MATH 5B SYLLABUS

Instructor: John Cloutier
Office: South Hall 6431K
Office Hours: Monday - Thursday 2:30pm-3:30pm
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Course webpage: http://www.math.ucsb.edu/~john/math5b/

Textbook: *Vector Calculus* by Lovric

Course Description: This course is an introduction to the calculus of functions of several variables. In single variable calculus, one studies limits, derivatives, and integrals of functions $f : \mathbb{R} \to \mathbb{R}$. Vector calculus is similar, except in this class we will examine functions $f : \mathbb{R}^m \to \mathbb{R}^n$ (where m and n will usually be 1, 2, or 3). The generalization of calculus concepts to higher dimensions relies heavily on linear algebra, so you would do well to remember linear transformations and their matrices.

Topics we will cover will include: Dot and cross products and geometry in space, partial and total derivatives, gradients and directional derivatives, the chain rule, tangent planes, optimization problems and Lagrange multipliers, double and triple integrals, integrals of scalar and vector fields along curves and surfaces, Green's theorem, Stokes' theorem, and the Divergence theorem and their applications. Further topics may be discussed if time permits.

Homework: Homework for this class will be done via Webwork. You can access your webwork account at the following website:

http://homework.math.ucsb.edu/webwork2/Math5B-B1-M09-Cloutier/

You should receive an e-mail providing you with your username and password. You should change your password from the one you are given. Homework will be assigned possibly several times over the course of the week, but it will always be due on Monday at 11:00pm.

I will also on occasion hand out problem sheets to help you prepare for exams. Some of the problems from these sheets may find their way onto the actual exams.

Discussion Section Quizzes: You will have discussion section twice a week with your TA Rob. He will give you quizzes on occasion.

Exams: There will one midterm and a final exam. The dates for the exams are as follows:

- Midterm: Thursday, August 20
- Final: Thursday, September 10

Grading: The grades will be broken down as follows:

- Homework = 30%
- Quizzes = 10%
- Midterm = 20%
- Final = 40%