University of Guelph
Course Outline
MATH*1080 - Elements of Calculus I
Winter 2026
(January 5 - April 21)

1. Course Information

Course Title: MATH*1080 - Elements of Calculus I.
Course Description: This course provides an introduction to the calculus of one variable with emphasis on mathematical modelling in the biological sciences. The topics covered include elementary functions, sequences and series, difference equations, differential calculus and integral calculus.
Prerequisites: 1 of 4U Advanced Functions, 4U Advanced Functions and Calculus or equivalent - Must be completed prior to taking this course.
Restrictions: IPS*1500, MATH*1200
Credit Weight: 0.5 credit
Academic Department: Mathematics & Statistics
Campus: Guelph
Semester Offering: Winter

2. Course Resources

- **Text 1:** Single Variable Calculus (Early Transcendentals), by James Stewart, Daniel Clegg, Saleem Watson, 9th edition. This text comes with 3 purchase options:

  - Single Variable ET printed book – 9780357022269 (list as 'alternate format') - $169.95
  - Single Variable ET eBook – 9780357598351 (list as 'required') - $79.95
  - Single Variable ET WebAssign with eBook – 9780357128916 (list as "optional") - $99.95 (prices are subject to change).

- **Text 2:** MATH*1080 Elements of Calculus Course Notes (PDF), Nagham Mohammad. The textbook is provided on the course website in PDF format (free of charge). You are required to bring this Course Notes to every lecture and lab session.

- **Statistics Learning Centre (SLC):** Located in the Science Commons on the 3rd Floor of the McLaughlin Library, the Statistics Learning Centre is a drop-in extra-help centre staffed by Teaching Assistants who are there to help you with any questions you may have! No appointment is necessary! The hours of operation for the SLC are:

    - Monday & Wednesday: 9:30am - 3:30pm
    - Tuesday & Thursday: 10am - 4:00pm
    - Friday: 9:30am - 2:30pm

    For more information, please visit the SLC website

- **Courselink:** Course information and material (such as lab assignments, tests, etc.) will be available on CourseLink. Students are responsible to check the website regularly for updated information and announcements.

3. Course Content

1. **Specific Learning Outcomes**

    By the end of this course, students should be able to

    - Describe the differences between sequences and series, and use formulas resulting from finite and infinite series to solve problems involving payments, deposits, dosage of drugs, and population size.
    - Compute basic limits of functions and understand the importance of limits to the process of differentiation. Explain the notion of continuity as related to functions.
    - Explain what a derivative is in terms of the idea of a tangent line to the graph of a function and how a derivative can be used to describe the rate of change of one quantity with respect to another.
    - Understand the rules of differentiation. Learn the derivatives of the elementary functions.
    - Use derivatives to explore the behaviour of a given function and understand the information that the first and second derivatives of a function give you about that function. This includes locating and classifying its extrema, and graphing the function.
    - Understand the notion of an implicitly defined function and finding linear approximations to implicit functions using "implicit differentiation."
    - Understand the idea of optimisation and be able to solve extreme-value problems.
    - Break down a composition of two functions into basic functions. Apply the chain rule to find derivatives of functions raised to a power, exponential functions, and logarithmic functions.

- Find intervals where a function is concave up or concave down. Find inflection points. Use the second derivative test to find local extrema.
- Calculate indefinite integrals of basic polynomial, radical, and exponential functions.
- Evaluate definite integrals to find net area between a curve and the x-axis using the Fundamental Theorem of Calculus. Use definite integrals to find the area between two curves.

2. **Lecture Content**

The lecture content will cover the following topics:

Part 1: Differential Calculus

- Functions - Basic Concepts
- Limit of a function
- Continuity of a function
- Derivative of function - Applications (Related Rates, Optimization, Local Extrema and Concavity, etc.)
- Sequences and Series - Difference Equation.

