

## Math 110. Applications of Calculus

**Instructor:** Professor Alexander Hahn.

**Office:** Computer Center and Mathematics Building, Room 370.

**Request:** On Wednesday January 21 please turn in the following on one page with your name in capital letters: a good Xerox copy of a photograph (e.g. 3 by 5) of yourself, a list of all the college level math courses you have had, and some convenient time slots at which we can schedule office hours.

**Text:** Chapters 9–11 and parts of 14 of the Notes *Basic Calculus: From Archimedes to Newton to its Role in Science*. These notes will be available in the bookstore.

### Examinations:

**Quizzes:** One quiz every 2 weeks. Normally two problems (one of which will usually be routine and the other more challenging)

**Midterm:** Wednesday, March 4 (in class)

**Final:** In the week of May 4–8 (details to be announced)

**Note:** The University Honor Code applies to all of the above.

**Homework:** There will be a problem set due every Friday with the final write up to be turned in on the following Monday. The problems will be discussed on Friday (usually the most difficult ones, for which hints will be given) and I will ask for volunteers to present solutions on the board. Such presentations will receive extra credit (depending on their quality). The homework will be subject to the following rules (to which the Honor Code applies): Until Friday's class you are to work on the homework on your own, but thereafter you are encouraged to collaborate. However, on Monday you can only submit what you fully understand and everything that you submit must be your own work and write up.

**Grade Determination (Roughly):** Final Exam 30%, Midterm 20%, Quizzes 30%, Homework 20%.

### Topics:

From Engineering:

Preliminaries: Basic facts about Differentiation,  
Basic facts about Forces and Tensions.

Topics: A Problem from De L'Hospital's Calculus Text.  
The Suspension Bridge.

From Science:

Preliminaries: Basics about the exponential and logarithm functions.

Topics: Nuclear Clocks and What They Tell Us.  
Growth in Biology.

From Engineering:

Preliminaries: Review of Integration and Graphing, Work and Energy.

Topics: Interior Ballistics.

The Springfield Rifle.