

**COURSE DETAILS**

**Course, credit hours and term:** MBIO 2020 Exploring Microbial Genetics, 3 credit hours, Winter 2026

**Pre-requisites:** [MBIO 1010 or MBIO 1011] and [((CHEM 1110 or CHEM 1111) and (one of CHEM 1120, CHEM 1121, or CHEM 1126)) or (the former CHEM 1310 or the former CHEM 1311)].

**LECTURE INSTRUCTOR CONTACT INFORMATION**

**Instructor:** Dr. Ann Karen Brassinga (she/her) [Email: Ann.Brasinga@umanitoba.ca]

**COURSE DESCRIPTION**

**Academic calendar:** (Lab required) Topics will include bacterial growth, chromosome replication, the specifics of transcription and translation and their application to the regulation of microbial gene expression. Families of bacterial and animal viruses, their modes of reproduction and pathogenicity will be discussed. Mutation and gene transfer in bacteria will be introduced. May not be held with MBIO 2021, the former MBIO 2110, or the former MBIO 2111. Prerequisites: a minimum grade of C in [MBIO 1010 or MBIO 1011] and [((CHEM 1110 or CHEM 1111) and (one of CHEM 1120, CHEM 1121, or CHEM 1126)) or (the former CHEM 1310 or the former CHEM 1311)].

**General:** Students will learn in detail the basic principles underlying molecular mechanisms of microbial genetics with focus on the roles of these mechanisms in molecular experimental approaches. By the end of the course, the student should be:

1. Knowledgeable of bacterial, plasmid and phage genetics
2. Knowledgeable of how microbial genetics can be used as tools in molecular experimental approaches
3. Able to critically analyze and extract relevant information provided in a text and/or lecture

**COURSE MATERIALS**

**Required textbook:** *Biology of Microorganisms* by Madigan, Martinko, Bender, Buckley and Stahl, 16th Edition (available as E-text or print)

**EXPECTATIONS AND POLICIES**

**Lecture format:** Lectures will be delivered using PowerPoint presentation and use of the overhead/whiteboard. PDF files of lecture PowerPoint slides will be posted on UM Learn in advance for each class to provide students with a template to fill in with their own style of note-taking. As such, lecture slides are not complete, and therefore should not be used as a substitute for not attending a class. **Complete lecture notes will not be provided in the event of a missed class; it is your responsibility to catch up on the missed lecture material and notes.** Students are expected to attend all classes, and are encouraged to ask questions on the lecture material. Note that in the event of unusual circumstances (e.g. illness, family emergency, etc.), I will work with my home Department to find a substitute to continue teaching the class in-person. In the event a suitable instructor cannot be found, I may give the lecture synchronously or provide asynchronous content through Webex/Zoom or UMLearn for up to 5 days. An email will be sent to students' UM email and a posting will be made on UM Learn the night before class if this is the case.

**Image recordings** – still image capture of slide/whiteboard material is strictly for personal viewing only and may not be shared or reproduced further without permission of the copyright owner (Dr. A. Karen Brassinga). Please do not include instructor and/or classmates in the image(s). Audio/video recordings require prior consent from instructor, and once granted upon request, the recording is for personal use only and may not be shared or reproduced further without permission of the copyright owner (Dr. A. Karen Brassinga). Posting of images/recordings that include lecture material and/or instructor/classmates on the internet is strictly prohibited.

**Emails:** The University requires all students to activate an official U of M email account, which should be used for all communications between yourself and the university, including all your instructors. Emails sent to me from an email account other than the University of Manitoba account will automatically be deleted. All email communications should comply with the University's policy on electronic communication with students, which can be found at:

[http://umanitoba.ca/admin/governance/governing\\_documents/community/electronic\\_communication\\_with\\_students\\_policy.html](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html). You can expect me to answer your email sent on a working day within 24 hours, or if sent on a holiday or weekend, within 72 hours. Student e-mails sent to me from an email account other than the University of Manitoba account will automatically be deleted.

### **Traditional Territory/Land Acknowledgement**

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

### **COURSE EVALUATION**

**Grading:** 2 Midterm exams (15% each; 30% total), laboratory (20%), and 1 Final Exam (50%)

**Midterm exams:** Each of the 2 mid-term exams will be handwritten under “closed book” conditions during class time. During the exam, the student will not be permitted to have access to lecture/personal notes, textbook/reference materials, or any electronic devices including but not limited to laptops, cell phones, smart watches and/or glasses, earbuds.

