



**UM** | Faculty of Agricultural  
and Food Sciences

Department of Soil Science  
362 Ellis Building  
Winnipeg, Manitoba  
Canada R3T 2N2

# Syllabus

SOIL 0630 Soil Fertility

Term: Fall 2024

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## COURSE DETAILS

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<b>Course Title &amp; Number:</b>	Soil Fertility (SOIL 0630) Fall 2024
<b>Number of Credit Hours:</b>	4 credit hours
<b>Class Days of Week, Times, and Location:</b>	Tuesday/Thursday: 1:00 – 2:15 pm 219 Animal Science Building
<b>Lab Days of Week, Times, and Location:</b>	Friday: 2:30 – 3:45 pm (sometimes longer) 245 Ellis Building
<b>Pre-Requisites:</b>	SOIL 0420 Soil Resources and Productivity (minimum grade of C)

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## Instructor Contact Information

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<b>Instructor(s) Name &amp; Preferred Form of Address:</b>	Dr. Joanne Thiessen Martens (she/her) I will respond to any civil and respectful form of address, including Joanne, Dr. Thiessen Martens, etc.
<b>Office Location:</b>	378 Ellis Building
<b>Office Hours or Availability:</b>	You are welcome to drop by my office any time during normal working hours (8:30-4:30). However, I may not be available. It is best to send an email to schedule a time to meet.
<b>Office Phone No.</b>	204-806-2777 (cell)
<b>Email:</b>	<a href="mailto:J.ThiessenMartens@umanitoba.ca">J.ThiessenMartens@umanitoba.ca</a> Please include 'SOIL 0630' in the subject line.
<b>Contact:</b>	Email is the best way to contact me. As a rule, I will respond to emails within 24 hours when received on weekdays (Mon-Fri) or 48 hours when received on the weekend or holidays. For urgent matters, please call or text, providing your name and including 'SOIL 0630' in the message.
<b>Teaching Assistants:</b>	Jamie Wan <a href="mailto:wanc1@myumanitoba.ca">wanc1@myumanitoba.ca</a> Julia Beechinor <a href="mailto:beechinj@myumanitoba.ca">beechinj@myumanitoba.ca</a>

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## **Traditional Territory and Land Acknowledgement**

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*The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Métis Nation. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.*

I personally acknowledge that my place of work (University of Manitoba campuses and research sites) and my personal residence are located in the heartland of the Red River Métis nation and the traditional territories of other Indigenous peoples of the region. I am continuing to learn about the traumas experienced by Indigenous peoples and also the richness of Indigenous cultures, especially their relationships with the land.

As students of agriculture, we are students of the land. One of the goals of this course is to learn about appropriate soil fertility management that helps to meet human needs while respecting and caring for the natural environment. Seeing ourselves as part of the land, rather than only land managers, can help foster a relationship built on reciprocity rather than extractive resource use. I believe such an approach will help guide modern agriculture to greater sustainability.

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## **Equity and Inclusion Commitment**

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I am committed to upholding and advancing equity, diversity, and inclusion in my teaching. I respect your identities (e.g., race, gender identity, sexual orientation, ability, etc.) and commit to working against any form of oppression or discrimination based on these or other categories. I recognize that I am still learning and developing in this area, and so I invite your feedback on my actions related to equity and inclusion in this course. You can submit feedback to me on equity and inclusion issues through an anonymous survey found in the UM Learn site for this course (click on Assessments and then Surveys to find the “Equity and Inclusion Feedback” survey).

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## **Course Description**

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### **U of M Course Calendar Description**

Soil nutrients and their behaviour; evaluation of soil fertility including soil testing for precision agriculture; crop response to fertilizers; the manufacture, properties, reactions, and application of fertilizer.

### **General Course Description**

Through lectures and a comprehensive lab project, students will gain a thorough understanding of soil fertility management concepts and practices relevant to crop production in Manitoba and similar environments. SOIL 0630 is a required course in the Crop Management option in the Diploma in Agriculture program and will be beneficial to students in the other Diploma options.

Appropriate soil fertility management is central to the productivity, economic viability, and environmental sustainability of crop production systems. This course provides conceptual and applied learning experiences related to soil fertility and nutrient management. The course content is designed to prepare students for the nutrient management portion of the International and Prairie Certified Crop Advisor exams.

## Course Learning Outcomes

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On completion of this course, you should be able to:

1. Explain how key soil properties and processes affect nutrient cycling and plant nutrition.
2. Describe nutrient forms and behaviour; nutrient uptake, utilization, and deficiency symptoms; fertilizer sources, properties, and reactions; and fertilization practices of soil macro- and micronutrients.
3. Discuss the implications of soil fertility management practices on agricultural sustainability and environmental protection.
4. Interpret agronomic soil test results and fertilizer recommendations.
5. Formulate nutrient management plans for field crops in a Manitoba context.
6. Communicate your recommendations for nutrient management and soil fertility to others in written and oral form.
7. Proceed to write the nutrient management portion of the Certified Crop Advisor exam.

## Textbook, Readings, and Course Materials

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No textbook is required. The course materials available on the UM Learn website constitute the study material for the class. Additional resource materials will be provided as needed, including links to online resources.

The course notes posted on UM Learn are “skeleton” notes that provide only an outline of basic information covered in lectures. You are expected to participate in all lectures, when this material will be discussed, expanded upon, and students can ask questions. You are strongly encouraged to supplement and personalize your course notes for active and effective learning and studying.

To access course materials in UM Learn:

1. Log in to UM Learn at the following site, using your UMnetID and password (same as your UM email). <https://umanitoba.ca/umlearn>
2. Click the waffle icon along the top of the page and select SOIL-0630-K01

### Supplementary Resources for Additional Learning:

*Digging into Canadian Soils: An Introduction to Soil Science*. Free online textbook: <https://openpress.usask.ca/soilscience/>. Canadian Society of Soil Science.

Havlin, J.L., S.L. Tisdale, W.L. Nelson, and J.D. Beaton. 2014. *Soil Fertility and Fertilizers: An Introduction to Nutrient Management*. 8<sup>th</sup> ed. Pearson. Available in the UM library.

Manitoba Agriculture, Food and Rural Initiatives, 2007. *Soil Fertility Guide*. Online: [https://www.gov.mb.ca/agriculture/crops/soil-fertility/soil-fertility-guide/pubs/soil\\_fertility\\_guide.pdf](https://www.gov.mb.ca/agriculture/crops/soil-fertility/soil-fertility-guide/pubs/soil_fertility_guide.pdf)

Manitoba Agriculture, Food and Rural Initiatives, 2008. *Soil Management Guide*. Online: <https://www.gov.mb.ca/agriculture/environment/soil-management/soil-management-guide/pubs/soil-management-guide.pdf>

## **Course Technology**

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The course lectures and labs will be offered in person, with the option to pivot to online learning if needed. Students are free to use tablets, laptops, etc. in the classroom provided these are used in a responsible, efficient, ethical, and legal manner. Electronic devices may be needed in class for certain activities, such as quizzes, interactive polls, and so on. To be respectful to your classmates and instructor and maintain a classroom environment that is conducive to learning, please silence notifications during the lecture and lab periods and avoid activities not related to the course (checking social media, playing games, messaging friends, browsing the internet, and so on).

Students are not permitted to record lectures without the permission of the instructor.

Course materials and some assessments will be delivered through UM Learn. You are responsible for making sure you are able to access the materials and assessments in UM Learn. You are also responsible for making sure assignments are submitted in UM Learn correctly. Failing to submit an assignment correctly is not a valid excuse for a late or missing submission.

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## **COURSE SCHEDULE**

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### **SUMMARY OF IMPORTANT DATES AND ACTIVITIES**

Thurs, Sept 19	Last day to drop courses without penalty
Fri, Sept 20	Soil sampling field trip – extended lab session (2:30 to approx. 6:00)
Tue, Sept 24	Quiz 1
Fri, Sept 27	No lab – Aggie Bedpush
Thurs, Oct 10	Quiz 2
Oct 14-18	No classes or labs – experiential learning week
Tues, Oct 22	Mid-term exam
Thurs, Nov 7	Quiz 3
Nov 11-15	No classes or labs – mid-term break
Tues, Nov 19	Voluntary Withdrawal Deadline
Fri, Nov 29	Term project group presentations – extended lab session (2:30 – 6:00)
Tues, Dec 3	Quiz 4
Fri, Dec 6	Term project written reports due
TBA (Dec 9-19)	Final exam (including lab questions)

### **LECTURE OUTLINE**

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students (subject to [section 2.8 of the ROASS procedure](#)). Numbers in parentheses to the left of each topic indicate the approximate number of lectures.

- (1) **I. Introduction and Review**
  - A. Role of soil fertility for crop production
  - B. Overview of nutrient use, uptake, and movement

**(2) II. Effects of Soil Solids, Surfaces, and Solutions on Soil Fertility**

- A. Soil inorganic solids: weathering, precipitation, dissolution of nutrients
- B. Soil organic solids: solubilization, immobilization, and mineralization of nutrients
- C. Soil surfaces: adsorption and desorption of nutrients
- D. Effects of pH: acidity and alkalinity
- E. Effects of aeration: oxidation and reduction

**III. Soil Fertility and Fertilizers**

Nutrient-by-nutrient discussion of forms and behaviour of nutrients in the soil; nutrient uptake, utilization, and deficiency symptoms; fertilizer sources, properties, and reactions; and fertilization practices for:

- (5) A. Nitrogen
- (1) B. Sulphur
- (2) C. Phosphorus
- (1) D. Potassium
- (2) E-M. Ca, Mg, Mo, B, Cl, Cu, Zn, Mn, Fe

**IV. Soil Fertility Management - General Issues**

- (1) A. Manure management
- (2) B. Fertility evaluation, fertilizer recommendations
- (1) C. Soil fertility and agricultural sustainability
- (1) D. Soil fertility and environmental issues

**LAB OUTLINE**

The lab component of this course includes two complementary components, which will be interwoven throughout the term:

- **The term project** involves developing a nutrient management plan for a real farm selected by the instructor. You will collect information from the farmer(s) as well as soil samples from farm fields and will create a nutrient management plan based on the gathered information along with knowledge gained in the course. You will prepare an individual written report and will deliver a group oral presentation to the farmer(s) and a panel of experts.
- **Weekly assignments** will provide additional information and skill development for soil fertility management in general and in relation to the term project. For example, some weekly assignments include fertilizer cost calculations, which are a required component of the term project.

These lab activities are designed to prepare you for the challenges of solving “real world” nutrient management problems. Those problems will challenge you to think critically and will not necessarily stay within the boundaries of this particular course. Instead, **the activities are designed to challenge you to discover, share, and apply knowledge from a variety of areas**, including lecture and lab material from this course, other courses, your own and others’ experiences, and reference material. The lab exercises will provide a chance to work through important (and expensive!) decisions made on farms every year, without risk to anyone’s farming operation.

**You will be assigned to work in groups** for the weekly assignments and term project. These groups will include people with diverse perspectives and experiences. You are expected to treat your group members

(and all classmates, the instructor, and TAs) with respect, even when your perspectives differ. You are expected to discuss your lab assignments and soil fertility recommendations with the members of your group. However, **group copying of assignments and plagiarism are not acceptable**. Each of you is expected to submit your own individual, unique lab assignments and written term project reports. Keep in mind that you will need to use the knowledge and experience gained from your group efforts to complete a final lab exam at the end of the term, without help from your group members.

