

MATH*2210 Course Outline (Winter 2023)

Instructor: Daniel Kraus

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Office Hours: Mon./Wed./Fri. 10:25am – 11:25am
(feel free to email me to schedule alternate meetings)

Section 01

Class: M/W: 1:00pm – 2:20pm, MCKN 227

Prerequisite: MATH*2200 Advanced Calculus I

Restrictions: none

Credit Weight: 0.50

Academic Department: Mathematics & Statistics

Campus: Main

Semester Offering: Winter

1 Textbook & Course Notes:

- **Textbook:** *Calculus, Volume 3*, by Edwin Herman & Gilbert Strang. This textbook is completely free and is available on the Courselink site for this course.
- **Course Notes:** In order to facilitate the note-taking process, blank PDF slides have been prepared and will be posted to Courselink.

2 Lectures:

All lectures will be in person unless otherwise dictated by the university.

3 What to Bring to Class:

- Your notes
- Blank paper, pens/pencils, highlighters
- Scientific calculator

4 Schedule:

Date	Notes Sections	Notes & Major Topics
Jan 9	1.1 – 1.3	Review: Double Integrals (Rectangles, General Regions, Polar Coordinates)
Jan 11	1.3 – 1.4	Review: Double Integrals (Polar Coordinates, Applications)
Jan 16	2.1 – 2.2	Surface Area, Triple Integrals
Jan 18	2.2 – 2.3	Triple Integrals, Cylindrical Coordinates
Jan 23	2.3 – 2.4	Cylindrical & Spherical Coordinates
Jan 25	2.4 – 2.5	Spherical Coordinates, General Change of Variables
Jan 30	2.5, 3.1	General Change of Variables, Vector Fields
Feb 1	3.1 – 3.2	Vector Fields, Line Integrals
Feb 6	3.2	Line Integrals
Feb 8	3.3	Fundamental Theorem: Line Integrals
Feb 13	---	Review, MIDTERM 1
Feb 15	3.4	Green's Theorem
Feb 20	---	WINTER BREAK
Feb 22		
Feb 27	3.4	Green's Theorem
Mar 1	4.1	Curl & Divergence
Mar 6	4.2	Parametric Surfaces & Their Areas
Mar 8		
Mar 13	4.3	Surface Integrals
Mar 15		
Mar 20	---	Review, MIDTERM 2
Mar 22	4.3, 5.1	Surface Integrals, Stokes' Theorem
Mar 27	5.1	Stokes' Theorem
Mar 29		
Apr 3	5.2	The Divergence Theorem
Apr 5		

5 Calendar Description:

This course continues the study of multiple integrals, introducing spherical and cylindrical polar coordinates. The course also covers vector and scalar fields, including the gradient, divergence, curl and directional derivative, and their physical interpretation, as well as line integrals and the theorems of Green and Stokes.

6 Learning Outcomes:

Upon successful completion of this course, the student will have demonstrated the ability to:

- Apply and use the principles of integral calculus of several variables to study a broad range of phenomena in science and engineering, and as a basis of further studies in advanced mathematics.
- Solve word problems by applying formulas and techniques learned in class.
- Think critically about complex mathematical problems, question the potential subtleties of such problems, and give a complete and correct answer.
- Problem solve and think critically.

7 Homework:

Practice problems will be assigned each lecture, with hints and solutions posted to Courselink. There will be 5 assignments throughout the semester, each accounting for 3% of the final grade. These assignments are to be written out and handed in by the end of lecture on Jan. 18, Feb. 1, Mar. 1, Mar. 15, and Mar. 29.

8 Tests and Exam Times:

Exams are based mainly on examples done in class and homework.

- **Midterm Test 1: Monday, February 13, 7:00pm – 8:30pm (90 min.), Room TBA**
- **Midterm Test 2: Monday, March 20, 7:00pm – 8:30pm (90 min.), Room TBA**
- **Final Exam (cumulative): Monday, April 17, 2:30pm – 4:30pm, Room TBA**

9 Grade Distribution

	Scheme #1	Scheme #2	Scheme #3
5 Assignments	15%	15%	15%
Midterm #1	22.5%	13%	22%
Midterm #2	22.5%	22%	13%
Final Exam	40%	50%	50%

Your final grade will be calculated using the most favorable of the above schemes.

10 Picking up Assessments

Graded assignments and midterms will be handed back in lecture. Uncollected assignments midterms will be stored in the drawer for this course on the third floor of MacNaughton until the end of the semester. To find the drawers, head to your right as you exit the elevator. The assignment drawers are at the end of the hall on the left.

ONCE THE FINAL EXAMINATION DATE HAS PASSED, ALL UNCOLLECTED ASSIGNMENTS AND MIDTERMS WILL BE SHREDDDED.

