

Syllabus

SOIL 4520 K01: Soil Fertility
(Fall 2026)

TABLE OF CONTENTS

TABLE OF CONTENTS	1
COURSE DETAILS	3
Instructor/TA Contact Information	3
Traditional Territory or Land Acknowledgements.....	4
Equity and Inclusion Commitment	4
Course Description	5
U of M Course Calendar Description	5
General Course Description.....	5
Course Learning Outcomes	5
Course Materials	5
Required Materials	5
Course Schedule	6
Course Evaluation and Assessments	7
Labs and Tutorials	7
Types of Lab Problems and Group Learning.....	7
Assignment Feedback.....	10
Late Assignments.....	10
Missed Assignments	11
Lab/Tutorial Schedule	11
Grading.....	12
Expectations	12
Course Policies	12
Academic Integrity	12
Accessibility	13
Attendance	14
Assignment Extension and Late Submission.....	14
Class Communication	14
Recording Class Lectures	14
Referencing Style.....	14
Technology Use	15
Using Copyrighted Material.....	15
APPENDIX: ROASS SCHEDULE A.....	16
UM Policies.....	16
Academic Calendar.....	16
Academic Integrity	16
Copyright	16
Grade Appeals	17
Intellectual Property.....	17
Program-Specific Regulations.....	17
Respectful Work and Learning Environment.....	17
Sexual Violence Policies	17
Voluntary Withdrawal	17
UM Learner Supports	18
2SLGBTQIA+ Community	18

Academic Advising.....	18
Academic Learning Centre (ALC)	18
Basic Needs	19
English Language Centre	19
Health and Wellness.....	20
Indigenous Students.....	21
International Students	21
Sexual Violence Support and Education.....	22
Student Accessibility Services (SAS)	22
Student Advocacy.....	22
University of Manitoba Libraries (UML)	22
University of Manitoba Students' Union.....	22

COURSE DETAILS

Course Title & Number:	SOIL 4520 K01: Soil Fertility
Term:	Fall 2026
Credit Hours:	3 credit hours
Lecture Times & Days:	Mondays/Wednesdays/Fridays 9:30-10:20 am
Lecture Location:	245 Ellis Building
Lab/Tutorial:	Thursdays 2:30-5:25 pm
Lab/Tutorial Location:	245 Ellis Building

Instructor/TA Contact Information

Instructor's Name and Contact Information

Dr. Xiaopeng Gao (he/him)
Xiaopeng.Gao@umanitoba.ca
Office Location: 311 Ellis Building
Phone: 204-599-5116

Office Hours for Dr. Gao: Students with questions or suggestions are strongly encouraged to ask questions during or immediately after the regular lecture periods. Alternatively, please send an email to set up a meeting time.

Communication: Email is the most preferred way to contact me.

You are welcome to call me by my first name in all communications, including in person and in emails.

TA's Name and Contact Information

Ms. Rebecca Micheal (she/her)
michealr@myumanitoba.ca

Traditional Territory or Land Acknowledgements

The University of Manitoba campuses and research spaces are located on original lands of Anishinaabeg, Ininiwak, Anisininewuk, Dakota Oyate, Dene and Inuit, and on the National Homeland of the Red River Métis.

UM recognizes that the Treaties signed on these lands are a lifelong, enduring relationship, and we are dedicated to upholding their spirit and intent. We acknowledge the harms and mistakes of the past and the present. With this understanding, we commit to supporting Indigenous excellence through active Reconciliation, meaningful change, and the creation of an environment where everyone can thrive. Our collaboration with Indigenous communities is grounded in respect and reciprocity and this guides how we move forward as an institution.

I (Dr. Gao) 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 soil fertility and agriculture, we are also students of the land and soil that sustain food production and human communities. In this course, we will learn how soil properties, nutrient cycling, and nutrient management influence crop production and the broader environment. An important goal is to understand how we can meet crop nutrient needs while maintaining soil health, using nutrients efficiently, and minimizing nutrient losses that may affect water, air, and surrounding ecosystems.

