MATH 11B
Calculus with Applications
Fall 2007

Description: Starting with the fundamental theorem of calculus and related techniques, the integral of functions of a single variable is developed and applied to problems in geometry, probability, physics, and differential equations. Polynomial approximations, Taylor series, and their applications conclude the course. Students cannot receive credit for this course and course 19B or Economics 11B.

Prerequisites: Course 11A or AP Calculus AB exam score of 4 or 5, or BC exam score of 3 or higher, or IB Mathematics Higher Level exam score of 5 or higher.

Time and Place: MWF 2:00 – 3:10 Thimann Lecture 3
Class Webpage: http://ic.ucsc.edu/~ptantalo/math11b/Fall07

Instructor: Patrick Tantalo (http://www.soe.ucsc.edu/~ptantalo/)
Office: E2 257
Office Hours: TTh 1:00 – 4:00 pm, and by appointment
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Teaching Assistant(s): to be determined

Required Text: *Calculus for Biology and Medicine,* second edition, by Claudia Neuhauser. Pearson Prentice Hall, 2004. The following reading schedule is a rough guide to what we will discuss and when. Several sections listed below (6.3.5, 7.7.3, 8.3.1-3) are considered optional, and will be covered lightly, or may be skipped. The remaining sections will be covered in full detail.

Week	*Sections*	*Topics*
1	5.8.1, 6.1.1-3, 6.2.1	Antiderivatives, Definite Integrals, Fundamental Theorem of Calculus
2	6.2.2-3, 6.3.1	Applications of Integration, Cumulative Change
3	6.3.2-3, 6.3.5	Average Values, Rectification of Curves
4	7.1.1-2, 7.2.1	Techniques of Integration, Indefinite Integrals, Integration by Parts
5	7.3.1-2, 7.4.1-3	Integration of Rational Functions, Improper Integrals
6	7.6.1, 7.7.1-2	Tables of Integrals, Taylor Approximations
7	7.7.3	Error Estimates
8	8.1.1-3, 8.2.1	Differential Equations, Allometric Growth, Stability
9	8.2.2-4, 8.3.1	The Levins Model, The Allee Effect
10	8.3.2-3	Systems of Differential Equations, An Epidemic Model

Coursework and Evaluation:
Homework will consist of written assignments taken from the exercises at the end of each section, and will be turned in discussion sections. The **first Midterm Exam** will be held **Friday October 26**, and the **second Midterm Exam** will be held **Friday November 16**. The **Final Exam** will be held on **Thursday December 13**, from **8:00** to **11:00 am.** Please make arrangements to be available at the appropriate times. Coursework will be weighted as follows:

Homework	20%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	40%

The grading scale for the class will be approximately: A+::97%-100%, A::93%-96%, A-::90%-92%, B+::87%-89%, B::83%-86%, B-::80%-82%, C+::76%-79%, C::70%-75%, D::60%-69%, F::0%-59%. Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.

Academic Honesty:
The Mathematics Department has a zero tolerance policy towards any incident of academic dishonesty. If cheating occurs, consequences within the context of the course may range from getting zero on a particular assignment, to failing the course. In addition to these sanctions, every case of academic dishonesty is referred to the students' college Provost, who sets in motion an official disciplinary process. Cheating in any part of the course may lead to failing the course and suspension or dismissal from the university.

What is cheating? In short, it is presenting someone else's work as your own. Examples include (but are not limited to) copying another student's written homework assignment, midterm exam, or final exam, allowing your own work to be copied, or in any way facilitating the cheating of others. Although you may discuss problems with fellow students, your collaboration must be at the level of *ideas* only. Legitimate collaboration ends when you "lend", "borrow", or "trade" *written solutions* to problems, or in any way share in the act of *writing* your answers. If you do collaborate (legitimately) or receive any form of help from anyone, you must credit them by placing their name(s) at the beginning of your assignment.

Please go to http://www.ucsc.edu/academics/academic_integrity/ to see the full text of the University's policy on Academic Integrity.