MATH*1210 Calculus II

Winter 2018

UNIVERSITY of GUELPH

(Revision 0: November 30, 2017)

---

1 Instructional Support

1.1 Instructors

Matthew Demers, Ph.D.
Office: MacN 543, ext. 53079
Email: mdemers@uoguelph.ca
Office hours:

Kimberly M. Levere, Ph.D.
Office: MacN 539, ext. 56908
Email: klevere@uoguelph.ca
Office hours:

Due to large class size, office hours are held in a group setting. We have found this to be a very productive and supportive learning environment in the past. Should you require an individual, private appointment with either of us, please contact us by email to set up a meeting.

1.2 Teaching Assistants

TBA

2 LEARNING RESOURCES

2.1 Course Website

Course material, news, announcements, and grades will be regularly posted to the MATH*1210 Course site. You are responsible for keeping up-to-date on this site.

2.2 Required Resources

M. Demers and K. Levere, *MATH*1210 – Calculus II Course Manual*, available at the MacNaughton Book Store. This is the primary resource for the course and functions both as the textbook, and as a notebook that we will complete together in class as the course progresses. Please be sure that you have the current version, the 5th edition, (only available in the MacNaughton bookstore) as a number of changes have been made to last year's manual.

2.3 Recommended Resources

Not applicable

2.4 Additional Resources

Lecture Information: Completed lecture notes will be uploaded to the Course website at the end of every major section. It is, however, strongly recommended that you attend every class.

Lab Tutorial Information: A weekly lab session will give you the opportunity to tackle tougher problems or extra practice questions. We may also use this time to cover course material directly from the Course Manual. It is your responsibility to obtain completed notes from lab tutorials if you cannot attend, as **these will *not* be posted online** unless we otherwise specify.

Other: Past tests, supplementary questions, and other resources may be posted to the Course website as needed. Again, it is important that you check regularly to keep up-to-date.

2.5 Communication & Email Policy

Please use lectures and lab help sessions as your main opportunity to ask questions about the course. Major announcements will be posted to the course website. **It is your responsibility to check the course website regularly.** As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its student.

3 ASSESSMENT

3.1 Dates and Distribution

Your grade will be determined using the more favourable of the two grading schemes for you.

Grading Scheme 1	Grading Scheme 2
Warm-up Test 10%	Warm-up Test 0%
Term Test 1 20%	Term Test 1 20%
Term Test 2 30%	Term Test 2 30%
Final Exam 40%	Final Exam 50%

Warm-up Test: Friday, January 19th

(40 minutes to write).
Location: in your scheduled lab section.

Test 1: Friday, February 9th
5:30pm-6:45pm (60 minutes to write).
Location: TBA

Test 2: Friday, March 23rd
5:30pm-6:50pm (75 minutes to write).
Location: TBA

Final Exam:

TBA. Location: TBA

3.2 Course Grading Policies

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 number, 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

Accommodation of Religious Obligations: If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor at 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:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

Missed midterm tests: Missed tests will receive a grade of 0%, unless you miss a test due to any of the above reasons, in which case the weight of the missed test will be added to the final exam. There will be no makeup tests.

Passing grade: In order to pass the course, you must receive a final grade of at least **50%**.

Group Work: You are encouraged to work together to learn the course material and complete For You to Try exercises.

---

4 AIMS, OBJECTIVES & GRADUATE ATTRIBUTES

4.1 Calendar Description

This course is a continuation of MATH*1200. It is a theoretical course intended primarily for students who need or expect to pursue further studies in mathematics, physics, chemistry, engineering and computer science. Topics include inverse functions, inverse trigonometric functions, hyperbolic functions, indeterminate forms and l'Hopital's rule, techniques of integration, parametric equations, polar coordinates, Taylor and Maclaurin series; functions of two or more variables, partial derivatives, and if time permits, an introduction to multiple integration.

Credit Weight: 0.5 Department: Mathematics & Statistics **Campus**: Guelph
Prerequisite: One of MATH*1000, MATH*1080, or MATH*1200
Restrictions: MATH*2080

4.2 Course Aims

This course extends the ideas and concepts covered in a first Calculus course. The objective of the course is to broaden your mathematical background to explore more advanced topics. The main goals of the course are (1) to teach students the Calculus concepts listed in section 4.1 at a level that promotes a deep understanding and (2) to explain how such concepts are applicable in their various degrees by exploring real-world problems.

4.3 Learning Objectives

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

1. Understand fundamentals of complex numbers in various forms.
2. Understand inverse functions (including inverse trig), domains, ranges, and graphs.
3. Define and graph hyperbolic functions and their inverses.
4. Identify indeterminate forms and effectively use L'Hopital's rule to evaluate limits.
5. Utilize various advanced integration techniques to find antiderivatives.
6. Evaluate improper integrals.
7. Calculate volumes of revolution using definite integrals.

8. Calculate the arclength of a curve using integral formulas.
9. Work with parametric curves and polar coordinates.
10. Derive Taylor and MacLaurin series for a variety of functions.
11. Extend concepts to multivariable functions, including partial derivatives.