Thinking of ourselves as part of the land, rather than simply as managers of it, encourages us to consider our responsibility for the soils we depend on. This perspective can help us approach soil fertility through stewardship and reciprocity—returning nutrients, maintaining soil function, and protecting the land for future generations—rather than viewing soil only as a resource for production. These principles can help guide agriculture toward productive and sustainable management of our soil resources.

Equity and Inclusion Commitment

I am committed to upholding and advancing equity, diversity, and inclusion in our 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 our actions related to equity and inclusion in this course. If you feel comfortable doing so, please contact me directly with your concerns. To submit anonymous feedback, you may place a typed, unsigned note in our mailboxes in the Soil Science office and/or contact the Soil Science Department Head.

Course Description

U of M Course Calendar Description

This course explores forms and behaviour of plant nutrients in soil; soil fertility evaluation and management, including fertilizer sources and practices.

General Course Description

This course provides an in-depth exploration of soil fertility principles and their application in sustainable agriculture. Students will examine the chemical, physical, and biological factors that influence nutrient availability and uptake by plants. The course covers essential nutrients, soil testing methods, fertilizer use, and the impact of soil management practices on crop production and environmental quality. Through lectures, case studies, and practical sessions, students will develop skills in diagnosing soil fertility issues and formulating nutrient management plans. Emphasis is placed on integrating scientific knowledge with practical approaches to develop nutrient recommendations in diverse agricultural systems.

Course Learning Outcomes

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

1. Understand and explain the principles and practices of nutrient management for crop production
2. Evaluate the implications of soil fertility management practices on agricultural sustainability and environmental protection
3. Apply your individual and collective knowledge to solving real-world nutrient management and soil fertility problems
4. Communicate your recommendations for nutrient management and soil fertility to others

Course Materials

Required Materials

Textbook: No textbook is required for this course. Students are expected to regularly check UM Learn for course announcements and materials. Summary lecture notes and reference materials for laboratory assignments will be posted on UM Learn. Students are encouraged to actively engage with the lectures and personalize the provided notes by adding key concepts, explanations, examples, and other relevant information presented in class.

Recommended readings:

- 1) Havlin, J. L., Tisdale, S. L., Nelson, W. L., & Beaton, J. D. (2014). *Soil fertility and fertilizers: An introduction to nutrient management* (8th ed.). Pearson.
- 2) Strawn, D. G., Bohn, H. L., & O'Connor, G. A. (2015). *Soil chemistry* (4th ed.). Wiley-Blackwell.
- 3) Essington, M. E. (2015). *Soil and water chemistry: An integrative approach* (2nd ed.). CRC Press.
<https://doi.org/10.1201/b18385>

Technology: You are required to have all hardware, software, and connection ability necessary to successfully operate UM Learn, access online materials, and complete course assignments.

UM Learn: Course materials and submission folders for assignments will be provided through UM Learn.

Course Schedule

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to [section 2.8 of the ROASS procedure](#). Lecture materials will be posted on UM Learn ahead of each lecture.

Week	Date	Class Content
1	Sept 9-11	I. Introduction and Review A. Role of soil fertility for crop production B. Overview of nutrient use, uptake and movement
2	Sept 14-18	II. Properties of Soil Solids, Surfaces and Solutions A. Mineral composition of soil
3	Sept 21-25	II. Properties of Soil Solids, Surfaces and Solutions B. Organic matter in soil C. Surface and solution chemistry 1) Soil solids, solubility and precipitation
4	Sept 28 - Oct 2	II. Properties of Soil Solids, Surfaces and Solutions C. Surface and solution chemistry 2) Soil surfaces & adsorption Note: no class on Sept 30 (National Day for Truth and Reconciliation)
5	Oct 5-9	II. Properties of Soil Solids, Surfaces and Solutions C. Surface and solution chemistry 3) Effects of pH, acidity and alkalinity 4) Effects of pe, redox, and flooding
6	Oct 12-16	III. Soil Fertility and Fertilizers A. Nitrogen Note: no class on Oct 12 (Thanksgiving Day)
7	Oct 19-23	III. Soil Fertility and Fertilizers A. Nitrogen
8	Oct 26-30	III. Soil Fertility and Fertilizers B. Sulfur C. Phosphorus
9	Nov 2-6	III. Soil Fertility and Fertilizers C. Phosphorus
10	Nov 9-13	No class – Fall Term Break
11	Nov 16-20	III. Soil Fertility and Fertilizers D. Potassium E. Calcium and Magnesium
12	Nov 23-27	III. Soil Fertility and Fertilizers F. Micronutrients
13	Nov 30 - Dec 4	IV. Soil Fertility Management - General Issues A. Manure management B. Fertility evaluation, fertilizer recommendations
14	Dec 7-11	IV. Soil Fertility Management - General Issues C. Soil fertility and agricultural sustainability D. Soil fertility and environmental issues