You are encouraged to use **reference material** and should bring your lecture notes, calculators, and any reference material you wish to use to the lab sessions. The lab exam portion of the final exam will be conducted in a “limited open book” format so that you can use the printed reference materials and your weekly assignments from the lab sessions.

The following lab schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students (subject to [section 2.8 of the ROASS procedure](#)). Note that one lecture and one lab session have been swapped, to accommodate the farmer interview and to provide you with the information you need for the term project before collecting soil samples from the field.

Date	Lab #	Topic(s)
Friday, Sept. 13	1	Introduction of groups, term project, fields, farm & farmer Discuss background information required to prepare for farmer interview Develop interview questions for farmer; soil information from AgriMaps Fertilizer rate calculations
<b>Thurs, Sept 19</b>	2	Interview with farmer Overview of soil testing, soil sampling, and sample handling Nutrient uptake and fertilizer cost calculations
Friday, Sept. 20	3	Conduct field sampling Complete and submit soil sample information sheets <b>NOTE: this lab will be 2:30 to approximately 6:00 pm and will involve travel by bus off campus.</b>
Sept. 27	--	<b>No lab</b>
Oct. 4	4	Soil test extraction & analysis; interpretation of soil test results Fertilization rate calculations for a field, including complete fertilizer blend
Oct. 11	5	Detailed comparison of soil test analyses and recommendations for term project, using the reports from the soil testing labs and the MB Soil Fertility Guide
Oct. 18	--	<b>No lab – Experiential Learning Week</b>
Oct. 25	6	Prepare the first draft of recommendations for farmer’s nutrient management. Prepare follow-up questions for farmer
Nov. 1	--	<b>Lecture period to make up for lab on Thurs, Sept 19.</b>
Nov. 8	7	Multinutrient fertilizer cost and rate calculations (e.g., NPS fertilizers) Work on term project
Nov. 15	--	<b>No lab – Fall Term Break</b>
Nov. 22	8	Manure management exercise Work on term project
Nov. 29	9	Term project presentation to farmer and industry panel <b>NOTE: this lab will be 2:30 to approximately 6:00 pm, with pizza supper.</b>
Dec. 6	10	Review session for final exam. <b>Term project report due by Friday, Dec. 4<sup>th</sup> at 4:30 pm</b>

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## COURSE ASSIGNMENTS AND EVALUATION

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### CLASS ASSIGNMENTS

#### **Weekly responses:**

Each week, you are asked to submit a very brief response to the course material (lectures and/or labs) from the past week. Each response is worth 1% of your final grade, for a total of 10%. There are 11 weeks of class and 10 responses will be expected. This means you can skip one week and still get full marks for the responses, or you can get a bonus point by submitting all 11 responses. You are not required to complete these responses to pass the course.

#### **Responses must meet the following criteria to get full marks:**

1. They must be relevant to the course material from the past week.
2. They must include your own perspective on the course material, not just a summary. For example, responses could include:
  - Commentary on what you found interesting or challenging about the course material;
  - Discussion of how the course information is relevant to you and a farm you know about, to other parts of the ag sector, to society, etc;
  - Questions about aspects you do not understand or would like to learn more about.
3. They must be your own original work. The use of generative AI tools, such as ChatGPT, is not permitted for creating the responses. Plagiarism from the internet or other sources is not permitted. Responses can take any of the following formats:
  - A short written response (100-200 words)
  - A short (30-60 second) video of yourself talking about the course material
  - A mini photo essay, with 2-4 photos (your own photos or with proper acknowledgement of the source), with your own descriptive captions and/or explanation
  - A comic, cartoon, or meme (your own creation or with proper acknowledgement of the source), with your own brief explanation of the concept depicted
  - A limerick, haiku, ballad, or other type of poem or song (your own composition)
  - Other formats? Be creative, but check with me first.
4. They must be submitted on time and using the appropriate submission method. **No extensions or make-up assignments will be available.**
  - Due dates/times: between Thursday 2:15 pm and the following Monday 8:30 am each week. For example, Response 1 can be submitted any time between 2:15 pm on Thursday, Sept. 12 and 8:30 am on Monday, Sept. 16, reflecting content from the lectures on Sept. 10 and/or 12, and/or the Sept. 13 lab.
  - Responses must be submitted in UM Learn. Make sure you are selecting and uploading the correct file and double check to make sure you have received a 'submission confirmation' email from UM Learn. Emailed responses will not be accepted.

#### **Grading for Responses:**

- Full marks (1): Meets all requirements outlined above.
- Half marks (0.5): Meets requirements 3 and 4 outlined above, but not requirements 1 and 2.
- Zero: Does not meet requirements 3 and 4 above or violates other course policies.
- Grammar and writing are not evaluated when grading the responses, as long as I can decipher the content.



## **QUIZZES**

There will be four (4) quizzes during the term, during the last 15 minutes of class time (2:00 to 2:15 pm) on the dates specified below. Each quiz will be worth 4% of your final grade (16% total). Quizzes will be administered through UM Learn. You are required to bring a device (laptop or tablet) on which to complete the quizzes.

**Dates:** Quiz 1: September 24  
Quiz 2: October 10  
Quiz 3: November 7  
Quiz 4: December 3

**Missed quizzes:** If you know beforehand that you will not be able to attend a quiz, you must contact me ahead of time to make alternate arrangements. In case of illness or other emergency, please contact me as soon as possible and see the UM [Self-Declaration for Brief and Temporary Student Absences Policy and Procedure](#). Students who miss a quiz without notice will receive a grade of zero on the quiz.

