

# CALC 2503B - Advanced Calculus 2

## Course Outline - Preliminary version - 2023-01-03

### Course Information

**Lectures:** Monday, Wednesday, Friday, 13:30 – 14:30, in room MC 105B

**Antirequisites:** Calculus 2303A/B.

**Prerequisites:** Calculus 2302A/B or Calculus 2502A/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.

**OWL Website:** 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. Course material will be posted on OWL. 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.

### Instructor Information

**Instructor:** Martin Pinsonnault

**Email:** [mpinson@uwo.ca](mailto:mpinson@uwo.ca)

**Communication with the instructor:** In order to facilitate communication and ensure timely responses, please follow the following guidelines in every email to your instructor:

- For any email communication, always use your **UWO account**.
- In your emails, always include **CALC 2503B** in the title.
- Always include your **full name** and your **student number** in the body of your email.
- **Never reply directly to a global OWL announcement.** If you have questions, always write a separate email following the above guidelines.

**Office hours:** We will schedule the (in-person) office hours through an online pool during the 2nd week. Details will be posted on OWL.

### Course Material

- The course will be based on the textbook *Multivariable Calculus*, 9th ed., by J. Stewart. (required). The PDF version can be purchased from the editor. Student solution manual is recommended. Note: older editions of Stewart are not compatible with the current 9th edition.
- Some computer calculations and experimentations will be done using the computer algebra system SAGE that is available for free at <https://www.sagemath.org>.

## Course Syllabus

**Description from the Academic Calendar:** Integral calculus of functions of several variables; multiple integrals; Leibnitz' rule; arc length; surface area; Green's theorem; independence of path; simply connected and multiply connected domains; three dimensional theory and applications; divergence theorem; Stokes' theorem.

**Learning outcomes:** The course material corresponds to Chapters 15 and 16 from your textbook. Time to time we shall also give extra examples and applications of concepts and results as we go through these two chapters. Advanced Calculus 1 was all about differentiating multivariable functions and vector fields. In Advanced Calculus 2 we shall learn how to integrate multivariable functions and vector fields and shall find the multivariable analogues of the fundamental theorem of calculus which relate differentiation to integration (theorems of Green, Gauss and Stokes). Other topics include: change of variable formula and Jacobians; integration in polar, cylindrical and spherical coordinates. Special attention will be given to precise definitions and theorems. Some computer calculations and experimentations will be done using the computer algebra system SAGE that is available for free at <https://www.sagemath.org>.

### What is expected from the students

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 assignments problems must be written neatly, and handed in by the deadline. Problem sets will be distributed regularly for self assessment. They will not be marked, but partial solutions will be provided for selected problems.

### Methods of Evaluation

The overall course grade will be calculated as listed below. Note that the given dates **are only tentative** and are waiting final approval.

- Assignment #1: 10%, due 2023-02-05, 23:59.
- Midterm Test: 30%, 2023-02-15, 19:00 – 21:00.
- Assignment #2: 10%, due 2022-03-12, 23:59.
- Assignment #3: 10%, due 2022-04-02, 23:59.
- Final Exam: 40%, 3 hours, sheduled by OOR during the exam week.

Assignments will be submitted online through **Gradescope**.

If needed, a makeup midterm will be held **one week** after the midterm ( $\pm 1$  day if necessary).

Note that **cellphones, calculators, cheat sheets, textbooks, and any other aids will NOT be allowed during examinations.**

### Student Absences and Missed Evaluation Components

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

By policy, academic considerations for work totalling 10% or more of the final course grade can be granted only by the student's Faculty of Registration (typically by their academic counsellors). In such cases, 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/accommodation\\_medical.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf). The Student Medical Certificate is available at [https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

**Late Assignments:** Unless an academic consideration is granted, 10% will be taken off for each day after the due date. No assignment will be accepted more than 3 days after the due date.

**Missed Assignments:** Students who are granted an academic consideration for a missed assignment will get their the other components of their evaluation reweighted.

**Missed Midterm:** Students who are granted an academic consideration **no later than 5 days after a missed midterm** will get an a make-up exam. Students who are granted an academic consideration and who are not able to complete the evaluation component **within 7 days** after the sheduled date will get their evaluation reweighted.

**Absences from Final Examinations:** 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).

Note: missed work can only be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is not sufficient on its own.

## Online Learning Contingency plan

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). In the case the courses moves online, each student will need:

- Laptop or desktop computer
- A browser meeting the requirements for OWL, Gradescope, and Proctortrack
- Stable internet connection
- Working microphone
- Working webcam
- Device for scanning (either a scanner or an app that can be used in conjunction with your phone's camera)

The grading scheme will not change. Tests and examinations will be conducted using a remote proctoring service. 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. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>. Assessments will also be conducted online as determined by the course instructor.

If students need assistance with any of the above items, they can seek support on the OWL Help page <https://owlhelp.uwo.ca/students/index.html>. Alternatively, they can contact the Western Technology Services Helpdesk <https://wts.uwo.ca/helpdesk/>. Phone: 519-661-3800 or Ext 83800.

## Key Sessional Dates

**2022-01-09** Classes resume.

**2022-01-17** Last day to add a full course, a first-term half course, a first-term full course, or a full-year half course on campus and Distance Studies.

**2023-03-07** Last day to drop a full course, a first-term half course, a first-term full course, or a full-year half course with no fee penalty; course will be removed from your transcript.

**2022-02-18 to 2022-02-26** Winter Reading Week.

**2022-04-07** Good Friday.

**2022-04-10** Classes end.

**2022-04-13 to 2022-04-30** Final examination period.

## 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 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/AcademicAccommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/AcademicAccommodation_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 their official university address is attended to in a timely manner.

**Scholastic offences:** 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).

Again, **cellphones, calculators, cheat sheets, textbooks, and any other aids will NOT be allowed during examinations.**

## 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 <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](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](mailto: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://academicssupport.uwo.ca/accessible\\_education/index.html](http://academicssupport.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, see <https://westernusc.ca/services/>.