Multivariable Calculus

INSTRUCTOR Ron Buckmire $\sim$ Fowler 313 $\sim$ x2536 $\sim$ `ron@oxy.edu` $\sim$ **Buckmire2536**

OFFICE HOURS I am almost always in my office (Fowler 313) until at least 5pm. My official office hours for Fall 2005 are **MWF 2:30-3:30pm and TR 3-4p**.

I am readily accessible by e-mail at **ron@oxy.edu** and by phone at **323-259-2536** and AIM at **ProfBuckmire** or **MadProfessah** (add me to your buddylist!) If you need to see me at a time not specified here, then contact me and make an appointment and I'll be happy to meet with you then. If you don't interact with me on a 1-to-1 basis then you really aren't getting your (tuition) money's worth!

TEXTBOOK *Multivariable Mathematics*, (4th edition) by Richard Williamson & Hale Trotter. Published by Pearson/Prentice Hall, 2004.

WEBSITE `http://faculty.oxy.edu/ron/math/212/05/`

NATURE OF THE CLASS The material in the class will begin with a brief introduction to vectors, equations of lines and planes and a review of linear systems of equations and matrices. We shall then proceed through the textbook by going through Chapter 4 (Derivatives), Chapter 5 (Differentiability), Chapter 6 (Vector Differential Calculus), Chapter 7 (Multiple Integration), Chapter 8 (Integrals and Derivatives on Curves) and Chapter 9 (Vector Field Theory).

FORMAT OF THE CLASS I believe strongly in collaborative learning. This will be an integral part of the class. I predict that you will learn the most from the weekly quizzes and homework sets. I expect that every single student will have met with me in my office *at least* once and probably a dozen times, by the end of the semester. *Multivariable Calculus* is not a class that you can "do well" on your own.

We will be making use of the Mathematica computer algebra systems and other online web resources. I expect a lot of participation in class and will facilitate this through the use of daily class formats (worksheets), group work, in-class computer exercises, abbreviated lectures, take-home quizzes, online communication and COPIOUS homework!

GOALS OF THE CLASS The goals of the class are to extend your understanding of the Calculus to functions of more than one variable. In particular, by the end of the class you should be able to

- manipulate vectors, vector-valued functions and functions of vectors
- take partial derivatives of multivariable functions
- set up and evaluate double (and triple!) integrals
- understand and evaluate the gradient / divergence / curl of a given vector field
- appreciate and be familiar with "doing Calculus" in multiple dimensional space

among other skills. (i.e. This is not an exhaustive list!)

TESTS There will be **three (3)** exams in this course. To be precise, two tests and a final exam. The tests are scheduled for

- TEST 1: Friday, September 27, 2005
- TEST 2: Friday, October 16, 2005
- FINAL : Friday, December 5, 2005 (8:30am-11:30am)

Of course, these dates are subject to change (with at least one week's notice). It should be noted that students generally think that my tests are too hard.

QUIZZES There will be quizzes given every week. These quizzes will almost always be take-home, weekend quizzes given out on class on Friday to be handed in in class on Monday. When a quiz is distributed, it is due at the beginning of the next class. They will consist of relatively simple homework problems which you work on by yourself and will be a way in which you can assure yourself you are keeping up with the course. **Quizzes are to be completed alone and should be treated like mini take-home exams. LATE QUIZZES WILL NOT BE ACCEPTED**.

HOMEWORK Homework should be done in **pencil**. At the end of each week you will be given the homework problems for the next week. Homework will be due on Fridays at 5pm. You are **strongly** encouraged to work on the homework together. However, whatever you hand in must represent your own understanding of the material. Copying homework is cheating and will be dealt with accordingly. **Late homework will NOT be accepted.**

COURSE POLICIES Make-up tests will not be given except for compelling reasons which have been communicated to me well-in advance (i.e. at least 7 days) of the test date.

If you are late to a test, you will only be allowed the time remaining in which to complete your test.

Late homework or quizzes will not be accepted since the solutions are made available on the same day that they are collected in class.

This is not an exhaustive list of course policies.

GRADES Your course grade will be composed of the following:

- Two (2) Tests **30%**
- Final Exam **20%**
- Quizzes **20%**
- Homework **30%**

OTHER NOTES We will not have class on Monday September 5 (Labor Day), October 15-19 (Fall Break). I will let you know at least a week ahead of time if there may be other days that we will not have class.

ON-LINE MATERIALS I have set up a web page for the course, where the official version of this syllabus and all class materials will be available. The URL is `http://faculty.oxy.edu/ron/math/212/05/`. Also there is a class mailing list, which all students are on, at `math212-L@oxy.edu`.
In addition, we will be using the Blackboard online course management system where student can obtain acces to course documents and grade information, at `http://blackboard.oxy.edu`.