## **MIDTERM AND FINAL EXAMINATIONS**

There will be one midterm and a final exam:

**Midterm exam:** Oct. 22, 2024  
The midterm will cover the lectures from September 10 to October 10. It will be written during the regular lecture period (75 minutes).

**Final Exam:** Scheduled by the University during the final exam period (Dec. 9-19, 2024).  
The final exam will be three hours in length. The final will draw on material from the lectures and the labs.

At the beginning of the course, we will decide as a class on one of two formats for the exams:

- Closed book (except for the lab portion of the final exam) – in this case, key diagrams and other information may be provided with the exam materials.
- OR “print-only open book” – in this case, you would be permitted to use your own physical copies of course materials, including your own marked-up notes.

In either case, you will be permitted to use your lab materials for the lab portion of the final exam. Grammar, spelling, and composition will be evaluated and considered as part of the grading criteria for exams.

**Missed Exams:** The exam schedule is provided well in advance so you can check for potential scheduling conflicts.

- If you know beforehand that you will not be able to attend the **midterm exam**, you must contact me ahead of time to make alternate arrangements. If unforeseen catastrophic events occur (e.g. illness or emergency), please contact me to explain the extenuating circumstances under which you are not able to attend the exam. If you miss the midterm exam without notice, you will receive a grade of zero on the midterm.
- If you know that you will not be able to attend the **final exam** or if an emergency situation causes you to miss the final exam, please refer to the University of Manitoba’s [Final exam conflicts and deferral webpage](#).

For both exams, in case of illness or other emergency, please see the UM [Self-Declaration for Brief and Temporary Student Absences Policy and Procedure](#). Medical notes are not required for illnesses.

## **LABORATORY ASSIGNMENTS**

The laboratory assignments include eight (8) weekly assignments, a group oral presentation, and an individually prepared final report.

### **Weekly lab assignments:**

- **Due dates:** Assignments are generally designed to be completed during the lab session and submitted in person or on UM Learn before you leave the lab. However, they can be submitted up to the following Monday at 8:30 am without penalty. Lab assignments will be graded and returned in the next lab session.
- **Group work:** Students are expected to discuss their lab activities with other members of their group, but each member is expected to submit their own individual, unique written report (**i.e. copying of assignments is not permitted**).
- **Missed labs:** If you know beforehand that you will not be able to attend a laboratory session, you must contact me ahead of time to make alternate arrangements. In case of illness or other emergency, please notify me as soon as possible. Students who miss a lab without notice will receive a grade of zero on the lab assignment.
- **Late weekly assignments:** Weekly lab assignments that are late will receive a grade of zero on that exercise, unless you have been granted an extension. Late lab assignments must still be submitted in satisfactory condition by December 6, 2024 to receive a passing and complete grade in the course.

### **Group oral presentation:**

- **Date:** The presentations will occur on November 29 during the Friday lab session. As noted elsewhere, this lab session will be longer than normal. Presentations will be graded based on criteria clearly outlined ahead of time. More information on the format and grading criteria will be provided in the lab sessions.
- **Missed presentations:** If you must miss the group presentations for any reason, you must notify me as soon as possible. Alternate arrangements will be made for you to deliver your portion of the oral presentation for assessment.

### **Individual written report:**

- **Due date:** The final written term project report is due by 4:30 pm on Friday, Dec. 6.
- **Late projects** will be docked 20% of the maximum possible grade for each 24-hr period past the deadline, unless you have been granted an extension. Accordingly, assignments submitted 5 or more days after the deadline will receive a mark of zero. Late projects must still be submitted in satisfactory condition by December 11, 2024 to receive a passing and complete grade in the course.

### **Additional notes on lab assignments and the term project:**

- **Grammar, spelling, and composition** will be evaluated and considered as part of the grading criteria for all lab reports and assignments.
- **Extensions:** If you will not be able to meet a deadline due to extenuating circumstances, you may contact the instructor to request an extension. Extensions must be requested before the original deadline. The instructor has the right to deny the request for an extension.

## **COURSE EVALUATION**

<b>Course element</b>	<b>Date</b>	<b>% of final grade</b>
<b>Lab component</b>		
Weekly laboratory assignments	Mondays by 8:30 am	15%
Oral presentation	Nov. 29, during lab	5%
Written term project report	Dec. 6, 4:30 pm	10%
<b>Sub-total</b>		<b>30%</b>
<b>Lecture component</b>		
Weekly responses	Mondays by 8:30 am	10%
In-class quizzes	Sept 24, Oct. 10, Nov. 7, Dec. 3	16%
Midterm	Oct. 22, in class	14%
Final exam (includes lab material)	University final exam period	30%
<b>Sub-total</b>		<b>70%</b>
<b>Total</b>		<b>100%</b>

## **GRADING**

<b>Letter Grade</b>	<b>Percentage out of 100</b>	<b>Final Grade Points</b>
A+	90-100	4.5
A	80-89	4.0
B+	75-79	3.5
B	70-74	3.0
C+	65-69	2.5
C	60-64	2.0
D	50-59	1.0
F	Less than 50	0

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## **EXPECTATIONS**

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### **I EXPECT YOU TO:**

- **Read and understand the information in this syllabus.**
- **Attend class and lab sessions regularly and punctually.** Class and lab attendance is required to gain a full understanding of the course material.
- **Prepare for class.** The course materials will be provided to you in digital format on the UM Learn course page prior to start of each new section in the class. You are expected to have these notes for reference during class and to supplement them with your own notes from the lectures. Reading course materials before class AND reviewing after class will benefit your learning.
- **Create and maintain a respectful learning environment:** Sharing knowledge effectively requires mutual respect among students, teaching assistants, and the instructor. All communications and in-person interactions, in and outside of class, are expected to be respectful and professional. Additional community guidelines will be discussed during one of the first lectures. See the [UM policy on Respectful Work and Learning Environment](#).

