Mathematics 2210, Sections 3 and 6  Calculus III  Spring 2018

Class Times and Place:
2210–006, MWF, 9:40–10:30, JFB 102
2210–003, MWF, 10:45–11:35, JFB 102

Instructor: Ken Golden, Distinguished Professor of Mathematics
LCB 328, 801-581-6176 (office), 801-750-8555 (mobile)
kenatmath@gmail.com, golden@math.utah.edu
website: www.math.utah.edu/~golden

Office Hours: Mondays 11:45 AM – 12:45 PM, by appointment, or most days after class. There will be a practice exam and review session to go over it before each exam.

Text: Calculus with Differential Equations, 9th Edition, Varberg, Purcell and Rigdon

Course Materials: Practice exams, the syllabus, help schedules, etc. can be obtained at www.math.utah.edu/~golden.

Course Description: Mathematics 2210 is an introduction to multivariable calculus. Vectors, functions, and motion in two and three dimensional space will be examined. Derivatives and integrals of functions of many variables will be developed. The fundamental differential operators of calculus in higher dimensions, \( \text{div} \), \( \text{grad} \), and \( \text{curl} \), and their physical interpretations for fluid and electromagnetic fields, will be studied in detail. Integration of functions on curves, surfaces, and volumes will be developed. The course will conclude with an introduction to vector field theory and the theorems of Green, Gauss, and Stokes.

Course Outline:

January
8-12  11.1 - 11.3  Vectors and the geometry of space
17-19  11.4 - 11.7  Motion and vector-valued functions
22-26  11.8 - 11.9  Surfaces; coordinate systems
29-2  12.1-12.4  Derivatives of multivariable functions

February
5-9  12.5-12.6  Directional derivatives and the gradient  EXAM I (Feb. 9)
12-16  12.7-12.9  Tangent planes; maxima and minima
21-23  13.1-13.3  Double integrals
26-2  13.4-13.6  Surface area; applications

March
5-9  13.7-13.8  Triple integrals
12-16  13.9  Change of variables in multiple integrals  EXAM II (March 16)
17-25  SPRING BREAK
26-30  14.1-14.2  Vector fields and line integrals

April
2-6  14.3-14.4  Green’s Theorem and path independence
9-13  14.5-14.6  Gauss’s Theorem and surface integrals  EXAM III (April 13)
16-20  14.7  Stokes’s Theorem & Review
23  Partial differential equations of science
26-2  FINAL EXAMS
Teaching Assistant (TA):
Zexin Liu, zexin@math.utah.edu, 801-581-7653, LCB Loft.

Discussion Hours:
There will be optional discussion sessions conducted by the TA. During these sessions you can get help with webwork problems, exams, etc. Schedule of time and place will be posted.

Getting Help:

- **Setting up a webwork account:** In class you’ll be given information on how to get into your own Webwork account. If you encounter any problems, please contact the TA, and give your full name, course number and section, and student ID number.

- **Webwork feedback button:** When you use the feedback button within an exercise, state your question clearly. All relevant data about your question and answers is sent to the TA. Please don’t over-use this option, the TA will be getting lots of emails.

- **Free tutoring:** Available all day M-F in the Rushing Undergraduate Math Center.

Grades and Exams:

- **(50%)** Your two best scores on three in-class exams. The lowest of your three exam scores is dropped automatically in calculating the final grades. There are NO MAKE-UP EXAMS. You may bring one sheet of paper and a calculator to any exam, but NO laptops or wireless devices. Please bring University ID to all exams.

- **(25%)** Final exam.

- **(25%)** WeBWorK assignments.