4.4 Graduate Attributes

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

Graduate Attribute	Learning Objectives	Assessment
1. Knowledge Base for Engineering	1-10	Exams, Labs
2. Problem Analysis	1-10	Exams, Labs
3. Investigation	1-10	
4. Design	-	-
5. Use of Engineering Tools	-	-
6. Communication	-	-
7. Individual and Teamwork	1-10	Labs
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	-	-

4.5 Instructor's Role and Responsibility to Students

As your instructors, we must:

1. Develop and deliver course material in a professional way that facilitates learning for a variety of students and learning styles;
2. Attend all lectures, filling in the Course Manual as we proceed in each lecture. We will provide completed course notes online regularly, but we strongly urge you to come to class. Bear in mind that most Tutorials will not use the Course Manual and these completed notes might not be provided to you.
3. Respond to you. This includes, as time permits, questions in lectures and lab tutorials, after classes, during office hours, or through email (where we reserve the right to reply within a timeframe of 1-2 days). You are more than welcome to contact either of us at any time through these means if you have questions or concerns about the course or the course material.
4. Evaluate you fairly, and fairly as compared to your peers, providing prompt feedback on your performance and justification for your grade. We must provide academic consideration, where appropriate, as described in Section 3.

4.6 Students' Learning Responsibilities

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

1. Take advantage of the learning opportunities provided during lectures and tutorials;
2. Treat others with respect and dignity whenever you address them, in-class or online.
3. Genuinely try all homework in a timely manner, including the online Miniquizzes and the "For You to Try" component of the Course Manual, on your own time;
4. Seek help if you have tried the homework and are still having difficulty with the course content. This means contacting us (*not* just at the last minute!) and possibly considering other resources as we recommend them to you;
5. Check all grades against tests that have been returned to you, once they are posted to the Course website, to verify that the correct mark has been recorded.
6. Notify us, as described in Section 3, in the case that there are missed tests or academic conflicts that are known in advance. If illness, work, or extra-curricular activities are causing you to struggle, you are advised to keep us up-to-date on your progress, so that we can be more helpful to you.

5 TEACHING AND LEARNING ACTIVITIES

5.1 Timetable

Lectures (Section 02 – Dr. Levere):

Monday	1:30 pm – 2:20 pm	ROZH*101
Wednesday	1:30 pm – 2:20 pm	ROZH*101
Friday	1:30 pm – 2:20 pm	ROZH*101

Lectures (Section 01 – Dr. Demers):

Monday	10:30 am – 11:20 am	ROZH*101
Wednesday	10:30 am – 11:20 am	ROZH*101
Friday	10:30 am – 11:20 am	ROZH*101

Tutorials:

Friday	8:30 am – 9:20 am	WMEM*103
Friday	3:30 pm-4:20 pm	ROZH*104

5.2 Lecture Schedule

(schedule is approximate and subject to change depending on time constraints)

Lectures (Week)	Lecture Topics	References
1	Complex Numbers	Chapter 1
1-2	Inverse Functions	Chapter 1
3	Hyperbolic Functions	Chapter 2
4	L'Hôpital's Rule	Chapter 3
4-5	Advanced Integration Techniques	Chapter 4
6	The Method of Partial Fractions	Chapter 5
6-7	Improper Integrals	Chapter 6
7-8	Volumes of Revolution	Chapter 7
8-9	Arclength of a Curve and Parametric Equations	Chapter 8
10	Polar Coordinates	Chapter 9
11	Taylor & MacLaurin Series	Chapter 10
12	Introduction to Multivariable Functions	Chapter 11

5.3 Lab Schedule

Lab topics will correspond to weekly topics. Together we will practice the material covered in class as well as extend it to more interesting problems.

5.4 Other Important Dates

First day of classes: Monday, January 8th, 2018.
Reading Week: Monday, February 19th, 2018-Friday, February 23rd, 2018. (no classes)
40th Class Day: Friday, March 9th, 2018.
Good Friday: Friday, March 30th, 2018. (no classes)
Last day of classes: Friday, April 6th, 2018.

Drop Date: Courses that are one semester long must be dropped by the end of the fortieth class day (**Friday, March 9th, 2018)**; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Course Evaluation Information: Near the end of the term, you will be given the opportunity to evaluate your instructor and provide comments regarding your experience. The evaluations for this class will be done in-class. Your instructor will inform you of when these are to take place.

6 Lab Safety

Safety is critically important to the School and is the responsibility of all members of the School: faculty, staff and students. As a student in a lab course you are responsible for taking all reasonable safety precautions and following the lab safety rules specific to the lab you are working in. In addition, you are responsible for reporting all safety issues to the laboratory supervisor, GTA or faculty responsible.

7 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.

7.1 Resources

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

A tutorial on Academic Misconduct produced by the Learning Commons can be found at:
http://www.academicintegrity.uoguelph.ca/

Please also review the section on Academic Misconduct in your Engineering Program Guide.

The School of Engineering has adopted a Code of Ethics that can be found at:
http://www.uoguelph.ca/engineering/undergrad-counselling-ethics

---

8 ACCESSIBILITY

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability for a short-term disability should contact Student Accessibility Services (SAS, formerly the Centre for Students with Disabilities, CSD) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.csd.uoguelph.ca/csd/

---

9 RECORDING OF MATERIALS

Presentations which are made in relation of 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.
http://www.uoguelph.ca/registrar/calendars/index.cfm?index