

Syllabus

PLNT 4590: Physiology of Crop Plants (Winter 2024)



UM | Faculty of Agricultural
and Food Sciences

TABLE OF CONTENTS

COURSE DETAILS 3

INSTRUCTOR CONTACT INFORMATION..... 3

COURSE DESCRIPTION 3

INSTRUCTIONAL METHODS AND COURSE GOALS..... 4

COURSE LEARNING OUTCOMES 4

TEXTBOOK, READING AND COURSE MATERIALS 5

USING COPYRIGHTED MATERIAL 5

COURSE TECHNOLOGY 5

EXPECTATIONS: I EXPECT YOU TO..... 5

EXPECTATIONS: YOU CAN EXPECT ME TO 7

DESCRIPTION OF EXAMINATIONS..... 7

DESCRIPTION OF ASSIGNMENTS 7

DESCRIPTION OF LABS, SCHEDULE AND LAB REPORTS..... 7

ASSIGNMENT AND LAB REPORT SUBMISSION POLICY 8

EARLY AND MISSED EXAMINATIONS 8

COURSE EVALUATION METHODS AND GRADING SCALE..... 8

CLASS SCHEDULE..... 9

LAB SCHEDULE 11

UNIVERSITY SUPPORT OFFICES & POLICIES..... 12

COURSE DETAILS

Course Title: Physiology of Crop Plants

Department: Plant Science

Course Number: PLNT 4590

Academic Session: Winter 2024

Credit Hours: 3

Prerequisites and How They Apply to This Course: BIOL 2242 - a study of the structure and function of the flowering plants. Moreover, basic knowledge in crop science and soil science is desirable.

Lecture Hours: 12:30 - 1:20 pm (MWF)

Location: Room 134, Agriculture Building

Laboratory Hours: 2:30 - 5:25 pm (W)

Location: Room 343, Agriculture Building

Department Office Location: 222 Agriculture Building

Course Web Page: UM Learn @ <https://universityofmanitoba.desire2learn.com/d2l/login>

INSTRUCTOR CONTACT INFORMATION

Instructor: Dr. Belay Ayele (I prefer to be addressed as “Belay”)

Office Location: Room 111 Agriculture Building

Research Lab Location: Room 112, Crop Technology Center, 194 Dafoe Road

Office Phone Number: 204-474-8227

Email Address: belay.ayele@umanitoba.ca

Office Hours: 11:00 - 12:30 pm (Thursdays). Otherwise, available by appointment only. I can be reached preferably by email, and will reply to your emails within 24 hours.

Lab Teaching Assistant: Ms. Janelle Gawiak

Office Location: Room 149 Agriculture Building

Email Address: janelle.gawiak@umanitoba.ca

Office Hours: Please email Janelle

COURSE DESCRIPTION

U of M Course Calendar Description

Concepts dealing with the physiological response of crop plants to the environment from the time of seed germination through to reproduction.

General Course Description

Crop physiology is an integrative course that builds on and applies the conceptual and technical information presented in the foundation courses from a variety of disciplines including plant physiology, crop production, soil science, botany and ecology to further enhance students' capabilities to bear on problems of yield improvement and crop management, and undertake graduate studies in preparation for advanced research and teaching positions.

This course is designed to help students integrate and better understand crop growth, development and yield from the perspective of whole plant physiology. In this course, students will gain an overview of crop physiological processes that are necessary to understand how plants operate, and interact with their

environment. The course is useful to understand and interpret agronomic phenomena contributing to crop yield. It also offers an opportunity to survey contemporary aspects of crop physiology with emphasis on recent research progress in related fields.

INSTRUCTIONAL METHODS AND COURSE GOALS

Instructional Methods: This course will consist of lectures (with the aid of PowerPoint presentations) and obligatory laboratory work. The lectures are designed to orient students with the conceptual information in the text and current topics in the subject. Copies of the course outline and PowerPoint slides of lectures will be posted under course content on the course's UM Learn site ahead of time. The laboratory part of the course will provide opportunities in structured labs and independent investigations.

