Math0110A 570
Introductory Calculus
Fall 2025

Instructor: Dr. Joseph Turnbull
Email: jturnbu7@uwo.ca

Course Information

Mode of Instruction: In Person

Calendar Description:

Introduction to differential calculus including limits, continuity, definition of derivative, rules for differentiation, implicit differentiation, velocity, acceleration, related rates, maxima and minima, exponential functions, logarithmic functions, differentiation of exponential and logarithmic functions, curve sketching.

Pre-requisite(s): One or more of Ontario Secondary School MHF4U, MCR3U, Mathematics 0105A/B, Mathematics 0109A/B, or equivalent

Anti-requisite(s): Mathematics 1225A/B, Mathematics 1230A/B, Calculus 1000A/B, Calculus 1500A/B, Numerical and Mathematical Methods 1412A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1413.

Extra Information: 4 lecture hours.

Course Weight: 0.50
Breadth: CATEGORY C
Subject Code: MATH

Notice: Unless you have either the requisites for this course (fulfilment of pre-requisites, no anti-requisite conflicts), or special permission from your Dean to enrol 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.

SCHOOL OF MANAGEMENT, ECONOMICS, AND MATHEMATICS (MEM)
KING'S AT WESTERN UNIVERSITY

Mathematics 0110A (570)
Introductory Calculus

September – December 2025

Instructor: Joseph Turnbull
Email: jturnbu7@uwo.ca

***M**ath 0110A/B curriculum, tests and the final exam are coordinated across all campuses*

Office hours: student drop-in hours will be announced on Brightspace.

Textbook: *Custom Text for Mathematics 0110A/B, 1225A/B and 1230A/B*
OPTION 1: print text with homework solutions book (*any edition, used or new) $116.25*
OPTION 2: e-Book with homework solutions e-book (*any edition) $92*

Class format

- Lectures are in-person.
- Quizzes will be conducted online and in-person.
- Tests and exam are in-person.
- Some materials will be posted to Brightspace (Western's online learning platform), and you are expected to access these materials in addition to attending class.
- Attendance in each class is expected. If a student has unexcused absences from class too often, they may be disbarred from writing the final exam (automatic grade of 0).

Technology requirements

- Computer or laptop access
- Paper, pencils, and erasers
- *Recommended but not required*: access to a printer.

Prerequisites
Acceptable prerequisites include (but are not limited to): Mathematics 0105A/B, Mathematics 0109A/B, Ontario High School MHF4U. If unsure, please contact jturnbu7@uwo.ca for clarification.

Antirequisites
Mathematics 1225A/B, 1230A/B, Calculus 1000A/B, 1500A/B, Applied Mathematics 1413.
** This means you cannot take mathematics 0110A/B after receiving credit for any of these courses.

Course topics:
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.

A schedule of topics will be on the Brightspace page and may be slightly different for each instructor.

Learning outcomes: students will

- Be able to manipulate functions to accomplish required goals.
- Explore limits of functions
- Understand instantaneous rates of change and how they compare with slope and average rates of change.
- Be able to calculate and interpret derivatives of single-variable functions.
- Learn how to use exponential and log functions.
- Solve application problems in a variety of areas.
- Use derivatives to infer information about the graphs of functions.
- Perform optimization with constraints.
- Learn how to properly justify steps in mathematical calculations.

Instructor contact instructions:
The best way to contact your instructor is in class or at so-called "office hours". What are office hours? See this wonderful explanation from Dr. Ishak at Santa Clara University: https://vimeo.com/270014784.

- Instructor office hours will be posted to the Brightspace page.
- Email is not efficient, and response times vary wildly depending on email volume (instructors may be receiving hundreds of emails per day).
- Any email sent to an instructor **SHOULD say Math 0110A in the subject line**. This helps us categorize your email as "not spam" and give it a higher priority.
- Do not trust email "autocomplete" to default to your instructor's email addresses. Type it in. Autocomplete may automatically input the wrong email address.
- Any changes in office hours locations and timings will be clearly communicated to you via the course Brightspace page, and announced in class.
- Email should not be your primary means of communication with instructors.

