UM | Faculty of Agricultural and Food Sciences

Syllabus

FOOD 4150 Food Microbiology

(Fall 2020)

Department of Food and Human Nutritional Sciences

University of Manitoba

TABLE OF CONTENTS

Contents

COURSE DETAILS

Course Title & Number:	Food Microbiology 4150
Number of Credit Hours:	3
Class Times & Days of Week:	MWF 9:30 am – 10:20 am
Location for classes/labs/tutorials:	This course will be delivered primarily remotely, combining synchronous-asynchronous course design. For the lab portion, the course will have face to face sessions during January 5-15, 2021.
Pre-Requisites:	No course pre-requisite is necessary. However, an introductory course in microbiology is strongly recommended since several topics to be covered will assume prior knowledge of certain microbiological terms and concepts. Some independent review of microbiology may be needed by some students to bring them to the average initial awareness level of students in the class.

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Claudia Narvaez-Bravo, please address me by Dr. Narvaez or Professor Narvaez
Office Location:	NA
Office Hours or Availability:	By appointment. I am generally in my office, 238 Ellis Building, from 8:30 a.m. - 4:30 p.m. daily and I'm readily available with a prior appointment. To make an appointment, please use the UML email system.
Office Phone No.	204-474-6658
Email:	Claudia.narvaezbravo@ad.umanitoba.ca *Note*: All email communication must conform to the Communicating with Students university policy.
Contact:	By email/Webex.

Teaching Assistant (TA) and Markers	Email
Bill Nan (Teaching Assistant)	nany@myumanitoba.ca
Nancy Ansen (Teaching Assistant)	asennda@myumanitoba.ca
Kavitha Koti (Marker)	kotik@myumanitoba.ca
Thilini Dissanayake (Marker)	dissanat@myumanitoba.ca
Haque, Md Mahamudul (Marker)	haquemm@myumanitoba.ca
Contact	By email, previous appointment

Course Description

U of M Course Calendar Description

Relationships of microorganisms to processing and spoilage of food.

General Course Description

FOOD4150 focuses on the significance of the presence and/or growth of microorganisms in foods and their importance in the production and safety of foods. Contents include the microbial ecology of food, beneficial microorganisms in food systems, pathogenic and spoilage microorganisms, toxins, characteristics of foodborne infection, food intoxication and the influence within the food system of the growth and survival of microorganisms and contaminants that may occur in a food-processing environment. Food preservation and food processing related to food microbiology are also discussed.
This course has a laboratory section that deals with conventional and rapid methods for testing food products, including microbial indicators and foodborne pathogens. Good manufacture practices (GMP), Standard Operating Procedures (SOP), and HACCP basics will be introduced. Food microbiology addresses the safety and quality of foods. It is a basic discipline that connects with fields related to food production and processing (pre and post-harvest level). Microbes play an essential role in food preservation, food safety, human health, and food biotechnology, and all of them are important aspects of food production. You will have the opportunity to learn and have hands-on experience in different techniques (conventional and rapid) to enumerate and identify bacteria related to food in the laboratory.

Course Goals

Food microbiology is an exciting field, technologically dynamic and fundamental for food development, food production, and public health; it assists us in answering questions arising from food production and food technology disciplines supporting a multibillion-dollar food industry. Food Microbiology not only assures the quality and shelf life of different food products but also ensures that food products are safe for the consumer. The production of food under food safety parameters and regulations is beyond the simple memorization of knowledge. It requires critical thinking, integration of knowledge, and innovative approaches to problem-solving. It will help students to foster these skills throughout, using a variety of teaching methods, including lecturing, group discussion, and other activities in the classroom. This course will combine classroom lectures with a laboratory environment on the fundamentals of food microbiology and food safety. Additionally, the student's written skills will be improved through multiple writing assignments including laboratory reports.