**Laboratory:** please refer to Dr. Rathgeber’s section of this syllabus.

**Final exam:** The final exam will be handwritten at the time and date stipulated by the Registrar’s Office and will be conducted under “closed book” conditions. During the final exam, the student will not be permitted to have access to lecture/personal notes, textbook/reference materials, or electronic devices including laptops and cell phones. **To pass the course, a grade of 45% or greater must be achieved on the final exam in addition to achieving a passing grade in the laboratory component.** The Faculty of Science regulations apply to all missed final exams.

**Deferred midterm exams will not be offered.** The grade weight of one, or both missed midterm exams, will automatically be added to the final exam grade weight **once the student completes and submits the digital form (Self Declaration Form) within 120 hours (5 days) of the missed midterm exam(s).** Please refer to the Short-Term Accommodations and Health & Safety sections (appendix) for further information. **Please do not come to campus if you are ill.** Note that the final exam schedule may be worse than your midterm exam schedule and for most students, a 50-80% final is not less stressful than one worth 50%.

**Determination of final course grade:** Letter grades are assigned taking into consideration the grade distribution in the class and the University of Manitoba’s descriptors A+ (Outstanding), A (Excellent), B+ (very good), B (Good), C+ (Satisfactory), C (Adequate), D (Marginal), F (Failure); see <http://umanitoba.ca/student/records/grades/686.html>. The grading scheme generally but not exactly follows that used by the Rady College of Medicine [https://umanitoba.ca/faculties/health\\_sciences/medicine/admissions/8847.html](https://umanitoba.ca/faculties/health_sciences/medicine/admissions/8847.html).

A+ (>90%), A (80-89.9%), B+ (75-79.9%), B (70-74.9%), C+ (65-69.9%), C (60.0-64.9%), D (50-59.9%), F (<50%, or <45% in final exam).

## Lab information

Lab Instructor – Dr. Chris Rathgeber

Email: [chris.rathgeber@umanitoba.ca](mailto:chris.rathgeber@umanitoba.ca)

Office hours: I am available for meetings most mornings. Please email me for an appointment. I'm also available for consultation in the lab room during and after your scheduled period.

Laboratory grade: (20%)\*

The lab counts for 20% of your final grade in the course and marks will be allocated as follows:

- Lab term work, including individual lab reports and group assignments = 10%
- Lab exam = 10%

\* Note that to pass the course, you must attend at least 6 out of 8 scheduled lab periods, and you must achieve a minimum of 10 marks out of 20 in the lab.

Check the lab schedule on UM Learn for quiz for lab assignment due dates.

### Lab attendance

All labs this term will be held in-person during your scheduled lab period. See the official lab schedule on UM Learn for the weeks that you have labs.

Lab attendance is mandatory. Because all lab sections are full, you must attend the lab period for which you are registered on Aurora. Make-up labs for missed lab periods are not possible.

**In case of illness – The most important thing to remember is that if you are sick... Stay Home!**

**Missed labs** – You may miss up to two lab periods for medical or compassionate reasons (no doctor's note required). If you miss a lab, you should submit the [Self Declaration Form](#). In most cases, make-up labs will not be possible. It will be your responsibility to catch up on the lab material by studying the pre-lab, and lab review material online, and looking at the results obtained by other students in the class as necessary. The lab reviews that appear on UM Learn after each topic has been covered are excellent resources for studying, especially if you miss a lab.

Please note that you can miss a maximum of two lab periods. If you miss any more than two, you will not have completed the lab requirement for this class, and you will receive a failing grade in the course.

**Assignments for missed labs** – If you miss a lab due to illness or for other reasons, you will not be able to do the associated lab assignment. You may not submit an assignment based on lab data that is not yours (this is considered falsified data.) And, as some assignments are meant to be group work, it may not be possible to assemble a group outside of regular lab time. In the case of a 1st missed group assignment, the mark for that assignment will be reweighted onto your lab exam (so that your lab exam will be worth 12%). Note: You must submit a temporary absence form for the missed lab to qualify for grading accommodations. As the group assignments are mandatory, no further grading adjustments will be made for additional missed labs. (ie. a 2nd missed group assignment will score a zero.)

Because you are free to choose which two labs (out of four) you will use for your individual lab reports, if you miss an associated lab, just choose another lab to use for your individual report.

