University of Guelph
Department of Mathematics and Statistics
MATH 1080 – Elements of Calculus I: Fall 2022

Course Information

Sec.	Instructor	Office	Email	Lecture Times
01 In-person	Dr. Nagham Mohammad	MACN 513	naghamm	**Tuesday and Thursday** (LEC) 02:00PM - 3:30PM Room: ALEX 200
02 In-person	Dr. Daniel Kraus	MACN 511	dkraus	Monday, Wednesday, Friday (LEC) 09:30AM - 10:20AM Room: ROZH 101
03 Flipped	Dr. Nagham Mohammad	MACN 513	naghamm	**Tuesday (in-person)** (LEC) 10:00AM - 11:20AM Room: WMEM 103 Thursday (AD-A)
04 Flipped	Dr. Nagham Mohammad	MACN 513	naghamm	**Thursday (in-person)** (LEC) 10:00AM - 11:20AM Room: WMEM 103 Tuesday (AD-A)
05 In-person	Dr. Geordie Richards	MACN 547	grichards	**Tuesday and Thursday** (LEC) 5:30 PM - 6:50 PM Room: ROZH 104

You can expect a response to emails within 48 hours **Monday-Friday**.

Sections (1, 2 and 5) (LEC) are the In-Person (face-to-face) format of MATH*1080 – Elements of Calculus I. In the face-to-face sections, each week we will have 3- hours in-person lectures to cover the material, no recorded videos and we use technology "Top Hat" to engage students during the class time, to make sure that they are following up with the material.

Sections 3 and 4 (LEC) are the Flipped format of MATH*1080 – Elements of Calculus I. In the flipped sections, we will not have in-person lectures, but instructor's lecture-videos will be uploaded on the CourseLink with a schedule of reading and practicing for each week. For Sections 3 and 4, we will have one hour and half in person-class each week. During this time, we will use technology "Top Hat" to engage students during the class time, to make sure that they are following up with the material. This is the biggest different between in-person and the flipped sections. All the concepts, assessments, and grading schemes are the same for the two formats of the course.

Required Textbook

In-person (Sections 01, 02, 05) (LEC)

Title: MATH*1080 Elements of Calculus Course Notes (PDF).
Author: Nagham Mohammad
Edition / Year: Edition one / fall 2022

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.

Flipped (Sections 03 and 04) (LEC)

This course includes instructor recorded videos, PowerPoint slides and the instructor practice problems. You can explore the materials based on the schedule provided for each week. To access these materials, select **Content** on the navbar to locate each **Week Materials** in the table of contents panel.

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.

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.

Learning Outcomes:

By the end of this course, you 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.

Top Hat

To facilitate discussion and to enhance your learning in and out of class, we will be using educational software called *Top Hat*. *Top Hat* allows you to answer questions and engage in discussion using your smartphone, tablet or laptop. You will need to purchase the *Top Hat* app. instructions for purchasing, downloading and setting up the *Top Hat* software will be provided by e-mail. **You must attend the lecture section you are registered in to receive Top Hat marks.** If you do not attend your registered lecture section, you will not get any Top Hat marks. **Answering Top Hat questions for another student is an academic offence.**

For each Top Hat question asked during class, there will be two marks: one for participation (any answer), and another for a correct response.

Notes:

1) <u>**Sections 1, 2, and 5 (LEC)**</u>

   Only the best 70% of the Top Hat marks will be used to determine your Top Hat final grade since you have 3 hours of in-person class each week.

   Note <u>There are no alternate dates nor make-up for missing any Top Hat questions. Dropping the lowest 30% of Top Hat marks is meant to take into account any absences.</u>

2) <u>**Sections 3, and 4 (LEC)**</u>

   Only the best 85% of the Top Hat marks will be used to determine your Top Hat final grade since you have only 1.5 hours of in-person class each week.

   Note <u>There are no alternate dates nor make-up for missing any Top Hat questions. Dropping the lowest 15% of Top Hat marks is meant to take into account any absences.</u>

Missed Lectures:

If you miss lectures then **you are responsible** for finding out what you missed. Your instructor will not reteach missed material.

Out-of-Class Workload:

As in any university course, much of your learning in this course will take place outside of class time. Therefore, you should plan to spend 3-6 hours each week in out-of-class learning. This learning consists mostly of making sure you understand the concepts and steps that were used in class to solve problems and then solving problems from the practice problems on your own.

