Western Science

Department of Mathematics

CALCULUS 1000A – Course Outline

1. Course Information

Course Name: Calculus I
Course Number: CALC 1000A
Academic Term: Fall 2026

Prerequisites: Ontario Secondary School MCV4U or Mathematics 0110A/B

Antirequisites: Calculus 1500A/B, the former Calculus 1100A/B, Applied Mathematics 1413.

Unless students have either the prerequisites for this course or written special permission from the Department of Mathematics to enroll in it, they may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on their academic record. This decision may not be appealed.

2. Instructor Information

Instructors	Email	Office
Dr. Kelvin Chan	kchan773@uwo.ca	
Dr. Asghar Ghorbanpour	aghorba@uwo.ca	
Dr. Natalia Kiriushcheva	nkiriush@uwo.ca	
Dr. Pei Yu	pyu@uwo.ca	
Dr. Xingfu Zou	xzou@uwo.ca	
Dr. James Uren (Course Coordinator)	juren2@uwo.ca	

Students must use their Western (@uwo.ca) email addresses when contacting their instructors and put "CALC 1000A" in the subject line in addition to other identifiers. Feedback on calculus should be sought through office hours, in lecture, or via the math help centre. Remember to check announcements on our OWL page before contacting your instructor or the course coordinator. Issues related to the business of a given lecture section should be directed to the instructor associated to that section before involving the course coordinator. Instructors will endeavor to reply to student queries within five business days, although response times may be longer depending on the volume of emails received. It is your responsibility to ensure you raise your concerns in a timely manner.

Office hours: Each instructor will offer weekly in-person consultation time and the details can be located on the OWL page associated to our course. It is important that you check OWL regularly for updates/changes to the scheduling of these times.

Extra Help: The Mathematics Department runs free in-person and virtual help centres each weekday during the semester, starting Monday September 21st. Our help centre is 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 our help centre and other departmental supports for students can be found at:

https://www.uwo.ca/math/undergraduate/current_students/Help%20Centre.html

3. Course Syllabus, Schedule, Delivery Mode

Review of limits and derivatives of exponential, logarithmic, and rational functions. Trigonometric functions and their inverses. The derivatives of the trig functions and their inverses. L'Hôpital's rules. The definite integral. Fundamental Theorem of Calculus. Simple substitution. Applications of integration, including areas of regions and volumes of solids of revolution.

Section	Dates	Time	Room	Instructor
LEC 001				
LEC 002				
LEC 003				
LEC 004				
LEC 005				
LEC 006				
LEC 007				
LEC 008				

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Compute the limits of functions at a point or at infinity using methods of algebra, limit laws, and related concepts.

2. Define the notion of continuous function and be able to determine if a given function is continuous using limits or other theorems.
3. Explain the role of limits in the definition of derivatives and integrals, and how the ideas of continuity, differentiability, and integrability are related to one another.
4. Compute derivatives and integrals of various algebraic, trigonometric, exponential, and logarithmic functions.
5. Deduce properties of the graph of a function from its derivatives and apply these concepts to solve optimization problems.
6. Apply the idea of the definite integral to compute areas between curves.

Course Content Schedule

Week	Dates	Topic	OpenStax Reference Sections
1	Sept 9 – 13	Introduction and Review	1.1, 1.2
2	Sept 14– 20	Exponential, Trigonometric, and Inverse functions	1.3, 1.4, 1.5
3	Sept 21- 27	Limits and Continuity	2.2, 2.3, 2.4
4	Sept 28 – Oct 4	Limits at Infinity/The Derivative	4.6, 3.1, 3.2
5	Oct 5 – 9	Derivative as a Function/Differentiation Rules	3.2, 3.3, 3.5, 3.7
6	Oct 10 – 18	FALL READING WEEK	N/A
7	Oct 19 – 25	The Chain Rule/Implicit Differentiation	3.6, 3.8
8	Oct 26 – Nov 1 (MIDTERM OCT 30)	Derivatives of Logarithmic Functions/Related Rates	3.9, 4.1
9	Nov 2 – 8	Maximum and Minimum Values/Relationship Between Derivatives and the Shape of the Graph	4.3, 4.5
10	Nov 9 – 15	Optimization Problems/L'Hôpital's Rules and Indeterminate Forms	4.7, 4.8
11	Nov 16 – 22	Antiderivatives/Sigma Notation	4.10, 5.1
12	Nov 23 – 29	The Definite Integral/Fundamental Theorem of Calculus	5.2, 5.3
13	Nov 30 – Dec 6	Simple Substitution/Areas Between Curves	5.4, 5.5, 5.6, 6.1
14	Dec 7 – 9	Volumes/Review	6.2

**The above schedule is *tentative*, and minor adjustments may be made as the course progresses.

Other Important Dates:

Classes begin: September 9, 2026.
Fall Reading Week: October 10 – 18, 2026.
Classes end: December 9, 2026.
Exam period: December 11 – 22, 2026.