- **Complete all coursework with academic integrity**, as outlined below and on the UM website.
- **Communicate any difficulties, concerns, or criticisms** regarding the course with me as early as possible. This will make it more likely that we can work out a solution.

**YOU CAN EXPECT ME TO:**

- Treat all students with respect.
- Arrive at lecture and lab sessions punctually and well-prepared.
- Grade assessments fairly and provide feedback in a timely manner.
- Respond to your communications in a timely manner.
- Be available for in-person, online, or phone meetings to discuss class material and assignments as needed, providing support to meet your learning goals.

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## COURSE POLICIES

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### Communications

**You must obtain and use your University of Manitoba email account** for all communication between yourself and the university. *I will send email messages only to your University of Manitoba email account.* 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](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html).

Email is my preferred form of communication to set up appointments or discuss issues related to the course. As a rule, I will respond to emails within 24 hours on weekdays and 48 hours on weekends or holidays. For urgent matters, you may phone or text me but I cannot guarantee an immediate response.

I will use UM Learn to send out course announcements and other information. These notices will be sent to your @myumanitoba.ca email address.

### Academic Integrity

***Each student in this course is expected to compete their coursework and programs of study with integrity by making a commitment to the six fundamental values of honesty, trust, fairness, respect, responsibility, and courage.***

In this course, academic integrity looks like referencing the work of others that you have used and completing your assignments independently unless otherwise specified. For assignments/projects where you are encouraged to work in a group or team, ensure that your assignment/project is completed with integrity. You must do your own work during quizzes and exams.

**Please refer to these specific course requirements for academic integrity for individual and group work:**

1. Complete your assignments independently unless otherwise specified. You must do your own work for weekly responses and during quizzes and exams without direct help from your class peers, family members or others, or generative AI. If you are in need of assistance, please contact the instructor or TAs for support. For lab assignments and the term project where you work in a

group, you will discuss your activities and results with your group and then complete the assignments individually. The oral presentation will be prepared collaboratively with your group.

2. Do not share course materials (e.g., notes, exam questions, assignment instructions, article) that have been created by the instructor or were authored by another. Sharing of such materials with your peers or with note-sharing companies is a violation of the Copyright law.
3. Reference the work of others that you have used in your own work. To plagiarize is to take ideas or words of another person and pass them off as one's own. It is not necessary to state the source of well-known or easily verifiable facts, but you are expected to appropriately acknowledge the sources of ideas and expressions you use in your written work, whether quoted directly or paraphrased. Plagiarism applies to any published work, in traditional or electronic format, as well as orally or verbally presented work. This applies to images, diagrams, etc., as well as to written material, and to materials or information from Internet sources. To provide adequate and correct documentation is not only an indication of academic honesty but is also a courtesy which enables the reader to consult these sources with ease. Failure to provide appropriate citations constitutes plagiarism.
4. Do not use generative AI tools (including but not limited to ChatGPT and Grammarly) to complete any type of assignment or assessment in this course, unless explicitly permitted in the instructions for that assignment. The use of standard spelling and grammar tools in word processing software is permitted.
5. Do not submit lab reports or other types of assignments already graded in another course.

Plagiarism, duplicate submission, cheating on quizzes, tests, and exams, inappropriate collaboration, academic fraud, and personation are violations of the Student Discipline Bylaw and will lead to the [serious disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

### Accessibility

Please see the University of Manitoba's Accessibility information under "UM Learner Supports" in Schedule A at the end of this syllabus. You are also welcome to discuss any accessibility concerns you may have with me directly if you feel comfortable doing so.

### Attendance

Regular class attendance is highly recommended to gain a full understanding of the course material. Participating in the labs is required to receive marks for those assignments.

### Assignment Extensions, Late Submissions, and Missed Exams

In case of illness or other extenuating circumstances that cause you to miss labs, quizzes, or exams, please refer to the University of Manitoba's [Self-Declaration for Brief and Temporary Student Absences Policy and Procedure](#). Note that travel, vacations, work and other scheduled personal obligations are not considered extenuating circumstances.

If unforeseen catastrophic events occur and you require an extension on an assignment, please contact me to explain the extenuating circumstances under which you are/were not able to meet the deadline.

See the Course Assignments and Evaluations section above for specific requirements for each type of course assignment or assessment.

### Recording of lectures:

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. Thiessen Martens. Course materials (both paper and digital) are for the participant's private study. If you need to record lectures for accessibility or accommodation reasons, you are encouraged to discuss options with me or contact Student Accessibility Services to arrange an accommodation.

### Copyright

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](mailto:umcopyright@umanitoba.ca).

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## UM POLICIES

The University of Manitoba has outlined policies and procedures governing the Responsibilities of Academic Staff with Regard to Students (ROASS). "Schedule A" outlines all relevant ROASS policies and can be found below, as well as in the UM Learn materials for this course (Content > Introduction and Syllabus).

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## UM LEARNER SUPPORTS

The University of Manitoba provides many types of support to help students thrive. In "Schedule A" (below and in UM Learn), you will find a select list of important supports for learners at the UM, both academic supports and otherwise. For a complete listing of all learner supports at the University of Manitoba, visit the [Everything You Need to Thrive](#) website.

## SCHEDULE A (Revised February 17, 2023)

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## UM Policies

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As a student at 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 University of Manitoba (UM) website's [Governing Documents](https://umanitoba.ca/governance/governing-documents) (<https://umanitoba.ca/governance/governing-documents>) is one important source of information, in particular the Academic and Students sections. The Student Advocacy office can also help you understand policies and procedures; find their information in the UM Learner Supports section below.

