Math*1200 – Calculus I – Fall 2022

UNIVERSITY of GUELPH

(Revised: August 25, 2022)

1 INSTRUCTIONAL SUPPORT

1.1 Instructor

Dr. Matt Demers mdemers@uoguelph.ca

Group (In Person) Office Hours:
Tuesdays 10 – 11 am, and Wednesdays 12 noon – 1 pm, in THRN*1425 (just off the Atrium!)

Virtual (Zoom) Office Hours:
Thursdays, 5 – 7 pm

Also feel free to get in touch to make an appointment with me, or chat with me after our Friday labs!

1.2 Teaching Assistants

Lab TAs:
Harrison Tieman   htieman@uoguelph.ca
Cameron Jakub   cjakub@uoguelph.ca
Michael Dube   mdube04@uoguelph.ca

2 LEARNING RESOURCES

2.1 Course Website

Completed course notes, news, announcements, and grades will be regularly posted to the Math*1200 Courselink page.

2.2   Required Resources

Math*1200 – Calculus I Course Manual (Available through Courselink)

This is our primary resource for the course. This will be released free of charge, through Courselink, chapter by chapter as we progress through the course.

2.3   Recommended Resources

Not applicable.

2.4   Additional Resources

Lecture Information:

Lectures will be in-person. Completed notes will be uploaded to Courselink regularly, so that if you miss a class, you'll be able to catch up on your own time. It is your responsibility to stay on top of any missed material!

Past Tests and More:

Assignments and tests from recent offerings of the course will be posted online with full solutions available. This is an opportunity for you to see and work on extra problems that are at the level I expect from you. *This does not in any way, however, imply that the assignments and tests of this semester will be or should be identical to or similar to those of previous years.* I may also post extra resources or provide links from time to time if I create something or come across something that I believe might be helpful to you. Anything like this would be posted to the Courselink site, so again, check it every day!

2.5   Communication & Email Policy

Please feel free to ask any questions during or just after classes or labs. Do not feel intimidated about contributing your questions: Active learning is much more effective than just copying down notes! If you can't ask your questions during, though, there are still options for help:

- Drop in to my posted office hours. Don't ever hesitate to join, even if you think you are behind in your studying. Getting you caught back up is **exactly** what those opportunities are there for!   There are both in-person and Zoom opportunities available, for your convenience.

- Use the discussion forums available to you on Courselink. It is possible that a classmate will know the solution and will be able to help you, and it will be useful to have classmates to collaborate with. Myself and a TA will be monitoring the boards to help answer questions in case a classmate is unable to jump in with a response first. Remember: It is GREAT practice to help and explain one concepts to one another!

- Send me an email (mdemers@uoguelph.ca). If you do this, it would be extremely helpful for you to *attach a picture of your work*, so I can easily see where you might be stuck and be able to help you more quickly. I will always aim to respond within a

day, and quicker whenever I can. Please use this option responsibly: I love to help students out, but there are over 900 of you and just one of me! So absolutely use my email, but please take the time to explore other available options for help too.

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3 ASSESSMENT

3.1   Dates and Distribution

(Note that no phones or screens of any kind will be permitted for any tests or exams.)

Lab Tests: (20% apiece)
Friday, September 30 in lab (on Functions)

Friday, November 4 in lab (on Derivatives)

Lab Tests are tests that are designed to make sure that you have down your fundamental calculus skills: No more, and no less. Lab Tests will be short: Just 40 minutes in length. They will be closed-book tests where you do not have access to any resources (outside of your brain and a pencil). However, the lab tests will only cover the basics: Application questions, extended word problems, or "extension" questions are unlikely to be featured on lab tests. *Lab tests will help you measure how well prepared you are for later in this course and in future courses!*

Midterm Exam: (25%)
Saturday, October 22, 10 – 11:30 am
Locations TBA

Final Exam: (35%)
Monday, December 5, 7 – 9 pm
Locations TBA

The midterm and final exams will feature a variety of problems that will measure your problem-solving skills, your ability to think logically, and communicate mathematically. There will be some simpler problems, and some more challenging problems, including applications and extension questions. However, you may use any resources you wish for the midterm and final; that is, they will be open book and calculators will be allowed.

The final exam will be cumulative, but will emphasize material that has not yet been tested in the course. So while anything is game, expect it to feature material from the last chapters more heavily than the rest!

3.2 Course Grading Policies

Missed Assessments and Tests:
If you know in advance that you will be unable to attend any tests due to medical, psychological, compassionate, or other reasons, please email me. We may be able to come to an agreement to reweight the test to other components of the course, or provide an alternative assessment, depending on your situation. I ask that you provide me with at least two weeks of notice, or else an alternative may not be possible. See below for details and consult the undergraduate calendar for information on regulations and procedures for Academic Consideration:

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Accommodation of Religious Obligations:
If you are unable to meet an in-course requirement due to religious obligations, please email me within two weeks of the start of the semester to make alternate arrangements. See the undergraduate calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations:

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

Passing grade:
You must receive a final grade of 50% or greater in order to pass this course.

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).

