
- 10. Demonstrate practical proficiency and teamwork in the laboratory
- 11. Be able to interpret and report results in a scientific report.

Textbook, Readings, and Course Materials

No textbook is required for this course. Instructor will provide necessary reading materials during the course

Using Copyrighted Material

Please respect copyright. Copyrighted content used in this course is appropriately acknowledged and has been used in accordance with 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. For more information, see the University's Copyright Office website at http://umanitoba.ca/copyright/ or contact umanitoba.ca/copyright/ or contact umanitoba.ca/copyright/ or contact

Course Technology

Students are required to bring a computer and have access to UMLearn to be able to attempt the midterm test and the final exam. Access to UMLearn will be required to access course material and to complete course assessments.

The instructor's general policy is that students should refrain from any behaviour that may be distracting to other students. Accordingly, all technology resources are to be used in a responsible, efficient, ethical and legal manner. The course lectures will be delivered in person and the lecture material will be available through UMLearn. The labs will be in-person and the lab manual and other relevant information will be available through UMLearn.

Expectations: I Expect You To

Attend the classes regularly and punctually. I will be asking questions during the class and will expect the students respond and actively participate in the class (even though you are not sure if the answer is correct).

I will treat you with respect and would appreciate the same courtesy in return. See <u>Respectful Work and Learning Environment Policy.</u>

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:

http://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 <u>Academic Integrity principles</u>. 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 <u>disciplinary action</u>. Visit the <u>Academic Calendar</u>, <u>Student Advocacy</u>, and <u>Academic Integrity</u> web pages for more information and support.

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:

The instructor and the University of Manitoba hold copyright over the course materials, presentations and lectures which 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. Chamila Nimalaratne. 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. <u>Students Accessibility Services (SAS)</u> 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

Do in-class revisions before the exams.

Respond to your emails related to class within 24-48 hr.

Be available for questions/clarifications related to course content by appointment.

CLASS SCHEDULE AND COURSE EVALUATION

The schedule provided below is subject to change at the discretion of the instructor 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 1 quiz, Midterm test, and 5 lab reports before the Voluntary Withdrawal date)

	25%
	10%
	21%
	5%
	35%
	4%
Total	100%
	Total

^aLab reports are due 2 weeks after laboratory session according to schedule and instructions below. Penalty for late submission is deduction of 10%/day of original mark. Refer to LAB SCHEDULE below for due dates.

^bFinal exam date will be set by the Registrar's Office.

Date	Class Content & Teaching	Required	Ev	valuation	
	Strategies*	Readings or any Pre-class Preparation	Type of Assessment	Due Date	Value of Final Grade
Week 1	Introduction to the course				
Jan 06-10	Laws and regulations Drinking water standards/ Wastewater standards				
Week 2	2. Analytical parameters for				
Jan 13-Jan 17	potable water – microbiology, acidity, alkalinity, hardness, chlorine,				
Week 3	3. Water testing parameters				
Jan 20- Jan 24	important in surcharge - COD, BOD, TOC, SS				
Week 4	4. Calculations in volumetric				
Jan 27-Jan 31	analysis				
	- molarity				
	- normality				
Week 5			Quiz 1	Feb 03	5%
Feb 03-Feb 07	5. Food Industry Sustainability, Water Stewardship				
Week 6	6. Application of HACCP, ISO in water stewardship				
Feb 10-Feb 14	·	17 21 Winter To	rm Break (No Classes)		
		17-21 Willer Te	IIII break (NO Classes)		
Week 7	7. Water/ wastewater treatment facilities -				
Feb 24 -Feb 28	Introduction				
Week 8	Midterm revision and exam		In-class Midterm	Mar 5	25%
Mar 03-Mar 07			Exam		
Week 9 Mar 10-Mar 14	8. Methods of wastewater treatment				
	- Primary treatment				
	- screening				
	- filtration				

Week 10	9. Secondary treatment			
Mar 17-Mar 21	- biological - Tertiary or advanced treatment - nitrogen, phosphorus removal - water disinfection - coagulation - activated carbon - membrane (MF,UF,RO) - filtration	Voluntary withdrawal deadline Mar 19		
Week 11 Mar 24-Mar 28	Field visits (Location to be decided)	Quiz 2	Mar 24	5%
Week 12 Mar 31-Apr 04	10. Water re-use /recycling in food industry and processing plants	Assignment	Due Apr 7 th	5%
Week 13 Apr 7-Apr 11	Revision and Final Exam Review			
Exam period: Apr 11 –Apr 25, 2025		Final exam (scheduled by Registrar's Office during Fall Term Exam period: Apr 11 –Apr 25, 2025		35%
		Class attendance/ in-class activities		4%
		Total		100%

^{*}Lecture topics are only a guideline; Their order may change as the course move on.

