

# Calculus I for Engineers

MATH 1210 - Fall 2022

**Instructor:** Dr. Serhii Myroshnychenko ([smyroshn@lakeheadu.ca](mailto:smyroshn@lakeheadu.ca))

**Schedule:**

- ✓ Lectures: Wednesday, Friday 14:00 – 15:30 EST at **M339**.
- ✓ Labs: Monday 17:00 – 18:00 EST at **A248**.
- ✓ Office hours: Monday 18:00 – 19:00, Wednesday 16:00 – 17:00 EST or by appointment at **F118E** or via Zoom.

**Recommended textbooks:**

- *Calculus*, by Ron Larson and Bruce Edwards.
- *Calculus: early transcendentals*, by James Stewart.

**Important dates:**

- First Day of Classes: **September 6<sup>th</sup>**.
- Fall Study Week: **October 24<sup>th</sup> – October 28<sup>th</sup>**.
- Midterm: **October 24<sup>th</sup>**.
- Last Day of Classes: **December 6<sup>th</sup>**.
- Final: **TBD**.

**Exams:** There will be one midterm exam during the **lab hours**. The final exam will be scheduled by the registrar's office. The exams will be closed book with no calculators or other aids allowed.

**Grade:** Please note that no alternate grading scheme will be used in this course.

Written Homework	20%
Online Assignments (WeBWork)	20%
Midterm	20%
Final	30%
Quizzes	10%

**Homework:** Written HW is assigned **every three weeks**. Online assignments are assigned **weekly**.

**Lab Hour:** No new material will be covered in the labs. The lab will reinforce concepts through examples, as well as provide students with the opportunity to ask questions about the content given in class or assignment problems. Though the lab is not mandatory, it is very beneficial to attend and **required to take a quiz**.

**Course Policies:**

1. Late assignments will be **accepted and reviewed, but not graded**. There will be no make-up exams. If you miss the midterm for a legitimate reason which you can document (e.g. doctor's note), the weight of the midterm will be *transferred* to the final exam. The documented proof of absence should be provided no later than 3 days after the is scheduled.

2. All electronic devices (phones etc.) are prohibited during the exams. In case when such a device is detected during the exam (**activated or not**), it would be treated as an **academic misconduct** situation.

**Accommodations:** Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as soon as possible. For more information please visit:

<https://www.lakeheadu.ca/students/student-life/student-services/accessibility/>

**Awards and scholarships for current/returning students:**

<https://www.lakeheadu.ca/studentcentral/financing-budgeting/scholarships-for-current-returning>

**Any questions?** Feel free to reach out to the instructor by e-mail or “in-person” with any questions, concerns, comments you might have. Also, check-out the following useful page for several related student resources:

<https://www.lakeheadu.ca/students/student-life/student-conduct/resources>

### *Tentative schedule*

Week	Topics
1	Functions and models, function composition. Inverse functions. Trigonometric functions. Exponential and logarithmic functions.
2	Odd and even functions, periodicity, transformations. Piecewise-defined functions: the absolute value function, Heaviside function.
3	The trigonometric and inverse trigonometric functions. Review of exponential and logarithmic functions. The hyperbolic functions.
4	Limits and continuity. Asymptotes.
5	Differentiation. Techniques of differentiation: implicit and logarithmic differentiation.
6	The Mean Value theorem. Newton’s method.
7	Curve sketching techniques. Optimization problems.
8	Related rate problems. L’Hôpital’s rule. Differentials & linearization.
9	Indefinite Integrals. The definite integrals and their properties.
10	The Fundamental Theorem of Calculus. The method of substitution (change of variables).
11	Integration by parts. Average values of functions. Areas between curves.
12	Volumes of solids of revolution. Work.