**Late assignments** – If you cannot submit an assignment before the due date due to illness or absence, you should submit a temporary absence form within 2 days of the missed assignment. Submission of the temporary absence form will extend your due date by a further five days. (2 days to submit the form + 5 days extension = 7 days total). Assignments that are submitted late without a form of temporary absence may be assessed a 10% penalty per day that they are late, up to a maximum of 7 days. After 7 days, the assignment drop box will be closed and late assignments will no longer be accepted.

### Lab exemptions

Lab exemptions are available to students who have previously taken the course and completed the lab section with a minimum grade of 60% in the lab. For permission to register for the lab exemption, or to see if you qualify, [email the instructor](#).

### **CLASS/LECTURE/LABORATORY/EXAM SCHEDULE**

*(The lecture content, schedule and chapter references are tentative, and may be subject to change)*

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#### Course Introduction

Nucleic acid structure and properties (Chapter 6.1)

Replication (Chapters 6.1, 6.2, 6.3)

Replication (Chapters 6.3, 6.4)

Replication (Chapters 6.3, 6.4)

#### Lab 1 – Mutants

Replication (Chapters 6.3, 6.4)

Transcription (Chapter 6.5)

Transcription (Chapter 6.5)

#### Lab 2 – The *lac* operon

Transcription (Chapter 6.5)

Bacterial gene organization/Genetic Code (Chapters 6.5, 6.7, 6.8, 6.9, 6.10)

Translation (Chapters 6.7, 6.8, 6.9, 6.10)

#### Lab 3 – The *lac* operon (cont'd)

Translation (Chapters 6.7, 6.8, 6.9, 6.10)

Regulation of gene expression (Chapters 7.4, 7.5, 7.6)

Regulation of gene expression (Chapters 7.1, 7.2, 7.3)

#### Lab 4 - Bacteriophages

Regulation of gene expression (Chapters 7.4, 7.5, 7.6)

Regulation of gene expression (Chapters 7.4, 7.5, 7.6)

#### Lab 5 - Bacteriophages (cont'd)

Regulation of gene expression (Chapters 7.4, 7.5, 7.6)

Regulation of gene expression (Chapters 7.4, 7.5, 7.6)

#### Lab 6 - Plasmid purification

Mutation and DNA Repair (Chapters 9.1, 9.2, 9.3, 9.4)

Mutation and DNA Repair (Chapters 9.1, 9.2, 9.3, 9.4)

Mutation and DNA Repair (Chapters 9.1, 9.2, 9.3, 9.4)

#### Lab 7 – Gel electrophoresis and transformation

Viruses (Chapters 5, 11)

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Viruses (Chapters 5, 11)

Viruses (Chapters 5, 11)

Lab 8 – Last lab

Viruses (Chapters 5, 11)

Viruses (Chapters 5, 11)

Gene transfer (Chapters 9.5, 9.6, 9.7, 9.8, 9.9)

Gene transfer (Chapters 9.5, 9.6, 9.7, 9.8, 9.9)

Gene transfer (Chapters 9.5, 9.6, 9.7, 9.8, 9.9)

Genetic tools (Chapters 12.1, 12.2, 12.3, 12.4, 12.5)

Genetic tools (Chapters 12.1, 12.2, 12.3, 12.4, 12.5)

Lab exam

Genetic tools (Chapters 12.1, 12.2, 12.3, 12.4, 12.5)

Genetic tools (Chapters 12.1, 12.2, 12.3, 12.4, 12.5)

Genetic tools/Exam Information

**FINAL EXAM (CUMULATIVE) – 50% of final course grade**

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## Schedule A for Winter 2026 course syllabi

As students in this course, you are expected to have read and understood the following information.

### How to succeed in your science courses?

The Faculty of Science is committed to your academic success. Here are five key strategies:

1. Use the [Registration Revision Period](#)  
Review course syllabi and adjust your schedule without financial penalty during the registration revision period. Speak with instructors if you have questions.
2. Assess your workload  
Be realistic about your time and commitments. Use the Academic Learning Centre's [Managing Your Time Effectively](#) and consult an [academic advisor in your unit](#) if needed.
3. Commit to consistent study  
Plan for at least three hours of study per lecture hour. Stay on top of your coursework.
4. Ask for help early  
If you're struggling, contact your instructor, Teaching Assistants (TAs), or the [Academic Learning Centre](#). Early support prevents ongoing issues. Reach out to academic advisors for broader concerns.
5. Take effective notes  
In-person lectures cannot be rewatched, develop strong note-taking skills. The [Academic Learning Centre](#) offers [General Note-Taking Tips](#).

