

Math*1200 – Elements of Calculus II – Winter 2023



(Revised: December 20, 2022)

1 INSTRUCTIONAL SUPPORT

1.1 Instructor

Dr. Matt Demers mdemers@uoguelph.ca

Office Hours:

Mondays 12:00 noon - 1:00 pm; Wednesdays 1:00 pm - 2:00 pm, MACN 543

Virtual (Zoom) Office Hours:

Thursdays, 5 - 6 pm (the link will be provided through Courselink in the first days of class)

Also feel free to get in touch to make an appointment with me, or chat with me after class any day!

1.2 Teaching Assistants

Lab TA:

Harrison Tieman htiemman@uoguelph.ca

2 LEARNING RESOURCES

2.1 Course Website

Completed course notes, news, announcements, and grades will be regularly posted to the Math*1090 Courselink page.

2.2 Required Resources

Math*1090 - Elements of Calculus II Course Notes (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

Calculus for Biology and Medicine (Fourth Edition) by Neuhauser Roper.

I will post some exercises from this text and potentially occasionally draw material from it. However, the “core” of the material for this course are the notes that we will fill in together class by class.

2.4 Additional Resources

Lecture Information:

Lectures and labs 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!

“For You to Try” problems, Practice Tests, and More:

A list of homework problems from the optional text will be posted as Courselink announcements on a regular basis, and weekly “For You to Try” (FYTT) problems will be given for you to do as optional homework. Practice materials will be posted before each lab test, the midterm, and the final, along with solutions. Use these to prepare well!

2.5 Getting Help + 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 concept to one another!
- Check out the Math + Stats Learning Centre on the third floor of the library. It is a drop-in tutoring facility, available and staffed Monday - Friday during the day. The TAs’ job there is specifically to help students in first-year courses out, if they need help!
- 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 very many 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.

3 ASSESSMENT

3.1 Dates and Distribution

Lab Tests: (40 minutes each, 10% apiece)

Friday, January 27

Friday, February 10

Friday, March 17

Friday, March 31

Lab Tests are closed-book tests (including no calculators) that focus on a few specific topics and your fundamental knowledge. They will tend not to feature many (or any) word problems, application questions, etc.

Lab Test weighting will transfer automatically to the final exam if you cannot or do not wish to attend, or choose not to submit your work (even after you sit to write, you may opt not to hand in your work if you do not wish for it to be graded). Note: If you DO hand in your work, this is a commitment to having it graded and contribute toward your final mark!

Midterm Exam: (75 minutes, 25%)

Saturday, March 4, 12:00 noon - 1:15 pm or 1:45 - 3:00 pm in MACN 105

The Midterm Exam will be more comprehensive, covering material from throughout the course to that point. It will feature a mix of questions, both standard and challenging. It is open-book and you may bring any resources, notes, etc, that you like, including any calculator; however, no devices that can connect to the internet will be allowed. There will be two seatings of the midterm so that we have a little more space to work with. Stay tuned to our Courselink website for more details on this as we get closer.

If you know that you will be absent from the midterm, or you become sick, etc, the weight of this assessment does NOT transfer automatically to the exam; you must contact me to inform me of your situation first. Thank you!

Final Exam: (2 hours; 35% + the weight of any missed lab tests)

Monday, April 24, 7 - 9 pm

Locations TBA

The Final Exam will feature a similar open-book format to the Midterm Exam. The final exam will be cumulative, but will emphasize material that has not yet been tested in the course. So while anything is game, keep this in mind!

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 course will expand on integration techniques, and introduce students to difference and differential equations, vectors, vector functions, and elements of calculus of two or more variables such as partial differentiation and multiple integration. The course will emphasize content relevant to analyzing biological systems, and methods will be illustrated by application to biological systems.

Restriction(s): IPS*1510, MATH*1210, MATH*2080

Department(s): Department of Mathematics and Statistics

Requisites: 1 of IPS*1500, MATH*1080, MATH*1200 - Must be completed prior to taking this course.

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 trig and inverse trig functions, as well as their derivatives.
2. Apply a variety of advanced integration techniques to solve problems.
3. Classify, define, and solve certain difference equations and differential equations.
4. Apply techniques of calculus and differential equations in order to explore biological applications.
5. Work with vectors, fundamental vector operations, and vector functions.
6. Explain a multivariable function, including the computation of partial derivatives and multiple integrals.

4.3 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.

4.4 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, get in touch with me as soon as you are able and we can figure things out.
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.

5 TEACHING AND LEARNING ACTIVITIES

5.1 Timetable

Lectures:

Mondays, Wednesdays, Fridays at 10:30 am, MACN 105

Labs:

Fridays at 4:30 pm, THRN 1200

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

Weeks	Topic	Learning Objectives
1-2	Inverse Functions; Review of Trigonometric Functions; Arctrig Functions and their Derivatives	1
3-5	Integration by parts, Integration of Trig Products, Trig Substitutions, Partial Fractions; Improper Integrals	2,4
6-8	Difference Equations and Differential Equations	3,4
9-10	Vectors, Vector Operations, and Vector Functions	5
11-12	Fundamentals of Multivariable Calculus: Partial Derivatives and Multiple Integration	6

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

Monday, January 9: Classes commence

Monday, February 20 - Friday, February 24: Reading Week (no classes scheduled)

Friday, April 7: Good Friday (no classes are scheduled)

Monday, April 10: Last day of Classes (Friday class schedule is in effect) and last day to drop courses for W23 semester

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://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](tel: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](tel: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.