4 AIMS, OBJECTIVES & GRADUATE ATTRIBUTES

4.1 Calendar Description

This is a theoretical course intended primarily for students who expect to pursue further studies in mathematics and its applications. Topics include inequalities and absolute value; compound angle formulas for trigonometric functions; limits and continuity using rigorous definitions; the derivative and derivative formulas (including derivatives of trigonometric, exponential and logarithmic functions); Fermat's theorem; Rolle's theorem; the mean-value theorem; applications of the derivative; Riemann sums; the definite integral; the fundamental theorem of calculus; applications of the definite integral; the mean value theorem for integrals. [Restriction(s): IPS*1500, MATH*1080][Department(s): Department of Mathematics and Statistics]

4.2 Learning Objectives

At the successful completion of this course, the student will have demonstrated the ability to:

1. Establish comfort and competency in working with a wide variety of common functions.
2. Solve inequalities and use them to understand the formulation of the formal definition of a limit.
3. Explain limits from graphical and intuitive perspectives, using this knowledge to understand continuity and related theorems.
4. Understand how the derivative of a single-variable function is defined and how this definition leads to a variety of derivative rules useful in everyday calculation, including higher-order and implicit derivatives.
5. Explain the logic of Fermat's Theorem, Rolle's Theorem, and the Mean Value Theorem, and how these depend on differentiability and continuity.
6. Apply the concept of derivatives to aid in solving problems of related rates, graph sketching, and optimization.
7. Solve simple antiderivatives, including the technique of substitution.
8. Connect the idea of Riemann sums to the fundamental theorem of calculus, and thereby solve definite integrals.

4.3 Graduate Attributes (for Engineering)

Successfully completing this course will contribute to the following CEAB Graduate Attributes:

Graduate Attribute	Learning Objectives	Assessment
1. Knowledge Base for Engineering	1-8	Labs, Tests, Exam
2. Problem Analysis	6,8	Labs, Tests, Exam
3. Investigation	-	-
4. Design	-	-
5. Use of Engineering Tools	-	-
6. Communication	1-8	Labs, Tests, Exam
7. Individual and Teamwork	-	-
8. Professionalism	-	-
9. Impact of Engineering on Society and the Environment	-	-
10. Ethics and Equity	-	-
11. Environment, Society, Business, & Project Management	-	-
12. Life Long Learning	-	-

4.4   Instructor's Role and Responsibility to Students

As your instructor, I pledge to:

1. Deliver course material in a professional way that facilitates learning for a variety of students and learning styles.

2. Respond to you. This includes, as time permits, questions during or after lectures, during office hours, or through email. You are more than welcome to contact me at any time through these means if you have questions or concerns about the course or new concepts.

3. Evaluate you fairly, providing prompt feedback on your performance and justification for any grades you are given. I must provide academic consideration, where appropriate, as described in Section 3.

4.5   Students' Learning Responsibilities

As a member of this class, you are expected to:

1. Take advantage of the learning opportunities provided during lectures, labs, and through Courselink.

2. Treat others with dignity whenever you address them. There are a large number of people enrolled in this class from all walks of life and of all skill levels. Your understanding and respect of this diversity is extremely important!

3. Genuinely try all homework in a timely manner and make the effort of attempting optional practice questions, especially if you have faced some trouble with math courses in the past.

4. Seek help if you have tried the homework and are still having difficulty with the course content. This means using the Courselink forums to get help from your peers, contacting me through email or in office hours (*not* just at the last minute!) and possibly considering other resources as I recommend them to you.

5. Check all of your posted grades with tests that have been returned to you, to verify that the correct mark has been recorded. If not, then for tests, get in touch with me right away in person or through email, and we will figure things out. For lab assignments, contact your TA and they will do the same.

6. Notify me, as described in Section 3, in the case that there are academic conflicts that are known in advance. If illness, work, or extra-curricular activities are causing you to struggle, you are advised to keep me up-to-date on your progress, so that I can be more helpful to you.

4.6   Relationships with other Courses & Labs

Follow-On Courses
MATH*1210, MATH*2200: While a great number of courses in many departments and programs require MATH*1200 as a prerequisite, these two courses in particular expand and extend upon concepts that are first built in high-school calculus and in this course. The skills in this course are *essential* for these others. Stay tuned for more!

5   TEACHING AND LEARNING ACTIVITIES

5.1   Timetable

Lectures:
Lecture Section 1: Tuesdays and Thursdays, 11:30 am – 12:50 pm, ROZH 101
Lecture Section 2: Tuesdays and Thursdays, 2:30 – 3:50 pm, War Memorial Hall

Labs:
Lab Section 1: Fridays at 12:30 pm, ALEX 200
Lab Section 2: Fridays at 3:30 pm, ROZH 104
Lab Section 3: Fridays at 9:30 am, THRN 1200

5.2   Schedule of Topics – (Please note that the timing is just an estimate)

Weeks	Topic	Learning Objectives
1-2	Review of Functions	1
3	Inequalities	2
4-6	Limits	2,3
7	Basics of Derivatives	4
8-10	Derivative Theory and Applications	5,6
10-12	Integration Theory and Applications	7,8

5.3   Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.
Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml
Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

5.4 Other Important Dates

Thursday, September 8: Classes commence
Monday, October 10: Thanksgiving Day (no classes scheduled)
Tuesday, October 11: Fall Study Break Day (no classes are scheduled)
Thursday, December 1: Tuesday class schedule is in effect
Friday, December 2: Last day of classes; Monday class schedule is in effect

6 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.

7 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

8 COVID-19 DISCLAIMER AND SAFETY PROTOCOLS

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.

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.

9 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, classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

10 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: https://www.uoguelph.ca/registrar/calendars

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://well-ness.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.