Course Learning Objectives

- To define microbial food spoilage, food quality, food safety and the factors affecting the growth and control of microorganisms in food.
- To articulate the use of hurdle technology and food preservation in the control of foodborne pathogens in food systems.
- To discuss the principles of food preservations and to describe the different food preservation methods.
- To describe the role of beneficial microorganisms in food processing, preservation and safety, and their potential health benefits.
- To explain the causes of foodborne microbial diseases and predict the pathogens that can grow in any given food during different stages of the food production system.
- To explain the different factors that take place during food processing and how food can be contaminated in the food continuum (pre and post-harvest level)
- To recognize and articulate the importance of SSOP, GMP and HACCP in the food industry.
- To apply rapid microbiology techniques to assess food safety and quality.
- To demonstrate the use of appropriate lab techniques commonly used in the food microbiology laboratory.
- To work effectively as a team in designing and using food microbiology laboratories and in-class activities.

Foundational Knowledge Content Areas for Dietetic Education

This dietetic education program is an accredited program by the Partnership for Dietetic Education and Practice (PDEP) and prepares students for eligibility for registration with a provincial dietetics regulatory body.

Highest level achieved: 1= demonstrate broad knowledge; 2= demonstrate comprehensions; 3= analyze, interpret and apply knowledge.

Content Area	Foundational Knowledge	Cognitive Complexity Level
Communication	Strategies for effective written communication	3
	Strategies for effective interpersonal communication	3
Food	Physical properties and chemical composition of food	2
	Food preservation, storage, and packaging	1
	Food-borne illness	2
Food Service Systems	Quantity food production and distribution	2
	Hazard Analysis and Critical Control Points (HACCP)	2

Interprofessional Collaboration	Interprofessional communication	2
	Team functioning	1
	Collaborative leadership	1
Management	Organizational behaviour and development	1
Microbiology	Classification of microbes	1
	Microbes in food safety	2
	Host-vector spread of infection and risk management	2
	Microbes in food production including prebiotic and probiotics	1
Profesional Practice in Dietetics	Ethical conduct	3
	Reflective practice	2
	Professional development	1
	Decision making	2

Textbook, Readings, and Course Materials

Required textbook: Food Microbiology. An Introduction. Edited by Thomas J. Montville and Karl R. Mathews (2012). 2nd Ed. ASM Press.

Note: You can use older editions that can be found at the university library

University of Manitoba Bookstore and University of Manitoba Libraries

Available at the University of Manitoba book store

FOOD4150 Laboratory Manual: Available at UML under the content tab.

Supplementary readings

- A Guide to Writing in the Sciences. Gilpin, A.A., Patchet-Golubev, P. University of Toronto Press 2000.
- Lab Math: A Handbook of Measurements, Calculations, and Other Quantitative Skills for Use at the Bench By Dany Spencer Adams. http://www.amazon.ca/Lab-Math- Measurements-Calculations Quantitative/dp/0879696346
- Modern Food Microbiology, edited by Jay J.M., Loessner, M.J. and Golden, D.A. (2005), 7th ed. Springer, New York, NY.
- Food Microbiology: Fundamentals and Frontiers, edited by Doyle, M. P., and Beuchat, R. L. (2007) 3rd ed. ASM Press, Washington, DC.
- Compendium of Methods for the Microbial Examination of Foods. Edited by Downes, F.P. and Ito, K. (2001) 4th ed. American Public Health Assoc.

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 (videos, power point slides, etc), 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, uncles 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

I will be using the iclicker student response system in class this Fall 2020 term. Please make sure you install iclicker reff in your smart/iphone phone. iClicker helps me to understand what you know and gives everyone a chance to participate in class. I will check for attendance using iclicker. You will also get bonus marks for your class participation using iClicker.

For the course management, I will be using UM Learn.

In addition, the use of other technology (i.e., tablets, cellphones, laptops, etc.) are allow 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

The student is expected to participate actively in the course. Active participation means: actively listening and responding to questions in class (I do not expect perfection!); staying on top of lecture material and assignments and seeking help on course material that is not clear.

PowerPoint presentations summarise only a portion of the knowledge content that needs to be covered in class. For the rest of the contents, you are expected to read the required textbook.

Videos will be provided for the lab component, please read you lab manual before you check the videos, that will facilitate learning.

I expect students to connect on time and to be prepared to learn.

If you experience connection issues and arrive late, I expect you to make sure that you mute yourself, that way you won't disrupt the class. I expect that you will appreciate the diversity of our campus and respect the rights of each member of the class.

