CALCULUS 1501 Calculus II for the Mathematical and Physical Sciences

Summer 2023, Online

Instructor: Allen O'Hara

e-mail: aohara@uwo.ca

Course Timing Details:

The scheduled times for this course, per the UWO timetable, are:

Section	Time	Instructor
001	*Mon Tue Wed Thu Fri 9:00am - 11:00am*	$O'Hara$

Synchronous meetings though Zoom will be held within this time frame. The meeting links with more details are available on the course OWL site in the Zoom tab.

Course Description: Students who intend to pursue a degree in Actuarial Science, Applied Mathematics, Astronomy, Mathematics, Physics, or Statistics should take this course. Techniques of integration; The Mean Value Theorem and its consequences; series, Taylor series with applications; parametric and polar curves with applications; first order linear and separable differential equations with applications.

Course Assessments: Students' grades will be based on three written homework assignments (each worth 20%, submitted electronically), as well as an online cumulative final exam (worth 40%). The assignments will be spaced out to be due approximately every two weeks (due in Weeks 2, 4, and 6 of the course schedule). The final exam is scheduled by the registrar and is expected to fall in the window August 14-August 15. Once the date and time have been scheduled an announcement will be posted through OWL.

Your mark in the course will be the mark that you earn based on your demonstrated understanding of the course content, assessed using the outlined criteria. Extra credit assignments are not available, and assessments cannot be rewritten to obtain a higher mark.

Course Textbook: The suggested textbook and its associated solution manual are:

○ Single Variable Calculus: Early Transcendentals (8th edition), by James Stewart (Brooks/Cole)

○ Student's Solutions Manual for 8th edition of Stewart, by Anderson, Cole & Drucker (Brooks/Cole)

There will be a class Webassign course created, so students who do not have a copy of these texts from previous calculus courses will be able access them electronically, once the Webassign course code is posted to OWL. The textbook is used to provide practice exercises for students to perfect their abilities and understanding of the course concepts. Do note that the textbook is currently in its 9th edition.

Prerequisites: A minimum mark of 60% in one of Calculus 1000A/B, 1500A/B or the former 1100A/B.

"Unless you have either the prerequisites for this course or the written special permission of your Dean 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 you are dropped from a course for failing to have the necessary prerequisites." - UWO Senate

Antirequisites: Calculus 1301A/B, Numerical and Mathematical Methods 1414A/B, the former Applied Mathematics 1414A/B, the former Applied Mathematics 1413.

Online Proctoring: Tests and examinations in this course will be conducted using the remote proctoring service Proctortrack. By taking this course, you are consenting to the use of this software and declaring that you have a reliable internet connection with sufficient capacity to support video proctoring. You will be required to complete a video face scan and show photo identification. You will also be monitored during tests and examinations. The video and desktop screen are recorded and uploaded to Proctortrack servers and your instructor may review the recording. More information about this remote proctoring service is available in the Online Proctoring Guidelines at the following link:

https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf

Completion of this course will require you to have a device that meets the technical requirements for this service. Information about the technical requirements are available at the following link:

https://www.proctortrack.com/tech-requirements/.

Please contact the course instructor if you are not able to meet the technical requirements or if you have any questions about the use of this remote proctoring service for this course.

What is Expected of the Student: Students should make a serious effort to understand all course material and do all the assigned homework. The student must assume responsibility for staying up to date on course content, including being aware of deadlines. Late assessments are not generally permitted, however exceptions can be made in unusual circumstances. The student is responsible for being aware of all relevant information posted on the OWL web site. It is up to the student to seek out help when needed.

Remember, you understand the course material if you can answer new questions about it. Being able to answer similar questions repeatedly just shows that you remember a formula and being able to reproduce results from class only demonstrates memorization. While these are certainly important, you should not confuse them with a true understanding of the concepts.

In addition, students are expected to abide by the course and university policies and to maintain a healthy environment of respect and openness.

Learning Outcomes:

A successful student in this course will be able to:

1. Use the formal ($\epsilon - \delta$ and $\epsilon - N$) definitions of a limit to prove a limit does in fact have a proposed value.

2. Correctly apply Rolle's Theorem and the Mean Value Theorem to functions that satisfy the necessary preconditions.

3. Use the integration techniques of substitution, integration by parts, partial fractions, and trigonometric identities to evaluate definite integrals and find antiderivatives.

4. Apply the convergence tests learned in the course to correctly determine when a given infinite series converges to a value or diverges.

5. Create power series for given functions and correctly determine the radii of convergence of such series.

6. Calculate areas and arc lengths of curves given in exotic forms (parametric, polar, etc).

7. Solve both linear and separable differential equations.

Course Policies:

○ With regards to e-mails being sent to the professor or other students, remember to be respectful of the other party and to use appropriate language in your correspondence. E-mails to the professor <u>must</u> include **Calculus 1501** in the subject line.

○ Calculators will not be permitted for any of the examinations in the course.

○ Students are expected to gain familiarity with any electronic applications needed for assessments. A failure to submit assessments electronically, or to properly input a response, based on ignorance of the application will not be considered grounds for regrading or other accommodations.

○ Students are expected to complete and submit assessments on their own.

Senate Policy on Prerequisites:

Unless you have either the requisites for this course or written special permission from your Dean 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.

Course Website:

Students should check OWL (http://owl.uwo.ca) or the course website (if not hosted on OWL) on a regular basis for news and updates for all of the courses in which they are enrolled. This is the primary method by which information will be disseminated to all students in each class. Students are responsible for checking OWL on a regular basis.

Accommodation and Accessibility:

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's policy on academic consideration for student absences: `https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf`.

If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (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" (see `http://www.registrar.uwo.ca/examinations/exam_schedule.html`)

Academic Policies:

The website for Registrarial Services 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.

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

Electronic devices (including cell phones and calculators) are NOT allowed on exams and may be confiscated.

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`.

Acknowledgment of the Science Student Donation Fund:

Mathematics undergrad courses are supported by the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at ssc@uwo.ca.