Reading week

- Reading week is November 3-7 (no classes held)

Evaluation of student learning:

- Top 5 of 6 online quizzes (worth 1% each)
- Two tests (worth 20% each)
- Three in-class quizzes (worth 5% each)
- One final exam (worth 40%)

Assessment	Date
Online Quiz 1	Due: September 26
Online Quiz 2	Due: October 3
In-class Quiz A	Wednesday, October 8
Test 1	**Friday, October 17** 7:00 – 8:30 PM
Online Quiz 3	Due: October 31
	Reading Week Nov 3-7
Online Quiz 4	Due: November 7
In-class Quiz B	Wednesday, November 12
Test 2	**Friday, November 14** 7:00 – 8:30 PM
Online Quiz 5	Due: November 28
Online Quiz 6	Due: December 5
In-class Quiz C	Friday, December 5
Final Exam	December (date TBD)

*If your test 1 score is lower than your test 2 and/or 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 exam becomes 50% weight for students whose test 1 mark is their lowest). There is no similar arrangement for test 2 or for the exam.

The in-class quizzes, term tests and the final exam are closed-book, no calculator, no electronic devices because math 0110A/B prepares you for calculus classes that assess using the same format, e.g. calculus 1000A/B and 1500A/B.

You will be required to bring your photo ID/student card to both tests and the final exam. The format of the tests and final exam includes a mixture of multiple choice and show-your-work long format problems. They may also include some true/false questions that require you to justify your response.

MISSED WORK POLICY

- If you miss a quiz, it will be reweighted to the test or exam that covers the same material. There are no makeup quizzes.
- If you miss test 1 (with academic consideration or self-reported absence), there will be a makeup test on Friday, October 17 from 2:30 – 4:00 PM.
    - If you then miss the makeup for test 1 (with academic consideration), the weight of test 1 will shift to the final exam. Without academic consideration for missing the makeup, your test 1 grade will be 0.
    - New material, including quizzes, will continue after the regular test 1 date, so those writing the makeup test will need to make sure they do not fall behind on the material that comes after test 1.
- If you miss test 2 (academic consideration required; NOT ELIGIBLE for self-reported absence), there will be a makeup test on Friday, November 21 from 2:30 – 4:00 PM.
    - If you then miss the makeup for test 2 (with academic consideration), the weight of test 2 will shift to the final exam. Without academic consideration for missing the makeup, your test 2 grade will be 0.
- If you miss the final exam with formal academic consideration, a makeup exam will be scheduled for you. Without academic consideration, missing the final exam will result in an exam grade of 0.
- Online makeups are NOT available for any reason.
- *Students seeking religious accommodation for any coursework must make such requests to academic counselling at least one week in advance (and at least two weeks in advance for final exams). After academic counselling has been contacted, you must then notify your instructor.*

IMPROVEMENT POLICY

- If your test 1 grade is higher than your grade on quiz 1, quiz 2, or quiz A, then your test 1 grade will replace that quiz grade.
- If your test 2 grade is higher than your grade on quiz 3, quiz 4, or quiz B, then your test 2 grade will replace that quiz grade.
- If your exam grade is higher than your grade on quiz 5, quiz 6, or quiz C, then your exam grade will replace that quiz grade.

COMBINED CONSEQUENCE MISSED WORK POLICY + IMPROVEMENT POLICY

1. If you miss a quiz, the grade gets replaced by the associated test or exam grade.
2. If you do badly on a quiz (compared to your associated test or exam grade), the quiz grade gets replaced by the associated test or exam grade.
3. Consequently, quizzes are risk-free grades. You should not skip quizzes as you then are automatically forfeiting the “best of” improvement policy for that quiz!

Approximate schedule

Each instructor will follow a slightly different schedule, so your topic order may not appear exactly as indicated below.

Dates	Topics
Week 1	Operations and functions
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
Weeks 5 and 6	Implicit, higher order derivatives, related rates
Week 7	Exponential and log functions
Week 8	Derivatives of exponential and log functions
Week 9	Increasing/decreasing and max/min
Week 10	Concavity, inflection, and 2nd derivative test
Week 11	Optimization with applications
Week 12	Asymptotes and curve sketching

Test 1 will tentatively cover material from weeks 1, 2, 3, 4, and possibly 5.
Test 2 will tentatively cover material from weeks 5, 6, 7, and all or part of week 8.
The final exam is cumulative, but emphasizes material from weeks 8, 9, 10, 11, 12.

