Western Science

Department of Mathematics

Math2500A (Fall 2026) Course Outline

1. Course Information

Course Information

Course Name: Math 2500A — Calculus III / Multivariable Calculus

Time and Location:
Lecture:
Tutorial

Prerequisites: A minimum mark of 60% in Calculus 1301A/B, Calculus 1501A/B, Integrated Science 1001X, or NMM 1414A/B.

Antirequisites: Calculus 2303A/B, Calculus 2402A/B, NMM 2276A/B, NMM 2277A/B, the former Calculus 2503A/B.

Unless students have either the prerequisites for this course or written special permission from the Department of Mathematics to enroll in it, they may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on their academic record. This decision may not be appealed.

2. Instructor Information

Full name, title and appropriate contact information of the instructor and, if the course is taught by more than one instructor, the name of the person responsible for the course (course coordinator).

Instructors	Email	Office	Phone	Office Hours
Dr. Pei Yu	pyu@uwo.ca			
TA (TBA)				

Students must use their Western (@uwo.ca) email addresses when contacting their instructor and TAs. The instructor's office hours are held in person in the instructor's office (MC 283).

3. Course Syllabus, Schedule, Delivery Mode

Description:
This course covers limits and continuity in two or three variables, partial derivatives and multivariate integrals, line integrals and parameterized curves, parameterized surfaces and surface integrals, vector fields and Green's theorem, Stokes's and Gauss's theorems.

This is a computational course without proofs.

The course material mainly corresponds to Chapters 4-6 from the textbook and the lecture notes provided by the instructor.

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

- Compute partial derivatives of multivariable functions and derive equations of curves in the plane and in space.
- Calculate velocity and acceleration using vector-valued functions and apply these concepts to relevant problems.
- Compute directional derivatives and solve optimization problems involving multivariable functions.
- Compute double and triple integrals, perform changes of variables, and apply these techniques to relevant problems.
- Work with cylindrical and spherical coordinates, parameterized surfaces, and surface integrals of vector fields.
- Apply Divergence (Green's) and Stokes' theorems to solve problems arising in physical applications.
- Use technological tools, such as computer algebra systems and graphing calculators, to visualize and perform calculations involving multivariable calculus concepts.

Lectures – Section 001, **in-person**.

Note that all Quizzes, Midterm Test and Final Examination are scheduled **in-person**.

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

Classes begin: September 9, 2026
Fall Reading Week: October 10 – 18, 2026
Classes end: December 9, 2026
Exam period: December 11 – 22, 2026

4. Course Materials

Textbook and Other Learning Materials

• **Required textbook: Calculus Volume 3,** by E. J. Herman and G. Strang, OpenStax, 2018.

• **Free access:** The PDF file "Calculus-vol-3-3.2.pdf"of the textbook is available free of charge at the following link: https://openlibraryrepo.ecampusontario.ca/jspui/handle/123456789/457

Additional materials: Topics not fully covered in the textbook will be supplemented with lecture notes and other materials provided by the instructor.

All course material will be posted to OWL Brightspace: https://westernu.brightspace.com/
All information about this course, including the course outline, practical problems, exams, lectures, etc. will be posted only on OWL.

Students are responsible for checking the course OWL Brightspace site 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 Brightspace 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.

Technical Requirements
If the course is offered online, for the lecture classes**,** you need stable internet connection and a computer with working microphone and/or webcam**.**

5. Methods of Evaluation

Grading Scheme and Assessment Dates

Grading Scheme and Assessment Dates

Quizzes (4) will be run during the lecture hour.

Quiz 1: Tuesday, September 29, 2026	8%
Quiz 2: Tuesday, October 20, 2026	8%
Quiz 3: Tuesday, November 3, 2026	8%
Quiz 4: Tuesday, November 24, 2026	8%

Midterm Test: Friday, November 13, 2026, 7:00-9:30 pm, in-person, Room (TBA) 28%

Make-up Midterm: Friday, November 20, 2026, in-person (Time and location TBA)

See the **Course Content** on the OWL for the material covered in each of the quizzes and the midterm test.

Final Exam: (In-person, Period: December 11 – 22, 2026) 40%

Problem sets are provided, which are designed to enhance understanding of the lectures and to develop problem-solving skills. These assigned problems will not be collected and marked

Note: All material covered in lectures and assigned problems may be tested in the quizzes, midterm and final examination.

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://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.

Midterms and Tests

This course has 4 quizzes, 1 midterm test, and a **cumulative** final exam. There is no makeup for missed quizzes (while the midterm has a makeup). If a student misses a midterm, its weight will shift automatically to their final exam grade. If their final exam grade is higher than their midterm grade, their final exam grade will replace the midterm's weight in their overall grade. They do not need to request Academic Consideration for a missed midterm; the reweighing will be done automatically.