Attendance and participation are essential elements to the student's success in this course. Attendance is not mandatory; however, you will not get credit for an in-class assignment if you are absent on the day it is given.

I will be connected for class at least 10 minutes before starting with the lecture content, if you need to ask a quick question or talk to me about any issue related to the class. I will treat you with respect and will appreciate the same courtesy in return. For more information regarding a respectful work and learning environment, please visit the following link:

Please 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: 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 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:

Videos covering the laboratory sessions will be provided by the instructor. The instructor will also record the lectures. 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

You can expect me to be on time and prepared for class.
You can expect me to be available for consultation regularly.
Email is my preferred method of communication; you can expect to receive a response to any

email within 24 hours on **weekdays**.
If you have a question that cannot wait, you may send an email. I will be happy to answer it, however, make sure you are asking a relevant question (i.e. you could not find the answer or get an understanding of the material after reviewing the class notes, videos or textbook). I will be glad to offer brief advice about the class material or an assignment.
All assignments handed in on time will be graded and returned within two weeks of the due date; late assignments will be graded as my time permits.
You can expect me to treat all of your questions and comments with respect and to take your concerns seriously. If you are having a problem, don't hesitate to talk to me about it. Don't wait until the last moment to realize that you need some marks to pass the course! I won't be able to help you at this point.

CLASS SCHEDULE AND COURSE EVALUATION

Note: *The lecture or laboratory schedule is subject to change, students will be notified in advance.*

Course Schedule

Date	Topics, Readings, Assignments
Sept 9	Introduction
Sept 11	Microbiology: basic review. Mandatory reading: Montville, Section 2. Pages 15, 18, 19, 20, 21, 22, 23
Sept 14	Microbiology: Sample Reception and preparation for microbiological analysis, enumeration. Mandatory reading: Montville, Chapter 4: Detection and enumeration of microbes in food.
Sept 16	Indicator microorganism. Standards, guideline and specifications
Sept 18	Methods to Detect Coliforms, faecal coliforms and *E. coli*. Mandatory reading: Compendium of Methods for Microbial examination of foods. 4th Ed. 6.4. Most Probable Number Techniques
Sept 21	Continuation ….Methods to Detect Coliforms, faecal coliforms and *E. coli*. Mandatory reading: Compendium of Methods for Microbial examination of foods. 4th Ed. 6.4. Most Probable Number Techniques
Sept 23	Yeast and molds
Sept 25	Hurdle Technology

Sept 28	Group activity 1: Hurdle Technology. Introduction/teamwork and critical thinking. Mandatory reading: Montville, Chapter 2. Microbial Growth, survival and death in foods.
Sept 30	Spoilage introduction, Meat, poultry and seafood. Book reading Montville: Chapter 21Chapter 21. Page 299-306.
Oct 2	Meat, poultry and seafood/class activity cross contamination (germ-wise-cross contamination)
Oct 5	Milk and Dairy Products/fruits and vegetables Book reading Montville: Chapter 21. Pages 309-322.
Oct 7	Midterm 1
Oct 9	Control of microorganisms in foods: Chemical preservation/ Modified Atmosphere Package. Book reading Montville: Chapter 25. Pages 403-418
Oct 11	Control of microorganisms in foods: Food Preservation: High-temperature processing, Low-temperature preservation. Book reading Montville: Chapter 27. Pages 432-445.
Oct 12	**Thanksgiving**
Oct 14	Bio-preservation Book reading Montville: Chapter 26. Pages 419-431.
Oct 15	Foodborne Intoxications and Toxico-Infections: *S. aureus* and *B. cereus*
Oct 19	Foodborne Intoxications and Toxico-Infections: *C. botulinum* and *C. perfringens*
Oct 21	Foodborne infections - *Salmonella* - *Listeria*
Oct 23	- *Campylobacter*
Oct 26	Foodborne infections: *E. coli*
Oct 28	Foodborne infections: -*Shigella, Yersinia* -*Vibrio paraheamolyticus* - Norovirus, Hepatitis A
Oct 30	Molecular methods for foodborne pathogens detection: Introduction to PCR
Nov 2	Biofilms in the Food Industry
Nov 4	Cleaning and sanitation.