OTHER POLICIES

Appropriate Use of Learning Environment

- The course web site is hosted on Brightspace. It requires login using your UWO credentials.
- Course materials on the Brightspace page including notes, videos, and related are copyright-protected by the instructor and cannot be distributed.
- Uploading of any course materials to websites or social media is strictly forbidden and will result in serious academic sanctions.
- Class activities may not be recorded (video or audio) by students. This is to protect the privacy of everyone in attendance.

Academic Integrity

- It is expected that all work you submit will be your own.
- Academic integrity policies at Western require that instructors forward to their department chair or director any evidence of academic offenses.
- Cheating is taken seriously to protect the integrity of our measures of your learning.
- 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**
- Tests and exams may be subject to similarity review (by hand or by software) to check for unusual coincidences in answer patterns that may indicate cheating.

Notes about assessment format

- This is an introductory course in calculus that primarily prepares students for further study of calculus in math 1225A/B and math 1230A/B. It is also preparatory for calculus 1000A/B and calculus 1500A, though students heading into those higher-level calculus courses will also need to independently review trigonometry.
    - That this course creates a pathway to calculus 1000A/B and 1500A is reflected in the assessment format.
- Tests are in-person, proctored, closed book, no calculator.
- Practice tests and exams are available on Brightspace and are extremely helpful preparation.

Your mark in the course will be the mark that you earn based on your demonstrated understanding of the course content, assessed using the outlined criteria. Extra credit assignments are not available, and tests and exams cannot be rewritten to obtain a higher mark.

A COMMENT ON LEARNING MATHEMATICS

There are many reasons to learn math. Here are three good reasons.

1. It is a language and set of structures that allow us to efficiently discuss, model, and explain reality. So, for some people, learning mathematics is about being able to perform specific operations and procedures for applications. People heading to professional routes that use mathematics (engineering, computer science, economics, finance, physics, actuarial science, etc.) can justify the effort needed in terms of direct utility. This concept of mathematics also aligns with its placement in the sciences, especially as it relates to developments in applied mathematics, statistics, data science, theoretical physics, and astrophysics. In recent years, mathematics increasingly encroaches in the managerial and social sciences as well, especially economics, business, analytics, finance, and quantitative-subdisciplines within psychology and sociology.

2. It provides a form of intellectual exercise that enhances our ability to solve (mathematical *and* non-mathematical) problems, think creatively, argue concisely, and navigate challenges that may not in any superficial way resemble mathematics. It provides intellectual exercise akin to exercises performed as training for a sport. With physical training, there may be resentment toward running laps or lifting weights because the connection to playing soccer or basketball may be harder to see than, say, dribbling or passing drills that are specific to the sport. It is no different with mathematical training; laments about "inapplicability" of mathematics to life or to a particular career are missing that mathematical training supports intellectual fitness.

3. Mathematics pursues truths that are independent of any direct or indirect utility. For example, a formally proven mathematical theorem is a forever-concluded matter (i.e., not subject to scientific revision or sociopolitical reimagination), and few other areas of human inquiry enjoy this feature. The pursuit of truth and even beauty within mathematics is why mathematics can also be thought of as an art - a very precise one.

KING'S UNIVERSITY COLLEGE
GENERAL COURSE POLICIES
2025-2026

1. Academic Accommodations, Consideration for Absences

Academic Accommodation (Accessibility)

Accessibility Services works to ensure that academic programs are accessible to all students, and supports students who may have a condition related to, but not limited to, vision, hearing, mobility, different ways of learning, mental health, chronic illnesses, chronic pain, autism spectrum disorder, ADD/ADHD, and temporary conditions (beyond short-term academic consideration). Accessibility Services provides recommendations for accommodation based on medical documentation or psychological and cognitive assessment. The accommodation policy can be found here Academic Accommodation for Students with Disabilities. Information on Accessibility Services at King's can be found here.

Academic Consideration for Student Absence

If a student is unable to meet a course requirement due to substantial but temporary extenuating circumstances (medical or compassionate), they should follow the procedures below.

In some cases, where instructors have built flexibility into their assessments, this flexibility will already address consideration needs.

Requests for academic consideration should be directed to the Academic Advising Office of your faculty/college of registration. Requests must be made as soon as possible and no later than 48 hours after the missed assessment.

As a rule, documentation is required for academic consideration. For academic consideration requests on medical grounds, the Student Medical Certificate is available at https://www.kings.uwo.ca/kings/assets/File/currentStudents/courses_enrollment/exams_and_tests/SMC-Feb-2025.pdf.