The last day to withdraw with no refund (VW) is Nov. 24, 2026. Students who do not drop the course by Nov. 24, 2026 will be assigned a final grade. Withdrawn courses will be recorded on your official transcript. Please refer to the [Registrar's Office](#) web page for more information.

Course Evaluation and Assessments

Your grade will be based on a combination of two midterm exams; laboratory/tutorial assignments; and the final exam.

Course element	Date	% of final grade
First midterm exam (closed-book)	2:30-4:00 pm, Oct 15, 2026	15%
Second midterm exam (closed-book)	2:30-4:00 pm, Nov 19, 2026	15%
Final exam (closed-book)	TBD	25%
Lab/tutorial		
Weekly assignments	End of each lab session	15%
Oral presentation on term project	2:30-5:30 pm, Nov 26, 2026	5%
Written report on term project	Due by 5:00 pm, Dec 10, 2026	10%
Lab exam (open-book)	2:30-4:30 pm, Dec 3, 2026	15%

Labs and Tutorials

Types of Lab Problems and Group Learning

Students will be assigned to groups for **weekly assignments** and the **term project**. Group work is designed to foster collaborative learning, teamwork, and a problem-solving approach to soil fertility and nutrient management. **Collaboration is encouraged; copying is not.** Students are expected to discuss problems, calculations, interpretations, and recommendations with their group members. However, unless otherwise specified, each student must complete and submit their own work. Submitted assignments must reflect the student's own understanding, analysis, calculations, and writing. Copying work from another student, including a member of the same group, is not permitted. All required weekly assignments must be completed to receive a passing grade in the course.

Weekly Assignments:

- **Goal:**
 - Address learning outcomes 1-3.
 - Reinforce and apply concepts from across the course.
 - Develop skills in soil fertility calculations, interpretation, and problem-solving.
- **Procedure:**

Weekly assignments will be based primarily on lecture material covered during the current or preceding week. Assignments will be provided during the laboratory session and will generally include calculation problems and short-answer questions. Students may discuss approaches and concepts with their group members, but each student must complete and submit their own work unless otherwise instructed.
- **Submission guidelines:**

Assignments should normally be completed during the laboratory period and submitted to the TA before the end of the session.

- **Evaluation criteria:**

Assignments will be evaluated based on technical accuracy, demonstrated understanding of soil fertility concepts, appropriate application of calculations and principles, and critical thinking. Clarity and quality of written communication may also be considered.

Term project – written report:

- **Goal:**

- Address learning outcomes 1-4.
- Integrate soil fertility concepts and calculations in a realistic agronomic setting.
- Develop detailed, field-specific nutrient management recommendations for commercial agricultural fields in Manitoba.

- **Project Overview**

Students will work in assigned groups to develop detailed fertilizer recommendations for several actual fields provided by a host farmer near Winnipeg. During the fall, students will visit the farm, collect soil samples from the fields, and interview the farmer about field history, crop management, and production goals. Soil samples will be analyzed by two commercial soil-testing laboratories, and relevant background information for each field will be provided.

For this project, students will act as a team of independent agronomic consultants. The farmer has asked your team to evaluate the fields and provide recommendations for the upcoming growing season. Assume that no soil testing or fertilizer application has yet been completed for these fields following harvest. This provides an opportunity to consider alternative approaches, including fall versus spring soil testing and fertilizer application.