11 The Math & Stats Learning Center:

The Mathematics & Statistics Department operates a learning center where you'll find a team of tutors that can help you understand and solve problems in MATH*2210. The learning center is located on the third floor of the McLaughlin Library in the Science Commons. The hours of operation are as follows:

Monday	Tuesday	Wednesday	Thursday	Friday
9:30-15:30	10:00-16:00	9:30-15:30	10:00-16:00	9:30-14:30

12 Outlines for the Midterms and Final Exam:

Posted in the Content section of Courselink when those dates approach.

13 Practice Tests:

Posted in the Content section of Courselink when the actual test dates approach.

14 Tests and Solutions for This Year:

Posted in the Content section of Courselink after the midterms have been graded.

15 Attendance:

Formal attendance will not be taken. However, I *strongly* encourage you to attend class regularly. IF YOU ARE UNABLE TO ATTEND CLASS, IT IS YOUR RESPONSIBILITY TO FIND OUT WHAT YOU MISSED FROM YOUR CLASSMATES. **DON'T EMAIL YOUR INSTRUCTOR ASKING FOR NOTES.**

16 Email Etiquette:

I try to respond to all email messages in a timely manner. Math questions may be better answered in person or via virtual meeting. Please keep your messages to the point and polite, and clearly state your question, with name, student ID, and course details.

17 Exam policies:

- All exams are **closed book**. You may not use your notes or any other outside material. Do not bring your own scratch paper.
- You are not allowed to use laptop computers or cellphones during exams. Ordinary scientific (NOT graphing) calculators are permitted during exams.
- The Final Exam is cumulative, i.e., it covers the whole course material.

18 Academic Consideration:

- There will be NO MAKE-UP MIDTERM EXAMS OR ASSIGNMENTS. If you miss an assessment due to serious illness of yourself or a death in your immediate family, or due to personal grounds, please contact me by email ASAP explaining the reason for missing the test. You do NOT need to get a doctor's note. If consideration is granted, I will readjust the weight of assessed material, as described in the next section. HOWEVER, ONCE YOU HAVE TAKEN AN EXAM, NO ACCOMMODATIONS WILL BE GRANTED (it is a general University of Guelph procedure to NOT grant accommodations retroactively). For further details concerning Academic Consideration see <https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>
- UNDER NO CIRCUMSTANCES WILL ANY EXAM BE RE-SCHEDULED AT A DIFFERENT TIME AND/OR DATE FOR INDIVIDUAL STUDENTS, with the possible exception of exams taken in SAS.
- Athletes who compete away from the University of Guelph during a midterm exam can arrange for their coach to proctor their exam. Just get your coach to contact me, and we will make the arrangements.
- If you miss the final exam due to catastrophic events such as serious illness of yourself or death of your immediate family, you will receive an "Incomplete" grade, and then (depending on circumstance) you may be allowed to take a make-up exam to receive a letter grade. If you miss the final exam, you should (a) inform me by email, and (b) contact your program counselor for advice.

19 Procedure Used to Re-Adjust the Weight of Assessed Material:

If consideration is given to miss an assessment, the percentage of missed material is moved to the final exam. Please DO NOT ASK FOR ALTERNATE ARRANGEMENTS, AS FOR REASONS OF FAIRNESS TO OTHER STUDENTS, SUCH REQUESTS WILL NOT BE GRANTED.

20 Regulations Regarding Seeing Your Final Exam:

If you wish to see your final exam, you must submit your **written** request to the chair of the department by the 5th class day of the new semester. For more details, see

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/sec_d0e7195.shtml

If you are granted permission to see your final exam, you will be provided with your written solutions.

21 Regulations Regarding a Grade-Reassessment:

If you believe that an error has been made in the determination of your final grade then you must **write** to the chair of the department (by the 10th class day of the new semester) requesting a grade re-assessment. This can lead to the grade staying the same, a grade

increase, or a grade decrease. Please note that this should not be used as a means of 'trying to get a few extra marks', but for situations where you have grounds for believing that mistakes have been made in the determination of your final grade. Remember also that your final exam is multiple choice and graded by a computer. Furthermore, THE CHOICES MADE ON THE BUBBLE SHEET TAKES PRECEDENCE OVER THE CHOICES CIRCLED IN THE QUESTION BOOKLET (we only refer to your circled choices in the question booklet if for some reason there is an error on the bubble sheet).

For further information, see

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

22 Academic Accommodation of Religious Obligations

If you are unable to complete a course requirement due to religious obligations, please let the instructor know within the first two weeks of class. See the academic calendar for more information:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml>

23 Academic Misconduct:

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>.

University Statements

24 Email Communication

As per university regulations, all students are required to check their e-mail account regularly. E-mail is the official route of communication between the University and its students.

25 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

26 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-regregchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

27 Copies of Out-of-Class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

28 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability

is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: www.uoguelph.ca/sas

29 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

30 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

31 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma

programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

32 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

33 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via Courselink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

34 COVID-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, that these guidelines may be updated as required in response to evolving University, Public Health or government directives.