CALCULUS 1000A – Course Outline – FW 2024-25

1. Course Information

Course Name: Calculus I
Course Number: CALC 1000A
Academic Term: FW24

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

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

Unless you have either the prerequisites 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

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 16th. 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.

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 5 – 8	Introduction and Review	1.1, 1.2
2	Sept 9– 15	Exponential, Trigonometric, and Inverse functions	1.3, 1.4, 1.5
3	Sept 16- 22	Limits and Continuity	2.2, 2.3, 2.4
4	Sept 23 – 29	Limits at Infinity/The Derivative	4.6, 3.1, 3.2
5	Sept 30 – Oct 6	Derivative as a Function/Differentiation Rules	3.2, 3.3, 3.5, 3.7
6	Oct 7 – 11	The Chain Rule/Implicit Differentiation	3.6, 3.8
7	Oct 12 – 20	Reading Week	N/A
8	Oct 21 – 27	Derivatives of Logarithmic Functions/Related Rates	3.9, 4.1

9	Oct 28 – Nov 3 (MIDTERM NOV 1)	Maximum and Minimum Values/Relationship Between Derivatives and the Shape of the Graph	4.3, 4.5
10	Nov 4 – 10	Optimization Problems/ L'Hôpital's Rules and Indeterminate Forms	4.7, 4.8
11	Nov 11 – 17	Antiderivatives/Sigma Notation	4.10, 5.1
12	Nov 18 – 24	The Definite Integral/Fundamental Theorem of Calculus	5.2, 5.3
13	Nov 25 – Dec 1	Simple Substitution/Areas Between Curves	5.4, 5.5, 5.6, 6.1
14	Dec 2 – 6	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 5, 2024.
Fall Reading Week: October 12 – 20, 2024.
Classes end: December 6, 2024.
Exam period: December 9 – 22, 2024.

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

Required Text:

Calculus: Volume 1, by Gilbert Strang and Edwin "Jed" Herman (OpenStax, 2016) – Access for free at
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.

Optional Additional Text:

CLP Calculus 1 and 2, by Joel Feldman, Andrew Rechnitzer, and Elyse Yaeger (UBC, 2018) – Access for free at https://personal.math.ubc.ca/~CLP/.

Technical Requirements

Students will be required to purchase a license for the WebAssign online assessment platform. There are no other additional required costs associated to this course. Purchases can be made through our Bookstore. Please do not purchase a WebAssign account via any other method. ***When registering your license make sure to use your @uwo.ca email address and have your Student ID ready.*** Deferred payment options may be available. Licenses cannot be purchased after Dec 8, 2024.

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 first 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 that is illegible or 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.

Web-Enabled Device
A phone, tablet, laptop or other web-enabled device will be used for the iClicker component during class. *You will receive course-specific instructions on how to sign up and register yourself during the second week of classes.* You can use Western's WiFi with your Western credentials. Students will need to create a free iClicker account (using your Western email address.) Please also refer to the instructions at https://presswestern.uwo.ca/ . If you already have an iClicker account, please go into the settings and verify that it uses your uwo.ca email address. This software will be used during class lectures to gauge participation, solicit feedback, and for other Q and A.

Additionally, students will need:
- o a laptop or computer;
- o a stable internet connection;
- o a working microphone and webcam;
- o to have installed recent versions of Chrome AND Firefox browsers, a pdf reader, and Zoom on their computer;
- o 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	Four equally weighted written assignments totaling 16% of final grade.	The four assignments will be due on October 4th, October 25th, November 15th, and November 29th, respectively
Quizzes	Online, asynchronous, via WebAssign	Best Six of Eight equally weighted short assessments totaling 10% of final grade.	Due dates are posted on OWL, with the first quiz open during the week of Sept 16th.
iClicker Lecture Questions	In Class, via iClicker	4%	Weekly, during class lectures. Starting the week of Sept 16th.
Midterm Test	In-person	30%	Friday November 1st, 7pm until 9pm.
Final Exam	In-person	40%	TBA (3 Hours)

- *To receive credit for answering iClicker lecture questions, you must attend the lecture section in which you are registered.* Questions answered in another section's lectures will not be counted towards your score.

