

Western University
London, Canada
Department of Physics and Astronomy
Numerical and Mathematical Methods 1412A – Calculus for Engineers I
Fall 2023

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 to enrol 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 if you are dropped from a course for failing to have the necessary prerequisites.

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 topics before class time
- 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 quizzes/assignments | 25% |

Midterm Exam

The Midterm Exam will take place [*], locations TBA.

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 Counselling Office.

Homework Quizzes

There will be a quiz/assignment every other week administered through MyLab. Dates are in the Calendar on OWL and will include all material up to the Friday before the quiz.

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](#).

For work totalling 10% (Midterm and Final) 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. You do not need to provide medical documentation to your instructor. For further information, please consult the University's medical illness policy at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf.

The Student Medical Certificate is available at

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

For quizzes a valid excuse should be provided to your instructor. There are no make-ups for quizzes. If excused, an average of the unexcused quizzes will be used as your quiz grade (25%)

Religious Accommodation:

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. 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) (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>.