4. Course Materials

Required Texts:

Calculus: Volume 1, by Gilbert Strang and Edwin "Jed" Herman (OpenStax, 2016) Cost to students: $0. The required textbook is available free of charge through OpenStax: https://openstax.org/books/calculus-volume-1/pages/1-introduction

Students are responsible for checking the course OWL site (https://westernu.brightspace.com/) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Brightspace 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

WebWork (https://webwork.math.uwo.ca/webwork2/) will be used as a grading platform for quizzes in the course. A free account will be created on your behalf, although you will be required to verify the account and change the password during the second week of class. Complete details about WebWork access will be provided via the course page on OWL.

Gradescope (https://www.gradescope.ca/) will be used as a grading platform for written work in the course. A free account will be created on your behalf, although you will be required to verify the account and change the password during the third week of class. Details regarding the set-up of your account and the submission requirements for your written work will be posted on OWL. It is the responsibility of the student to ensure their homework assignments are submitted in the correct format (PDF or PNG.) Submitting work in an improper format may result in your work not being graded, and this cannot form the basis of a regrade request. Additionally, the term test may be scanned by the course staff and uploaded to Gradescope for grading and viewing.

Additionally, students will need:

- a laptop or computer;
- a stable internet connection;
- a working microphone and webcam;
- to have installed recent versions of Chrome AND Firefox browsers, a pdf reader, and Zoom on their computer;
- a device for scanning documents to upload to Gradescope (either a scanner or an app that can be used in conjunction with your device's camera).

All other course material will be posted to OWL: https://westernu.brightspace.com/

5. Methods of Evaluation

Calculus 1000A is an in-person lecture-based course. Students are expected to attend all classes. A list of suggested exercises from the OpenStax will be provided in OWL to supplement the weekly lessons. All of the evaluations (homework, quizzes, the midterm test, and exam) for Calculus 1000A are based on the course material covered in weekly lectures.

The overall course grade will be calculated as listed below:

Assessment	**Format**	**Weighting**	**Date**
Submitted Homework	Online, asynchronous, via Gradescope	8%: Three written assignments will be offered. The best two assignments will each contribute 4% to the final course grade.	The three assignments will be due on October 9th, November 13th, and Nov 27th, respectively
Quizzes	Online, asynchronous, via WebWork	10%: Eight quizzes will be offered. The best five quizzes will each contribute 2% to the final course grade.	Due dates are posted on OWL, with the first quiz open during the week of Sept 21st.
Midterm Test	In-person	32%	Friday October 30th, 7:30pm until 9:30pm.
Final Exam	In-person	50%	TBA (3 Hours)

- A bonus of 1% for research survey participation, as announced on OWL near the beginning and end of the semester (2 surveys, 0.5% per survey.)

- The midterm test will be 120 minutes in duration and will consist of a mixture of short answer and multiple-choice-style questions, covering the course material from weeks 1-7, inclusive. *This will be a closed book test and no calculators, electronic devices, or aids of any other kind will be permitted.*
- The final exam will be cumulative, 180 minutes in duration, and will consist of a mixture of short answer and multiple-choice-style questions. *This will be a closed book exam and no calculators, electronic devices, or aids of any other kind will be permitted.*

Information about missed coursework

Students do not need to submit Academic Consideration requests for missed in-term assessments in this course, including the midterm test, quizzes, and assignments. Missed in-term assessments are handled automatically through the flexible-completion and reweighting provisions described below.

Academic Consideration with supporting documentation is required for a missed final examination. Requests concerning the final examination must be submitted through the Student Absence Portal (SAP) in accordance with the University Policy on Academic Consideration

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs,* posted on the Academic Calendar: https://uwo.ca/univsec//pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person. The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage: https://registrar.uwo.ca/academics/academic_considerations/

Requests for Academic Consideration for a missed final examination must be submitted in accordance with the timelines and procedures established by the University.

Midterm

This course has one midterm test and a **cumulative** final exam. There is no makeup test for a missed midterm. If a student misses a midterm, its weight will shift automatically to their final exam grade. If their final exam grade is higher than their midterm grade, their final exam grade will replace the midterm's weight in their overall grade. They do not need to request Academic Consideration for a missed midterm; the reweighing will be done automatically.

The only exception is an early sitting offered for a scheduling conflict with another scheduled class, laboratory, tutorial, or test; participation in a university-sanctioned varsity or institutional event; or a religious accommodation that prevents a student from writing the midterm at its scheduled time.

Flexible Completion: Quizzes. Eight quizzes will be offered. The best five quizzes will each contribute 2% to the final course grade. Students do not need to request Academic Consideration for a missed quiz. Up to three quizzes may therefore be missed without affecting the quiz component. If fewer than five quizzes are completed, the weight associated with any additional missed quiz will shift automatically to the final examination in accordance with the Faculty of Science flexible-completion framework.