### Your rights and responsibilities

As a UM student, it is important to understand both what you can expect from the University and what is expected of you. Familiarize yourself with the Academic Calendar, University policies, and Faculty-specific regulations.

- Key resources:
  - [Academic Calendar](#): Course descriptions, program requirements, and academic regulations.
  - [Governing Documents](#): Especially the Academic and Students sections.
  - [Student Advocacy](#): Offers guidance on policies and procedures.
- Academic concerns:
  - Speak with your instructor about grades or appeals.
  - You have the right to view your final exam scripts.
  - Review the academic integrity policy and misconduct procedures. [Visit the Academic Integrity website for tools and support](#)
  - View the [Registrar's Office website](#) for more information including appeal deadline dates and the appeal form.
- Respectful environment:
  - All students are entitled to a respectful learning space.
  - Policies governing behavior include the: [respectful work and learning environment](#), [student discipline](#), and [violent or threatening behaviour](#).
- Sexual violence support:
  - UM provides confidential support and reporting options.
  - Learn more at: [Sexual Violence Policy](#)
  - More information and resources can be found by reviewing the sexual violence website [Sexual violence support and education](#).
- Intellectual property:

- Understand your rights and responsibilities regarding academic work.
- Learn more about [Intellectual Property Policy](#).
- Program-specific rules:
  - Check your [Faculty, college or school's website](#) for detailed regulation.
  - Contact an [academic advisor within your registered Faculty](#), college or school with questions.

### Learner support

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 UM, visit the [student supports website](#).

### Academic Learning Centre (ALC)

Location: 201 Tier Building, Fort Garry Campus

Phone: 204-480-1481

The [Academic Learning Centre](#) offers free academic support to UM students, including:

- [Free one-to-one tutoring](#): Help with course content, study skills, writing and English-language academic writing. **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.
- [Academic success workshop](#): Learn strategies for writing, studying and time management.
- Resources: Access [videos and tip sheets](#) on key academic skills.

### University of Manitoba Libraries

Start your research at "[Learn at the Libraries](#)" which offers guidance on academic writing, searching, evaluating sources and citing.

Your [liaison librarian](#) can help with finding resources, managing citations and answering research questions. Support is available via email, phone, online meetings or the **Ask Us!** chat.

### 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](#)
  - [Manitoba Residential Tenancies Branch](#)
- Food
  - [UM Food Bank](#)
  - [Food Matters Manitoba](#)
- Finances
  - [UM Financial Aid and Awards](#)
  - [Manitoba Student Aid](#)
- Childcare
  - [UM Child Care](#)
  - [Manitoba Child Care Subsidy](#)
  - [Manitoba Child Care Association](#)

### English Language Centre

Location: 520 University Centre, Fort Garry Campus



Phone: 204-474-9251

The [English Language Centre \(ELC\)](#) supports students whose first language is not English through courses, tests, accommodations and individual academic support.

#### Health support

Your physical, mental, emotional, and spiritual well-being are essential to academic success. Explore UM's full range of supports on the [student health and wellness](#) website.

#### Mental health support

##### **Winnipeg Urgent Physical and Mental Health Care**

**In Crisis?** If you are an adult experiencing a mental health or psychosocial crisis, contact the [Klinik Community Health](#) 24/7 crisis line at 204-786-8686, visit the [Crisis Response Centre](#) located at 817 Bannatyne Avenue, or contact the Mobile Crisis Service at 204-940-1781.

**Need Health Advice?** To speak with a nurse for guidance on what healthcare 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).

**Urgent Medical Care?** 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)

Location: 474 UMSU University Centre, Fort Garry Campus

Phone: 204-474-8592

The [Student Counselling Centre \(SCC\)](#) offer free mental health support to UM, ELC and ICM students year-round, Monday to Friday, 8:30 a.m. to 4:30 p.m. [Services](#) include individual counselling, workshops, group sessions and learning disability assessments. For urgent help, visit the SCC's [urgent help webpage](#) or use the crisis resources listed above.

#### Student Wellness Centre

Location: 162 Extended Education, Fort Garry Campus

Phone: 204-474-6740

Balancing student life can be challenging. The Student Wellness Centre offers non-judgmental support to help you take charge of your health and well-being. Visit the [Student Wellness Centre](#) website for more information.