Students are permitted one academic consideration request without supporting documentation per term per course.

Instructors may designate one assessment per half-course weight as requiring formal supporting documentation. Please refer to the course outline for each course.

For further information, please see:
https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf

Absences from Final Examinations

If you miss the Final Exam, contact the Academic Advising Office of your faculty/college 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, or 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).

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give notice in writing to the instructor and Academic Advising Office if a course requirement will be affected by a religious holiday/observance. Notice must be given as early as possible, and no later than two weeks prior to an examination, and one week prior to a midterm test date. It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

2. Support Services

Accessibility, Counselling and Student Development at King's University College: https://www.kings.uwo.ca/current-students/student-services/

Students experiencing emotional or mental health distress can access services at King's University College: http://www.kings.uwo.ca/current-students/campus-services/student-support-services/personal-counselling/

Good2talk is a good online and phone 24/7 resource for students and is available in English, Mandarin, and French: https://good2talk.ca, 1-866-925-5454

MentalHealth@Western provides a complete list of options about how to obtain help: https://www.uwo.ca/health/mental_wellbeing/

Academic Support Services at King's University College: https://www.kings.uwo.ca/current-students/academic-resources/

GBSV Support:

King's 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.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/

You can reach someone supports at Kings by emailing Care@kings.uwo.ca or calling 519-930-4640 to reach a social worker who can offer help.

You can also reach Western's Gender-Based Violence & Survivor Support Case Manager by email or by calling 519-661-3568.

Further supports can be found on this website: https://www.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/

See also https://www.uwo.ca/health/student_support/survivor_support/get-help.html

University Students' Council offers many valuable support services for students, including the health insurance plan: http://westernusc.ca/services/

3. Statement on Use of Electronic Devices

Use of Electronic Devices: Unless explicitly stated otherwise, you are not allowed to have a cell phone, or any other electronic device, with you during tests or examinations. Unauthorized possession of such a device during a test or examination constitutes an academic offence.

Use of Laptops, Tablets, and Smartphones in the Classroom: King's University College at Western University acknowledges the integration of new technologies and learning methods into the curriculum. The use of electronic devices such as laptop computers, tablets, or smartphones can contribute to student engagement and effective learning. At the same time, King's recognizes that instructors and students share jointly the responsibility to establish and maintain a respectful classroom environment conducive to learning.

The use of electronic devices by students during lectures, seminars, labs, etc., shall be for matters related to the course at hand only. Students found to be using electronic devices for purposes not directly related to the class may be subject to sanctions under the Student Code of Conduct; see https://www.kings.uwo.ca/current-students/student-affairs/code-of-student-conduct1/

Inappropriate use of electronics (e.g., laptops, tablets, smartphones) during lectures, seminars, labs, etc., creates a significant disruption. As a consequence, instructors may choose to limit the use of electronic devices in these settings. In addition, in order to provide a safe classroom environment, students attending in-person class sessions are strongly advised to operate laptops with batteries rather than power cords.

4. Statement on Academic Offences

King's is committed to academic integrity. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, is posted at

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

It is expected that students will submit work that is truly their own, completed without external assistance (human or artificial) except as explicitly permitted by the course instructor. Check with you instructor on what tools, including generative AI (ChatGPT, translation tools, grammar-checking tools) are permitted in the course. Because a tool is permitted in one course, that does not mean it is permitted in other courses.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system; see https://elearningtoolkit.uwo.ca/tools/Originality Reports - TurnItIn.html.

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

5. Copyright of Course Material

Lectures and course materials, including PowerPoint presentations, tests, outlines, and similar materials are protected by copyright. Faculty members are the exclusive owner of copyright in those materials they create. Students may take notes and make copies for their own use. Students may not allow others to reproduce or distribute lecture notes and course materials publicly (whether or not a fee is charged) without the express written consent of a faculty member. Unauthorized sharing of class content is subject to academic discipline.

Similarly, students own copyright in their own original papers and exam essays. If a faculty member wishes to post a student's answers or papers on the course website, they should ask for the student's written permission.

6. Use of Recordings

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation and/or the participant has the prior written permission of the instructor. Unauthorized recording and/or sharing of class content is subject to academic discipline.

7. Policy on Attendance

Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean of the Faculty offering the course, after due warning has been given. On the recommendation of the department concerned, and with the permission of the Dean of that Faculty, the student will be debarred from taking the regular examination in the course.