Calculus III
MATH 2210, section 5, Fall 2020

Class Meetings: MWF 2:00pm-2:50pm on Zoom. Lectures on Mondays and on some Wednesdays. Exams on some Wednesdays, and Office Hours on Fridays.

Instructor: Kevin Wortman
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Text: Calculus with Differential Equations, by Varberg, Purcell, and Rigdon (9th edition).
We’ll cover Chapters 11-14, except for Section 13.5. For information on purchasing the textbook, go to http://www.math.utah.edu/schedule/bookInfo/

Course Information: Math 2210 Calculus III is a 3 credit course.
Prerequisite Information: “C” or better in (MATH 1220 OR MATH 1250 OR MATH 1320) OR AP Calculus BC score of at least 4.

Course Description: Vectors in the plane and in 3-space, differential calculus in several variables, integration and its applications in several variables, vector fields and line, surface, and volume integrals. Green’s and Stokes’ theorems.

Grading: The following are the grade components and the percentage each contributes to a student’s final grade:

- **Homework Assignments** (28%) Weekly homework assignments. Due late Friday night.

- **8 Exams** (72%, 9% each) The final exam, and also exams on the following Wednesdays: September 2, 16, 30, October 14, 28, November 11, 18.

- **Final Exam Time:** Thursday, December 10th from 1:00pm-3:00pm.

- **Course letter grades:** 100-94 A; 93-90 A-; 89-87 B+; 86-84 B; 83-80 B-; 79-77 C+; 76-74 C; 73-70 C-; 69-67 D+; 66-64 D; 63-60 D-; 59-0 E.

- **Departmental Videos.** The math department has a full set of lecture videos which you are welcome to use to supplement our course material. These can be found at http://www.math.utah.edu/lectures/

Calculators: Calculators will not be allowed on exams or quizzes.
**Expected Learning Outcomes:** Upon successful completion of this course, a student should be able to:

1. Perform basic vector computations: dot and cross products, projections of vectors onto vectors.

2. Determine the equation of a plane in 3-dimensions, including a tangent plane to a surface.

3. Find the parametric equations of a line in 3-dimensions.

4. Convert from rectangular to cylindrical and spherical coordinates. Understand when it’s prudent to switch coordinate systems in computing an integral.

5. Perform calculus operations on functions of several variables, including limits, partial derivatives, directional derivatives, and gradients; understand what the gradient means geometrically.

6. Find maxima and minima of a function of two variables; use Lagrange Multipliers for constrained optimization problems.

7. Compute line and surface integrals.

8. Compute double and triple integrals in rectangular, spherical, and cylindrical coordinates; proper use of double or triple integrals for finding surface area or volume of a 3-dimensional region.

9. Understand divergence and curl of a vector field.

10. Determine if a vector field is conservative and if so, find the corresponding potential function.

11. Use and apply Green’s Theorem, Gauss’ Divergence Theorem, and Stokes Theorem.
➢ **Attendance & Punctuality:** *Students will have to attend during exams.*

➢ **COVID-19 Considerations:** *Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu.*

➢ **Course Materials:** *Aside from the textbook for the course, all course materials can be found on the Canvas page for this course.*

➢ **Technical requirements:**
  - Students are expected to be computer literate and Canvas and Zoom navigation skills are expected. Knowledge and navigation of Canvas and Zoom are critical to access all features and resources of this course.
  - A strong internet connection and adequate bandwidth is needed.

➢ **Syllabus subject to change:** This syllabus is meant to serve as an outline and guide for our course. Please note that it may be modified by the course instructor with reasonable notice to you. The instructor may also modify the Course Schedule to accommodate the needs of our class. Any changes will be emailed to students.

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**CLASS SCHEDULE & IMPORTANT DATES**

**Mandatory Online Instruction Periods:** All classes will be online the weeks of October 5-10 and November 30-December 3.

**Exam Dates:** at scheduled course time on September 2, 16, 30, October 14, 28, November 11, 18. Also the final exam is on December 10, at 1pm (see above).

**COURSE DESIGN**

On the exam dates listed above, excepting the final exam, all of which are on a Wednesday, exams will occur during the Wednesday lecture time, beginning at 2:10 pm.

Each week, a live Zoom lecture will be given on Monday during the course meeting time. If it is a week when the course does not have an exam, a live Zoom lecture will also be given during the Wednesday meeting time, perhaps covering precisely the same material as the Monday lecture (students will be notified in advance if this is the case).

Homework is to be submitted on Canvas, weekly, by Saturday morning at 4 a.m. Note that this is effectively a due date of late Friday night.

Each week, about three hour-long pre-recorded lectures will be assigned for viewing. The live Zoom lectures will supplement the basic course content with real-time demonstrations of the techniques required to succeed in this course.

**The Americans with Disabilities Act:**
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.
**Addressing Sexual Misconduct:** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS).

**Campus Safety:** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu