

## Calculus 2503 Course Outline

### 1. Course Information

#### Course Information

Calculus 2503, Winter 2024. Course meets MWF 1:30 – 2:20 PM in PAB-106.

#### List of Prerequisites

Prerequisite(s): Calculus 2302A/B or Calculus 2502A/B.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) 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 Information

Instructors	Email	Office	Office Hours
Prof. Rasul Shafikov	shafikov@uwo.ca	MC 271	TBA
TA -- TBA			

If you have questions, you can email your instructor. Your email must comply with the following rules:

- Use your **UWO email address**
- Include "**CALC 2503**" in your title
- Include your **full name** as it appears on your UWO ID in the body of the message
- Include your **student number** in the body of the message
- **Do not reply directly to an announcement email** sent from the OWL website

Not following any of these rules may create confusion and may result in unexpected delays.

### 3. Course Syllabus, Learning Outcomes, Schedule, Delivery Mode

#### Syllabus

This course is a continuation of Calculus 2302/2502, students are assumed to be familiar with functions of several variables, vector-valued functions, partial derivatives. The course covers multiple integrals, including calculation of integrals in polar, cylindrical, and sphere coordinates; change of coordinates; vector fields, line integrals, Green's theorem, curl and divergence, Stokes' theorem.

## Learning Outcomes

By the end of this course successful students will be able to integrate functions of several variables using various methods, including iterated and line integrals. Students will successfully apply the change of variables formula and use various coordinate systems. Successful students will be able to formulate the fundamental theorem for line integrals, Green's theorem, and other results of integral calculus and will be able apply them to calculate area of surfaces and volumes of solid polyhedral, as well as in other applications.

## Approximate schedule of the material flow and class activities

Week	Dates	Material/Activities
1	Jan 8 - 12	Review; double integrals
2	Jan 15 - 19	Iterated integrals; integrals over general regions
3	Jan 22 - 26	Integrals in polar coordinates; applications
4	Jan 29 - Feb 2	Triple integrals; cylindrical coordinates; <b>Assignment 1</b>
5	Feb 5 - 9	Spherical coordinates; change of variables
6	Feb 12 - 16	Vector fields; <b>Assignment 2</b>
7	Feb 19 - 23	READING WEEK
8	Feb 26 - Mar 1	Line integrals; theorems for line integrals; <b>Midterm = Feb 29</b>
9	Mar 4 – Mar 8	Green's formula; Curl and Divergence
10	Mar 11 - 15	Parametric surfaces and areas
11	Mar 18 - 22	Surface integrals; <b>Assignment 3</b>
12	Mar 25 - 29	Stokes' theorem
13	Apr 1 - 5	Divergence theorem <b>Assignment 4</b>
14	April 8	Review

## Key Sessional Dates:

Classes begin: January 8, 2024

Fall Reading Week: February 17 – 25, 2024

Classes end: April 8, 2024

Exam period: April 11 – 30, 2024

## Contingency plan

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

## 4. Course Materials

Required textbook: Multivariable Calculus 9th ed., by J. Stewart. (required). Student solution manual is recommended. Note: older editions of Stewart may not be compatible with the current Edition 9.

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.

**Gradescope** (<https://www.gradescope.ca/>) will be used as a grading platform for written work in the course. A free account will be created on your behalf, although you will be required to verify the account and change the password during the first week of classes. Details regarding the set-up of your account and the submission requirements for your written work will be posted on OWL. It is the responsibility of the student to ensure their homework assignments are submitted in the correct PDF format. Submitting work in an improper format may result in your work not being graded, and this cannot form the basis of a regrade request. Additionally, the midterm test may be scanned by the course staff and uploaded to Gradescope for grading and viewing.

## 5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Assignments (4)	30%	(assignments are equally weighted)
Midterm Test	30%	
Final Exam	40%	

The due dates for the homework assignments are indicated in the timetable above.

The Midterm is scheduled for Feb 29, 6-8 PM in 3M Centre 3250. Tentatively it covers the material up to Vector Fields inclusively. It will consist of a mixture of short answer and multiple-choice-style questions. *This is a closed book/notes exam.*

Make-up midterm will be held one week after the scheduled midterm (+/- one day if necessary to avoid conflicts with other exams).

The Final will be scheduled by the Registrar. The exam is cumulative, 180 minutes in duration, and will consist of a mixture of short answer and multiple-choice-style questions. *This is a closed book/notes exam.*

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

## 6. Student Absence

Students who experience an extenuating circumstance (illness, injury, or other circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- i. For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration
- ii. Submitting appropriate documentation for non-medical absences to the Academic Counselling office of their Faculty of Registration.

The above regards assessments worth 10% or more.

Note that, in all cases, students are required to contact their instructor within 24 hours of the end of the period covered.

Students should also note that individual instructors **are not permitted** to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the Student Medical Certificate (SMC), see:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

Missing an evaluation component will result in a grade of zero unless appropriate permission is sought and granted.

**Late Assignments:** Unless an academic consideration is granted, 10% will be taken off for each day after a due date. No assignment will be accepted more than 5 days after the due date.

**Missed Assignments:** Students who are granted an academic consideration for a missing assignment will get the other components of their evaluation reweighted. For example, if only one written assignment (7.5%) is missing, the course grade will be computed out of  $100 - 7.5 = 92.5$  instead of 100.

**Missed Midterm:** Students who are granted an academic consideration **no later than 5 days after the midterm** will get a make-up exam. Students who are granted an academic consideration and who are not able to complete the scheduled make-up will get their evaluation reweighted. That is, their course grade will be computed out of  $100 - 30 = 70$  instead of 100.

**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).

## 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://www.edi.uwo.ca/>

### 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](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](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.

**No electronic devices are allowed during the examinations.**

**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).

## 9. Support Services

The Department of Mathematics runs the Math Help Centre. This term it starts January 22. Further details will be given in class.

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](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://academicsupport.uwo.ca/accessible\\_education/index.html](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/>.