



# MATH\*1210 Calculus II

Winter 2020

Section(s): C01

Department of Mathematics & Statistics

Credit Weight: 0.50

Version 3.00 - January 10, 2020

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## 1 Course Details

### 1.1 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.

**Pre-Requisites:** MATH\*1080 or MATH\*1200

**Restrictions:** IPS\*1510, MATH\*1090, MATH\*2080

### 1.2 Course Description

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.

### 1.3 Timetable

Lectures (Section 01)

Monday 10:30am-11:20am ROZH\*101

Wednesday 10:30am-11:20am ROZH\*101

Friday 10:30am-11:20am ROZH\*101

Lectures (Section 02)

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

#### Tutorials

|        |                 |          |
|--------|-----------------|----------|
| Friday | 11:30am-12:20pm | ROZH*104 |
| Friday | 4:30pm-5:20pm   | ROZH*101 |

## 1.4 Final Exam

Tuesday, April 7th, 2020 from 7:00pm-9:00pm. Location to be announced on Courselink and in class.

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Kimberly Levere PhD  
**Email:** klevere@uoguelph.ca  
**Telephone:** +1-519-824-4120 x56908  
**Office:** MACN 539  
**Office Hours:** Dates and times are as follows:

Mondays (Kim) 11:30am - 12:30pm (THRN\*1425)

Tuesdays (Myles) 3:00pm - 4:30pm (MACN\*536)

Wednesdays (Kim) 2:30pm - 3:30pm (THRN\*1425)

Thursdays (Connor) 10:00am - 11:30am (MACN\*536)

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

### 2.2 Teaching Assistants

|                 |                      |
|-----------------|----------------------|
| Bryson Boreland | Zixuan Luo           |
| Ningping Cao    | Volodymyr Vivchariuk |
| Eric Fernandes  | Danielle St. Jean    |
| Roie Fields     | Daiana Spataru       |
| Connor Gregor   | Katrina Olfert       |
| Britanny Howell | Myles Nahirniak      |
| Lia Humphrey    |                      |

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## 3 Learning Resources

### 3.1 Required Resources

#### Course Manual (Textbook)

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 6<sup>th</sup> edition, (only available in the MacNaughton bookstore) as a number of changes have been made since the last edition.

### 3.2 Recommended Resources

#### Completed Notes (Notes)

Completed lecture notes will be uploaded to the Course website at the end of every week. This is not a substitute for lecture attendance! I strongly recommend that you attend every class.

### 3.3 Additional Resources

#### Courselink Website (Website)

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

### 3.4 Additional Questions/Tests/Exams

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

### 3.4 Mobius Miniquiz Link

A link to the Mobius TA website is available through the Course website. Do not try to find the Mobius site by doing a web search; you may find the wrong page if you do this. You can login using your Central Student ID and password. If you have any issues accessing the online quizzes, please contact me [klevare@uoguelph.ca](mailto:klevare@uoguelph.ca). Be as specific as you can so that I can more easily be helpful; include your name and student number.

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able 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.
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## 5 Teaching and Learning Activities

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

### 5.1 Lecture

| When      | Topic                                |
|-----------|--------------------------------------|
| Week 1    | An Introduction to Complex Numbers   |
| Week 2    | Inverse Functions                    |
| Week 3    | Hyperbolic Functions                 |
| Week 4    | L'Hopital's Rule                     |
| Weeks 5-6 | Some Advanced Integration Techniques |
| Week 7    | The Method of Partial Fractions      |
| Week 8    | Volumes of Revolution                |
| Week 9    | Arclength and Parametric Equations   |

| When    | Topic                                    |
|---------|------------------------------------------|
| Week 10 | Polar Coordinates                        |
| Week 11 | Taylor and MacLaurin Series              |
| Week 12 | Introduction to Multi-variable Functions |

## 5.2 Tutorials

A weekly lab session will give you the opportunity to tackle tougher problems or extra practice questions. I 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 otherwise specified.

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## 6 Assessments

### 6.1 Marking Schemes & Distributions

| Name               | Scheme A (%) | Scheme B (%) |
|--------------------|--------------|--------------|
| Warm Up Test       | 10           | 0            |
| Term Test 1        | 15           | 15           |
| Term Test 2        | 25           | 25           |
| Final Exam         | 40           | 50           |
| Mobius Miniquizzes | 10           | 10           |
| Total              | 100          | 100          |

### 6.2 Assessment Details

#### Warm Up Test (10%)

**Date:** Fri, Jan 17, 6:00 PM - 7:15 PM

**Location:**

Last names A-C report to ROZH\*102

Last names D-Z report to ROZH\*104

#### Term Test 1 (15%)

**Date:** Fri, Jan 31, 6:00 PM - 7:30 PM

Location:

Last names A-C report to ROZH\*102

Last names D-Z report to ROZH\*104

### **Term Test 2 (25%)**

**Date:** Fri, Mar 6, 6:00 PM - 7:30 PM, ROZH\*104

### **Final Exam (40%)**

**Date:** Tue, Apr 7, 7:00 PM - 9:00 PM

Location to be announced on Courselink and in class.

### **Mobius Miniquizzes (10%)**

**Date:** Approximately weekly, due Thursdays at 6:00pm

There will be 1-2 Mobius miniquizzes posted in selected weeks for you to complete. The content

of these quizzes will be material covered in the previous week of classes. You have unlimited attempts to do each miniquiz up until their assigned due date. Your grade for each miniquiz will be equal to the highest grade received from all attempts you have taken at the miniquiz within the allotted time. The first Mobius miniquizzes that will count toward your final grade will be due on Thursday, January 16th, at 6:00pm (Week 2)

Quizzes will continue to be due approximately weekly on Thursdays at 6:00pm throughout the semester.

To help you to learn the Mobius system, I have posted a syntax quiz that will help you to learn how to properly input your answers and navigate the system. I highly recommend that

you attempt this quiz a few times so that you are comfortable.

## **6.3 Rule of 48**

You must receive at least 50% of the marks available, in total, on term tests and final exam that are used to calculate your final grade. That is,

$$(\text{Total marks earned on tests and exam}) \div (\text{Total marks available on tests and exam}) \geq 50\%$$

If you do not achieve this, your maximum possible final grade will be 48%, no matter what grade you receive on the Miniquizzes component. Provided that you satisfy the above equation, your final grade will be calculated using the more favourable of the above two grading schemes.

# **7 Course Statements**

## **7.1 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>

## **7.2 Missed Assessments**

Missed tests and/or miniquizzes will receive a grade of 0%, unless they are missed due to any of the above reasons, in which case the weight of the missed test or miniquiz will be added to the final exam. There will be no makeup tests or miniquizzes.

## **7.3 Other Important Dates**

First day of classes: Monday, January 6th, 2020.  
 Reading Week: Monday, February 17th, 2020 - Friday, February 21, 2020. (no classes)  
 Last day of regularly scheduled classes: Friday, April 3rd, 2020.

Good Friday: Friday, April 10th, 2020 (no exams scheduled)

# **8 University Statements**

## **8.1 Email Communication**

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

## **8.2 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. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration  
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions  
<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

## **8.3 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>

## 8.4 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.

## 8.5 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 book their exams at least 7 days in advance and not later than the 40th Class Day.

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

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 8.6 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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 8.7 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.

## 8.8 Resources

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

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

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