Calculator Policy:

Regarding both **Midterm Tests**, only a non-programmable, non-graphical calculator **is allowed.** Additional aids are not allowed (e.g. notes, books, communication, or scrap paper).

Learning Centre:

 Drop-in help is available in the Mathematics & Statistics Learning Centre (Science Commons, 3rd floor of the library) for students seeking help with course content and/or assignments. Hours of operation are Monday/Wednesday: 9:30am - 3:30pm, Tuesday/Thursday: 10am - 4pm, Friday: 9:30am - 2:30pm. Students are expected to use the Mathematics & Statistics Learning Centre as a primary resource for help with course material.

Assessment Descriptions

A brief description of each assessment is provided below. Select **Content** on the navbar to locate **Assessments** in the table of contents panel to review further details of each assessment.

Grading Scheme:

Every student is treated the same way according to the grading scheme below. We cannot modify final grades to give you an extra percent – this would be unfair to the other students. There are 2 grading schemes in order to minimize the impact of a poor performance on either of the 2 midterms. The scheme that gives you the best mark will be used **automatically**.

Scheme 1	**Scheme 2**
Top Hat Questions – 5%	Top Hat Questions – 5%
3 Lab Assignments: 15%	3 Lab Assignments: 15%
Midterm Test 1 – 25%	Best Midterm Test – 30%
Midterm Test 2 – 30%	Worst Midterm Test – 15%
Online Final Exam – 25%	Online Final Exam – 35%

Midterm Tests:

There will be 2 in-person Midterm Tests of one hour each; venues and material to be covered will be announced closer to the Midterm dates. Students must present a **valid Student ID card** to write all tests.

<p style="text-align:center; color:red;">Midterm Test 1: Friday Oct. 14th, 6:00 pm- 7:00 pm.
Midterm Test 2: Friday Nov. 11^{th,} 6:00pm - 7:00 pm.</p>

Note There is no alternate test date for Midterm Test 1. But there is a make up test for Midterm Test 2. Please read the important information about missing midterm test in the **"Missed Midterm Tests"** section in this Outline.

Lab Assignments:

There are 3 scheduled Lab Assignments to be completed during Lab time. See the course schedule below. The Lab Assignments will be open book and you may work with others. TAs will be present to help. If you miss any of these assignments for a **valid** reason, the weight from that assignment will be **calculated from the weight of the two <u>Midterm Tests</u> (the 5% of missing one lab assignment will be calculated from the 55 points of the two midterms).**

***Note* There are no alternate lab assignment dates nor make-up.**

***Note* You must attend the Lab section you are registered in to receive Lab Assignment marks. If you will write the Lab Assignments in multiple sections you will get ZERO.**

Final Exam:

This course requires you to write an online final exam using the **Quizzes** tool in CourseLink. We will NOT USE Respondus "LockDown Browser" to proctor the final exam.

The final exam contains 25 multiple choice questions. You are responsible for all the content off the course (cumulative). The final exam is open book, but and you CAN NOT work with others.

The final exam will be delivered online via the **Quizzes** tool. The exam is 2 hours in length and will be held on **Thursday, December 15, 2022**.

To accommodate students who may be located in various time zones, the exam will be available beginning at **2:30 pm** until **3:30 pm** Eastern Time. You can enter the exam at any point during the window of time. After **3:30 pm** ET you will no longer be able to enter the exam environment to write the exam and you will receive **ZERO**.

You must complete and submit your exam by 4:30pm unless you are on the SAS exam centre list, in which case your exam timing will be adjusted automatically.

If you submit your exam attempt late – even 1 minute is still late – (i.e., any time after 4:30 pm, except SAS students), your exam attempt will be automatically flagged as late, and **you will receive a ZERO on the final exam.**

For example, if you start writing the exam by **3:00 pm**, you will have until **4:30 pm** to complete it. If you submit your exam attempt at any time after 4:30pm (except SAS students), **you will receive a ZERO on the final exam.**

Important Note

If you enter the exam at any time between 2:30 pm and 3:30 pm ET, then you must keep track of the time spent completing the exam **yourself**. <mark>Do not rely on the timer in the quiz in Course Link to indicate how much time is remaining for you to complete the quiz. Regardless of the time remaining indicated on the quiz timer, you must be sure to **complete and submit your exam by 4:30pm.**</mark>

Select **Content** on the navbar to locate **Assessments Overview, Top Hat, Lab Assignments, Midterms, and Final Exam** in the table of contents panel to review further details of the final exam.

