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1 General Course Information

Course Title & Number	MATH 1500: Introduction to Calculus (Fall 2025)
Number of Credit Hours	3
Sections	A01: MWF 10:30–11:20am, EITC E3 270 A02: MWF 9:30–10:20am, EDUCATION 290 A03: MWF 11:30am–12:20pm, ARMES 200 A05: TR 11:30am–12:45pm, ARMES 204 A06: T 7:00–9:45pm, ARMES 201 A07: TR 10:00–11:15am, DRAKE CENTRE 343 A08: MWF 8:30–9:20am, DRAKE CENTRE 343
Prerequisites	One of Pre-calculus Mathematics 40S (60%), the former Mathematics 40S (300) (60%), MATH 1018 (C+), or MSKL 0100.
Term	Fall 2025
Course website	UM Learn: MATH 1500 All Sections

MATH 1500 covers limits, differentiation, and integration, with applications to optimization, rates of change, and curve sketching.

The goals of the course are:

- (i) to understand and apply key ideas from the course topics to familiar and less familiar problems,
- (ii) to verify or prove results from calculus, and
- (iii) to effectively communicate mathematical ideas.

2 Instructor Contact Information

Course Coordinator:	Jamie de Jong (jamie.dejong@umanitoba.ca)
Lab Coordinator:	YG Liang (yg.liang@umanitoba.ca)
Section A01:	Xinli Wang (xinli.wang@umanitoba.ca)
Section A02:	Liliana Menjivar Lopez (liliana.menjivarlopez@umanitoba.ca)
Sections A03 and A06:	Jaydeep Chipalkatti (jaydeep.chipalkatti@umanitoba.ca)
Section A05 and A07:	Jamie de Jong (jamie.dejong@umanitoba.ca)
Section A08:	Yong Zhang (yong.zhang@umanitoba.ca)

Emails must be sent from your University of Manitoba email address, and include the course code MATH 1500 in the subject line. For information on office hours, please consult Learn, or email your instructor if the information is not provided on Learn.

Office hours : 12:30 - 1:30 (MWF)

3 Required Materials and Technology

Textbook: Calculus Volume 1, by Gilbert Strang and Edwin “Jed” Herman, adapted from an open education resource on OpenStax by Dr. Nicholas Harland.

The textbook can be found online at:

<https://calculusvolume1firstuniversityofmanitobaedition.pressbooks.com/>

It is also available as a pdf on UMLearn.

Calculus by James Stewart may be used as an optional alternate resource.

Past Exams: The bookstore also sells a “Course Pack” of prior Math 1500 Midterm and Final Exams, with solutions.

Technology: Students are required to have access to a device that can be used during labs to access and work on MathMatize. A tablet or computer is strongly recommended, rather than a cellphone. If you require support in obtaining a suitable device, please contact the lab coordinator as early as possible.

4 Course Evaluation

Students are required to write the Midterm, Test 1, or Test 2 in order to pass MATH 1500. Subject to that requirement, students in this course will be evaluated according to the following table.

Assessment	Percentage
Diagnostic Test (in lab / online)	5%
Problem Sets (in lab)	$5*3\% = 15\%$
Tests 1 and 2 (in lab)	$2*10\% = 20\%$
Midterm (Oct. 29, 6-7:30pm)	20%
Exam	40%

All topics taught in the course **including proofs** are testable.

Students will be given a letter grade using the following table as guaranteed minimums for achieving a particular grade.

Grade	A+	A	B+	B	C+	C	D
Percentage	91	83	78	72	66	60	51

5 Course Topics and Schedule

The following table provides an approximate schedule for classes in the course. These will vary somewhat between sections due to public holidays. Dates and assessment coverage are subject to change depending on progress.

Week	Topics	Labs/Notes
Sept. 3-7	Review: Sections 1.1-1.5	No Labs
Sept. 8-14	2.2 The Limit of a Function 2.3 The Limit Laws	Diagnostic Test in lab
Sept. 15-21	2.4 Continuity 2.6 Limits at Infinity and Asymptotes	Problem Set 1 in lab Last day to drop with refund (Tuesday 16th Sept.)
Sept. 22-28	3.1 Defining the Derivative 3.2 The Derivative as a Function 3.3 Differentiation Rules	Problem Set 2 in lab
Sept. 29 - Oct. 5	3.3 Differentiation Rules (cont.) 3.4 Derivatives as Rates of Change 3.5 Derivatives of Trigonometric Functions	Sept. 30 Orange Shirt Day
Oct. 6-12	3.6 The Chain Rule 3.8 Implicit Differentiation	Test 1 in lab
Oct. 13-19	3.9 Derivatives of Exponential and Logarithmic Functions 4.1 Related Rates	Problem Set 3 in lab Oct. 13 Thanksgiving
Oct. 20-26	4.1 Related Rates (cont.) 4.3 Maxima and Minima	Problem Set 4 in lab
Oct. 27 - Nov. 2	4.4 The Mean Value Theorem 4.5 Derivatives and the Shape of a Graph	Midterm (Oct. 29, 6-7:30pm)
Nov. 3-9	4.6 Curve Sketching	Problem Set 5 in lab
Nov. 10-16	-	Reading Break
Nov. 17-23	4.7 Applied Optimization Problems	Problem Set 6 in lab VW Deadline (Tuesday)
Nov. 24-30	4.10 Antiderivatives 5.1 Approximating Areas	Test 2 in lab
Dec. 1-7	5.2 The Definite Integral 5.3 The Fundamental Theorem of Calculus	Problem Set 7 in lab
Dec. 8	Review	No Labs