Flexible Completion: Assignments. Three written assignments will be offered. The best two assignments will each contribute 4% to the final course grade. Students do not need to request Academic Consideration for one missed assignment. If fewer than two assignments are completed, the weight associated with any additional missed assignment will shift automatically to the final examination in accordance with the Faculty of Science flexible-completion framework.

Deadlines: The 48-Hour No-Late-Penalty Period

All assignments and quizzes with a stated due date include an automatic 48-hour period after the deadline during which students may still submit without a late penalty. For example, if an assignment is due on November 5, they may submit it until November 7 without penalty. After this 48-hour period, no further submissions will be accepted, and students do not need to request Academic Consideration for a missed deadline; their grade for this component will be calculated as described above.

Final Examination

The final examination is the only course assessment for which Academic Consideration with supporting documentation is required. A request for Academic Consideration for a missed final examination must be submitted through the Student Absence Portal (SAP), in accordance with University policy.

Per university policy, Academic Consideration requests with supporting documentation are required for the final examinations scheduled during official examination periods by the Registrar's Office.

If the student has been approved by the Academic Advising Office to write a Special Examination (SPC) and the final exam is their only outstanding course component, an SPC will be assigned to them and scheduled by the instructor per university policy.

If the student misses their SPC exam and is approved for Academic Consideration, they will be withdrawn from the course without academic penalty. If they experienced extenuating circumstances such as prolonged illness, they may make a request for relief to the Associate Dean (Academic), on a case-by-case basis, for the opportunity to write the final exam the next time the course is offered. An outstanding SPC will reduce their course load for the term in which the exam is deferred, as outlined in the Definitions of Types of Examinations policy.

If the student misses their SPC exam and Academic Consideration is not approved, or was not requested, they will receive a grade of zero on the exam.

6. Additional Statements

6.1 Religious Accommodation
When a recognized religious holiday either requires a student to be absent from the University, or requires or prohibits an activity that makes it impossible for them to complete an academic

requirement scheduled that day, they are entitled to accommodation. No student will be penalized for an absence for religious reasons, and an alternative means of satisfying the requirement will be arranged. This accommodation is provided in accordance with the University's policy on Accommodation for Religious Holidays: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The student should submit their requests through the Student Absence Portal (SAP), identifying the conflict and the specific course component(s) affected (e.g., test, midterm, exam).

Midterms and Tests: If a religious observance conflicts with a midterm test, they must submit their request no later than **one week** before the test. Their instructor will arrange an early sitting of the test. As set out above, no makeup test is offered for any other reason; this early sitting is available specifically for this accommodation.

Final Examinations: If a religious observance conflicts with the final exam, the student must submit their request no later than **two weeks** before the exam. Their instructor will arrange a Special Examination to take place no later than one month after the end of the examination period.

Students are responsible for finding out what was covered in any class they miss due to a religious observance, and for taking the appropriate steps to keep up with the course.

If a suitable arrangement cannot be reached between a student and their instructor, they should consult the Undergraduate Chair of the department offering the course, and if necessary, the Associate Dean (Academic) of the Faculty of Science.

For a list of recognized religious observances, please visit the calendars posted on the Equity, Diversity & Inclusion website - https://www.edi.uwo.ca (About Us – Resources – Additional Resources – Calendars).

6.2 Academic 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.

6.3 General Academic Policies

The website for Registrar Services is https://www.registrar.uwo.ca/.

Use of @uwo.ca email: In accordance with policy, 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 email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:
https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):
https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

6.4 Scholastic Offences

Policy on Scholastic Offences:
https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):
https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the **possession** of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, hidden cameras and wireless earbuds.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at a student’s desk, on their person, or within reach during an assessment will be treated as a scholastic offence, **even if the device is not in use**.

Effective September 2026, the typical penalty for this offence is a failing grade in the course AND a 12-month prohibition on retaking the course.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is their responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is the student’s responsibility to seek clarification before using any AI tools in academic work.

Use of Software for Assessments

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. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

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.

6.5 Support Services

Academic Advising. Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters: https://www.uwo.ca/sci/advising/.

Mental Health Support. 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.

Gender-Based and Sexual Violence. Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If a student has experienced GBSV (either recently or in the past), they can find information about support services for survivors, including emergency contacts, at:

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.

Accessibility for Coursework. A student may contact the course instructor if they require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to them. If they have any questions regarding accommodations, they may also contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html

Learning Development and Success. Learning-skills counsellors at Learning Development and Success (https://learning.uwo.ca) are ready to help students improve their learning skills. The facility offers 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.

Student Councils.
Student-run support services are offered by the University Students' Council (https://westernusc.ca) and the Science Students' Council (https://www.westernssc.ca).