- 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 1-8, inclusive. *This will be a closed book test and no calculators, electronic devices, or aids of any other kind will be permitted.*

- The make-up midterm is tentatively scheduled for Friday November 8th, 7-9pm.

- 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.*

General information about missed coursework
Students must familiarize themselves with the *University Policy on Academic Consideration –
Undergraduate Students in First Entry Programs* posted on the Academic Calendar:
https://www.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/
All requests for Academic Consideration must be made within 48 hours after the assessment date or
submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing
that formal documentation may not be available in some extenuating circumstances, the policy allows
students to make one Academic Consideration request **without supporting documentation** in this
course. However, the following assessments are excluded from this, and therefore always require
formal supporting documentation:
- The Final Exam (scheduled by the Office of the Registrar)
- The Midterm (tentatively scheduled for Nov 1, 7pm to 9pm)

When a student *mistakenly* submits their one allowed Academic Consideration request **without
supporting documentation** for the assessments listed above or those in the **Coursework with
Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is
forfeited.

Evaluation Scheme for Missed Assessments

In the case of a missed midterm, a common makeup test will be arranged. If a student misses the
midterm and the corresponding makeup midterm and has appropriate permission for both, then the
final exam will be re-weighted to include the weight of the missed term test.

When a student misses the Final Exam and their Academic Consideration has been granted, they will
be allowed to write the Special Examination (the name given by the University to a makeup Final
Exam). See the Academic Calendar for details (under Special Examinations), especially for those who
miss multiple final exams within one examination period.

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

Flexible Completion

Quizzes. This course has 8 quizzes, and the 6 quizzes with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students <u>do not</u> need to request Academic Consideration for the first 2 missed quizzes. Academic consideration requests will be denied for the first 2 missed quizzes. Academic Consideration requests may be granted when students miss more than 2 quizzes, and these additional (3rd, 4th…) missed quizzes will be reweighted to the final exam.

Missed Lectures (iClicker Questions): We understand that you will not be able to attend class from time to time. Therefore, the participation-based iClicker marking scheme was designed to take into account the occasional missed class. Accordingly, iClicker marks will not be adjusted for the occasional missed class. If you have a long-term absence (three or more consecutive classes) that is supported by academic consideration, then your iClicker marks will be adjusted to take your long absence into account.

Deadline with a No-Late-Penalty Period

Assignments. Students are expected to submit each of the 4 assignments by the deadline listed. Should extenuating circumstances arise, students <u>do not</u> need to request Academic Consideration and they are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. Should students submit their assessment beyond 48 hours past the deadline, a late penalty of 20% per day will be applied, although assignments submitted more than 96 hours past the deadline will not be accepted. Academic Consideration requests may be granted only for extenuating circumstances that <u>started before</u> the deadline and <u>lasted longer</u> than the No-Late-Penalty Period. Students who receive academic consideration lasting longer than the No-Late-Penalty Period will have the weight of the relevant assignment shifted to the final exam.

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

https://www.edi.uwo.ca.

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.

Academic Policies

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

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 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.

No electronic devices of any kind are permitted during the midterm test or final examination for this course.

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:

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

Use of IClicker

Students will be marked on participation only using iClicker. Your score is based on the % of questions you answer, not the % of questions you get correct:

At least 80% = 4/4; 70–79% = 3.2/4; 60–69% = 2.4/4; 50–59% = 2/4; 40–49% = 1.6/4; Less than 40% = 0.

 In order to receive any credit for the iClicker component, you must:
·   Create a free iClicker account using your Western email address. Please refer to the instructions at https://presswestern.uwo.ca/ . If you already have an iClicker account, please go into the settings and verify that it uses your uwo.ca email address.
·   Attend, and answer iClicker questions at lectures.
·   If your web-enabled device is not working properly, try refreshing the page or restarting the app. It is your responsibility to ensure that your device is working properly.

In the event of a health lockdown or any other university-declared emergency that requires some or all of the course to be delivered online, 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.

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising 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.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact your 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

if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (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/.