University of Notre Dame

Math. 165, Fall of 1996

Instructor:
Dr. Hong-Ming Yin.

Text Book:
Calculus, vol. 1 (second edition) by Tomm. Apostol.

Final Grade
Final Grade will be based on the following percentage:
Homework: 15%. There will be about 10 homework assignments.
Test 1: 15%, on Sept.26 from 11:00-12:00 a.m., at DBRT 318
Test 2: 15%, on Oct. 17 from 11:00-12:00 a.m., at DBRT 318
Test 3: 15%, on Nov. 21 from 11:00-12:00 a.m., at DBRT 318
Final Exam.: 40%, Time and place will be announced later.

Sections Covered: See Attached material A.

Daily Progress: See Attached Lecture numbers and titles.

Comments on the text book:

(1) In general, the textbook is very good and could be used in future.

(2) The definition of integral is good, but students have hard time to understand how to use step functions to approximate a rather simple function such as $y = x^n$. It needs one full lecture to derive the formula

$$\int_a^b x^n dx = \frac{b^{n+1} - a^{n+1}}{n+1}, n \neq -1.$$

The same problem occurs for *sine* and *cosine* functions.

(What I did is to assume the formulas, then use fundamental theorems to derive these formulas, since it is much easy to derive the derivative formula for x^n).

(3) I suggest that in Chapter 5, one may give an alternative definition for integrals (i.e. partition, summation and taking limits). My experience indicated that with two definitions the students have better understanding of definite integrals.

(4) The students in this class generally have no trouble to find basic limits, derivatives, integrals etc. Most students can do very complicated calculations. The $\varepsilon - \Delta$ definition is still a very difficult topic to students. But after one semester, most students understand the proofs. ¿From the test and homework, I found that most students were able to carry out proofs.

(5) As I taught Math.365-Math 366 before, I feel that some of good students in my class felt that the math365-math366 have similar contents to Math165-Math166. It would be a good idea to choose a textbook for Math365-366 with less repeated contents to the first year calculus.