

CALCULUS 1500A - Course Outline - FW 2023-24

1. Course Information

Course Information

Calculus 1500A – Calculus I for the Mathematical Sciences, September-December 2023.

Calculus 1500A-001: In-person lectures MTuWF 8:30-9:30 a.m. in BGSB-0165.

List of Prerequisites

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

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

Gord Sinnamon, Professor, Department of Mathematics. Email – sinnamon@uwo.ca. Office – Middlesex College Room 103e. Extension – 86535.

Drop-in office hours will be held in-person in MC 103e at times to be determined in consultation with the class. To meet outside these times, email me for an appointment and include a *definite day and time* that you would like to meet.

3. Course Syllabus, Schedule, and Delivery Mode

Course Content

Description: An enriched version of Calculus 1000A/B. Basic set theory and an introduction to mathematical rigour. The precise definition of limit. Derivatives of exponential, logarithmic, rational trigonometric functions. L'Hospital's rule. The definite integral. Fundamental theorem of Calculus. Integration by substitution. Applications.

Course Learning Outcomes

1. Use set notation to express mathematical concepts and find the supremum and infimum of a set of real numbers.
2. Compute the limits of functions at a point or at infinity using methods of algebra, limit laws, and related concepts.
3. Define the notions of limsup, liminf, limit, and continuity and be able to determine if a given function is continuous using limits or other theorems.
4. 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.

5. Compute derivatives and integrals of various algebraic, trigonometric, exponential, and logarithmic functions.
6. Deduce properties of the graph of a function from its derivatives and apply these concepts to solve optimization problems.
7. Define the notion of definite integral, state the Fundamental Theorem of Calculus and apply them to calculate integrals and compute areas between curves.

Weekly Schedule

Timeline is approximate

Sections refer to Textbook CLP-1, “A” stands for Appendix A

Sections in *italics* refer to Textbook CLP-2

Week of September 11: 0.1, 0.2, 0.3, Sets handout, 0.4, 0.5, 0.6, A12, A13

Week of September 18: A1–A9, A14, Supremum handout,

Week of September 25: 1.7, 1.8

Week of October 2: 1.4, 1.5, 1.6

Week of October 9: 2.1–2.6

Week of October 16: 2.7–2.13

Week of October 23: 2.14, 3.1, 3.2

Week of November 6: 3.5, 3.6, 3.7

Week of November 13: 4.1, *1.1*

Week of November 20: *1.2, 1.3*

Week of November 27: *1.4, 1.5*

Week of December 4: *1.6*

Key Sessional Dates

Classes begin:	September 7, 2023
Last day to add:	September 15, 2023
No classes:	September 29, 2023
Holiday:	October 9, 2023
Reading Week:	October 30 to November 5, 2023
Last day to drop:	November 13, 2023
Classes end:	December 8, 2023
Exam period:	December 10 to 22, 2023

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.

Course Materials

Required Textbook: CLP-1 Differential Calculus and CLP-2 Integral Calculus by Feldman, Rechnitzer, and Yeager. Available free from <https://personal.math.ubc.ca/CLP/>.

Each book is available as two pdf files, “textbook” and “problem book”. Each is also available in html format. If page number references are used in the course they refer to the pdf versions.

Occasional additional course material will be provided online via OWL.

Optional Supplementary Textbook: OpenStax Calculus Volume 1 by Herman and Strang. Available free from <https://openstax.org/subjects/math>.

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

Learning Management System (OWL)

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

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

Technical Requirements

4. Methods of Evaluation

Course Grade

The final course grade will be determined by student performance on

Five Written Assignments [20%]: Due at the beginning of class on September 26, October 11, October 24, November 14 and November 28. Assignments will be equally weighted.

To request a one-week extension of the due date for an assignment, contact your instructor before the due date. This is not an academic accommodation.

Four In-Class Quizzes [36%]: (50 minutes) October 6, October 20, November 10, November 24. Quizzes will be equally weighted. No aids may be used on quizzes.

Final Exam [44%] (Three hours) To be scheduled by the Registrar during the exam period. The final exam will cover the entire course. No aids may be used on the final exam.

Make-up Dates

There will be no make-up for Assignments or Quizzes. Special Examinations (make-ups for the final) will be scheduled in January.

5. Student Absences

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

Assessments Worth Less Than 10% of Course Grade

Contact your instructor first.

If academic accommodation for up to two missed assignments is granted by the course instructor (or a faculty counsellor,) then your mark for those assignments will be replaced by the average mark on your other assignments. There will be no makeups for missed assignments. If more than two are missed, see the next section.

If academic accommodation for one quiz is granted by the course instructor or a faculty counsellor, then your mark for that quiz will be replaced by the average mark on your other quizzes. There will be no makeups for missed quizzes. If more than one is missed, see the next section.

Assessments Worth At Least 10% of Course Grade

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the [University's medical illness policy \(click here\)](#) and review the [Student Medical Certificate \(click here\)](#). In the event that the links do not work, type either

- https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf (for policy)
- https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf (for certificate)

into your browser.

If academic accommodation for more than two missed assignments is granted by a faculty counsellor, then each other assignment will count for 7% and the excess assignment mark will be assigned to the final exam. There will be no makeups for missed assignments.

If academic accommodation for more than one missed quiz is granted by a faculty counsellor, then each other quiz will count for 15% and the excess quiz mark will be assigned to the final exam. There will be no makeups for missed quizzes.

Absences From Final Examinations

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

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., 3 or more exams in 23-hour period, 4 or more 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).

Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult [the University’s list of recognized religious holidays \(click here\)](#), which is updated annually. Alternatively, you may wish to enter

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

directly into your browser.

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. Students can consult [the policy on Academic Accommodation for Students with Disabilities \(click here\)](#). Alternatively, type

- [www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf)

into a browser.

6. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca> ([click here](#)).

In accordance with [policy \(click here\)](#), 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. The policy referenced above can also be accessed by typing

- https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf

into your browser.

No electronic devices may be used on tests or exams.

Scholastic offences are taken seriously and students are directed to read the appropriate [policy \(click here\)](#), specifically, the definition of what constitutes a Scholastic Offence. This policy can also be accessed by typing

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

into your browser.

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

7. Support Services

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

Students who are in emotional/mental distress should refer to Mental Health@Western by visiting their website <https://uwo.ca/health/> (click here) 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 information about support services for survivors, including emergency contacts [is available \(click here\)](#). If you cannot access the link you can type

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

into your browser. To connect with a case manager or set up an appointment, please email support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact [Accessible Education \(click here\)](#) if you have any questions regarding accommodations. If the link provided does not work, type

- http://academicsupport.uwo.ca/accessible_education/index.html

into your browser.

Learning-skills counsellors at the [Student Development Centre \(click here\)](#) are ready to help you improve your learning skills (alternatively, type <https://learning.uwo.ca> into your browser). 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.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/> (click [here](#)).