Recommendations should be practical, scientifically sound, economically reasonable, and tailored to the characteristics of each field and the needs of the farmer.

- **Written Report Requirements**

Although students will collaborate with their group in developing and evaluating recommendations, **each student must independently prepare and submit their own written term-project report**, including:

1) General introduction and background information:

Provide a concise description of the information relevant to nutrient management, including:

- soil and field characteristics;
- previous and planned crops;
- typical soil and crop management practices;
- yield potential and the farmer's yield goals; and
- other factors that may influence nutrient management decisions.

The purpose of this section is to establish the agronomic context for your recommendations.

2) Evaluation of the Soil Testing Program

Evaluate the soil sampling approach, soil test results, analytical methods, and fertilizer recommendations provided by the soil-testing laboratories. Discuss the reliability and limitations of the information and how it should be used in developing your recommendations.

3) Fertilization recommendations

Provide two detailed nutrient management options for each field: a **preferred recommendation** and a **reasonable alternative**. At least one option should incorporate an innovative but agronomically sound alternative to the farmer's current practices.

For each recommendation, address:

- rates of individual nutrients (e.g., N, P₂O₅, K₂O, and S) supplied through commercial fertilizers and/or livestock manure;
- fertilizer or manure sources, product rates, and estimated costs;
- reasons for selecting the recommended nutrient sources and rates;
- fertilizer placement and timing;
- estimated application costs; and
- advantages, disadvantages, and potential risks associated with the recommendation, including considerations such as nutrient availability, loss potential, seedling toxicity, and positional availability.

Clearly explain why the preferred recommendation is considered the best option for the field.

4) Summary of Overall Recommendations

Provide a concise summary of the major recommendations for the farmer, highlighting the most important management decisions and their rationale.

5) References

Cite the scientific, extension, industry, and other sources used to support your recommendations.

6) Appendices:

Include a complete set of sample calculations for one recommendation on one field, along with detailed or technical information to support conclusions.

Figures and tables are optional but are encouraged where they improve the clarity of the report. All information, figures, and tables obtained or adapted from other sources must be appropriately cited.

The written report should be approximately **8–10 pages**, excluding figures, tables, references, and appendices, and should use an **11-point font and 1.5-line spacing**.

Students will also present their recommendations orally to the farmer and a panel of industry agronomists.

- **Submission guidelines:** Submit the final report and oral presentation files to the appropriate UM Learn submission folder by the specified deadlines.
- **Evaluation criteria:**

The written report will be evaluated based on:

- appropriateness and practicality of the recommendations;
- technical accuracy;
- quality of agronomic reasoning and justification;
- effective use and interpretation of soil test and field information;
- consideration of reasonable alternatives;
- organization and clarity;
- strength of the discussion and conclusions; and
- quality and professionalism of the writing.

A detailed grading rubric will be provided in class.

Term project – Oral Presentation:

- **Goal:**
 - Addresses learning outcomes 3-4.
 - Communicate field-specific nutrient management recommendations clearly and professionally to the farmer and a panel of agronomists.

- **Procedure:**

Each group will present its nutrient management recommendations for the assigned fields to the farmer, the panel of agronomists, and the class.

The presentation should focus primarily on the nutrient management recommendations described in Section 3 of the written report. For each field, explain the preferred recommendation and compare it with at least one reasonable alternative. Clearly explain the basis for the recommended nutrient rates, sources, timing, and placement.

A detailed discussion of soil-testing methods is not required during the oral presentation; however, relevant soil test results and other supporting information should be used to justify the recommendations.

Each group will have:

- 15 minutes to present its recommendations; and
- 5 minutes to answer questions from the farmer and panel.

All group members are required to participate meaningfully in the presentation. Presentation responsibilities and speaking time should be distributed as evenly as practical among group members.

Presentations should follow standard practices for effective professional communication, with a clear introduction, logical organization of information, and concise conclusions and recommendations.

