Department of Mathematics

MATH 1225B Course Outline
Methods of Calculus

1. Course Information

Lectures: M W F 12:30 pm-1:30pm in MC-110
Due to Omicron variant, all lectures will be online, lectures are delivered synchronously (from January 10, 2022 to January 31, 2022)

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	Tuesday, 2:00pm-3:00pm (Zoom) and in my office (after January 31, 2022)
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 10, 2022
Spring Reading Week: February 19–27, 2022
Family Day: February 21, 2022
Classes end: April 8, 2022

Contingency plan for an in-person class pivoting to 100% online learning
In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining 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). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor. **In the event that Test/Exam cannot be held in-person**, please see the last page of this document.

4. Course Materials

Required Textbook: University of Western Ontario Custom e-book: Text for MATH 1225A/B, 2nd edition. SKU: CEB_CODEID=38254. Here is the link of UWO bookstore:
https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2021B&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: 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.

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:
Assignments (6)   20 %
Midterm Test   35%, Thursday, February 17, 2022 from 7:00pm-9:00pm (in person)
Final Exam   45 % scheduled by the Registrar Office (in person)

Assignments: Students do their assignments in **WeBWorK**. There are 6 assignments, and the best five of six are chosen.
Assignment 1: released January 17, due January 23
Assignment 2: released January 31, due February 6
Assignment 3: released February 11, due February 17
Assignment 4: released February 28, due March 6
Assignment 5: released March 14, due March 20
Assignment 6: released March 28, due April 3

Week	Dates	Topics by Chapters	Comments
1	January 10-14	1.5, 1.6, 2.1, 2.2, 2.4	Limits, continuity, derivatives, product and quotient rules
2	January 17-21	2.5, 2.6, 2.7, 3.1, 3.2,3.3	Chain rule, higher derivatives, implicit differentiation, the 1st and 2nd derivative tests, concavity
3	January 24-28	4.1, 4.2, 4.3, 4.4, 4.5	Exponential, logarithmic functions and their derivatives, logarithmic differentiation
4	January 31-February 4	8.2, 8.3, 5.1	Sine and cosine functions, derivatives

			of sine and cosine, antiderivatives, and indefinite integrals
5	February 7-11	5.2, 5.3, 5.4	Integration by substitution, Integration related to exponential and logarithmic functions, definite integrals, area and the FTC
6	February 14-18	5.5, review	Areas between curves, **Midterm Exam (Thursday, Feb 17 from 7:00pm-9:00pm)**
7	February 21-25	**Spring Reading Week**	**No classes, Family Day (Feb 21, 2022)**
8	February 28-March 4	6.1, 6.4, 8.4	Integration by parts, partial fractions, improper integrals, integrals of sine and cosine
9	March 7-11	7.1, 7.2, 7.3	Functions of several variables, partial derivatives, optimizing functions of several variables
10	March 14-18	7.5	Lagrange multipliers and constrained optimization
11	March 21-25	9.1, 9.2	Separable differential equations, applications
12	March 28-April 1	9.3	First order linear differential equations and its applications
13	April 4-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 has appropriate permission, then he/she is eligible to write the makeup midterm exam (about one week later).

6. Student Absences

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

(i)   Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:

   • an absence must be no more than 48 hours
   • the assessments must be worth no more than 30% of the student's final grade
   • no more than two SRAs may be submitted during the Fall/Winter term

(ii) 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.

(iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline.

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 that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the policy on Academic Consideration for Student Absences – Undergraduate Students in First Entry Programs, see:

   https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

and for the Student Medical Certificate (SMC), see:

   http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

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.

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).

6. Accommodation and Accessibility

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,

7. 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.

Calculators Only scientific calculators are allowed. For example, Sharp EL 510RB.

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 held 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.

8. 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.