	Book reading Montville. Chapter 9. Page 471
Nov 6	Midterm 2
Nov 9-13	Remembrance day & Fall break
Nov 16	Sanitation and Standard Operating Procedures (SSOP). Book reading. Chapter 29. Page 474
Nov 18	Sanitation and Standard Operating Procedures (SSOP). Book reading. Chapter 29. Page 474. Continues….
Nov 20	Good Manufacture Practices. Book reading. Chapter 29. Page 466 Mandatory reading: Chapter 1 Prerequisites to HACCP (Posted UML)
Nov 23	Good Manufacture Practices. Book reading. Chapter 29. Page 466 Mandatory reading: Chapter 1 Prerequisites to HACCP (Posted UML)…continues
Nov 25	Lecture: Food hygiene Monitoring
Nov 27	HACCP: Introduction, Hazard analysis and critical control points Book reading. Chapter 29. Page 474 Mandatory reading: Chapter 2. Hazard Analysis and Critical Control Points Principles and Application Guidelines (Posted UML)
Nov 30	HACCP: Biological, chemical and physical hazards, Critical limits, Monitoring procedures, corrective actions
Dec 2	HACCP: Verification, record keeping and documentation procedures
Dec 4	Group activity Case study in Food Safety
Dec 7	Case Study/HACCP Presentations
Dec 9	Case Study/HACCP Presentations
Dec 11	**Invited lecturer:** "Foodborne Disease Surveillance and Outbreak Response in Canada" Celine Nadon, PhD. Chief, Enteric Diseases National Microbiology Laboratory Public Health Agency of Canada **Note: Waiting for confirmation**
Final Exam	Venue and Time to be determined

Food Microbiology Lab Schedule.

Laboratory	Lab videos will be posted no later than the following dates (likely earlier)	Lab Report Due Date
Lab# 1 Sample preparation and serial dilution	Sept 8	No report is required for this lab
Lab # 2 Petrifilm • Standard Plate Count Method • Yeast and Mold • Coliform & *E.coli*	Sept 8	Sept. 16
Lab # 3 Most Probable Method (MPN)	Sept 16	Sept 30
Lab # 4 Enterococci & *Staph aureus*	Oct 19	Oct 28
Lab # 5 *Bacillus cereus*	Oct. 28	Nov.6
Fall break	Nov 9 - 13	
Lab # 6 *Salmonella*	Nov 6	Nov 16
Lab # 7 Molecular Rapid Detection Methods	Nov. 16	Nov 27
Lab # 8 Hygiene monitoring: ATP testing system	Nov 27	Dec 9

NOTE: All students are required to wear a lab coat or smock and closed-toed shoes at all time when working in the food microbiology laboratory.

Evaluation		
Type of Assessment	**Due Date**	**Value of Final Grade**
Mid-Term 1	9:30-10:20 am, Wednesday Oct 7, 2020	15%
Mid-Term 2	9:30-10:20 am, Friday Nov 6, 2020	20%

Lab Reports	For due dates, please see Food Microbiology lab schedule	20%
Assignments		10% (10 marks) total
Assignment 1	Dilution calculations Total plate count (individual)	1 mark
Assignment 2	Dilution calculations MPN (individual)	1 mark
Assignment 3- group	Hurdle Technology (Group activity)	4 marks
Assignment 4 Case Study - group	An ethical dilemma or HACCP (Group activity)	4 marks
Final exam	TBD	25%
Practicum lab exam		10%
		100%

Lab Expectations

Due to Covid-19 pandemic, we will not be able to be in the lab until Jan 5-15, 2021. Therefore, the videos for each lab will be provided as well as results and other relevant information that you will be using to write your lab reports. **Be aware that lab videos will be delivered in asynchronous design. Asynchronous learning happens on your schedule; you can access and satisfy these requirements within a flexible time frame; therefore, you are expected to be responsible for checking the lab-videos to fulfill the course requirements**.