- **Evaluation criteria:**

Oral presentations will be evaluated based on both group and individual performance, using the following criteria:

- technical accuracy and quality of the recommendations;
- strength of the agronomic reasoning and justification;
- organization and clarity of ideas;
- effectiveness of visual materials;
- speaking and communication skills;
- professionalism; and
- responses to questions from the farmer and panel.

A detailed grading rubric will be provided in class.

Assignment Feedback

Feedback on assignments will include a grade and, where appropriate, formative comments intended to help students improve their performance on subsequent assignments and the term project. Weekly assignments will normally be returned within one week of submission.

Late Assignments

Unless otherwise specified for a particular assignment, a penalty of **20% of the assignment grade will be applied for each 24-hour period**, or portion thereof, that an assignment is late, unless an extension has

been approved before the deadline or the student has circumstances covered by applicable University policies. Assignments must still be submitted and completed satisfactorily where satisfactory completion is a course requirement.

Missed Assignments

Students are responsible for completing and submitting required work even if they are absent from class. If circumstances prevent a student from attending a laboratory or submitting an assignment by the deadline, the student should contact the instructor as soon as reasonably possible.

Late penalties will normally apply unless an extension or accommodation has been approved. Students remain responsible for completing any required work associated with a missed laboratory.

Lab/Tutorial Schedule

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to [section 2.8 of the ROASS procedure](#). Related materials and assignments will be posted ahead of each session.

Week	Date	Class Content
1	Sept 10	Introduction: lab components, lab groups, nutrient removal by crops, and fertilizer calculations Problems: crop nutrient requirements and removal, fertilizer calculations
2	Sept 17	Term project: introduction of term project; use ref. material (e.g. soil maps) to preview characteristics of fields; finalize interview questions Problems: nutrient movement, uptake/removal by crops
3	Sept 24	Term Project: interview host farmer; discuss soil sampling and sample handling Problems: contribution of soil minerals and soil organic matter to soil fertility
4	Oct 1	Field Trip: Farm visit and field soil sampling for the term project
5	Oct 8	Term Project: soil test extraction & analysis Problems: solubility/precipitation, soluble and surface complexes
6	Oct 15	Midterm Exam #1
7	Oct 22	Term Project: examine soil test reports Problems: pH and pe effects
8	Oct 29	Term Project: discuss fertilization rate calculations (including blends) and methods of placement Problems: fertilizer rate and cost calculations, N behaviour
9	Nov 5	Term Project: organization, presentation and writing of reports; generate draft recommendations Problems: manure nutrient and application rate calculation
10	Nov 12	No class – Fall Term Break
11	Nov 19	Midterm Exam #2
12	Nov 26	Term Project: oral presentation of nutrient management recommendations to the farmer and agronomists' panel
13	Dec 3	Lab exam

Grading

Final grades for the course will be assigned based on the following grading scale. Grades will be rounded to the nearest whole number. No extra credit opportunities will be available.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	92-100	4.25-4.5	4.5
A	85-91	3.75-4.24	4.0
B+	78-84	3.25-3.74	3.5
B	72-77	2.75-3.24	3.0
C+	66-71	2.25-2.74	2.5
C	60-65	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

Expectations

I EXPECT YOU TO:

- **Read and understand the information in this syllabus.**
- **Attend class sessions regularly and punctually.** Class attendance is required to gain a full understanding of the course material.
- **Create and maintain a respectful learning environment:** Sharing knowledge effectively requires mutual respect among students and the instructors. All communications and in-person interactions, in and outside of class, are expected to be respectful and professional. 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 the instructor 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 sessions punctually and well-prepared.
- Grade assessments fairly and provide feedback in a timely manner.
- Respond to your emails within 24 hours of receiving them, from Monday to Friday.
- Be available for in-person, online, or phone meetings to discuss class material and assignments as needed, providing support to meet your learning goals.

Course Policies

Academic Integrity

Each student in this course is expected to complete 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.