#### Spiritual Care and Multifaith Centre

Location: 528 UMSU University Centre, Fort Garry Campus

Phone: 204-474-8721

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.

#### Case Management Office

Location: 520 UMSU University Centre, Fort Garry Campus

Phone: 204-474-7423

(Student Support Intake Assistant [Case Management](#))



If you are concerned about yourself or another student and need guidance, the [Case Management Office](#) connect students with resources, offer safety planning and provide referrals, including to the STATIS threat assessment team.

#### University Health Service (UHS)

Location: 104 University Centre, Fort Garry Campus

Phone: 204-474-8411

Contact [University Health Service \(UHS\)](#) for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.

#### Health and safety

The UM is committed to maintaining a safe learning environment for all students, faculty, and staff. Please stay home when you are feeling unwell.

#### Sexual violence support and education

Location: 537 UMSU University Centre, Fort Garry Campus

Phone: 204-474-6562

Sexual violence affects people of all ages, sexual orientations, genders, gender identities, abilities, and relationship status. At UM, we are committed to ensuring respectful work and learning environments 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](#), provides support, resources, information and referral services for any student, faculty or staff member who has been affected by sexual violence.

#### Indigenous Student Centre

Location: Migizii Agamik – Bald Eagle Lodge, Fort Garry Campus

Phone: 204-474-8850

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 Centre (IC)

Location: 541 UMSU University Centre, Fort Garry Campus

Phone: 204-474-8501

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 UM.

#### Academic accommodations

Location: 520 UMSU University Centre, Fort Garry Campus

Phone: 204-474-7423

If you have or suspect a disability (for example, mental illness, learning, medical, hearing, injury-related, visual), contact [Student Accessibility Services](#) (SAS) early in the term for a confidential consultation. SAS coordinates academic accommodations without compromising standards. To write exams with accommodation, register with the SAS Exam Centre several weeks in advance.

## Medical notes and documentation

### Short-term academic accommodations (up to 120 consecutive hours absences)

For absences of 120 hours or less, students may submit a [Self Declaration Form](#) instead of medical documentation within 48 hours of the end of the brief absence. The instructor will discuss with the student how the missed work can be made up. This policy reduces costs and avoids unnecessary use of health services. Additional documentation may be required for multiple short absences or any absence over 120 hours.

Students absent for **over 120 hours** because of medical, compassionate, University scholastic, University athletic or religious event will require official documentation to explain the absence. Students should reach out to instructors early if absences are anticipated.

### Long-term academic accommodations

Students with long-term academic accommodations are usually registered with [Student Accessibility Services](#). The long-term academic accommodations are usually to accommodate long term physical or mental illness, and accommodations can be in the form of notetaking, interpreting, assistive technology, and assessment accommodations.

### Test stress and Self-Declaration misuse

Tests can be stressful. Manage this by preparing effectively and using supports like the [Academic Learning Centre](#) and [Student health and wellness](#). Do not misuse the Self-Declaration Form for strategizing (for example, to skip a lab and write a midterm later).

Submitting it dishonestly is considered fraud and may lead to disciplinary action under the UM [Student Discipline Bylaw](#).

To be clear, here are some examples of:

#### Non-valid reasons

- Feeling unprepared to write the assessment
- Attending a personal or family event (for example vacation, wedding)
- Optional travel
- Technological difficulties
- Competitions or events, related to personal interests (choir, acting, pageants, exhibitions)
- Employment-related commitments
- Wanting to strategize the timing of the writing of the assessment
- Missing a lecture or lab to have more time to study for an upcoming test or exam

#### Valid reasons

- Sudden illness or injury on the day of an exam
- Unexpected compassionate circumstances
- Known conflicts of religious observance
- Bereavement or loss of a loved one
- Participation in an inter-university, provincial, inter-provincial, national, or international scholastic or athletic event

### Final exams and deferred exams – Very important!

- **Exam conflicts:** Contact your academic advisor immediately.
- **Missed exams:** If you miss an exam due to valid short-term reasons, submit a Self-Declaration Form to request a deferred exam.