### Academic Calendar

The [Academic Calendar](https://umanitoba.ca/registrar/academic-calendar) (<https://umanitoba.ca/registrar/academic-calendar>) is the University's official publication containing course descriptions, program and graduation requirements, as well as UM and faculty/school-specific rules, regulations and policies. In particular, familiarize yourself with the sections *University Policies and Procedures* and *General Academic Regulations*.

### Academic Integrity

In addition to reviewing your instructor's academic integrity policy listed in their syllabus, you are expected to view the *General Academic Regulation* section within the [Academic Calendar](https://umanitoba.ca/registrar/academic-calendar) (<https://umanitoba.ca/registrar/academic-calendar>) and specifically read the regulation pertaining to Academic Integrity. Ask your instructor for additional information about demonstrating academic integrity in your academic work, and consult the following UM resources for more information and support:

- [Academic Integrity](https://umanitoba.ca/student-supports/academic-supports/academic-integrity) (<https://umanitoba.ca/student-supports/academic-supports/academic-integrity>)
  - [Student Resources](https://umanitoba.ca/student-supports/academic-supports/academic-integrity#resources-to-conduct-academic-work-with-integrity) (<https://umanitoba.ca/student-supports/academic-supports/academic-integrity#resources-to-conduct-academic-work-with-integrity>)
  - [Academic Misconduct and How to Avoid It](https://umanitoba.ca/student-supports/academic-supports/academic-integrity#academic-misconduct-and-how-to-avoid-it) (<https://umanitoba.ca/student-supports/academic-supports/academic-integrity#academic-misconduct-and-how-to-avoid-it>)
- [Student Advocacy Office](https://umanitoba.ca/student-supports/academic-supports/student-advocacy) (<https://umanitoba.ca/student-supports/academic-supports/student-advocacy>)

### 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](https://umanitoba.ca/copyright/) (<https://umanitoba.ca/copyright/>) provides copyright resources and support for all members of the University of Manitoba community.



## Grade Appeals

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](https://umanitoba.ca/registrar/grades/appeal-grade) (https://umanitoba.ca/registrar/grades/appeal-grade) for more information including appeal deadline dates and the appeal form.

## Intellectual Property

For information about rights and responsibilities regarding intellectual property view the [Intellectual Property Policy](https://umanitoba.ca/governance/governing-documents/governing-documents-university-community#intellectual-property) (https://umanitoba.ca/governance/governing-documents/governing-documents-university-community#intellectual-property)

## Program-Specific Regulations

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](https://umanitoba.ca/academics) website (https://umanitoba.ca/academics).

## Respectful Work and Learning Environment

The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected to conduct yourself in an appropriate and respectful manner. Policies governing UM community behaviour include:

- [Respectful Work and Learning Environment](https://umanitoba.ca/about-um/respectful-work-and-learning-environment-policy) (https://umanitoba.ca/about-um/respectful-work-and-learning-environment-policy)
- [Student Discipline](https://umanitoba.ca/governance/governing-documents-students#student-discipline) (https://umanitoba.ca/governance/governing-documents-students#student-discipline)
- [Violent or Threatening Behaviour](https://umanitoba.ca/governance/governing-documents-students#violent-or-threatening-behaviour) (https://umanitoba.ca/governance/governing-documents-students#violent-or-threatening-behaviour)

The UM website, [Engaging in Respectful Conduct](https://umanitoba.ca/student-supports/respectful-conduct) (https://umanitoba.ca/student-supports/respectful-conduct), includes more details about expectations for behaviours related to university activities.

## Sexual Violence Policies

The UM has several policies and procedures that deal with the rights and responsibilities of the University community with regards to all forms of sexual violence. For a comprehensive list of policies and associated resources, visit the [Sexual Violence Resource Centre's information page](https://umanitoba.ca/student-supports/sexual-violence-support-and-education/sexual-violence-get-informed) (https://umanitoba.ca/student-supports/sexual-violence-support-and-education/sexual-violence-get-informed). Please note that there are many supports available in addition to these policy documents (see UM Learner Supports).

## Voluntary Withdrawal

Voluntary withdrawal (VW) is a way for students to leave a class without academic penalty once the Registration Revision Period has ended. If you opt to voluntarily withdraw from a course, you will not be eligible for a refund and, if applicable, will still be required to pay any outstanding tuition fees for the course. On your transcript, the course you have withdrawn from will be listed; however, "VW" will appear in lieu of a grade. If you do not drop a course before the VW deadline, you will receive a final grade in the course on your transcript.

Please note that there are separate deadlines for dropping a course early in a term during the Registration Revision Period. Dropping a course means you are removing that course from your schedule, will not be charged tuition fees for that course, and the course will not appear on your transcript.

The Registrar's Office website, [Withdraw from a Course](https://umanitoba.ca/registrar/withdraw-course) (<https://umanitoba.ca/registrar/withdraw-course>), includes more information on the different ways in which you can withdraw from a course and important dates and deadlines to do so.

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## UM Learner Supports

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Below you will find a select list of important supports for learners at the UM, both academic supports and otherwise. For a complete listing of all learner supports at the University of Manitoba, visit the [Everything You Need to Thrive](https://umanitoba.ca/student-supports) (<https://umanitoba.ca/student-supports>) website.

### 2SLGBTQIA+ Community

Find your queer community on campus! UM is committed to being an inclusive and welcoming space for all 2SLGBTQ+ students, staff and faculty. Visit the [2SLGBTQ+ Community](https://umanitoba.ca/2slgbtq-community) (<https://umanitoba.ca/2slgbtq-community>) website to access services, find resources, and connect with like-minded people and allies.

### Academic Advising

Contact an [Academic Advisor](https://umanitoba.ca/student-supports/academic-supports/academic-advising) (<https://umanitoba.ca/student-supports/academic-supports/academic-advising>) for support with degree planning and questions about your academic program and regulations.