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

1. Complete your assignments independently unless collaboration is specifically permitted. For weekly laboratory assignments, you may discuss approaches and concepts with your assigned group, but the work you submit must be your own. Failure to complete your work independently is considered ***inappropriate collaboration*** and/or ***academic fraud***. If you are in need of assistance, please contact the instructor immediately for support and/or to arrange for approved supports.
2. **Use of Generative Artificial Intelligence (GenAI):** Students may ***not*** use generative artificial intelligence (GenAI) tools or applications to answer questions, perform calculations, or generate written responses for weekly assignments.

For the term project, students may use GenAI tools as a learning and analytical aid to ***help explore ideas, compare alternative nutrient management strategies, and critically evaluate their recommendations***. Students are responsible for verifying the accuracy and appropriateness of any information or suggestions obtained from GenAI tools.

GenAI may ***not*** be used to generate the final written report or oral presentation. The submitted report and presentation must reflect the students' own analysis, reasoning, calculations, and writing, and students must be able to explain and defend their recommendations.
3. 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 services is a ***violation of the Copyright law***.
4. 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 (using quotation marks) or paraphrased. Plagiarism applies to any written 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.
5. Do not submit assignments already graded in another course. This is considered ***duplicate submission***.

Plagiarism, duplicate submission, inappropriate collaboration, academic fraud, and personation are violations of the Student Discipline Bylaw and will lead to the [serious disciplinary action](#). Please read the section on Academic Integrity under UM Policies at the end of this syllabus. 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. Please connect with Student Accessibility Services (SAS) to facilitate any accommodations you may require. SAS is located at 520 University Centre (Fort Garry Campus). You contact SAS in person, by phone (204 474 7423) or email (student_accessibility@umanitoba.ca).

You are also welcome to discuss any accessibility concerns you may have with us directly if you feel comfortable doing so.

Attendance

Regular class attendance is required to gain a full understanding of the course material. If you are sick, please stay home. If you must miss class for any reason, please let the instructor for that lecture know. As noted above, assignment due dates still apply if you miss class, unless you have arranged an extension.

Assignment Extension and Late Submission

In case of illness or other extenuating circumstances that cause you to miss classes and/or due dates, please communicate with the instructors directly first. In some cases, you may be required to follow 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 the appropriate instructor to explain the extenuating circumstances causing you to miss the deadline.

See the ***Course Assignments and Evaluations*** section above for specific requirements and penalties for late or missed submissions.

Class Communication

You must obtain and use your University of Manitoba email account for all communication between yourself and the university. We will send email messages only to your University of Manitoba email account. All communication must comply with the [Electronic Communication with Students Policy](#).

Email is our preferred form of communication to set up appointments or discuss issues related to the course. We will do our best to respond to all emails within 24 hours on weekdays and 48 hours on weekends/holidays. For urgent matters, you may phone or text, but we cannot guarantee an immediate response.

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

Recording Class 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 the instructor for that lecture. 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 us or contact Student Accessibility Services to arrange an accommodation.

Referencing Style

Use the APA style for citations and references, consistent with the Soil Science Society of America Journal.

- SSSAJ: <https://www.sciencesocieties.org/files/publications/style/chapter-01.pdf>
- APA Style Guide: <https://apastyle.apa.org/style-grammar-guidelines/>

Additional information about referencing styles and reference managers is available at <https://libguides.lib.umanitoba.ca/learning/citing>.

Technology Use

Technology use must align with the University of Manitoba's policy outlining responsible, ethical, and legal use. During class, you may use technology only for educational purposes related to this course. Please silence notifications on devices during class.

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. We have ensured that the content we use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by the instructors, 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 (e.g., Course Hero, Chegg, etc.), unless an exception to the Copyright Act applies or written permission has been confirmed. For more information, see the [University's Copyright Office website](#) or contact um_copyright@umanitoba.ca.

APPENDIX: ROASS SCHEDULE A

UM Policies

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 University's policies and procedures and regulations specific to your faculty, college or school.

The University of Manitoba (UM) website's [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](#) 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>) 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](#)
 - [Academic Misconduct and How to Avoid It](#)
- [Student Advocacy Office](#)

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.

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](#) 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](#).

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](#) website.

