Math 115—first half of Fall 2008   Syllabus

Summary: The primary goal of the course is to give students an understanding of the idea of infinite series, a concept of infinity harking back to the ideas of limit at the beginning of calculus. In addition, we will consider the theme of "approximation", including the theory and application of Taylor series and polynomials.

Instructor: Rob Manning, rmanning@haverford.edu

Office: KINSC H207, 896-1210

Office Hrs: W 1:30-3, Th 10:30-12, 1-3

Readings: We will be using excerpts from two different books, available as PDFs on Blackboard: two sections from "Calculus: Single Variable", by Hughes-Hallett et al, 4th edition (Wiley, 2005) and a chapter from "Calculus", by Stewart, 6th edition (Brooks-Cole, 2007).

Homework: Problem sets most weeks due on Fridays (except first HW due on Mon. 9/8); see tentative schedule on back.

Challenge Problems: On each HW, there will be one "challenge problem" using the ideas from that HW. Unlike regular HW, you may not collaborate with anyone on challenge problems, although you may ask me for hints and guidance. You may submit as many solutions to the challenge problem as you want, up until the last day of the course (10/24), incorporating my corrections, hints, etc.; your final grade on the problem will be largest grade of all your submissions. You only need to do 3 of the 5 challenge problems (if you do more, I'll count your top 3 toward the course grade).

Tests: There will be a midterm term due Fri. 9/26 (self-scheduled, distributed on 9/24). There will be a final exam due Fri. 10/24 (Part I is self-scheduled, distributed on 10/22, due in class 10/24; Part II taken in class 10/24). Both tests will be closed-book.

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

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Homework : 20%
Challenge Problems : 5%
Midterm Test: 30%
Final Exam: 45%

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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 will get credit for it. I will post homework solutions, and I would be happy to go over any questions you have about problems you had trouble with.

Homework rewrites: For any problem in which you get 3/5 or lower, you may rewrite your solution and hand it in. Your final HW grade for that problem will be the average of the original score and the score for your rewrite. **You may not use my solution set in doing a rewrite.** Rewrites for HW # 1-3 are due by 9/26 (the day of the midterm). Rewrites for HW # 4-5 are due by 10/24 (the day of the final).

Honor Code: For the homework (but not the challenge problems), 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 and the challenge problems, no collaboration is allowed.

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

Anticipated Schedule

Week	Material (with corresponding text section)
9/3–9/5	Improper Integrals (Hughes-Hallett 7.7–7.8)
9/8–9/12	Sequences and infinite series (Stewart 12.1–12.2), HW # 1 due 9/8, HW # 2 due 9/12
9/15–9/19	Convergence tests for series of positive terms (Stewart 12.3–12.4), HW # 3 due 9/19
9/22–9/26	Convergence tests for mixed-sign series (Stewart 12.5–12.6), MIDTERM due 9/26
9/29–10/3	Power series (Stewart 12.8–12.9), HW # 4 due 10/3
10/6–10/10	Taylor series (Stewart 12.10–12.11), HW # 5 due 10/10
10/13–10/17	FALL BREAK
10/20–10/24	Fourier series (material not on final exam), FINAL (Part I due 10/24, Part II taken in class on 10/24)

Math 116—second half of Fall 2008   Syllabus

Summary: This course will focus on a few key ideas in probability, mostly for discrete systems, but also briefly for continuous systems. The textbook (and the course) structures this material around questions from games and gambling, although the range of applications is much broader than this. In fact, probability is the language of statistics and data analysis across the natural and social sciences.

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Textbook and Other Reading: The main textbook (available in the campus bookstore) is Packel, Edward, "The Mathematics of Games and Gambling", 2nd edition, Mathematical Assocation of America (2006). Toward the end of the course, we will use a few sections from "Probability and Statistics" by Richard Devore (available from the course Blackboard page).

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

Challenge Problems: On each HW, there will be one "challenge problem" using the ideas from that HW. Unlike regular HW, you may not collaborate with anyone on challenge problems, although you may ask me for hints and guidance. You may submit as many solutions to the challenge problem as you want, up until the last day of the course (12/12), incorporating my corrections, hints, etc.; your final grade on the problem will be largest grade of all your submissions. You only need to do 3 of the 5 challenge problems (if you do more, I'll count your top 3 toward the course grade).

Tests: There will be a midterm term due Fri. 11/21 (self-scheduled, distributed on 11/19). There will be a final exam during the final exam period (using the registrar's "self-scheduled" exam system). Both tests will be closed-book.

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

> Homework : 20%
> Challenge Problems : 5%
> Midterm Test: 30%
> Final Exam: 45%

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 will get credit for it. I will post homework solutions, and I would be happy to go over any questions you have about problems you had trouble with.

Homework rewrites: For any problem in which you get 3/5 or lower, you may rewrite your solution and hand it in. Your final HW grade for that problem will be the average of the original score and the score for your rewrite. **You may not use my solution set in doing a rewrite.** Rewrites for HW # 1-3 are due by 11/21 (the day of the midterm). Rewrites for HW # 4-5 are due by 12/12 (the last day of classes).

Honor Code: For the homework (but not the challenge problems), 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 and the challenge problems, no collaboration is allowed.

Blackboard: The class Blackboard page will contain all HW assignments and HW solutions, along with occasional other material.

Anticipated Schedule

Week	**Material** (with corresponding text section)
10/27–10/31	Probability by Counting, Expectation (Packel, Ch. 2), HW # 1 due 10/31
11/3–11/7	Backgammon and other dice games (Packel, Ch. 3), HW # 2 due 11/7
11/10–11/14	Permutations & Combinations (Packel, Ch. 4), HW # 3 due 11/14
11/17–11/21	Binomial Distribution (Packel, Ch. 5), Midterm due 11/21
11/24	The Normal Curve (Packel, Ch. 5), No class on 11/26 or 11/28 for Thanksgiving
12/1–12/5	Continuous Probability (Devore, Ch. 4.1–4.3), HW # 4 due 12/5
12/8–12/12	Other Topics (Packel, Ch. 6 and 7), HW # 5 due 12/12
12/15–12/19	Final Exam during finals period