Course Goals: The aim of this course is to give students a greater understanding of the physiological processes, plant responses and environmental factors affecting growth and productivity of the agricultural crops we depend on, and to stimulate students' learning of basic concepts in crop growth and development. The course is also designed to enable students to use the knowledge of crop physiology to answer practical questions. Basic concepts underlying crop physiology will be demonstrated through laboratory exercises. Specific objectives of this course are the following:

1. Describe in detail the physiology and biochemistry of crop seed germination and dormancy;
2. Examine the physiological aspects of crop growth and phenological development;
3. Define and analyze the mechanisms by which crop plants acquire and utilize resources like carbon, water, light and mineral nutrients;
4. Discuss the concepts of assimilate translocation and dry matter partitioning in a crop plant;
5. Examine the physiology of crop adaptation to their environment;
6. Review the physiological basis for crop production and management practices; and
7. Develop critical thinking and problem solving skills with respect to crop physiology.

COURSE LEARNING OUTCOMES

This course has considerable value to students in the field of agricultural science including agronomy, crop management, plant breeding and plant biotechnology. As it extensively covers theoretical and practical aspects of crop physiological processes and crop-environment interaction, the course is also of interest for students of applied ecology and environmental science, with the following learning outcomes.

1. Distinguish key physiological processes underlying the formation of seedlings from seed embryos;
2. Identify the physiological factors that regulate growth and developmental processes of crop plants, and clearly define their roles;
3. Evaluate the different strategies used by plants to acquire and utilize resources, and formulate a logical argument of their impact on crop productivity;
4. Recognize the significance of assimilate translocation and patterns of dry matter partitioning in determining crop yield;
5. Demonstrate a clear understanding of crop-environment interaction and its implication on crop growth and yield;
6. Relate crop physiological processes with agronomic practices used in crop production systems; and
7. Integrate and apply their knowledge of crop physiology for analytical thinking and solving practical problems experienced in agricultural systems.

TEXTBOOK, READING AND COURSE MATERIALS

Recommended Textbook

Taiz L, Moller IM, Murphy A, Zieger (2022) Plant Physiology and Development. 7th ed. Sinauer Associates, Inc. Publishers, Sunderland, MA, USA ISBN: 9780197577240. It is available at the book store.

Supplementary Reading

Though the text book provides reasonable coverage for most of the topics in the course, it is not either sufficiently detailed or does not cover some of the topics to be discussed in this course. To supplement the shortfalls, please refer to selected chapters from the following books:

Bewley JD and Black M (1994) Seeds: Physiology of Development and Germination. 2nd ed. Plenum Press, New York.

Gardner FP, Pearce RB and Mitchell RL (1985) Physiology of Crop Plants. Iowa State University Press, Ames, IA, USA.

Hay R and Porter J (2006) The Physiology of Crop Yield. 2nd ed. Blackwell Publishing Ltd, Oxford, UK.

Marschner H (1995) Mineral Nutrition of Higher Plants. 2nd ed. Academic Press, San Diego, CA, USA.

Additional Materials

Supplementary reading materials will be posted on the course's UM Learn website (<https://universityofmanitoba.desire2learn.com/d2l/login>), and you will be notified of any updates by email from your instructor.

USING COPYRIGHTED MATERIAL

Please respect copyright. We will use copyrighted content in this course. Copyrighted works, including those created by me, 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 um_copyright@umanitoba.ca.

COURSE TECHNOLOGY

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in the classroom setting only for educational purposes approved by the instructor and/or the University of Manitoba Disability Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (©S Kondrashov. Used with permission).

EXPECTATIONS: I EXPECT YOU TO

Attend lecture class: Most important course materials are discussed in the lecture, thus successful completion of this course requires that students attend all classes, and they are also expected to arrive in good time for all these meetings, participate in class discussions and take notes during the class. Missing a

class will make understanding of materials presented in subsequent sessions difficult. Students should refrain from any disruptive behaviors during class time.

Participate: It is essential that students actively engage in class discussions (e.g. actively listening, posing and responding to questions) and group efforts. Your class participation will be critical for favourable consideration in the case of a borderline grading situation.

Respect: I will treat you with respect and would appreciate the same courtesy in return. See [Respectful Work and Learning Environment Policy](#).

Use of Third Party Detection and Submission Tools: Electronic detection tools may be used to screen assignments in cases of suspected plagiarism.

I expect you to follow these policies around Class Communication, Academic Integrity, and Recording Class Lectures ([Section 2.5 ROASS](#)).