Note: More information about the final exam will be announced closer to the Final Exam dates via the Announcements.

University of Guelph degree and associate diploma students must check WebAdvisor for their examination schedule.

https://webadvisor.uoguelph.ca

Please check the CourseLink System Requirements below:

Course Technology Requirements and Technical Support

CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

https://courselink.uoguelph.ca/d2l/systemCheck

Gradescope

Gradescope is an online testing and assessment software that may be used in this course. Visit the Gradescope website to review the Get Started videos and Student Help Centre.

https://www.gradescope.com/get_started#student-submission
https://help.gradescope.com/category/cyk4ij2dwi-student-workflow

Zoom Requirements

This course may use **Zoom** as a video communication tool. A Webcam, headphones/speakers may be needed. Review the [Zoom information for students (uoguelph)](#) to ensure that your computer meets the technical requirements.

https://support.opened.uoguelph.ca/students/courselink/tools/content/zoom

Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

CourseLink Support

University of Guelph
Day Hall, Room 211
Email: courselink@uoguelph.ca
Tel: 519-824-4120 ext. 56939
Toll-Free (CAN/USA): 1-866-275-1478

Walk-In Hours (Eastern Time):
Monday thru Friday: 8:30 am–4:30 pm

Phone/Email Hours (Eastern Time):
Monday thru Friday: 8:30 am–8:30 pm
Saturday: 10:00 am–4:00 pm
Sunday: 12:00 pm–6:00 pm

Technical Skills

As part of your learning, you are expected to use a variety of technology:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);

- Navigate the CourseLink learning environment and use the essential tools, such as **Dropbox**, **Quizzes**, and **Grades** (the instructions for this are given in your course);

- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and

- Perform online research using various search engines (e.g., Google) and library databases.

Remarking of Tests:

If you have a question regarding the marking of a midterm test/lab assignment you must first check the posted solutions. If you still have a question, then you should follow the procedure posted on the CourseLink. **You have <u>4 days</u> to appeal a test/assignment grade.**

Missed Midterm Tests:

If you miss a midterm test due to illness or extenuating circumstances you must contact your instructor within 48 hours of the missed test.

1) If you miss Midterm Test 1 due to illness/extenuating circumstances, <u>the weight from that test will be carried to the second midterm.</u>

2) If you miss Midterm Test 2 due to illness/extenuating circumstances, <u>then you will write a make up test.</u>

Missed Final Exam:

Extensions will be considered for medical reasons or other extenuating circumstances only. If you require an extension, discuss this with the instructor Nagham Mohammad (naghamm@uoguelph.ca) as soon as possible and well before the due date. Barring exceptional circumstances, extensions **will not be granted** once the **due date of the exam has passed**. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on the final exam, and to help marking the test in shortest possible time.

Obtaining Grades and Feedback

Unofficial assessment marks will be available in the **Grades** tool of the course website. Your instructor will have grades posted online. Once your assignments/tests are marked you can view your grades on the course website by selecting **Grades** from the menu on the navbar. Your course will remain open to you for seven days following the last day of the final exam period, but the Grades will be hidden to work on the final grade of the course.

University of Guelph degree students can access their final grade by logging into [WebAdvisor](#) (using your U of G central ID).

https://www.uoguelph.ca/webadvisor

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 [Academic Consideration](#).

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.

University Policies

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.

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for academic consideration:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Academic Misconduct

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.

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.

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 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: www.uoguelph.ca/sas

Course Evaluation Information (Student Feedback Questionnaires (SFQs))

Please see

Copyright Notice

Content within this course is copyright protected. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course, or have been copied under an exception or limitation in Canadian Copyright law.

The fair dealing exemption in Canada's Copyright Act permits students to reproduce short excerpts from copyright-protected materials for purposes such as research, education, private study, criticism and review, with proper attribution. Any other copying, communicating, or distribution of any content provided in this course, except as permitted by law, may be an infringement of copyright if done without proper license or the consent of the copyright owner. Examples of infringing uses of copyrighted works would include uploading materials to a commercial third-party web site, or making paper or electronic reproductions of all, or a substantial part, of works such as textbooks for commercial purposes.

Students who upload to CourseLink copyrighted materials such as book chapters, journal articles, or materials taken from the Internet, must ensure that they comply with Canadian Copyright law or with the terms of the University's electronic resource licenses.

