Tentative Syllabus for SM332, Advanced Calculus II, Spring 2003-2004.
Text: Analysis with an Introduction to Proof, Steven R. Lay, 3rd edition, Prentice Hall
Instructor: Professor Mark Meyerson; Classroom: CH127

The course will cover Chapters 6-9 on Differentiation, Integration, Infinite Series, and Sequences and Series of Functions.
There will be 3 hour tests, a capstone project (with oral and written reports), and a final exam.

Prerequisites from last semester:
Thm 10.2 Induction
Cor. 17.5 A non-negative convergent sequence has a non-negative limit.
Thm. 20.8 A sequential version of function limit.
Example 20.11 Discontinuity of sin(1/x)
Thm 20.13 Linearity, etc., of limit.
Exercise 20.14 If f's limit at c is positive, then f is positive near c.
Thm 21.2d f is continuous at c iff the limit of f at c is f(c).
Example 21.5 Continuity of x sin(1/x)
Exercise 21.13 If f continuous and positive at c, then f is positive near c.
Cor 22.3 Extreme Value Theorem.
Exercise 22.13 About strictly monotone functions.
Theorem 23.5 Continuous on a closed and bounded set implies uniformly continuous.

Homework#1: Exercises 10.7, 17.18, 20.7b, 21.13(use def 21.1)

6. Differentiation
25. The Derivative. Exercises: 1,2,3,4,6,8,11,13,16a,b
26. MVT. Exercises: 1,2,3,5a,d,f,6,7,9,15,17,18,19
27. L'Hospital's rule. Exercises: 3a,e,g,h, 4a,c,9,12,13d
28 Taylor's Thm. Exercises: 4,5,6,7,10,11,13

7. Integration
29 Riemann integral. Exercises: 1,2,3,5,6,9,10,11,14,16a
30. Properties. Exercises: 1,4,5,7,9,10,11,12,15,19,20
31. FTC. Exercises: 3,4,5,8,13

8. Infinite Series
32. Convergence. Exercises: 2,3,4,5a,c,3,i,6,7,8,13
33. Convergence Tests. Exercises: 1,2,3abef,4a,5abeg,6,8,11,12,13,14,16,17
34. Power Series. Exercises: 1,2,3cdgh, 5ad, 10

9. Sequences and Series of Functions
35. Pointwise and Uniform Convergence. Exercises: 3,4,7,15,16,19def
36. Applications of Uniform Conv. Exercises: 1,2,4,5,6,11,13,14
37. Unif conv and power series. Exercises: 3,7,10,11ad,12ad,13,16