

## **Math 0110A 001 Course Outline**

### **1. Course Information**

#### **Course Information**

Math 0110A: Introductory Calculus, September-December 2023

Section 001: In-person lectures, Tuesday & Thursday 7:00-9:00 p.m. in 3M Centre 3250

#### **List of Prerequisites**

Acceptable prerequisites include (but are not limited to): Mathematics 0105A/B, Mathematics 0109A/B, Ontario High School MHF4U. If unsure, contact an academic advisor or the main math office.

#### **List of Antirequisites:**

Mathematics 1225A/B, 1230A/B, Calculus 1000A/B, 1500A/B, Applied Mathematics 1413.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

### **2. Instructor Information**

<b>Instructors</b>	<b>Email</b>	<b>Office</b>	<b>Office Hours</b>
Dr. Michael Francis	mfranc65@uwo.ca	MC 133	See OWL page

Students must use their Western (@uwo.ca) email addresses when contacting their instructors and include "Math 0110" in the subject line of their email.

Office hours are held in room 133 of Middlesex College (the photogenic building with the clock tower). One hour of weekly drop-in office hours will be announced on OWL by Week 3. You may attend office hours in-person or via Zoom. You may also contact me to make an appointment outside of regularly scheduled office hours.

The Mathematics Department runs free, in-person and virtual help centres on weekdays during the semester. The in-person help centre is located in the Math-Physics Accelerator in PAB 48/49/26 (on the lower level of the Physics and Astronomy Building). These help centres are staffed by graduate student teaching assistants and all first-year mathematics courses are supported. No appointments are necessary.

Information about the help centre and other departmental supports for students can be found here:

[https://www.uwo.ca/math/undergraduate/current\\_students/Help%20Centre.html](https://www.uwo.ca/math/undergraduate/current_students/Help%20Centre.html)

### 3. Course Syllabus, Schedule, Delivery Mode

**Course description:** Limits, continuity, definition of derivative, rules for differentiation, higher-order derivatives, velocity, acceleration, implicit differentiation, related rates, exponential functions, logarithmic functions, differentiation of exponential and logarithmic functions, maxima and minima, concavity, curve sketching, optimization.

**Learning outcomes:** After passing this course, the student will demonstrate the ability to:

- Accurately manipulate functions to accomplish required goals
- Calculate limits of functions
- Calculate and interpret derivatives of single-variable functions
- Use derivatives to infer information about graphs and vice versa
- Solve equations and calculus problems involving exponential and log functions
- Use calculus to solve practical problems
- Perform optimization with constraints
- Properly justify steps in mathematical calculations
- Write short explanations of core calculus concepts

**Lectures:** Lectures are conducted in-person Tuesday & Thursday 7:00-9:00 p.m. in 3M Centre 3250. Typically, class will consist of 50 minutes of instruction, followed by a 10 minutes “recess”, followed by another 50 minutes of more example-heavy class time focused around a worksheet.

#### Approximate schedule of Topics:

Dates	Topics	Assessments
Week 1	Operations and functions	Test 1
Week 2	Limits and continuity	
Week 3	Lines, average rate of change	
Week 4	Definition of derivative and derivative short-cuts	
Week 5	Chain rule and combination derivatives	
Week 5 and 6	Implicit, higher order derivatives, related rates	Test 2 emphasizes this material
Week 7	Exponential and log functions	
Week 8	Derivatives of exponential and log functions	
October 30 to November 3 READING WEEK		
Week 9	Increasing/decreasing and max/min	Final exam emphasizes this material (but tests entire course)
Week 10	Concavity, inflection, and 2 <sup>nd</sup> derivative test	
Week 11	Optimization with applications	
Week 12	Asymptotes and curve sketching	
Week 13	Review	

#### Key Sessional Dates:

- First day of classes: September 7, 2023
- Reading Week: October 30 – November 5, 2023
- Last day of classes: December 8, 2023
- Exam period: December 10 – 22, 2023

### Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

## 4. Course Materials

**Textbook:** Custom Text for Mathematics 0110A/B, 1225A/B and 1230A/B

OPTION 1: print text (solution manual is automatically included in bundle)

OPTION 2: e-Book (solution manual can be: included in bundle, purchased separately, or not purchased)

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

Any additional course materials will be posted to OWL: <http://owl.uwo.ca>.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

### Technical Requirements

Computer or laptop access and a stable internet connection

Paper, pencils, and erasers

Recommended but not required: access to a printer

## 5. Methods of Evaluation

The grading scheme for the course is as follows:

Quizzes (10 at 2%)	20%
Midterm Test 1	20%
Midterm Test 2	20%
Final Exam	40%

**Online Quizzes:** In 8 weeks of the semester, there will be an online quiz to be completed on OWL. Quizzes open at 12:05 a.m. on Monday and close at 11:55 p.m. on Sunday. They are worth 2% each.