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](#)
- [Student Discipline](#)
- [Violent or Threatening Behaviour](#)

The UM website, [Engaging in 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](#). 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](#), includes more information on the different ways in which you can withdraw from a course and important dates and deadlines to do so.

UM Learner Supports

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](#) 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](#) website to access services, find resources, and connect with like-minded people and allies.

Academic Advising

Contact an [Academic Advisor](#) for support with degree planning and questions about your academic program and regulations.

Academic Learning Centre (ALC)

The [Academic Learning Centre](#) offers one-to-one tutoring, group 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](#). 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](#).

Attend [Supplemental Instruction \(SI\)](#) 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](#), where you can learn strategies to improve your writing and studying. More information on topics, dates, and registration, are found online.

Register for [Faculty of Graduate Studies Grad Steps Workshops](#). These workshops are specifically designed for students working towards Master's degrees or PhDs. More information on topics, dates, and registration can be found online.

Access the Academic Learning Centre's collection of [videos and tip sheets](#) 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. 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](#)
- [Winnipeg Rental Network](#)
- [Manitoba Residential Tenancies Branch](#)
- [HOPE End Homelessness Winnipeg Services & Supports](#) (<https://umanitoba.ca/housing>)

Food

- [U of M Food Bank](#)
- [Food Matters Manitoba](#)

Finances

- [UM Financial Aid and Awards](#)
- [Manitoba Student Aid](#)

Child Care

- [UM Child Care](#)
- [Manitoba Child Care Subsidy](#)
- [Manitoba Child Care Association](#)

English Language Centre

The [English Language Centre \(ELC\)](#) provides in-person and remote courses, and individual support to students whose first language is not English to support academic success and participation in the University of Manitoba community.

The ELC helps students meet the English Language Proficiency Requirement for most programs at the University of Manitoba. Over 80 per cent of students who enter the ELC's Intensive Academic English Program successfully complete the program and begin their degree at the University of Manitoba.

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](#) 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, you can:

- contact the [Canada Mental Health Crisis Line](#) at 9-8-8
- or the [Klinic Community Health](#) 24/7 crisis line at 204-786-8686,
- visit the [Crisis Response Centre](#) located at 817 Bannatyne Avenue.

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](#) 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](#) webpage for a list of locations and current wait times.

Student Counselling Centre (SCC)

The [Student Counselling Centre](#) 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](#) webpage or the urgent care resources listed above if you require immediate support.

Visit the [SCC's Our Services](#) 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 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](#) website.

Student Wellness Centre (SWC)

The SWC is an inclusive space for students to rest, recharge and learn skills to actively engage in and maintain their wellbeing throughout their time in university. It is a resource hub for a range of wellness-related services including consultations with our professional staff and trained peer educators, events such as pet therapy, workshops, gatherings, and free harm reduction supplies.

For more information, please visit the [Student Wellness](#) website. *The SWC is located at 162 Extended Education Building (Fort Garry Campus).*

Spiritual Care and Multifaith Centre

Spiritual care services are available to all, whether you identify as spiritual, atheist, religious or agnostic. [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](#) is a safe and confidential space, offering students direct support and assistance with getting connected to supports on campus and in the community. We can help with challenges related to mental health, financial or housing insecurity, safety concerns, or any ongoing challenges that are affecting your ability to focus on academics.

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.

University Health Service (UHS)

The [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, 100 UMSU University Centre
- 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](#) 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](#) 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](#) website 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](#), 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](#) 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). You contact SAS in person, by phone (204 474 7423) or email (student_accessibility@umanitoba.ca)

Student Advocacy

[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).

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](#)

General library assistance is also available at both the Bannatyne and Fort Garry campuses by [visiting any library location](#). When working online, students can receive help via the Ask Us chat button found on the right-hand side of the [Libraries' homepage](#).

University of Manitoba Students' Union

As the official representative of all University of Manitoba undergraduate students, the [University of Manitoba Students' Union](#) (UMSU) provides a range of resources, services, events and support services, including the U-PASS, Health and Dental coverage, Legal Aid, and more.