



## **Textbook**

This class will not have a textbook required to purchase. There is a wealth of textbooks and calculus resources available to you and many can be found in the LU library. Here are some suggested references:

Comprehensive Textbooks:

- *Calculus* by Stewart
- *Calculus* by Salas, Hille, Etgen
- *Calculus* by Thomas, Weir, Hass

Free online textbooks that can serve as a supplement to the class notes:

- Calculus Volume 1 by Edwin Herman, Gilbert Strang  
<https://openstax.org/details/books/calculus-volume-1>
- Apex Calculus, Version 3 by Gregory Hartman  
<http://www.apexcalculus.com/downloads/>

## **Course Description**

This course will cover differential calculus and the beginning of integral calculus.

- **Functions** (definition, domain and range, representation of functions, piecewise functions, catalog of essential functions, symmetry, new functions from old ones, inverse functions, combining functions, composition of functions)
- **Limits** (intuitive definition, one-sided limits, infinite limits, limits laws, trigonometric limits, vertical and horizontal asymptotes, squeeze theorem, precise definition)
- **Continuity** (definition, types of continuous functions, types of discontinuities, intermediate value theorem)
- **Derivatives** (geometric and algebraic interpretation, differentiability and continuity, power rule, product rule, quotient rule, chain rule, implicit differentiation, higher derivatives, derivative formulas, derivatives of inverse functions, exponential growth and decay, rate of change in life and social sciences, related rates.)

- Applications of Derivatives (extreme value theorem, mean value theorem, monotonicity and concavity, extrema, inflection points, first derivative test, second derivative test, optimization problems, curve sketching)
- Integrals (definite integral, The Fundamental Theorem of Calculus, indefinite integrals, u-substitution)
- Extra topics may be added, if time permits.

## **WeBWorK**

WeBWorK is a free online homework system that will be required to complete the assignments. WeBWorK is a free online homework system that will be required to complete the assignments. The link to access WeBWorK as well as login information will be provide to you on D2L.

## **Labs**

The lab will also be used to facilitate your understanding of the material and it will be beneficial to attend. Concepts will be reinforced through explanations and examples. You will also have time to work through questions yourself so that you can test your understanding.

## **Class Policies**

Attendance is not mandatory; however, it is strongly recommended that you attend. If you come to class, I would appreciate that you show up on time. Please turn off your phone while in class. Midterms and exams must be taken on the date assigned and there will be no books, calculators, cell phones, or other aids allowed during the exams. Cell phones or other electronic devices are not allowed to be on your person during midterms and exams, per university policy. If you miss the midterm for a legitimate reason which you can document (e.g. doctor's note), the documented proof of absence should be provided to me, no later than 3 business days after the exam was written.

## **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 of their academic activities. If you 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 visit: <http://studentaccessibility.lakeheadu.ca>

## **Evaluation**

### **A. Assignments (10 %)**

There will be weekly assignments posted on WeBWorK. At the end of the semester, I will drop your lowest assignment mark.

*Late assignments will not be accepted.*

### **B. Midterm (30%)**

The midterm is tentatively scheduled on **Monday February 25**, during class time.

### **C. Final Exam (60%)**

The final exam will be a three hour cumulative exam. The date of the exam will be provided as soon as it is scheduled.