- There will be 4% of the final marks for attendance/ active class participation.
- 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 midterm test or final exam.
- If a student is absent for the midterm test and provides a proper physician note or written explanation of a substantiated and compelling personal matter, 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 have 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 - Chamila.Nimalaratne@umanitoba.ca)

- Lab attendance is mandatory (there are no makeup labs). 100% of mark allocated to a lab will be deducted if absent without a physician note or documentation of a compelling personal matter. Students are not allowed to submit the lab reports if absent for the in-person labs. Please note, the students must pass the lab component with at least 60% of the lab grade.
- The overall goal is to give students a practical experience in the advanced analysis of water and wastewater, and for students to learn to effectively work in groups. There will be a total of 21% of the final grade given for labs. The lab handouts will be distributed prior to the labs
- For labs, students may work in groups as assigned, 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 matter will be subject to disciplinary action in accordance with university policy on academic misconduct.
- 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 handout which will be given before the labs.

*NOTE: If you haven't done yet, prior to the first laboratory, you are required to complete and pass (with a mark of at least 80%) an online WHMIS quiz available through UM Learn. You may take this test as many times as is necessary to pass.

Tentative Lab Schedule*

Date	Lab Content	Location	Lab report	
			Due Date	Value of Final Grade
Jan 13	Laboratory 1 (Microbiology)	Student lab		3%
	Group 1 (2:30 – 3:45 pm) Group 2 (4:00 – 5:15 pm)			
Jan 20	Laboratory 2 (Alkalinity lab) –	Student lab		3%
Jan 27	Laboratory 3 (Hardness lab)	Student lab		3%
Feb 03	Laboratory 4 (Solids lab)	Student lab		3%
Feb 07	Extra day (If required)	Student lab		
Feb 24	Laboratory 5 (COD lab)	Student lab		3%
Mar 03	Laboratory 6 (BOD lab and COD results)	Student lab		3%
	Group 1 (2:30 – 4:00 pm) Group 2 (4:15 – 5:45 pm)			
Mar 10	BOD reading lab	Student lab		
	Group 1 (2:30 – 4:00 pm) Group 2 (4:15 – 5:45 pm)			
Mar 17	Laboratory 7 (Chlorine lab)	Student lab		3%
	Group 1 (2:30 – 4:00 pm) Group 2 (4:15 – 5:45 pm)			
Apr 07	Field tours (Tentative)			

^{*} A complete lab schedule with exact times and location of in-person labs for each group will be posted on UMLearn.

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
В	66-74.9	3.0
C+	61-65.9	2.5
С	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 **17**th **January 2025**. And the last day to withdraw with no refund (voluntary withdrawal) is **19**th **March 2025**. Students who did not drop the course by the VW deadline would be assigned a final grade. However, withdrawal courses will be recorded on official transcript. Please refer to the <u>Registrar's Office</u> web page for more information.

ASSIGNMENT DESCRIPTIONS

The assignment is worth 5% of the course grade.

TITLE: Assignment_ Water analysis current and practical knowledge

GOAL: Students will complete assigned reading and consult the course notes to complete the assignment. Develop skills in literature review, familiarize with water analyses methods.

PROCEDURE: Complete the assignment by the due date

SUBMISSION GUIDELINES: Electronically to the relevant UMLearn folder

EVALUATION CRITERIA: Based on the marking scheme and the rubric on UMLearn

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 (7th ed.). Washington, DC: Author. Please refer to https://libguides.lib.umanitoba.ca/ld.php?content_id=35726641 for style guide.

Assignment Feedback

In this section, explain what form of feedback you will provide to students: formative (i.e., comments) or summative (i.e., grade). Indicate the method in which your feedback will be delivered (i.e., via paper or electronically). Additionally, indicate to the students when they can expect to receive their graded assignments. It is recommended that students receive a sufficient percentage of their final grade prior to the Voluntary Withdrawal date, which will allow students to make a decision about completing or withdrawing from the course.

Assignment Extension and Late Submission Policy

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

UNIVERSITY SUPPORT OFFICES & POLICIES

Instructors shall provide to every student the information on university support offices and policies in <u>Schedule "A"</u> within the first week of classes, either through a paper copy and/or via the university's student information system (i.e., Aurora, UM Learn, or such other university information system as may be approved by the university from time to time).

Schedule "A"

Section (a) sample 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/UtJ0bB4. 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) sample: re: A statement regarding mental health that includes referral information:

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

Section (c) sample: re: 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) sample: re: 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 <u>Academic Calendar http://umanitoba.ca/student/records/academiccalendar.html</u> 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

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