MATH*2210: Advanced Calculus II (Winter 2021)

Department of Mathematics & Statistics
University of Guelph

Course 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.

Credit Weight

0.50 credits

Prerequisites

MATH*2200.

Lectures

This course will be taught in an asynchronous format with lecture videos being posted to the course website.

Instructor

Harry J Gaebler

Email

gaeblerh@uoguelph.ca

Office Hours

Room	Online via Zoom
Tues.	1200 – 1300
Thurs.	1100 – 1230

*** Or by appointment*

Teaching Assistants

Bryson Boreland, bborelan@uoguelph.ca

Textbooks

Required: None.

Recommended: *Apex Calculus, Q4*, Version 4.0, http://www.apexcalculus.com/

Course Website

All course announcements, assignments, solutions, practice questions, and grades will be posted on the course website. https://courselink.uoguelph.ca

Email Communication

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

Evaluations

Evaluations for the course are as follows:

40% - Assignments (5; Jan 28, Feb 11, March 11, March 25, April 8)
25% - Midterm (Friday March 5, 1730 – 1930)
35% - Final Exam (Tuesday April 27, 1900 – 2100)

** You must receive at least 50% of the marks available, in total, on the midterm and final exam that are used to calculate your final grade. That is,
(Total marks earned on midterm and exam) ÷ (Total marks available on midterm and exam) $\geq 50\%$

If you do not achieve this, your maximum possible final grade will be 48%, *no matter what grade you receive on the Assignment component.*

Marks

Assignments and term tests will be marked as quickly as possible and returned. All marks will be posted on CourseLink. It is your responsibility to check that the posted marks are accurate.

Assignments

Assignments will be distributed online via the course web page and are due online to https://crowdmark.com/ no later than 11:59 pm on the dates listed above. Late assignments will **NOT** be accepted. Of course, you can talk about assignment questions with me and with each other, but please make sure that the bulk of the work you submit is truly your own work. There will be low tolerance for plagiarism or what I deem to be excessive collaboration.

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.

Midterm and Final Exam

The midterm and final exam will be take-home style exams. There will be a given time frame, listed above, where the exam will be active. Solutions must be submitted online to https://crowdmark.com/ before the end of the exam time frame. Late exams will **NOT** be accepted.

An announcement will be made regarding the scope of material for the midterm. The final exam will cover all material taught in the course.

Lecture Schedule

Tentative Schedule and List of Topics

Week	Lecture Topics
1	Double Integrals
2	Triple Integrals
3	Triple Integrals, Change of Variables
4	Line Integrals
5	Fundamental Theorem of Line Integrals
6	Green's Theorem and Applications
7	Curl Divergence, Parametric Surfaces
8	Parametric Surfaces, Surface Integrals
9	Surface Integrals
10	Surface Integrals
11	Stokes Theorem and Applications
12	Divergence Theorem and Applications

Course Objectives

This course is an advanced course in Calculus. The objective of the course is to continue to develop a strong mathematical background and skills that you will require as you progress through your degree. The main goals of the course are (1) to develop qualitative skills, critical thinking, and application of these skills to physical problems and (2) develop strong mathematical communication skills, which will serve you well when working on interdisciplinary teams.

Learning Outcomes

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

1. 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.
2. Solve word problems by applying formulas and techniques learned in class.
3. Think critically about complex mathematical problems and question the potential subtleties of such problems and give a complete and correct answer.
4. Problem solve and critical thinking.

Missed Evaluation due to Illness or Compassionate Reasons

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, student ID#, and e-mail contact. See the academic calendar for information on regulations and procedures for Academic Consideration:

http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Illness

The University will not require verification of illness (doctor's notes) for the fall 2020 or winter 2021 semesters.

Recording of Materials

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

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.

Academic Misconduct Policy
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

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 7 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

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-reg-regchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

Resources

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

Academic Calendars
https://www.uoguelph.ca/registrar/calendars

Disclaimer for this Semester

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via class email. All University-wide decisions will be posted on the COVID19 website https://news.uoguelph.ca/2019-novel-coronavirus-information/ and circulated by email.