For more information about students' rights and obligations with respect to copyrighted works, review Fair Dealing Guidance for Students.

http://www.lib.uoguelph.ca/sites/default/files/fair_dealing_policy_0.pdf

Plagiarism Detection Software

Students should be aware that faculty have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion from the University can be imposed.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate 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.

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via Courselink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

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).

COVID-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, that these guidelines may be updated as required in response to evolving University, Public Health or government directives.

Mental Health Services

One out of every five students in Canada experiences some sort of mental health issue at some point in their academic career. If you find yourself facing a mental health crisis, or just need to talk to someone, please consider taking advantage of one of the following resources available to University of Guelph students:

Counselling Services:

Visit the Counselling Services website (https://wellness.uoguelph.ca/counselling) to get information on resources available to you, both online and in-person. You can also visit them at Health Services (J.T. Powell Building, ext. 53244) where they offer individual and group counselling sessions by appointment or walk-in.

Student Support Network: is located in the Wellness & Education Promotion Centre in the J.T. Powell Building and offers confidential, peer-based, drop-in support.

Good2Talk: (1-866-925-5454) is a free, 24/7 student hotline that provides professional counselling and referrals for mental health, addictions and well-being.

Here 24/7: (1-844-437-3247) specializes in assessment, referral and appointment booking and is available 24/7 for crisis support.

You are not alone and you will not be judged for asking for help.

MATH*1080 Fall 2022 Course Schedule (Tentative)

The following table gives a tentative schedule for the material covered with Weeks Notes in Course Notes indicated.

Week	Topics	Notes
1. Sep. 8-9	Introduction	**No Lab this week.**
2. Sep. 12-16	**Week (1) Notes** - FUNCTIONS AND THEIR GRAPHS	**No Lab this week.** Complete Practice Problems Week (1)
3. Sep. 19-23	**Week (2) Notes** - INVERSES	TA: LAB (1) Complete Practice Problems Week (2)
4. Sep. 26-Sep.30	**Week (3) Notes** - LIMITS OF FUNCTIONS USING NUMERICAL AND GRAPHICAL TECHNIQUES	**TA: Lab Assignment 1** Complete Practice Problems Week (3)
5. Oct.3-Oct. 7	**Week (4) Notes** - RATES OF CHANGE AND THE DERIVATIVE **Review for Midterm Test (1)**	TA: LAB (2) Start Practice Problems Week (4)
Fall Break Oct.8 - 11	No Classes	No LABS

6. Oct. **12-14**	**Week (4) Notes (Continued)** - RATES OF CHANGE AND THE DERIVATIVE	Midterm Test (1) Friday Oct. 14th Complete Practice Problems Week (4)
7. Oct. 17-Oct. 21	**Week (5) Notes** - DIFFERENTIATING THE PRODUCT AND THE QUOTIENT OF TWO FUNCTIONS; HIGHER-ORDER DERIVATIVES. **Week (6) Notes** - THE CHAIN RULE	TA: LAB (3) Complete Practice Problems Week (5) Complete Practice Problems Week (6)
8. Oct. 24 – Oct. 28	**Week (7) Notes** - IMPLICIT DIFFERENTIATION	**TA: Lab Assignment 2** Complete Practice Problems Week (7)
9. Oct. 31 - Nov. 4	**Week (8) Notes** - Applications of the Derivatives I	TA: LAB (4) Start Practice Problems Week (8)
10. Nov. 7-11	**Week (8) Notes (Continued)** - Applications of the Derivatives I **Review for Midterm Test (2)**	Midterm 2 Friday Nov. 11th No Lab this week. Complete Practice Problems Week (8)

11. Nov. 14-18	**Week (9) Notes** - Applications of the Derivatives II	TA: LAB (5) Complete Practice Problems Week (9)
12. Nov. 21 -25	**Week (10)** - The Integral I. **Week (11)** - The Integral II.	**TA: Lab Assignment 3** Complete Practice Problems Week (10) Start Practice Problems Week (11)

12. Nov. 28 – Dec. 2
 	
Thursday, **Dec. 1**
 	
   - Classes rescheduled from Tuesday, October 11
   - **Tuesday** schedule in effect
 	
Friday, **Dec. 2**
   - Classes rescheduled from Monday, October 10
   - **Monday** schedule in effect
	Week (11) (Continued)
	
	- The Integral II.
	
	Week (12)
	
	- The Integral III.
		No Lab this week.
		
		Complete Practice Problems Week (11)
		
		Complete Practice Problems Week (12)