

- Techniques of Integration (Integration by Parts, Trigonometric integrals, Trigonometric Substitution, Partial Fractions, Improper Integrals)
- Infinite Sequences and Series (sequences, limits of sequences, infinite series, Taylor Series)

*Extra topics may be added, if time permits.

Learner Outcomes

By the end of this course, students will be able to:

- Evaluate definite and indefinite integrals using the Fundamental Theorem of Calculus and appropriate antiderivative techniques.
- Apply u-substitution and change of variables to simplify and solve complex integrals.
- Compute and interpret the area between curves and volumes of solids of revolution using integral formulas and Pappus's Theorem.
- Determine the average value of a function over a closed interval and apply it in practical problem-solving contexts.
- Use various techniques of integration (such as Integration by Parts, Trigonometric Integrals, Trigonometric Substitution, and Partial Fractions) to solve advanced integrals.
- Evaluate improper integrals and determine their convergence or divergence through limit analysis.
- Analyze infinite sequences and series by determining their limits, convergence, and divergence using analytic tests.
- Construct and use Taylor and Maclaurin series to approximate functions and solve problems involving power series representations.

Course Site

This course has an online D2L site, which you access through *mycourselink* via myInfo or directly using the link

<https://mycourselink.lakeheadu.ca>

All information with regards to this course can be found on D2L and should be checked regularly. Pre-recorded lecture videos, notes and assignments will be posted and should be checked regularly. It is recommended that you turn on notifications within the D2L course, so that you are alerted to any changes or announcements.

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* for Biology and Medicine by Claudia Neuhauser

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/>
- Calculus Volume 2 by Edwin Herman, Gilbert Strang
<https://openstax.org/details/books/calculus-volume-2/>

WeBWoRK

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 provided 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

It is strongly recommended that you attend class. If you come to class, I would appreciate that you show up on time. Please turn off your phone on silent while in class. Midterms and exams must be taken on the date assigned. 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.

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. ***Late assignments will not be accepted.***

B. Test I (25%)

The midterm is tentatively scheduled on **Friday, February 27**, during the lab time.

B. Test II (25%)

The midterm is tentatively scheduled on **Friday, March 27**, during the lab time.

D. Final Exam (40%)

The final exam date and time will be provided as soon as the university schedules it.