Once you are allowed to go into the lab, all students are expected to follow safety procedures and work observing aseptic techniques in the lab. All the students are required to wear lab coats or a smock and closed-toed shoes all times when working in the micro food lab.

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 date to drop without penalty (100% refund): September 22, 2020

Last date to drop with no refund (no final grade): November 23, 2020

Please refer to Ask the Registrar's Office web page for more information.

Assignment Extension and Late Submission Policy

Laboratory Reports:
You will have a total of eight lab periods, in which you must hand in a total of seven laboratory reports. Lab reports 2-8 are mandatory, and must be handed in by ALL students:

- Lab.2. Petrifilm for indicator microorganisms (standard plate count, yeast and moulds and coliforms and *E. coli*)
- Lab.3 Most Probable Number (MPN)
- Lab 4 Enterococci & *Staphylococcus aureus*
- Lab 5 *Bacillus cereus*
- Lab.6 *Salmonella*
- Lab 7. Molecular rapid detection methods
- Lab 8. Hygiene monitoring: ATP testing system

- A portion of the laboratory will be evaluated in the midterm exams and a final examination. A practical part will be examined in the period during January 5-15, 2021.
- Each student will write their report (not a group activity).
- Each student must hand in their report using UML.
- Only typed reports will be accepted.

Note: A detailed rubric for laboratory reports assessment is available at UML.

Classroom assignments:

Dilutions and calculations:

1. ***Total plate count (TPC)***
2. ***Most Probable Number Exercises (MPN)***

During the first three weeks of classes, students will receive two pages of bacteria enumeration exercises, specifically on Total Plate Count (TPC) and the most probable number (MPN). The activities must be solved by each student (individually assignment) and will be submitted for marking within seven days.

Group activity. Hurdle technology: Intrinsic-Extrinsic factors.

Assessment: Group activities, instructor evaluation and peer evaluation sheets.

Main topic: Intrinsic-Extrinsic factors affecting microbial growth/Hurdle technology. Content: Intrinsic-Extrinsic factors affecting microbial growth. Hurdle technology.

Purpose: to stimulate the understanding of hurdle technologies and their importance in food preservation and food safety using active learning tools such as:

- The application of hurdle technologies to different types of food products.
- Knowledge sharing by students within their groups and among classmates regarding hurdle technology.
- Promote and learn how to work on teams and exercise critical thinking skills.

Procedure:

a. The class will be organized into different groups. A food product will be assigned (lottery) to each group.

b. The instructor will provide a short introduction, including the activity explanation and expectations.

c. Student reviews of intrinsic and extrinsic factor definitions and outline the components in each category: review hurdle technology definition and its importance. A textbook reading will be assigned, and students must read at home before the activity takes place.tudents will describe the specific type of food product: ingredients, shelf-life, processing (canned, pasteurized, etc.), preservatives, packaging, storage and what groups of microorganisms, including pathogens, that are more likely to be present in that particular food.

d. To gather relevant information, students were allowed to use iphones, ipads, computers, textbooks and class notes.

e. Sharing the information: Students will explain if a hurdle approach was applied to that specific food and what particular intrinsic/extrinsic factors were targeted and why. Students will be provided with markers and 3M post-it white paper sheets in order to list their results and to present them to the class (time 5-8 min.).

f. Conclusion: At the end of this activity, the instructor will briefly summarize the main points of the lecture and how it was linked to the group activity on PowerPoint.

g. Assessment: All groups have to prepare a written summary – one per group- (Length 5,000 characters including 1.0 line spacing - about a 1 1/2 page) for the activity. Activity 1 summary will be submitted using the assignments function on D2L within seven days after in-classroom activity.

h. All students must fill the peer's evaluation sheets.

Case study Activity or a HACCP program:

Assessment will consist of two portions: the group activity instructor evaluation and the peers' evaluation sheets**.**

a. The class will be organized into different groups. A case study will be assigned to each group.

b. The instructor will provide a short introduction, including the activity explanation and expectations.

c. The instructor will provide a case study or a food item (HACCP) to each group.

d. Students will discuss the case and answer the questions.

e. Sharing the information: Students will be provided with markers and 3M post-it white paper sheets to list their results and to present them to the class (time 5 min.).

f. All students must fill out the peers' evaluation sheets.