Class Communication:

You are required to obtain and use your University of Manitoba email account for all communication between yourself and the university. All communication must comply with the Electronic Communication with Student Policy:

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

Academic Integrity: Each student in this course is expected to abide by the University of Manitoba [Academic Integrity](#) principles. Always remember to reference the work of others that you have used. Also be advised that you are required to complete your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

Refer to specific course requirements for academic integrity for individual and group work such as:

- I. Group projects are subject to the rules of academic dishonesty;
- II. Group members must ensure that a group project adheres to the principles of academic integrity;
- III. Students should also be made aware of any specific instructions concerning study groups and individual assignments;
- IV. The limits of collaboration on assignments should be defined as explicitly as possible; and
- V. All work should be completed independently unless otherwise specified.

Recording Class Lectures: Dr. Ayele and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from the instructor. Course materials (both paper and digital) are for the participant's private study and research, and must not be shared.

Student Accessibility Services: The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and

services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services

520 University Centre

Phone: (204) 474-7423

Email: Student_accessibility@umanitoba.ca

EXPECTATIONS: YOU CAN EXPECT ME TO

I will be in class before or on time. My teaching practice involves the use of questions in class. I expect students to respond but I do not expect perfection.

DESCRIPTION OF EXAMINATIONS

There will be two exams. The first exam will cover mainly the lectures and reading materials covered prior to the exam, whereas for the second exam you may expect the coverage of some cumulative information garnered throughout the term. Both exams are designed to evaluate how well you have achieved the learning outcomes of the course, and will consist of a mixture of questions in fill-in-the-blank, short answer and long answer/essay formats. The planned exam dates are indicated in the “COURSE EVALUATION METHODS AND GRADING SCALE” section (see below), and are very unlikely to change.

DESCRIPTION OF ASSIGNMENTS

An assignments with its respective instructions will be given during the term. All the references (books, articles, lecture handouts, and relevant websites) you may have cited in your assignments should be listed at the end of your assignment. Follow the American Psychological Association (APA) citation style.

DESCRIPTION OF LABS, SCHEDULE AND LAB REPORTS

Lab expectations

Attend lab: Lab attendance is mandatory. Reports will not be accepted if the lab is not attended, unless the student provides acceptable justification and/or documentation as required.

Group work policies: Regardless of how each lab work is performed (individually or in group); lab reports should be written on an individual basis.

Description of labs and lab reports

At the start of each lab session, you will be provided with instructions and background information for the concepts to be illustrated. You will receive lab handouts at least a week prior to the date of performing the scheduled experiment. Your lab grade will be determined by your lab quizzes and reports, and note that the laboratory section of the course must be passed to pass the course. The lab reports should have the following sections:

1. **Title Page** - Include the title of the experiment, your name, course name and number, and date of the experiment;
2. **Introduction** - Include brief background information, the purpose and hypothesis of your experiment;
3. **Materials and Methods** - Describe the materials and experimental procedures or methods used in your experiment;

4. **Results** - Show the data or observation in graphical or tabular format and describe it in words. You must also include additional notes you made during the lab;
5. **Discussion and Conclusion** - Discuss and interpret your results, state if the results support your hypothesis, include any errors and suggestions for improvement, and summarize your experiment; and
6. **Citation** - list all the references (books, articles, lab manuals, relevant websites) you have used at the end of the report. Follow the American Psychological Association (APA) citation style.

ASSIGNMENT AND LAB REPORT SUBMISSION POLICY

Assignments and lab reports are due in a week after posting and completion of the lab work, respectively, and assignments are submitted through the Assignment link UM Learn course website by 6 PM on the due date. Assignments and lab reports not submitted by the due date will be penalized 10% of the total value for each day late. Missed assignments will receive a zero grade. If a lab report is missed, an "I" (for incomplete) grade will be assigned to the student.

EARLY AND MISSED EXAMINATIONS

Exams must be written on the scheduled dates. No early exams will be given. A student who misses an exam will automatically receive a grade of zero for that exam. Only students with legitimate excuses/documentation deemed acceptable will be allowed to make up missed exams.

COURSE EVALUATION METHODS AND GRADING SCALE

Exams, assignments and lab reports will be returned to you after they are marked or graded, except for the final exam. I try to get all your work graded and give you feedback within 10 working days after submission/completion. Evaluative feedback from the first assignment and first exam, in the form of numerical marks, will be provided prior to the deadline for voluntary withdrawal (see important dates below).