The only exception is an early sitting, offered solely for a university-sanctioned schedule conflict (e.g., conflict of two midterms, Varsity competitions) or a religious accommodation that prevents a student from writing the midterm at its scheduled time. If a student requires this accommodation, they must notify their instructor in writing no later than one week before the test. No other circumstance, including illness, qualifies for an early sitting or makeup; these are addressed through the automatic reweighting described above.

A student is entitled to **one** makeup midterm. If a student misses the makeup midterm and is approved for Academic Consideration, they will be withdrawn from the course without academic penalty, following the same process that applies to a missed Special Examination (see Special Examination, below). A student may appeal to the Associate Dean (Academic), on a case-by-case basis, for the opportunity to write the midterm the next time the course is offered. If a student misses the makeup midterm and Academic Consideration is not approved, or was not requested, they will receive a grade of zero on the makeup midterm.

Labs, Assignments, and Quizzes

This course has 4 in-class (one hour) quizzes. **No make-up** for missed quizzes will be arranged. Students are expected to complete 3 of 4 to receive full credit for this component. If they miss up to 1 of these, they do not need to request Academic Consideration; the missing item(s) will not count against them, and their grade for this component will be calculated from their best 3 submissions.

Special Examination
Per university policy, Academic Consideration requests with supporting documentation are required for the final examinations scheduled during official examination periods by the Registrar's Office.

If the student has been approved by the Academic Advising Office to write a Special Examination (SPC) and the final exam is their only outstanding course component, an SPC will be assigned to them and scheduled by the instructor per university policy.

If the student misses their SPC exam and is approved for Academic Consideration, they will be withdrawn from the course without academic penalty. If they experienced extenuating circumstances such as prolonged illness, they may appeal to the Associate Dean (Academic), on a case-by-case basis, for the opportunity to write the final exam the next time the course is offered. An outstanding SPC will reduce their course load for the term in which the exam is deferred, as outlined in the Definitions of Types of Examinations policy.

If the student misses their SPC exam and Academic Consideration is not approved, or was not requested, they will receive a grade of zero on the exam.

6. Additional Statements

6.1 Religious Accommodation
When a recognized religious holiday either requires a student to be absent from the University, or requires or prohibits an activity that makes it impossible for them to complete an academic requirement scheduled that day, they are entitled to accommodation. No student will be penalized for an absence for religious reasons, and an alternative means of satisfying the requirement will be arranged. This accommodation is provided in accordance with the University's policy on Accommodation for Religious Holidays:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The student should submit their requests through the Student Absence Portal (SAP), identifying the conflict and the specific course component(s) affected (e.g., test, midterm, exam).

> **Midterms and Tests**: If a religious observance conflicts with a midterm test, they must submit their request no later than **one week** before the test. Their instructor will arrange an early sitting of the test. As set out above, no makeup test is offered for any other reason; this early sitting is available specifically for this accommodation.
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> **Final Examinations**: If a religious observance conflicts with the final exam, the student must submit their request no later than **two weeks** before the exam. Their instructor will arrange a Special Examination to take place no later than one month after the end of the examination period.

Students are responsible for finding out what was covered in any class they miss due to a religious observance, and for taking the appropriate steps to keep up with the course.

If a suitable arrangement cannot be reached between a student and their instructor, they should consult the Undergraduate Chair of the department offering the course, and if necessary, the Associate Dean (Academic) of the Faculty of Science.

For a list of recognized religious observances, please visit the calendars posted on the Equity, Diversity & Inclusion website - https://www.edi.uwo.ca (About Us – Resources – Additional Resources – Calendars).

6.2 Academic 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.

6.3 General Academic Policies

The website for Registrar Services is https://www.registrar.uwo.ca/.

Use of @uwo.ca email: 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 email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as "appeals")

Policy on Request for Relief from Academic Decision:
https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):
https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

6.4 Scholastic Offences

Policy on Scholastic Offences:
https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):
https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the **possession** of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, hidden cameras and wireless earbuds.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at a student's desk, on their person, or within reach during an assessment will be treated as a scholastic offence, **even if the device is not in use**.

Effective September 2026, the typical penalty for this offence is a failing grade in the course AND a 12-month prohibition on retaking the course.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is their responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is the student's responsibility to seek clarification before using any AI tools in academic work.

6.5 Support Services

Academic Advising. Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters: https://www.uwo.ca/sci/advising/.

Mental Health Support. 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.

Gender-Based and Sexual Violence. Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If a student has experienced GBSV (either recently or in the past), they can 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.

Accessibility for Coursework. A student may contact the course instructor if they require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to them. If they have any questions regarding accommodations, they may also contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html

Learning Development and Success. Learning-skills counsellors at Learning Development and Success (https://learning.uwo.ca) are ready to help students improve their learning skills. The facility offers 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.

Student Councils.
Student-run support services are offered by the University Students' Council (https://westernusc.ca) and the Science Students' Council (https://www.westernssc.ca).