### Academic Learning Centre (ALC)

The [Academic Learning Centre](https://umanitoba.ca/student-supports/academic-supports/academic-learning) (<https://umanitoba.ca/student-supports/academic-supports/academic-learning>) offers one-to-one tutoring, groups study sessions and workshops, as well as video and tip-sheet resources to help you throughout your academic program. All Academic Learning Centre programming, supports, and services are free for UM students.

Make an appointment for [free one-to-one tutoring](https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study#individual-tutoring) (<https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study#individual-tutoring>). **Content tutors** (over 90 UM courses) can help you understand concepts and learn problem-solving strategies. **Study skills tutors** can help you improve your skills such as time management

and goal setting, reading and note-taking, as well as learning and test-taking strategies. **Writing tutors** can give you feedback on your academic writing, whether you are just getting started on a written assignment or already have a draft. **English as an Additional Language** specialist, Antoanela Denchuk, is available for one-to-one tutoring to help you improve your English-language academic writing skills. Use the drop-down menu, read the tutor biographies, and make an appointment for tutoring on the [Academic Learning Centre schedule](https://manitoba.mywconline.com/) (<https://manitoba.mywconline.com/>).

Attend [Supplemental Instruction \(SI\)](https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study) (<https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study>) sessions in historically difficult courses (including Chemistry, Engineering, and Computer Science). These free weekly review sessions are facilitated by a peer mentor who has previously taken the course and provide an opportunity to discuss course content, ask questions, compare notes, solve practice problems, and develop study strategies. See online for a list of SI courses and meeting times.

Register for an [Academic Success Workshop](https://umanitoba.ca/student-supports/academic-supports/academic-learning/academic-success-workshops) (<https://umanitoba.ca/student-supports/academic-supports/academic-learning/academic-success-workshops>), where you can learn strategies to improve your writing and studying. More information on topics, dates, and registration, are found online.

Access the Academic Learning Centre's collection of [videos and tip sheets](https://umanitoba.ca/student-supports/academic-supports/academic-learning#tip-sheets-for-writing-and-study-skills) (<https://umanitoba.ca/student-supports/academic-supports/academic-learning#tip-sheets-for-writing-and-study-skills>) to help you with many of the academic tasks you'll encounter in university.

**Contact the Academic Learning Centre** by calling 204-480-1481 or emailing [academic\\_learning@umanitoba.ca](mailto:academic_learning@umanitoba.ca). Bannatyne students can contact the Bannatyne Student Services office at 204-272-3190.

## Basic Needs

It can be difficult to learn and succeed in courses when you are struggling to meet your or your family's basic needs. Several UM and community resources are listed below if you would benefit from support with regards to housing, food, finances, and/or childcare:

- *Housing*
  - [UM Housing](https://umanitoba.ca/housing) (<https://umanitoba.ca/housing>)
  - [Winnipeg Rental Network](https://www.winnipegrentnet.ca/) (<https://www.winnipegrentnet.ca/>)
  - [Manitoba Residential Tenancies Branch](https://www.gov.mb.ca/cca/rtb/) (<https://www.gov.mb.ca/cca/rtb/>)
  - [HOPE End Homelessness Winnipeg Services & Supports](https://umanitoba.ca/housing) (<https://umanitoba.ca/housing>)
- *Food*
  - [U of M Food Bank](https://umanitoba.ca/financial-aid-and-awards/u-m-food-bank) (<https://umanitoba.ca/financial-aid-and-awards/u-m-food-bank>)
  - [Food Matters Manitoba](https://foodmattersmanitoba.ca/find-emergency-food-in-winnipeg/) (<https://foodmattersmanitoba.ca/find-emergency-food-in-winnipeg/>)
- *Finances*
  - [UM Financial Aid and Awards](https://umanitoba.ca/financial-aid-and-awards) (<https://umanitoba.ca/financial-aid-and-awards>)

- [Manitoba Student Aid](https://www.edu.gov.mb.ca/msa/) (https://www.edu.gov.mb.ca/msa/)
- *Child Care*
  - [UM Child Care](https://umanitoba.ca/about-um/child-care) (https://umanitoba.ca/about-um/child-care)
  - [Manitoba Child Care Subsidy](https://bit.ly/3yG3ijy) (https://bit.ly/3yG3ijy)
  - [Manitoba Child Care Association](https://mccahouse.org/looking-for-child-care/) (https://mccahouse.org/looking-for-child-care/)

## English Language Centre

The [English Language Centre \(ELC\)](https://umanitoba.ca/english-language-centre) (https://umanitoba.ca/english-language-centre) provides courses, tests, accommodations and individual support to students whose first language is not English in order to support academic success and participation in the University of Manitoba community.

## Health and Wellness

Physical, mental, emotional, and spiritual health and wellness play a critical role in student success. See all of UM's resource on their [Health and Wellness](https://umanitoba.ca/student-supports/student-health-and-wellness) (https://umanitoba.ca/student-supports/student-health-and-wellness) website, and make note of several specific UM and community supports listed below.

### Winnipeg Urgent Physical and Mental Health Care

If you are an adult experiencing a mental health or psychosocial crisis, contact the [Klinik Community Health](https://klinik.mb.ca/crisis-support/) (https://klinik.mb.ca/crisis-support/) 24/7 crisis line at 204-786-8686, visit the [Crisis Response Centre](https://sharedhealthmb.ca/services/mental-health/crisis-response-centre/) (https://sharedhealthmb.ca/services/mental-health/crisis-response-centre/) located at 817 Bannatyne Avenue, or contact the Mobile Crisis Service at 204-940-1781.

To speak with a nurse for guidance on what health-care path to take for the issue you are facing or for general information about health resources available in Manitoba, contact [Health Links](https://misericordia.mb.ca/programs/phcc/health-links-info-sante/) (https://misericordia.mb.ca/programs/phcc/health-links-info-sante/) at 1-888-315-9257 (toll free).

