

Western University

Cal2502A (Fall 2023) — Course Outline

1. Course Information

Course Name: Calculus 2502A — Advanced Calculus I

Time and Location: Lectures – Section 001, **in-person**. Note that all Quizzes, Midterm Test and Final Examination are scheduled **in-person**.

Monday, Wednesday, Friday: 1:30 - 2:30 pm, Room PAB-148

Prerequisites: A minimum mark of 60% in Calculus 1501A/B or Calculus for Engineering I 1412A (former Applied Mathematics 1413), or Calculus 1301A/B with a mark of at least 85%.

Antirequisites: Calculus 2302A/B

Pre- or Corequisites: Mathematics 1600A/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.

2. Instructor

Instructor: Dr. Pei Yu, Department of Mathematics, UWO

Office: MC 283

Email: pyu@uwo.ca

Important: Please make sure to use your UWO email address when contacting the instructor or TAs.

3. Course Syllabus

Course Description: The course material corresponds to Chapters 12, 13, 14 and Sections

16.1 and 16.5 from the textbook. Quick review of vectors in space from Chapter 12, vector valued functions (Chapter 13), Differential calculus of functions of several variables: level curves and surfaces; limits; continuity; partial derivatives; total differentials; Jacobian matrix; chain rule; implicit functions; inverse functions; curvilinear coordinates; derivatives; the Laplacian; extrema; Lagrange multipliers; vector and scalar fields; divergence and curl (from Chapter 14 and Sections 16.1, 16.5 of Chapter 16).

Learning Outcomes: By the end of this course you will be able to

- represent vectors analytically and geometrically, and compute dot and cross products for presentations of lines and planes;
- analyze vector functions to find derivatives, tangent lines, arc length, and curvature;
- compute limits and derivatives of functions of multiple variables;
- apply derivative concepts to find tangent lines to level curves and to solve optimization problems;
- use technological tools such as computer algebra systems or graphing calculators for visualization and calculation of multivariable calculus concepts.

Classes Begin: September 7, 2023

Last Day to Add the Course: September 15, 2023

National Day for Truth and Reconciliation: September 29, 2023

Thanksgiving Weekend: October 7-9, 2023

Reading Week: October 30-November 5, 2023

Last Day to Drop the Course: November 13, 2023

Classes End: December 8, 2023

Examination Period: December 10-22, 2023

See the schedule for the lecture/assigned problems, etc. from the “Course Content” on the OWL.

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency requires some or all of the course delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any remaining quizzes/midterm will also be conducted online as determined by the course instructor.

4. Course Materials

Textbook: Multivariable Calculus, 9th ed., by J. Stewart (required). *Student solution manual is recommended.*

Note: older editions of Stewart are not compatible with the current edition 9.

Course website: The official website for this course is the course page on OWL (<http://owl.uwo.ca>). All information about this course including the course outline, practical problems, exams, lectures, etc. will be posted only on OWL. You should check the OWL on a regular basis for news and updates.

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

Technical Requirements for teaching online: For lecture classes, you need stable internet connection, computer with working microphone and/or webcam.

5. Methods of Evaluation

Quizzes (3) will be run during the lecture hour.

Quiz 1: October 2, 2023	10%
Quiz 2: October 16, 2023	10%
Quiz 3: November 17, 2023	10%

Midterm Test: Friday, October 27, 2023, 7:00-9:30 pm, Room (TBA) 30%

Make-up Midterm: (Monday, November 6, 2023, time and location TBA)

Final Exam: (TBA, Exam. Period: December 10 – 22, 2023) 40%

Note: All materials covered in lectures and assigned problems can be considered testable in the quizzes, midterm and final examination. The problem sets are designed to enhance understanding of the lectures and to develop problem solving skills, which will not be collected and marked.

6. 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 10% or more of the overall 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 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.

No Make-up for missed quizzes will be arranged. If you receive an accommodation from the Dean's office, the instructor will give a mark for your missed quiz based on your course average after the final examination. A missed quiz has a score blank and OWL will reweigh automatically.

Absences from Final Examinations:

If you miss the Final Exam, you need to 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).

7. 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 University's list of recognized religious holidays (updated annually) at

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

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. 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.

8. 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,

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.

Statement on Use of Electronic Devices: Calculators, computers, cellphones or any electronic devices which can be used for communication, are not allowed to be used in the quizzes, midterm test and final exam.

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.

Remote Proctoring Service: All the quizzes, midterm and final examination in this course will be conducted **in person**. In the event of any university-declared emergency, the teaching will be changed to **online**, and the tests will be proctored using Zoom through OWL. 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>.

9. 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/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) 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 find information about support services for survivors, including emergency contacts at

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

To connect with a case manager or set up an appointment, please contact 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 at

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

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.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.

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/>.

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