Math 113—Fall 2007 Syllabus

Summary: The primary goal of the course is to give students a wide variety of perspectives on the idea of a "derivative", one of the two main concepts in calculus. Our perspectives will range from conceptual (how is it defined, when does it exist, etc.) to the computational (how can I compute the derivative of my favorite function, both on paper and using a calculator or computer). We will especially focus on applications: what the derivative tells us about various functions, and how it is used to solve problems in physics, economics, and other fields.

Instructor: Rob Manning, rmanning@haverford.edu

Office: KINSC H207, 896-1210

Meetings: 10:30–11:30 AM MWF

Discussion Sections: Times to be determined; attendance highly encouraged. Discussion sections will devote the first 30 minutes to students solving a problem or two in collaborative groups (problems will be on the same themes as that week's homework problems), and the remainder of the hour will be devoted to questions on that week's homework (we will not solve problems to completion, but will hopefully get you "over the hump" so you can finish the remainder of each problem on your own.

Office Hrs: To be announced

Text: "Calculus: Single Variable", by Hughes-Hallett et al, 4th edition (Wiley, 2005)

Homework: Problem sets most weeks due on Fridays; see tentative schedule on back.

Tests: There will be two tests on 10/1–10/3 and 11/5–11/7. Each test will have two parts: a self-scheduled part that will be distributed on the Monday and due at the beginning of class of the Wednesday, and then an in-class part taken on Wednesday. There will be a self-scheduled final exam (during final exam period).

Grades: The semester's grade will be based on:

Homework : 15% (lowest dropped)
Midterm Tests (2): 25% each
Final Exam: 35%

Late homework: Because of the volume of homework grading that is required, and the difficulty of grading straggling late homework, I will not be able to grade late homework, so please hand in whatever you have finished on the due date so that you may get credit for it. I will be posting homework solutions, and I would be happy to go over any questions you have about problems you had trouble with.

Honor Code: For the homework, I encourage you to work in groups and/or to speak with me, but the final write-up should be yours alone. Please indicate on your homework who your collaborators were. What you turn in should reflect your personal understanding of the problems, so make sure you write them individually without referring to detailed notes from your collaborative work (and certainly not copied verbatim from anyone else's work). For all tests, no collaboration is allowed.

Blackboard: The class Blackboard page will contain all handouts, HW assignments, and HW solutions.

Anticipated Schedule

Week	**Material** (with corresponding text section)
9/3–9/7	A survey of functions (1.1–1.4)
9/10–9/14	Function survey con't, intro to limits (1.5, 1.6, 1.8)
9/17–9/21	The derivative (2.1–2.2)
9/24–9/28	More on the derivative (2.3–2.4)
10/1–10/5	TEST # 1 (on Wed. 10/3), Second Derivatives (2.5)
10/8–10/12	Computing derivatives (3.1–3.3)
10/15–10/19	FALL BREAK
10/22–10/26	Chain Rule (3.4–3.6)
10/29–11/2	Implicit Functions, Linear approximation (3.7, 3.9)
11/5–11/9	TEST # 2 (on Wed. 11/7), Theorems about differentiable functions (3.10)
11/12–11/16	Applications: curve sketching (4.1–4.2)
11/19–11/21	Applications: optimization (4.3), THANKSGIVING BREAK (Fri 11/23)
11/26–11/30	Applications: optimization con't (4.5), economics (4.4)
12/3–12/7	Applications: related rates, L'Hopital's Rule (4.6, 4.7)
12/10–12/14	Applications: parametric curves (4.8)
12/17–12/21	FINAL EXAM (self-scheduled, during final exam period)