

Western University
London, Canada
Department of Physics and Astronomy

Numerical and Mathematical Methods 1412A – Calculus for Engineers I

Fall 2024

INSTRUCTORS:

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Required Texts and Resources

- **Calculus – A Complete Course**, 10th edition, R. Adams, C. Essex (Pearson).
- Access to Mylab from Pearson; can be bought as a package with the text above. A print copy can be ordered directly from the publisher.

Antirequisite(s): Calculus 1000A/B, Calculus 1500A/B, Mathematics 1225A/B, Mathematics 1230A/B, the former Applied Mathematics 1413.

Prerequisite(s): Ontario Secondary School MCV4U or equivalent, 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 Advisors)** 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.

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.

Course Syllabus

Description

Topics covered include an introduction to complex numbers, limits, continuity, differentiation of functions of one variable with applications, extreme values, l'Hospital's rule, antiderivatives, definite integrals, the Fundamental Theorem of Calculus, the method of substitution.

Expectations

. By the end of the course, students should be able to:

- operate with complex numbers, including finding powers and roots.
- calculate limits, derivatives and integrals of functions and apply these concepts to applied problems.
- Students are expected to study the relevant lecture videos on Owl before class time, which will be used for clarifying concepts, examples, applications and answering questions.
- Students should note that success in university-level mathematics courses requires self-directed exploration of topics.
- Students are expected to use help resources available to them when problems arise. It is often better to tackle difficult material when problems with understanding occur. Putting off questions until exam time is an ill-advised study strategy. Students that work at a consistent pace throughout the term and make a consistent effort to understand material tend to achieve better results.

The course will cover selected material in Preliminaries, Appendices I-III, and Chapters 1-5 in Calculus by Adams and Essex. A list of suggested exercises will be provided; it is strongly recommended that you solve as many of them as possible.

Evaluation

Your final grade will be calculated as follows:

Midterm Exam	35 %
Final Exam	40 %
Homework Assignments	25 %

Midterm Exam

Academic consideration for the Midterm Exam requires the submission of formal supporting documentation to your Home Faculty Academic Counselling Office.

Final Examination

The Final Examination will be cumulative. The date and time of the final exam will be announced by the Registrar's Office. **Students seeking a make-up exam for any reason must secure approval from the appropriate Faculty Counseling Office.**

Homework Assignments

There will be an assignment every other week administered through MyLab, for a total number of 5 assignments. The best 4 out of the 5 assignments will count toward your "Homework Assignment" grade. There will be a 48-hour grace period to the assignment submission deadline, when no penalty will be assessed. Submissions received after the expiration of this additional time will receive a mark of zero. Details will be coming through the course Owl page.

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:

- **Examinations scheduled during official examination periods** (Defined by policy)
 - **Midterm** (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration)

The Department of Physics and Astronomy may adjust the final course marks in order to conform to Departmental policy.

Please note that the course outline may be modified, including evaluation weights, in case the University will move the course online.

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

Academic Consideration for Student Absence

Please read carefully all the details of the Western policy on Academic Consideration:

https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#SubHeading_400

Religious Accommodation

https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_16

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. **Please note that this notice should be given at least two weeks before a final exam, and at least a week ahead of a midterm exam.** Additional information is given in the [Western Multicultural Calendar](#).

Academic Policies

The website for the Registrar's Office is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, 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 his/her official university address is attended to in a timely manner.

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

Support Services

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 Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.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.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.