

The University of Western Ontario (Western University)

**Calculus 2302A, Fall 2022**  
**Intermediate Calculus I**

September–December 2022

[course outline version Aug. 30, 2022; may be updated later]

**INSTRUCTOR:**

Prof. D. J. Jeffrey ([djeffrey@uwo.ca](mailto:djeffrey@uwo.ca)) MC252

**CLASS MEETINGS:**

Lectures: MWF 1:30-2:20 pm, in AHB-2B02

Office Hours: Friday 3:30-5:30 pm, in MC 204. Flexible format.

**TEXTBOOK:**

Multivariable Calculus (any edition), by J. Stewart. (recommended).

**Note:** an electronic version is available through [cengage.com](http://cengage.com).

Free alternative: Calculus Vol 3 ([openstax.org](http://openstax.org)),

**PREREQUISITES:** A minimum mark of 55% in one of Calculus 1501A/B, Calculus 1301A/B, Numerical and Mathematical Methods 1414A/B, the former Applied Mathematics 1414A/B, the former Applied Mathematics 1413. Integrated Science 1001X with a minimum mark of 60% can be used in place of Calculus 1301A/B.

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.

**ANTIREQUISITES:** Calculus 2502A/B.

**COURSE DESCRIPTION:** Three dimensional analytic geometry: dot and cross product; equations for lines and planes; quadric surfaces; vector functions and space curves; arc length; curvature; velocity; acceleration. Differential calculus of functions of several variables: level curves and surfaces; limits; continuity; partial derivatives; tangent planes; differentials; chain rule; implicit functions; extrema; Lagrange multipliers.

If you are unsure whether you should be taking Calculus 2302A or 2502A, please check the course prerequisites and your module requirements and/or contact an academic counsellor. They will briefly discuss the differences between the two courses in class.

**LEARNING OUTCOMES:** By the end of the course, the student will understand

- How to represent lines and surfaces in three-dimensional space,
- Make calculations involving lines and surfaces.
- Understand how to extend calculus concepts from one variable to several variables.
- Understand applications to mechanics (velocity and acceleration).
- Define functions implicitly and work with them.
- Calculate the extrema of a function and calculate the extrema of a function when it is subject to constraints.

If you are unsure whether you should be taking Calculus 2302A or 2502A, please check the course prerequisites and your module requirements and/or contact an academic counsellor. They will briefly discuss the differences between the two courses in class.

**WHAT IS EXPECTED OF THE STUDENT:** Students are expected to attend all class meetings, review all learning materials in timely fashion, follow class announcements, complete all assignments and write all examinations. Solutions of collected homework problems must be written neatly, and handed in by the deadline.

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.

All course material 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.

### **CONTINGENCY PLAN FOR AN IN-PERSON CLASS PIVOTING TO 100% ONLINE**

**LEARNING:** In an event during the course that necessitates the course delivery moving away from face-to-face interaction, all course content will be delivered online. Any synchronous content will be delivered on zoom during the times indicated in the timetable. Any asynchronous content will be posted on the owl site. The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor. For the online mode of course delivery the following technical requirements will be applicable: computer with a microphone and webcam, stable internet connection, a scanner or an alternative. Any remote learning sessions will not be recorded. Any online proctored assessments will not be recorded.

### **EVALUATION OF STUDENT PERFORMANCE:**

Assignment due Monday October 10: 10%

Midterm 1 test on Friday October 21, 1:30-2:20: 20%

(Make-up midterm 1 Friday November 11, 4:30-5:30).

Assignment due Monday November 14: 10%

Midterm 2 test on Friday November 18<sup>th</sup>: 1:30-2:20: 20%

(Make-up midterm 2 Friday November 25<sup>th</sup>: 4:30-5:30).

Final exam (**3 hours, to be scheduled by the Registrar's office**): 40%

**ACCOMMODATED EVALUATIONS:** late homework will not be accepted. Please submit any time before the deadline. If there is proper documentation for a missed assignment, then the corresponding component of the grade will be transferred to the final exam. If a student misses the midterm test and accommodation is approved by academic counseling, then a make up test will be given.

**STUDENT ABSENCES:** Academic Consideration for Student Absences. Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration. For details, please see the website

[Academic Consideration for Absences - Academic Consideration for Absences - Western University \(uwo.ca\)](http://www.uwo.ca/academic-consideration-for-absences)

**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 University's list of recognized religious holidays (updated annually) at <https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

**ABSENCES FROM FINAL EXAMINATION:** 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., more than 2 exams in 23-hour period, more than 3 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:**

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 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_Accommodation_disabilities.pdf)

**ACADEMIC POLICIES:** The website for Registrarial Services is <http://www.registrar.uwo.ca>. In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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 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.

No aids will be permitted on tests and exams. Electronic devices, including calculators, will not be permitted on in-person tests and exams. In case of pivoting to tests and exams administered on zoom, instructions for the use of electronic devices during the examination will be provided by the course instructor.

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

**SUPPORT SERVICES:** Please visit the Science and 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/>.

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 at (519) 661-2147 if you have any questions regarding accommodations.

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/>.

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/mentalhealth>) 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>

#### CONTINGENCY PLAN FOR IN-PERSON CLASS PIVOTING TO 100% ONLINE LEARNING:

If circumstances necessitate course delivery moving away from in-person instruction, all course content will be delivered online. Any synchronous content will be delivered on zoom during the times indicated in the timetable. Any asynchronous content will be posted on the owl site. The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor. For the online mode of course delivery the following technical requirements will be applicable: computer with a microphone and webcam, stable internet connection, a scanner or an alternative. Any remote learning sessions will not be recorded. Any online proctored assessments will not be recorded.