SYLLABUS

Calculus II, Fall, 2003

Instructor: James A. Davis   Office hours: MW 10:30-11:30; TTh 8:30-9:30
                206 Jepson Hall   or by appointment
                289-8094
                jdavis@richmond.edu
                http://www.mathcs.richmond.edu/$\sim$ jad

I. COURSE DESCRIPTION:

Math 212 is a continuation of a first year course in the calculus, with an emphasis on the integral, applications of integration to various geometric and physical problems (for example: areas, volume, work, center of mass), series, power series, and differential equations. The fundamental concepts of approximation and convergence play a key role in all of the topics. As in Math 211, both an analytic and geometric point of view is stressed, and students are expected to be able to translate back and forth between the two. Students in Math 212 will be expected to develop skills in formulating problems, solving them, and communicating their solution to others (usually in written form). Successful formulation of a problem often requires that the student recognize how the basic concepts of calculus are involved in the problem at hand, and be able to translate the problem into appropriate symbolic form. This process of formulation and solution helps students to develop analytical thinking skills applicable in a wide variety of situations. While students will need to develop a degree of proficiency with techniques for evaluating integrals and applying tests for convergence, the emphasis in the course will be on problems which require students to understand concepts and underlying principles, as opposed to merely implementing algorithms. Some problems are designed to have students construct and analyze mathematical models of real world phenomena, while other problems help students make conceptual leaps from specific examples to general principals.

Math 212 satisfies the Field of Study Symbolic Reasoning requirement of the General Curriculum. In addition, Math 212 is a University wide requirement for anyone seeking a Bachelor of Science degree. If you have any question regarding whether this is an appropriate course for you to be taking, please don't hesitate to come talk to me.

We will use the book Calculus concepts and context by Stewart. We will cover most of chapters 5 through 9, covering the following topics: techniques of integration (substitution, parts, tables, partial fractions, improper, numerical), applications of integration (geometry, physics, work), differential equations (slope fields, methods, integrating factors, applications), series and power series (Taylor series, radius of convergence, error estimates). We are assuming that you are familiar with the material in Chapters 1 through 4, including all derivative formulas, basic integration facts, and the Fundamental Theorem of Calculus.

II.   **GRADING:**   <u>Three hour exams</u> (100 pts each)   300 pts
                         Exam dates: 9/19, 10/24, 11/24
                         <u>Quizzes</u> (20 pts each)   100 pts
                         Approximately 7 quizzes will be given; your
                         score will be the sum of the best 5. No
                         make-up quizzes will be given for any reason.
                         <u>Homework grade</u>   100 pts
                         You will turn in weekly homework assignments
                         <u>Final Exam</u> (12/12 9-12 or 12/16 2-5)   <u>200 pts</u>

                         TOTAL   700 pts

        (NOTE: You can get 10 bonus points for attending a lecture sponsored by the math and computer science department)

III. <u>**ATTENDANCE:**</u> Attendance is expected. You are responsible for making up any work you miss if you are not in class. I reserve the right to punish serious abuse of privileges (I will warn you before I do so).

IV. <u>**ACADEMIC HONESTY:**</u> All work on tests and quizzes must be your own. Calculators are permitted on quiz and test days, but you are never permitted to share them (make sure that you bring one on quiz and test days!). I may restrict your use of certain functions on the calculator for certain problems. On homeworks, I want to encourage you to speak with fellow students about the problems. The important principle to keep in mind is that any solutions that you turn in must have been written by you. If I suspect that you are simply copying from someone else, I will warn you before taking honor council action.