MATH 22
Introduction to Calculus of Several Variables
Spring 2009

Description: Functions of several variables. Continuity and partial derivatives. The chain rule, gradient and directional derivative. Maxima and minima, including Lagrange multipliers. The double and triple integral and change of variables. Surface area and volumes. Applications from biology, chemistry, earth sciences, engineering, and physics. Students cannot receive credit for this course and course 23A.

Prerequisites: Course 11B or 19B or 20B or AP calculus BC exam score of 4 or 5.

Time and Place: MWF   3:30 – 4:40   JBE Aud. 101
Class Webpage: http://www.ic.ucsc.edu/~ptantalo/math22/Spring09/

Instructor: Patrick Tantalo (http://www.soe.ucsc.edu/~ptantalo/)
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Office Hours: MWF   10:00 – 12:00 pm, or by appointment
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Teaching Assistants:
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Required Text:
Calculus, Early Transcendentals, sixth edition, by James Stewart. Thomson Brooks/Cole, 2008.
                                        - or -
Multivariable Calculus, sixth edition, by James Stewart. Thomson Brooks/Cole, 2008.

The second text is just the last half (i.e. chapters 12-17) of the first, and either text will work for this course. One can also use the standard (i.e. non-early trancendentals) version of the text, with the understanding that the chapter numbers will be off-by-one. Homework for this class will be assigned from the above texts and will be submitted via **Enhanced Web Assign** (https://www.webassign.net/) using the **Class Key**: ucsc 5977 2070. In addition to the text, you will need to purchase an access code for the WebAssign site. These are available from the bookstore bundled with the text, or in stand-alone form.

The following reading schedule is a rough guide to what we will discuss and when.

Week	Sections	Topics
1	12.1, 12.2	3 Dimensional Coordinate Systems, Vectors
2	12.3, 12.4, 12.5	Dot Product, Cross Product, Equations of Lines & Planes
3	12.6, 13.1, 13.2	Surfaces, Vector Functions, Derivatives & Integrals
4	13.3, 14.1	Arc Length, Functions of Several Variables
5	14.2, 14.3, 14.4	Limits & Continuity, Partial Derivatives,Tangent Planes
6	14.5, 14.6, 14.7	Chain Rule, Directional Derivatives, Gradient, Extrema
7	14.8, 15.1, 15.2	Lagrange Multipliers, Double Integrals, Iterated Integrals
8	15.3, 15.4	Double Integrals over General Regions, Polor Coordinates
9	15.5, 15.6, 15.7	Applications, Triple Integrals, Cylindrical Coordinates
10	15.8, 15.9	Spherical Coordinates, Change of Variables

Coursework and Evaluation:
Homework will consist of written assignments taken from the exercises at the end of each section, and will be submitted via Enhanced Web Assign, as described above. The **first Midterm Exam** will be held **Friday April 24**, and the **second Midterm Exam** will be held **Friday May 22**. The **Final Exam** will be held on **Monday June 8**, from **12:00** to **3:00 pm.** Please make arrangements to be available at the appropriate times. Coursework will be weighted as follows:

Homework	10%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	40%

The grading scale for the class will be approximately: A+::97%-100%, A::93%-96%, A-::90%-92%, B+::87%-89%, B::83%-86%, B-::80%-82%, C+::76%-79%, C::70%-75%, D::60%-69%, F::0%-59%. Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.

Academic Honesty:
The Mathematics Department has a zero tolerance policy towards any incident of academic dishonesty. If cheating occurs, consequences within the context of the course may range from getting zero on a particular assignment, to failing the course. In addition to these sanctions, every case of academic dishonesty is referred to the students' college Provost, who sets in motion an official disciplinary process. Cheating in any part of the course may lead to failing the course and suspension or dismissal from the university.

What is cheating? In short, it is presenting someone else's work as your own. Examples include, but are not limited to, letting someone else do your homework assignment for you, copying another student's midterm or final exam, allowing your own work to be copied, or in any way facilitating the cheating of others. Although you may discuss problems with fellow students, your collaboration must be at the level of *ideas* only. Legitimate collaboration ends when you "lend", "borrow", or "trade" *written solutions* to problems, or in any way share in the act of *writing* your answers.

Please go to http://www.ucsc.edu/academics/academic_integrity/ to see the full text of the University's policy on Academic Integrity.