Your final grade will be determined by the following:

Assessment Method	% of Final Grade
Mid-Term Exam: one hour examination (February 16)	20%
Final Exam: two and half hour final examination (TBA)	35%
Quize (s)/take home exam (TBA)	10%
Assignment (due March 15)	10%
Lab Quizzes & Reports (details will be discussed by the TA)	25%
Total	100%

Grading scale

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.25-4.5	4.5
A	80-89	3.75-4.24	4.0
B+	75-79	3.25-3.74	3.5
B	70-74	2.75-3.24	3.0
C+	65-69	2.25-2.74	2.5
C	57-64	2.0-2.24	2.0
D	50-56	Less than 2.0	1.0
F	Less than 50		0

Important dates

First Day of Class

January 8

Winter-Term Break

February 19-23

Voluntary Withdrawal Date

March 20

Last Day of Class

April 10

CLASS 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).

Topics	Lecture Weeks (# of lectures)
1. Seed Physiology <ul style="list-style-type: none"> - Seed structure and its composition - Seed storage reserves: the energy to fuel early seedling growth - Seed imbibition and germination: the transition of seed embryo into a seedling - Metabolic and cellular events during germination - Physiology of seed dormancy: deciding to germinate or not to germinate - Mobilization of storage reserves and its control 	Week 1-2 (5 lectures)
2. Crop growth and phenological development <ul style="list-style-type: none"> - Seedling emergence: phasing out dependence on storage reserves - The role of cell division in crop development - Cell walls and elongation: plant tissues plasticity and elasticity - Root formation, development and its regulation - Shoot formation and its development 	Week 3-4 (5 lectures)
3. Crop canopy, photosynthesis and respiration <ul style="list-style-type: none"> - The life history of a leaf: why it is important? - Components of plant leaf area expansion - Leaf anatomy and its role in light interception - The development of crop canopy: leaf area index - Canopy architecture and light penetration - Photosynthesis and photorespiration - Photosynthetic response to temperature and CO₂: the greenhouse effect - Crop respiration at the field, crop and canopy level 	Week 4-6 (6 lectures)
Week 7 (February 19-23) Mid-Term Break: No Classes	
4. Mineral nutrition of crops <ul style="list-style-type: none"> - Essential nutrients and crop growth response - Nitrogen assimilation - Biological nitrogen fixation and its regulation - Phosphate assimilation 	Week 6 and 8 (4 lectures)
5. The physiology of flowering in crop plants <ul style="list-style-type: none"> - Floral meristems and floral organ development - Floral evocation: the endogenous and exogenous cues - Biochemical signaling involved in crop flowering 	Week 9 (3 lectures)
6. Seed development and pre- and post-harvest physiology <ul style="list-style-type: none"> - Embryogenesis and seed formation: the making of next generation plants - Assimilate translocation: pathways and patterns - Assimilate partitioning and remobilization: source-sink interaction - Deposition of storage reserves, seed maturation and desiccation - Physiology of pre-harvest sprouting: why seeds germinate on the parent plant? - Seed storage and seed longevity: what is wrong with aged seeds? 	Week 10-11 (6 lectures)
7. Crop stress physiology <ul style="list-style-type: none"> - Flooding and hypoxic stress: the suffocation of plant tissues - Water deficit and drought tolerance - Temperature stress: the heat, the chill and the freeze - Salinity stress: the salt injury 	Week 12-13 (5 lectures)

LAB SCHEDULE

We will have a total of five lab sessions, and details of the lab topics, respective schedules and lab report due dates will be discussed by the TA at the beginning of the term.

Lab #	Topics
Lab 1	Seed Physiology
Lab 2	Seedling Emergence
Lab 3	Mineral Nutrition
Lab 4	Stress Physiology
Lab 5	Plant Hormone

UNIVERSITY SUPPORT OFFICES & POLICIES

The information on university support offices and policies is available in [Schedule “A”](#).

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 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 behaviors 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 <https://umanitoba.ca/sexual-violence>. 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.

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 [Student Supports website](https://umanitoba.ca/student-supports) (<https://umanitoba.ca/student-supports>).

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.

Register for [Faculty of Graduate Studies Grad Steps Workshops](https://umanitoba.ca/graduate-studies/student-experience/graduate-student-workshops) (<https://umanitoba.ca/graduate-studies/student-experience/graduate-student-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](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. 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>)

<https://foodmattersmanitoba.ca/>

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 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).

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).

University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research

process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A [complete list of liaison librarians](http://bit.ly/WcEbA1) (<http://bit.ly/WcEbA1>) can be found by subject.

In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult <https://umanitoba.ca/libraries/locations-and-facilities>. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the [University of Manitoba Libraries' homepage](https://umanitoba.ca/libraries/) (<https://umanitoba.ca/libraries/>).