**In-Class Quizzes:** There will be two in-class quizzes, 1 hour in length, held on weeks preceding midterm tests. The in-class quizzes are worth 2% each. **Use of a calculator or other aids is not permitted.**

**Midterms:** There will be two midterm tests on October 13 and November 10. Midterms are 2 hours in length. **Use of a calculator or other aids is not permitted.**

**Missed quiz/improvement policy:** If you miss a quiz for any reason, your score will automatically be replaced by your score on the corresponding test/exam. If you do poorly on a quiz (compared to your score on the corresponding test/exam), your score will automatically be replaced by your score on the

corresponding test/exam. Consequently, the quizzes in this course are **risk-free grades**. When you miss one of the quizzes, you miss an opportunity to raise your score in the course above the baseline of your test/exam score. Therefore, you should aim to write every quiz. No makeup quizzes will be scheduled.

**Test 1 improvement policy:** If your Test 1 score is lower than your Test 2 and/or Final Exam score, your Test 1 weight will be reduced to 10%, and your best assessment between the Final exam and Test 2 will have an additional 10% weight applied (so either your Test 2 becomes 30% weight or your Final Exam becomes 50% weight).

#### **Assessment Schedule:**

<b>Week 1</b> (Sept 7)	No assessment
<b>Week 2</b> (Sept 12, 14)	Online Quiz 1 open all week
<b>Week 3</b> (Sept 19, 21)	Online Quiz 2 open all week
<b>Week 4</b> (Sept 26, 28)	Online Quiz 3 open all week
<b>Week 5</b> (Oct 3, 5)	In-Class Quiz 1 on Thursday, October 5
<b>Week 6</b> (Oct 10, 12)	<b>Midterm Test 1 on Friday, October 13, 6:30-8:30 p.m.</b>
<b>Week 7</b> (Oct 17, 19)	Online Quiz 4 open all week
<b>Week 8</b> (Oct 24, 26)	In-Class Quiz 2 on Thursday, October 26
<b>Reading Week: October 30-November 3</b>	
<b>Week 9</b> (Nov 7, 9)	<b>Midterm Test 2 on Friday, November 10, 6:30-8:30 p.m.</b>
<b>Week 10</b> (Nov 14, 16)	Online Quiz 5 open all week
<b>Week 11</b> (Nov 21, 23)	Online Quiz 6 open all week
<b>Week 12</b> (Nov 28, 30)	Online Quiz 7 open all week
<b>Week 13</b> (Dec 5, 7)	Online Quiz 8 open all week
<b>Exam Period</b> (Dec 10-22)	<b>Final Exam, 3 hours, date/time TBA</b>

## 6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

### **Assessments worth less than 10% of the overall course grade:**

As explained above, if you miss a quiz for any reason, your score on that quiz will automatically be replaced by your score on the corresponding test/exam. No makeup quizzes will be scheduled. It is not necessary to seek an excused absence for missed quizzes.

### **Assessments worth 10% or more of the overall course grade:**

Your instructor is not empowered to grant an academic consideration for work totalling 10% or more of the final course grade. You must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf).

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

A student who obtains an academic consideration to miss a midterm test from their faculty counsellor will be permitted to write a makeup test, scheduled roughly a week after the regular test date.

A student who also obtains an academic consideration to miss a makeup test will be assigned a score in such a way that their class rank on the midterm test matches their class rank on the final exam.

### **Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

**Note:** missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

## 7. Accommodation and Accessibility

### Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## 8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Calculators and other aids are not permitted during final exams, midterm tests and in-class quizzes.

**Scholastic offences** are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

In the event that in-person quizzes and examinations become prohibited (e.g. in the event of a health lock-down), tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at:

<https://remoteproctoring.uwo.ca>.

## 9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.