Department of Mathematics

MATH 1225B Course Outline

Methods of Calculus

1. Course Information

Lectures: M W F 12:30 pm-1:30pm in SSC-2050

Prerequisites: Ontario Secondary School MCV4U or Mathematics 0110A/B.

Anti-requisite: Applied Mathematics 1201A/B, Calculus 1301A/B, Calculus 1501A/B, Mathematics 1230A/B, Numerical and Mathematical Methods 1412A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1413.

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 Information

Instructor	Email	Office	Phone	Office Hours
Dr. Khoa Nguyen	knguyen@uwo.ca	MC 282	519-661-2111 x88799	Friday, 2:00pm-3:00pm
TA	TBA			

Students must use their Western (@uwo.ca) email addresses when contacting their instructors and must say Math 1225B in the subject line.

3. Course Syllabus, Schedule, Delivery Mode

Description: Elementary techniques of integration; applications of Calculus such as area, volume, and

differential equations; functions of several variables, Lagrange multipliers.

Objectives: At the end of the course, a student should be able to

• Evaluate limits of functions of one variable

• Evaluate derivatives of functions of one variable

• Use the Chain Rule to evaluate derivatives of functions of one variable

• Use derivatives to solve an optimization problem

• Integrate functions by using several techniques such as substitution, integration by parts,

partial fractions

• Identify a given definite integral as proper or improper and evaluate it

• Find extreme values of a function of several variables by using Lagrange multiplier

• Evaluate partial derivatives of functions of several variables

Important Dates:

Classes begin January 8, 2024

Spring Reading Week: February 17–25, 2024

Family Day: February 19, 2024

Good Friday: March 29, 2024

Classes end: April 8, 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: University of Western Ontario Custom e-book: Text for MATH 1225A/B, 2 nd

edition. SKU: CEB_CODEID=38254. Here is the link of UWO bookstore:

https://bookstore.uwo.ca/textbooksearch?campus=UWO&term=W2023B&courses%5B0%5D=001_UW/MAT1225B

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: https://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.

Technical Requirements

To use **WeBWorK**, students will need stable internet connection, a laptop or computer and recent browsers as Firefox or Chrome.

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Regular Assigned Problems (not graded)

5%: Marked on participation only using iClicker. The score you receive is based on the % of questions you answer:

At least 80% = 5; 70-79% = 4; 60-69% = 3; 50-59% = 2; 40-49% = 1; Less than 40% = 0

Assignments (6) 15 %

Midterm Test 35%, Thursday, February 15, 2024, from 7:00pm-9:00pm (in person)

Final Exam 45 % scheduled by the Registrar Office (in person). This is a comprehensive examination; it covers the entire material of the course.

Remark: NO calculators or other electronic devices or any other aids are allowed on exams.

Assignments: Students do their assignments in **WeBWorK**. There are 6 assignments, and the best five out of six are chosen.

Assignment 1: released January 15, due January 21

Assignment 2: released January 29, due February 4

Assignment 3: released February 12, due February 16 (by 5:30pm)

Assignment 4: released February 26, due March 3

Assignment 5: released March 11, due March 17

Assignment 6: released March 25, due March 31

Week Dates Topics by Chapters Comments

1	January 8-12	1.5, 1.6, 2.1, 2.2, 2.4	Limits, continuity, derivatives, product and quotient rules
2	January 15-19	2.5, 2.6, 2.7, 3.1, 3.2,3.3	Chain rule, higher derivatives, implicit differentiation, the 1 st and 2 nd derivative tests, concavity
3	January 22-26	4.1, 4.2, 4.3, 4.4, 4.5	Exponential, logarithmic functions and their derivatives, logarithmic differentiation
4	January 29-February 2	8.2, 8.3, 5.1	Sine and cosine functions, derivatives of sine and cosine, antiderivatives, and indefinite integrals
5	February 5-9	5.2, 5.3, 5.4	Integration by substitution, Integration related to exponential and logarithmic functions, definite integrals, area and the FTC
6	February 12-16	5.5	review Areas between curves, Midterm Exam (Thursday, Feb 15 from 7:00pm-9:00pm)
7	February 19-25	Spring Reading Week	No classes, Family Day (Feb 19, 2024)
8	February 26-March 1	6.1, 6.4, 8.4	Integration by parts, partial fractions, improper integrals, integrals of sine and cosine
9	March 4-8	7.1, 7.2, 7.3	Functions of several variables, partial derivatives, optimizing functions of several

			variables
10	March 11-15	7.5	Lagrange multipliers and constrained optimization
11	March 18-22	9.1, 9.2	Separable differential equations, applications
12	March 25-March 29	9.3	First order linear differential equations and its applications Good Friday (Mar 29)
13	April 1-April 8		Catchup and review

Accommodated Evaluations

Missing a midterm exam, the final exam, or the due date of a submitted homework assessment will

result in a grade of zero unless appropriate permission is sought and granted. For the case of missing

homework assignments your mark will be re-weighted. If a student misses the midterm test and the corresponding makeup test and has appropriate permission for both, then he/she is eligible to write the makeup midterm exam (about one week later).

6. Student Absences

Assessments worth less than 10% of the overall course grade:

For work worth less than 10% of the total course grade, a student may follow the procedures below.

1) Missed Lectures (iClick Questions): We understand that you will not be able to attend class from time to time. So, the participation-based iClicker marking scheme was designed to consider occasional missed classes. Therefore, iClicker marks will not be adjusted for the occasional missed classes. However, if you have a long-term absence (three or more consecutive classes) that is supported by academic consideration, your iClicker marks will be adjusted to take your long absence into account.

2) For medical reasons, please contact the Academic Counseling Office of the Faculty of Registration immediately and request accommodation. If academic consideration is granted, then the weight of the assignment will be transferred to the remaining assignments.

3) For non-medical reasons, there is no guarantee that accommodation for a missed assignment to be granted because the lowest mark assignment will be dropped.

Note that in all cases where documentation (medical or otherwise) is required, it can *only* be collected by the student's Dean's Office Academic Counselling unit.

Assessments worth 10% or more of the overall course grade:

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, students should be directed as follows.

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.

Midterm Exam: If you missed the midterm exam due to any circumstance, you must provide an academic consideration covering the date of the exam. The makeup midterm exam will be available to those who are granted an academic consideration. A makeup midterm exam will be arranged later.

In cases where a student misses to take the midterm exam and the makeup exam and can provide an academic consideration for both of these absences, the weight of the midterm exam will be transferred to the final exam.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as possible. 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 at

www.edi.uwo.ca

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,

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 his/her official university address is attended to in a timely manner.

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.

In the event that Test/Exam cannot be help in-person

Tests and examinations in this course 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**. 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/.

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.

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

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