This assignment will be worth eight marks.

Note: The rubrics for assessments are available at UML.

Referencing Style

All written assignments (group activities summary) and lab reports in this course shall include in-text citation. Reference Style: International Journal Food Microbiology :

https://www.elsevier.com/journals/international-journal-of-food-microbiology/0168-1605/guide-for-authors

All publications cited in the text should be presented in a list of references following the text of the manuscript.

All citations in the text should refer to:

1.Single author: the author's name (without initials, unless there is ambiguity) and the year of publication;
2.Two authors: both authors' names and the year of publication;
3.Three or more authors: first author's name followed by 'et al.' and the year of publication.
Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically.
Examples: "as demonstrated (Allan, 1996a, 1996b, 1999; Allan and Jones, 1995). Kramer et al. (2000) have recently shown "
List: References should be arranged alphabetically by authors' names and should be as full as possible, listing all authors, the full title of articles and journals, publisher and year. Note that journal names are to be abbreviated. The manuscript should be carefully checked to ensure that the spelling of authors' names and dates are the same in the text as in the reference list.

Examples:

Reference to a journal publication:

Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1. http://dx.doi.org/10.17632/xwj98nb39r.1

Ono, K., Yamamoto, K., 1999. Contamination of meat with *Campylobacter jejuni* in Saitama, Japan. Int. J. Food Microbiol. 47, 211-219.

Reference to a book:

Strunk Jr, W., White, E. B., 1979. The Elements of Style, third ed. Macmillan, New York. Reference to a chapter in an edited book:

Kramer, J.M., Gilbert, R.J., 1989. Bacillus cereus. In: Doyle, M.P. (Ed.), Foodborne Bacterial Pathogens. Marcel Dekker, New York, pp. 22-70.

Caddick, M.X., 1994. Nitrogen metabolite repression. In: Martinelli, S.D., Kinghorn, J.R. (Eds.), *Aspergillus*: 50 Years on, Progress in Industrial Microbiology, vol. 29. Elsevier Science, Amsterdam, pp. 323-353.

Assignment Feedback

Feedback on student's performance will be provided to students: formative (i.e., comments) and summative (i.e., grade) will be delivered electronically through UML.

Assignment Extension and Late Submission Policy

1. *Late Assignments:*

Assignments (electronic papers and hard copies) are considered late if they are not submitted by the day they are due. For each day, the assignment is late (excluding weekends) a 10% deduction to the grade will be applied.

2. *Makeup exams or absence:*

Attendance is essential to student success in this course. Class roll will be taken each class and lab period. Makeup exams, assignments, or absence on required days will be given only with the professor's permission.

Group Work Policies: You are expected to complete group work in a professional fashion. You will be given an opportunity to provide a peer evaluation of group members at the end of each activity. Marks may be adjusted based on your classmates' feedback. Completion of the peer evaluation request should be done in a respectful, fair and reasonable fashion. It is unlikely that all group members warrant a perfect peer rating. However, if more than one member is failing another member (for example, in a group of 4 members, 3 members are failing (F) one member), the adjustment will be made on that member final mark accordingly (i.e. 50 to 0 %).

Group activities in the remote classroom (WebEx), they are scheduled from the beginning of the semester, you will be asked to prepare ahead of time; therefore, students missing the activities will have

deducted marks (50% out of the total), unless they have major reasons justifying their absence, such as health issues or compassionate reasons, in which cases written justification must be provided.

We will use the time in the remote classroom for discussions. Therefore, students must be there to add their contributions at that time and to excessive and acquire teamwork skills, and also to discuss strategies for further discussions, therefore attendance is mandatory.

Important Note on submissions: Be aware of the folders assigned for each assignment in UML; if you use a different folder by mistake that will be your responsibility to load the assignment in the right folder and it will be marked as late. **Please notice that I won't accept assignments through email.**

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

Instructors shall provide to every student the information on university support offices and policies in Schedule "A" 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/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) 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 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/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 http://umanitoba.ca/admin/governance/media/Intellectual_Property_Policy_-_2013_10_01.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