

Math 1171 Calculus I

LAKEHEAD UNIVERSITY – ORILLIA CAMPUS
FALL 2025 COURSE SYLLABUS

Course Instructor

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Course Information

Class & Lab Meetings

- Lectures: Tuesdays & Thursdays: 7pm – 8:30pm in OA2015
- Lab: Fridays: 2:30pm – 3:30pm in OA2010

Class & Lab Format

Class meetings will be very interactive! Each class will have lecturing components, in which we cover new material, together with problem-solving sessions, where you will get a chance to work through examples to solidify your understanding. You will also have more opportunities to work on problems during the weekly labs.

Course Description

Math 1171 is a first course in Calculus. As per the calendar description, we will be studying: Basic properties of the real number system; limits and continuity of functions; derivatives and differentiation formulas; applications of derivatives; anti-derivatives, definite integrals, indefinite integrals; Fundamental Theorem of Calculus; u-substitution.

Prerequisites & Restrictions

Prerequisites: MHF4U or permission of the Chair of the Department of Mathematical Sciences.

Restrictions: Students who have previous credit in Math 1180 may not take Math 1171 for credit. Students may receive credit for only one of Math 1151, Math 1171, or Math 1210.

Textbooks

There is no formal textbook required for the course. Students wishing to consult a textbook, may consider:

- (*Free!*) Gilbert Strang & Edwin “Jed” Herman: [Calculus: Volume 1](#)
- James Stewart: Calculus

Topics We Plan to Cover & Learning Objectives

- Review of Real Numbers and Functions
 - Be able to solve equalities and inequalities involving absolute values, and to express your answer in interval notation
 - Be familiar with the essential functions (linear, polynomial, piecewise, rational, trigonometric, exponential, and logarithmic) and be able to compute their domains
 - Understand how to compute the composition of two functions and find its domain
- Limits and Continuity
 - Be able to compute the limit of a function algebraically and from a graph when it exists
 - Identify when the limit of a function does not exist
 - Understand the definition of continuity in terms of limits
 - Be able to use limits to demonstrate when a function is continuous
- Derivatives and Differentiation Formulas
 - Interpret the derivative as the instantaneous rate of change of a function at a given point and as the slope of the corresponding tangent line
 - Be able to compute the derivative of a function using both the limit definition and differentiation formulas
- Applications of Derivatives
 - Apply L'Hôpital's Rule to calculate limits of indeterminate forms
 - Apply the chain rule and implicit differentiation to solve related rates problems
 - Use the derivative to form linear approximation of a function at a given point
 - Find the local/global extrema of a function and use this in context to solve optimization problems
 - Be able to sketch accurate graphs of a function using its derivative
- Integrals
 - Explain how Riemann sums are used to approximate the area beneath a curve
 - Interpret the definite integral as the precise area below a curve
 - Understand the notion of an antiderivative and be able to compute simple antiderivatives of functions
 - Be able to use the Fundamental Theorem of Calculus to compute definite integrals
 - Explain how the Fundamental Theorem of Calculus relates the notion of derivatives and integrals
 - Be able to compute more advanced antiderivatives using u -substitution

Depending on the time available, some of the topics may be adjusted.

Assessment

Assignments

There will be weekly homework assignments on WebWork due on Thursdays. These assignments assess your ability to use the material that we learned in class to solve problems. You are encouraged to work on the problems together with your peers, so long as you submit your solutions independently. There will be no extensions granted on the assignments. However, given that people get sick and face other extenuating circumstances and might not be able to meet the deadline every week, I will drop the two lowest homework scores for everyone. You do not need to e-mail me to request that the score be dropped—it will be automatic.

Quizzes

There will be short weekly quizzes during our Lab meetings on Fridays. These quizzes will assess your understanding of recent material, and will be graded both for completion and correctness. There will be no make-up quizzes, but your lowest quiz grade will be dropped.

Tests and Exams

There will be two midterm tests during class and one final exam. The tentative dates for the midterms are:

- Midterm 1: Thursday, October 2, 2025
- Midterm 2: Thursday, November 6, 2025

It is your responsibility to ensure that you are in class during the dates of the test. **If you miss a test for whatever reason, please e-mail me ASAP.** If you miss the test for a valid reason, the weight of the midterm will be transferred to the final exam. You will be required to provide adequate documentation detailing the reason for your absence and inability to take the test (doctor's note, etc.). Without adequate documentation, you will likely receive a grade of 0 for that test.

Grading Scheme

Your final numerical grade will be determined by the following categories:

- 10% WebWorks
- 12% Quizzes
- 17.5% Midterm 1
- 17.5% Midterm 2
- 35% Final Exam
- 8% Best grade among Midterm 1, Midterm 2, Final Exam

Resources

Office Hours

Please come to my office hours! Do you want to say hello? Do you have a question about the course—even the tiniest thing? If there is anything that you are struggling with in our class or on the homework, that's what I'm here for. I'd love for you to come by. There is no such thing as a bad question. I will try to do my best to help you! You are also encouraged to work on the assignments during office hours, and just ask questions as they arise! Tentatively, office hours are scheduled for:

- Tuesdays from 2:00pm to 4:00pm (in OA3027)
- Thursdays from 2:00pm to 4:00pm (in OA3027)
- Fridays from 1:15pm to 2:15pm (in OA3027)

If you cannot make any of the above times for whatever reason, send me an e-mail and we can try to find another time to talk.

Calculator Policy

Using a calculator or a computer to check or investigate problems for homework is encouraged, but be sure that you can solve the problems without one. **Calculators will not be allowed on the midterms and final exam.** Having said that, the problems on the exams will require only a moderate amount of calculation.

How to Succeed in Math 1171

Come to Class Ready to Work

Mathematics is best learned by actively working through problem—something we will spend a lot of classtime doing. Coming to class ready to engage with the material will ensure that you get the most out of it.

Don't be Afraid to Make Mistakes

Making mistakes is the most important part of doing mathematics! It is an integral part of the learning process. Never hesitate to share your reasoning (even if you think it's incorrect)—we cannot arrive at a correct answer if we don't understand why the incorrect ones don't work.

Work Together and Come To Office Hours

Working with your peers in class and on homework assignments can be very helpful. Two brains are better than one and having multiple perspectives when tackling a problem provides additional insight for it. Also, come to office hours—if I understand what you are having difficulties with, I can try to help make the course better.