- **Documentation:** Faculty of Science students who have deferred more than two terms must provide additional official documentation for all subsequent deferral requests. Fraudulent submissions will be investigated under the [Student Discipline Bylaw](#).
- **Deferred exam rules:**
  - Must be written within 30 days (students are expected to be available during this time).
  - Re-deferrals may delay your exam until the course is next offered (could be as late as a year later).
  - Deferred final exams are a privilege and are not always granted.
  - Deferred exams may differ in format or content. Students have a **responsibility** to check on the structure and expectations with the course instructor (or Department if the instructor is unavailable).
  - Instructors are not required to provide notes or answer content questions for re-deferrals. It is the student's responsibility to collect all the learning materials they need during the course.
  - Students who are not registered in the Faculty of Science should consult their Faculty's or unit's policies on deferred exams.
  - In cases of re-deferral requests or having deferred more than two terms of final exams, failure to provide supporting document with the necessary and relevant details will result in a final exam grade of **zero**.

Students feeling ill and who may not be able to write their exam, should apply to write a deferred exam and not attempt to write their exam.

### Missed lecture notes

If you miss a class, you are responsible for catching up. You can ask a classmate or your instructor for notes, but instructors are not required to provide them.

### Voluntary Withdrawal (VW) policies

You may withdraw from this course without academic penalty until **March 19, 2026** (in the event of date discrepancies, please follow the **dates** on the [important dates and deadlines webpage](#)). A "VW" will appear on your transcript instead of a grade. If you miss the deadline, a final grade will be recorded.

Review your assessment feedback to assess your progress and determine if you are achieving the grade you are aiming for in this course. If you are unlikely to be successful in the course or not achieving the grade that you are aiming for, you should consider a VW from the course. You may also decide to review your progress with your instructor or an academic advisor.

**Note:** VW is different from dropping a course during the Registration Revision Period, which removes the course from your record and tuition charges.

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.

### Professional conduct

Students in the University community can freely express their thoughts, opinions and beliefs however they must observe the [respectful work and learning environment policy](#) and treat each other, staff and faculty with respect. Students who are alleged to have breached the Respectful Work and Learning Environment Policy will be investigated and disciplined according to the [Student Non-Academic Misconduct and Concerning Behaviour Procedure](#).

### Academic integrity - Very Important!

Academic integrity means being honest in your work and respecting others' contributions. The Faculty of Science expects students to follow all academic conduct rules and instructor guidelines.

- **Protect your work:** Do not share or allow others to copy it. Report any compromise to your instructor. This also applies to test writing as you are responsible for protecting your work. If you suspect someone is copying your work, you must report it right away to the invigilator.
- **Unauthorized devices:** Possession of phones, earbuds, smartwatches, and more, during exams, intentional or not, will lead to an academic misconduct investigation unless explicit permission has been granted by the instructor.
- **Monitoring:** The University may monitor assessments to ensure fairness.
- **Consequences:** Violations are investigated under the [student discipline by-law](#) and [student academic misconduct procedure](#). Minimum penalties are listed on the [Faculty of Science website](#).

### Academic integrity - Final Exams

**Students caught cheating on a final exam in a Faculty of Science course will face the standard penalty:**

- **Grade of F in the course with a disciplinary notation**
- **One-year suspension from enrolling in Faculty of Science courses**

**Stricter penalties may apply in serious cases.**

Please read and follow the exam rules carefully. Students caught in contravention of the exam rules will face penalties assigned for cheating on an exam. Common violations include:

- **Talking to other students during the exam** (even to borrow stationary items)
- **Possession of electronic devices when not permitted** (devices such as mobile phones, ear buds, smart watches, smart glasses). Students are typically told to put the devices away, which means they must not be in your pockets or on your body.
- **Notes left in calculator covers or pencil cases.** Sometimes after studying, students leave study aids in the backs of calculator covers or in pencil cases. Therefore, check these areas before you go to write your assessments. Some courses may prohibit calculator covers entirely.

### Artificial Intelligence (AI)

Instructors decide whether AI tools (for example, ChatGPT, DALL·E, Quillbot, Grammarly) are allowed in their courses. If unsure, it is your responsibility to ask your instructor for clarification.

### Copyright

Students must follow Canada's Copyright Act. No audio or video recording of the lectures is allowed in any format, openly or surreptitiously, in whole or in part without permission from the instructor. University guidelines state that copyrighted works, including those created by the course instructor, are made available for private study and research, and must not be distributed in any format without permission (**including uploading the material to large language models to generate notes or questions**). Since it is **illegal**, 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.

Do not upload copyrighted content to UM Learn or any website unless legally permitted. For more information, visit [the University's Copyright Office website](#).