If you need urgent medical care, visit the Winnipeg Regional Health Authority's [Emergency Department & Urgent Care Wait Times](https://wrha.mb.ca/wait-times/) webpage (https://wrha.mb.ca/wait-times/) for a list of locations and current wait times.

### Student Counselling Centre (SCC)

The [Student Counselling Centre](https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc) (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc) provides free counselling and mental health support to UM, English Language Centre, and International College of Manitoba (ICM) students. We are open year-round, Monday through Friday from 8:30 am to 4:30 pm. Our commitment is to offer a support service to every student who contacts us.

Visit the SCC's [For Urgent Help](https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) webpage or the urgent care resources listed above if you require immediate support.

Visit the SCC's [Our Services](https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) webpage for more information on accessing a variety of services including individual counselling, counselling workshops and groups, support resources, and learning disability assessment services.

The SCC is located is located at 474 UMSU University Centre (Fort Garry Campus).

### Health and Wellness Office

Students often juggle multiple demands, and we recognize that it can be difficult to find balance. For any changes you want to make to your health and wellness, the Health and Wellness Office at the University of Manitoba would like to support you in your journey. We are here to help you take control of your own health and make your own decisions. We are a judgment-free space and we avoid labels whenever possible. For more information, please visit the [Health and Wellness Office](https://umanitoba.ca/student-supports/health-wellness) (https://umanitoba.ca/student-supports/health-wellness) website.

### Spiritual Care and Multifaith Centre

Spiritual care services are available to all, whether you identify as spiritual, atheist, religious or agnostic. [Spiritual Services](https://umanitoba.ca/student-supports/spiritual-services) (https://umanitoba.ca/student-supports/spiritual-services) also offer specific denominational support for certain religious groups and by Indigenous Elders-in-Residence.

### Student Support Case Management (SSCM)

Contact the [Student Support Case Management team](https://umanitoba.ca/student-supports/academic-supports/student-advocacy/case-management) (https://umanitoba.ca/student-supports/academic-supports/student-advocacy/case-management) 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.

### University Health Service (UHS)

The [University Health Service](https://umanitoba.ca/student-supports/health-wellness/university-health-service) (https://umanitoba.ca/student-supports/health-wellness/university-health-service) offers a full range of medical services to students, including psychiatric consultation, via two health clinics:

- Fort Garry Campus: (204) 474-8411, ACW-Lot temporary trailer (behind the Isbister building)
- Bannatyne Campus: (204) 474-8411, P309 – Pathology Building

### Student Services at Bannatyne Campus

Student Services at Bannatyne Campus (SSBC) offers a full range of mental health supports to students and residents in the Rady Faculty of Health Sciences, along with other academic and personal supports. Visit the [SSBC website](https://umanitoba.ca/student-supports/student-services-bannatyne-campus) (https://umanitoba.ca/student-supports/student-services-bannatyne-campus) for a list of services available.

## Indigenous Students

Staff, faculty and Elders are well-equipped to ensure your university experience is as beneficial, accessible, and successful as possible. Visit the Indigenous [Student Experience](https://umanitoba.ca/indigenous/student-experience) (<https://umanitoba.ca/indigenous/student-experience>) website for more information on the supports and services available.

## International Students

The transition to a new country and a new academic system can be both exciting and overwhelming. The International Centre (IC) is here to help you settle into life at University of Manitoba. Visit the [International Students](https://umanitoba.ca/current-students/international) website (<https://umanitoba.ca/current-students/international>) for more information.

## Sexual Violence Support and Education

Sexual violence affects people of all ages, sexual orientations, genders, gender identities, abilities and relationship statuses. At the U of M, we are committed to ensuring a respectful work and learning environment for all. We want to build a safe and inclusive campus community where survivors of sexual violence know they can receive the supports they need to succeed, both academically and personally.

The [Sexual Violence Resource Centre](https://umanitoba.ca/sexual-violence) (<https://umanitoba.ca/sexual-violence>), located at 537 UMSU University Centre (Fort Garry campus) provides support, resources, information and referral services for any student, faculty or staff member who has been affected by sexual violence.

## Student Accessibility Services (SAS)

The University of Manitoba is committed to providing an accessible academic community. [Student Accessibility Services](https://umanitoba.ca/student-supports/accessibility) (<https://umanitoba.ca/student-supports/accessibility>) 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 health, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation. SAS is located at 520 University Centre (Fort Garry Campus). Phone: (204) 474-7423. Email: [Student\\_accessibility@umanitoba.ca](mailto:Student_accessibility@umanitoba.ca)

## Student Advocacy

[Student Advocacy](https://umanitoba.ca/student-supports/academic-supports/student-advocacy) (<https://umanitoba.ca/student-supports/academic-supports/student-advocacy>) is a safe place for students. We help you navigate university processes and advocate for your rights as a student at UM. If anything in your personal or academic life is affecting your studies, contact our confidential intake assistant by phone (204-474-7423) or email ([stadv@umanitoba.ca](mailto:stadv@umanitoba.ca)).

### University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a key 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 have about the research process. Liaisons can be contacted by email or phone, and are also available to meet with you online or in-person. A [complete list of liaison librarians can be found by subject](http://bit.ly/WcEbA1) (<http://bit.ly/WcEbA1>).

General library assistance is also available at both the Bannatyne and Fort Garry campuses by [visiting any library location](https://www.umanitoba.ca/libraries/locations-and-facilities) (<https://www.umanitoba.ca/libraries/locations-and-facilities>). When working online, students can receive help via the Ask Us chat button found on the right-hand side of the [Libraries' homepage](http://www.umanitoba.ca/libraries) (<http://www.umanitoba.ca/libraries>).