**Department of Mathematics**

**CALCULUS 1000A – Course Outline**

**1. Course Information**

**Course Name:** Calculus I

**Course Number:** CALC 1000A

**Academic Term:** FW25

**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 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**

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| --- | --- | --- |
| **Instructors** | **Email** |  |
| Dr. Kelvin Chan | kchan773@uwo.ca |  |
| Dr. Asghar Ghorbanpour | aghorba@uwo.ca |  |
| Dr. Masoud Khalkhali | masoud@uwo.ca |  |
| Dr. Natalia Kiriushcheva | nkiriush@uwo.ca |  |
| Dr. Martin Pinsonnault | mpinson@uwo.ca |  |
| Dr. Rasul Shafikov | shafikov@uwo.ca |  |
| Dr. Pei Yu | pyu@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 22nd. 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.

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| --- | --- | --- | --- | --- |
| **Section** | **Dates** | **Time** | **Room** | **Instructor** |
| LEC 001 | M, W, Th, F |  |  | N. Kiriushcheva |
| LEC 002 | M, W, Th, F |  |  | M. Khalkhali |
| LEC 003 | M, W |  |  | A. Ghorbanpour |
| LEC 004 | Tu, Th |  |  | K. Chan |
| LEC 005 | M, Tu, W, F |  |  | K. Chan |
| LEC 006 | M, Tu, W, Th |  |  | M. Pinsonnault |
| LEC 007 | M, Tu, Th, F |  |  | R. Shafikov |
| LEC 008 | M, Tu, Th, F |  |  | P. Yu |

**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**

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| --- | --- | --- | --- |
| **Week** | **Dates** | **Topic** | **OpenStax Reference Sections** |
| 1 | Sept 4 – 7 | Introduction and Review | 1.1, 1.2 |
| 2 | Sept 8– 14 | Exponential, Trigonometric, and Inverse functions | 1.3, 1.4, 1.5 |
| 3 | Sept 15- 21 | Limits and Continuity | 2.2, 2.3, 2.4 |
| 4 | Sept 22 – 28 | Limits at Infinity/The Derivative | 4.6, 3.1, 3.2 |
| 5 | Sept 29 – Oct 5 | Derivative as a Function/Differentiation Rules | 3.2, 3.3, 3.5, 3.7 |
| 6 | Oct 6 – 12 | The Chain Rule/Implicit Differentiation | 3.6, 3.8 |
| 7 | Oct 13 – 19 | Derivatives of Logarithmic Functions/Related Rates | 3.9, 4.1 |
| 8 | Oct 20 – 26  (MIDTERM OCT 24) | Maximum and Minimum Values/Relationship Between Derivatives and the Shape of the Graph | 4.3, 4.5 |
| 9 | Oct 27 – Nov 2 | Optimization Problems/L’Hôpital’s Rules and Indeterminate Forms | 4.7, 4.8 |
| 10 | Nov 3 – 9 | READING WEEK | N/A |
| 11 | Nov 10 – 16 | Antiderivatives/Sigma Notation | 4.10, 5.1 |
| 12 | Nov 17 – 23 | The Definite Integral/Fundamental Theorem of Calculus | 5.2, 5.3 |
| 13 | Nov 24 – 30 | Simple Substitution/Areas Between Curves | 5.4, 5.5, 5.6, 6.1 |
| 14 | Dec 1 – 8 | 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 4, 2025.

Fall Reading Week: November 3 – 9, 2025.

Classes end: December 9, 2025.

Exam period: December 11 – 22, 2025.

**4. Course Materials**

**Required Texts:**

*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>

*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/>

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](https://brightspacehelp.uwo.ca/) 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**

Students will be required to purchase a license for the WebAssign online assessment platform. The cost of this license is approximately $37 and 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, 2025.

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 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).

Students will need to 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. This software will be used during class lectures to gauge participation, solicit feedback, and for other Q and A.

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 1000B are based on the course material covered in weekly lectures.

The overall course grade will be calculated as listed below:

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| --- | --- | --- | --- |
| **Assessment** | **Format** | **Weighting** | **Date** |
| Submitted Homework | Online, asynchronous, via Gradescope | Three equally weighted written assignments totaling 12% of final grade. | The three assignments will be due on October 10th, November 10th, and Nov 28th, 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% |  |
| Midterm Test | In-person | 30% | Friday October 24th, 7:30pm until 9:30pm. |
| Final Exam | In-person | 44% | TBA (3 Hours) |

* 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 make-up midterm is tentatively scheduled for Friday October 31st, 7:30-9:30pm.
* 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](http://academicsupport.uwo.ca/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 Oct 24, 7:30pm to 9:30pm)

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](https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_70)), 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 do not 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):**

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.

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 3 assignments by the deadline listed. Should extenuating circumstances arise, students do not 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 started before the deadline and lasted longer 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**

**6.1 Religious Accommodation**

When conflicts arise 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 of 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>

**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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_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>

Procedures on Request for Relief from Academic Decision (Graduate):

<https://uwo.ca/univsec//pdf/academic_policies/appeals/graduate_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:

<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, and wireless earbuds or headphones.

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

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your 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 your responsibility to seek clarification before using any AI tools in academic work.

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](https://remoteproctoring.uwo.ca/).

**6.5 Support Services**

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/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 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. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

<http://academicsupport.uwo.ca/accessible_education/index.html>

Learning-skills counsellors at Learning Development and Success ([https://learning.uwo.ca](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/>.