Part 2: Integral Calculus

- Definite Integral
- Fundamental of Calculus
- Indefinite Integral
- Some Integration Techniques

4. Assessment and Important Dates

Assessment	Weight
Assignment 1 (Jan 30, 11:59 PM)	6%
Assignment 2 (Mar 6, 11:59 PM)	7%
Assignment 3 (Apr 3, 11:59 PM)	7%
Midterm Tests (Feb 4, March 11, 5:30 - 6:50 PM)	45%
Final Exam (Apr 15, 8:30–10:30 AM)	35%
Total	100%

- Midterm Tests (Best 30%, Worst 15%) during regular lecture hours.
- Mock exams will be posted on Courselink prior to each midterm and the final exam.
- **Winter Break:** February 16–22, 2026 (classes resume February 23)
- **Classes End:** Monday, April 6, 2026

5. Course Policies

- **As the class is scheduled to be in-person, the expectation is that students will be attending the live lectures to obtain notes, listen to course announcements, and ask relevant questions**.

- **This syllabus is tentative and may be subject to minor changes**. Any change will be communicated to students.

Communication Policies:

- Emails **must be sent from your University of Guelph email account, and include MATH*1080 in your subject line**, and include your name and student ID number in all correspondence.

- **Emails that do not include a name and ID number, or from non-uoguelph accounts, will not be answered**.

- **Disrespectful and unnecessary emails will not be answered**.

- **You are allowed to send up to 2 emails per week to the instructor**.

- **I will try to respond to emails within 3 business days (8:30 am - 4:30 pm). Please note that I do not answer emails during weekends**.

Term Tests Policies:

- Assignments must be submitted via Dropbox. **Late submissions will not be accepted**.

- Term tests are scheduled during class time, and therefore no student should have a conflict with a test. If a conflict does exist, it is your responsibility to resolve it.

- Students who miss a test for medical illness must contact me within 3 business days of the missed test. In the case of absence due to medical illness, you may be required to complete an alternative assessment in a format of my discretion.

- The final exam (date, time and location) is scheduled by the Registrar's Office. Students who miss the final exam due to a valid, documented reason must contact their program counsellor for advice on University regulations regarding final exams. These procedures are based on University policy, and are not under the control of the course instructor.

- The format of the term tests and the final exam will be posted at a later date. Students are permitted to use a formula sheet during a test.

Regrade and Accommodation Request Policies:

- Regrade requests must be submitted within 3 days of a test being returned, after which regrade requests may no longer be submitted, and the test grade is considered final. Note that in the event that a student submits a test or assignment for regrading, I reserve the right to regrade the entire test/assignment, not just the question under consideration. Procedures for submitting a regrade request will be posted on Courselink.

- Requests for accommodation due to illness, personal circumstances, etc. should be made before the assessment is due. If this is not possible, the request should be made within 3 business days of the due date / test date. Accommodation will be provided at my discretion and should not be assumed. In the event that an accommodation is not granted, students will be expected to complete the test.

Course Policy on Group Work:

- Students are encouraged to work together to discuss course content, share ideas, and ask/answer questions. However, all term tests and the final exam are to be completed independently, and without collaboration with other individuals, regardless of whether they are registered in the course.

- Any unauthorized collaboration, completing another student's work, or having another student complete your work, will constitute academic misconduct.

6. University of Guelph Policies

Academic Integrity:
The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.
The Academic Misconduct Policy is outlined in the Undergraduate Calendar.

Accessibility:

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 10 business days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For students at the Guelph campus, information can be found on the SAS website.

Accommodation of Religious Obligations:

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations.

Copies of Out-of-Class Assignments:

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Drop Date:

Courses that are one semester long must be dropped by the end of the last day of classes; two-semester courses must be dropped by the last day of classes in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

Email Communication:

As per university regulations, all students are required to check their uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing:

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness. If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources. The Student Wellness team are here to help and welcome the opportunity to connect with you.

Illness:
Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Recording of Materials:
Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources:
The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

When You Cannot Meet a Course Requirement:
When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id #, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for information on regulations and procedures for Academic Consideration.