6 Assessment Descriptions

6.1 Diagnostic Test

The diagnostic test is on material from the course pre-requisites. This includes, but is not limited to, the material from Chapter 1 that may be reviewed in the first week of term. The purpose of the diagnostic test is to highlight any gaps in the pre-requisite knowledge needed for MATH

1500, so that they can be remedied before progressing through the course. If you are already aware of such gaps, you may choose to complete some or all of the remediation work prior to attempting the diagnostic test. (See Remediation below.)

First Attempt: The first attempt of the diagnostic test will be completed on MathMatize during labs in the week September 8-14. You must complete the test in your lab for the grade obtained to be valid. The test will be auto-graded by MathMatize and grades will be available at the end of the week.

- If you obtain a grade of 70% or higher on your first attempt, you earn the entire 5% for the diagnostic test grade. No remediation or further attempt is required.
- If you do not attempt the diagnostic test during the first lab, or do not obtain a grade of 70% or higher, you are expected to complete the remediation and second attempt detailed below. Failure to do so will result in a grade of 0%.

Remediation: If you do not attempt the diagnostic test during the first lab, or do not obtain a grade of 70% or higher you are required to complete (obtain all stars on) all of the Remediation modules on MathMatize. Failure to do so will result in a grade of 0%.

Second Attempt: The second attempt of the diagnostic test must be completed by the end of September 25. It will be available on MathMatize from September 15, provided the remediation work is complete. This attempt is not invigilated and must be completed during your own time. It is advised to begin early to ensure that you are able to complete it by the end of September 25.

- If you obtain a grade of 70% or higher on your second attempt, you earn the entire 5% for the diagnostic test grade.
- If you do not attempt the second diagnostic test during the required time frame, or do not obtain a grade of 70% or higher, your grade for the diagnostic test is based on the grade you obtained on the second attempt. (For example, a grade of 50% earns half of the available marks, which is 2.5%.)

Regardless of the grade you earn on the diagnostic test, it is strongly recommended that you revise topics that you had trouble with. The material on the test is essential background knowledge for the topics we will cover in MATH 1500.

6.2 Problem Sets

Most labs that do not include a test will have a problem set that must be completed on MathMatize and will be auto-graded. You must complete the problem set in your lab for the grade obtained to be valid. See Section 5 (Course Topics and Schedule) for the lab schedule. More details about the problem sets will be provided by your teaching assistant during the first and second labs.

The problem sets contribute 15% of your final course grade. Only the best 5 of 7 problem sets will be counted. This is to accommodate a variety of reasons for missing labs, including illness and emergencies.

6.3 Tests, Midterm, and Exam

There will be two tests held during labs. See Section 5 (Course Topics and Schedule) for the dates. More details about the structure and content will be provided closer to the time. Attendance is expected except in case of illness or emergency.

A midterm exam will be held on October 29, 6-7:30pm. More details about the structure and content will be provided closer to the time. Attendance is expected except in case of illness, emergency, or course conflict. There will be one make-up opportunity scheduled by the department. This will be available to students who are **unable** to write the midterm and complete the [online self declaration](#) or submit acceptable documentation to their instructor by the end of October 31.

The final exam will be scheduled by the registrar's office.

It is strongly recommended to write the tests and midterm if able, as they provide crucial information about your progress in the course. At least one of the Midterm, Test 1, and Test 2 must be written in order to obtain a passing grade in the course. Provided this is done, missing any of the others will result in its weight being shifted to the final exam.

6.4 Regrades

If there is an error in the grading of your work, you may make a regrade request within one week of the assessment being returned. The request will be completed through a form available on Learn and must clearly identify the assessment and question, as well as the specific error in grading. The entire assessment may be regraded, and the result of the request may be an increase or decrease in grade.

6.5 Missed Assessments

Assessments that are not completed as scheduled will be assigned a grade of 0. Most cases of missed assessments due to illness or emergency are covered by the policies above regarding dropped assessments and shifted weight. If you are **required** to miss more than two problem sets you must contact your instructor within 48 hours of the third (and any subsequent missed problem set) with the following information to request further accommodation.

- Reason (illness or emergency) for missing each problem set.
- Documentation (medical note or verification of the emergency) for the third (or subsequent) missed lab. You may not use a self-declaration as it is not intended for extended or repeated absences.

If you need to complete the second diagnostic test attempt, and are **unable** to do so due to illness / emergency, contact your instructor with appropriate documentation within 48 hours of the end

of the time frame for the test to request further accommodation. Accommodation in these cases will only be granted if the absence was for a significant proportion of the time available, and would usually include the end of the time period.

Missed assessments due to non-emergent reasons such as vacation, employment, other course work, or technological difficulties will not receive any additional accommodation.

