

Math 1078: Elementary Calculus

Winter 2026

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Zoom Office Hours: Wednesdays 2:00-3:00 pm or by appointment.

Textbook: There is no required textbook for the course as there are many great resources online. Problems will be assigned from the following open-source textbook:

[Calculus Volume 1 by Edwin Herman, Gilbert Strang](#)

Course Content: For students without Grade 12 U Calculus and Vectors or equivalent. Limits of functions and their properties; limits of exponential, logarithmic, and trigonometric functions; indeterminate and infinite limits; continuity of functions; the definition of derivatives; equations of tangent lines; differentiation of the elementary functions; differentiation rules; applications of differential calculus including optimization, related rates, and curve sketching; anti-derivatives, the fundamental theorem of calculus, and area problems.

Learning Objectives: By the end of the course students will be able to

- Compute both finite and infinite limits of algebraic and transcendental functions.
- Identify vertical and horizontal asymptotes using limits.
- Classify discontinuities of a function.
- Compute derivatives using differentiation rules.
- Compute derivatives of transcendental, exponential and logarithmic functions.
- Compute higher order derivatives.
- Solve related rates and optimization problems using differentiation.
- Graph a function by finding intervals of increase/decrease and concavity.
- Find antiderivatives of basic functions
- Use the Fundamental Theorem of Calculus to solve area problems.

Grading Scheme:	Discussion Board	20%
	Mini-Lectures	80%

Discussion Board: For each section found under “Content” in D2L, students will select one problem per learning objective to post a full step-by-step solution to the discussion board. For each section, students will also leave feedback on at least one other students’ solution. There are posted deadlines for each section, ending the Sunday of that week at 11:59 pm.

Mini-Lectures: For each one of the four topics (Limits, Differentiation, Applications of Derivatives, and Integration), students will submit a 10 minute presentation worth 20% of the final grade.

Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities. This includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact Student Accessibility Services <http://studentaccessibility.lakeheadu.ca> (SC0003, 343-8047, or sas@lakeheadu.ca).

Course Schedule:

Due Date	Sections due	Mini-Lecture due
January 11 th	1.1, 2.2	
January 18 th	2.3, 4.6	
January 25 th	2.4	Limits
February 1 st	3.1, 3.2	
February 8 th	3.3, 3.5, 3.9	
February 22 nd	3.6, 3.4	
March 1 st	3.8	Differentiation
March 8 th	4.1, 4.3	
March 15 th	4.5, 4.6	
March 22 nd	4.7	Applications of Derivatives
March 29 th	4.10, 5.2	
April 5 th	5.3	Integration