For any other concerns regarding missed assessments, contact your instructor as soon as possible and no later than 48 hours after the relevant assessment.

6.6 Final Examinations, Grades and Grade Appeals Resources

Final examination and grades policies can be found here:

<https://catalog.umanitoba.ca/undergraduate-studies/policies-procedures/final-examinations-grades-policy/>

Any appeal of a final grade is initiated through the Registrar's office. A fee will be charged for each appeal. For more information, see:

<https://umanitoba.ca/registrar/grades/appeal-grade>

To view your final examination, please check with the department offering the course for policies.

7 Expectations

7.1 Students

Students in MATH1500 are expected to:

- Read the course outline and assessment instructions thoroughly, and follow course and university policies.
- Be respectful of the teaching team and other students.

To achieve success in the course it is also strongly recommended that students:

- Attend and participate actively in classes and labs.
- Review material after class and work on assessments / practice regularly.
- Ask questions in office hours or use the Mathematics Help Centre when stuck.
- Complete all assessments on schedule.
- Review feedback from assessments carefully.

Much like learning a sport or to play a musical instrument, mathematics is learned by trying, failing, and trying again. Consistent practice is key, as is being willing to try things without knowing if they will work, being willing to get stuck, and being willing to ask for help.

Classes and labs will provide you with the key information about course topics, examples, and sometimes opportunities for practice, but the onus is on you to complete the further practice needed, and ensure that your understanding is complete. It is expected that you will spend 2-3 hours outside of class for each hour spent in class (6-9 hours per week).

7.2 Teaching Team

You can expect the teaching team (instructors, lab coordinator, teaching assistants) to:

- Follow course and university policies.
- Be respectful of colleagues and students in the course.
- Provide clear learning outcomes and assessment instructions.
- Be present and prepared in classes, labs, office hours, and assessments, or communicate alternate arrangements in case of illness/emergency.
- Provide feedback on tests and exams in a timely manner. The typical goal for feedback and grades is 1-1.5 weeks following the conclusion of the test, and you can expect to be informed if this cannot be met.

If you believe one of these expectations is not being met, please first discuss with the relevant member of the teaching team (where possible). If the issue is not resolved or you are unsure who to speak to, contact the course coordinator (Jamie de Jong).

8 Academic Integrity

The Department of Mathematics, the Faculty of Science and the University of Manitoba all regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read the Academic Integrity section in the General Academic Regulations and Requirements of the current Undergraduate Calendar. Note, in particular, that electronic devices such as phones, earbuds, and smartwatches are unauthorized materials, and hence may not be present during tests or examinations.

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of “F” in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to the [Student Discipline Bylaw](#) and the [Student Academic Misconduct Procedure](#). Minimum penalties are listed on the [Faculty of Science website](#).

Each assessment will include instructions on what materials are permitted. Ensure you carefully review these before completing the assessment.

9 Using Copyrighted Materials

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](#).

10 Course Technology

- We will post announcements, grades, notes, and solutions on UM Learn. You can access UM Learn at the following address:
<https://universityofmanitoba.desire2learn.com/d2l/login>.
Information on accessing and using UM Learn can be found here:
<https://umanitoba.ca/centre-advancement-teaching-learning/technologies/umlearn>.
- Your assessments will use Crowdmark and Mathmatize. You can log into Crowdmark using the UM Learn login at:
<https://app.crowdmark.com/sign-in/umanitoba>.
Information on using Crowdmark can be found at:
<https://crowdmark.com/help/>.
You must log into MathMatize using a direct link from Learn.

It is the policy of the University of Manitoba that all technology resources be used in a responsible, efficient, ethical and legal manner.

10.1 Crowdmark

Your personal information is being collected under the authority of The University of Manitoba Act. It will be used for the purposes of grading papers and providing feedback to students. Personal information will not be used or disclosed for other purposes, unless permitted by The Freedom of Information and Protection of Privacy Act (FIPPA). The University of Manitoba has taken steps to ensure that its agreement with Crowdmark, Inc. for services provided by the Crowdmark application is in compliance with FIPPA. Please be aware that information held by Crowdmark Inc. may be transmitted to and stored on servers outside of the University of Manitoba, or Canada. The University of Manitoba cannot and does not guarantee protection against the possible disclosure of your data including, without limitation, against possible secret disclosures of data to a foreign authority in accordance with the laws of another jurisdiction. If you have any questions about the collection of personal information, contact the Access and Privacy Office (tel. 204-474-9462), The University of Manitoba, 233 Elizabeth Dafoe Library, Winnipeg, Manitoba, Canada, R3T 2N2.

11 Class Communications

Please note that all communication between us and you as a student must comply with the electronic communication with student policy—see <https://catalog.umanitoba.ca/undergraduate-studies/policies-procedures/electronic-communication-students/>. You are required to obtain and use your U of M email account for all communication between yourself and the university.

12 Student Accessibility Services

If you are a student with a disability, please contact SAS for 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

<https://umanitoba.ca/student-supports/accessibility>

520 University Centre

204 474 7423

student_accessibility@umanitoba.ca

