

Math 317—Fall 2011

Syllabus

Instructor: Rob Manning, rmanning@haverford.edu

Office: KINSC H207C (down a half-floor from the main math dept space), 896-1210

Office Hours: M 2-3:30 PM (and 7-9 PM in MQC), T 12-2 PM, W 1:30-3 PM, Th 2-3:30 PM, or arrange another time with me.

Text: “Understanding Analysis”, Abbott, (Springer, 2001)

Moodle: Assignments and solution sets (and perhaps other stuff) will be posted on Moodle.

Discussion Sections: M 12:30-2 PM or M 5:30-7 PM, both in meeting rooms (TBA) in the DC. Get food through the line (or see me if you’re not on a meal contract). First portion of discussion section will be practice problems to help you assess and develop your understanding of the week’s material. Then I’ll field questions about the week’s HW, not working through full solutions, but trying to point you in the right direction.

Homework: Problem sets due Wednesdays by 4 PM most weeks (give to me in class or leave in drop box outside by office).

Solo Problems: On most HW assignments, there will be one question designated as a “solo problem”. No collaboration is allowed on solo problems (while it is encouraged for the other problems—see below). You may only ask me for help on solo problems, and I will only give a limited range of advice.

Homework Rewrites: For any HW problem on which you receive a grade of 8/10 or lower, you may submit a rewritten version of the problem, due one week after you get the HW back. If you do, your final grade for the problem will be the average of the original grade and the rewrite grade. Please submit the original problem along with the rewrite.

Late homework: I will grade late HW subject to a 25% grade penalty (no penalty in cases of pre-requested extensions for a good reason), up until the corresponding solution set is posted to Moodle.

Tests: Instead of HW on 10/2 and 11/6, there will be a test due. Each test will have two parts: Part I (\approx 90 minutes, self-scheduled, closed-book) covers basic definitions, True/False with short explanation, etc.; Part II (take-home, open-book) typically consists of 4–6 examples and proofs. There will also be a third test during the final exam period of the same format.

Grades:

Homework : 25%

Tests (3): 25% each

Collaboration: For homework problems other than solo problems, discussion with other students in the class or with me is encouraged. It is your responsibility to figure out what mode of collaboration works best for you, e.g., do you work on problems by yourself first before talking with a group and/or do you peel away from your group at some point once you've gotten a key idea. **You should work in groups of no more than 4 at a time;** it is my sense that in a group larger than that, some members of the group are not getting the understanding out of the problems that they need to in order to succeed.

You should write up your solutions individually, without using notes from collaborative discussions, so that you can be sure that it represents your personal understanding of the problems. **When you write down a solution to a problem, put away any notes from your collaborative discussions and move away from any blackboard where such notes may be present.** Try to write down the solution based on your understanding of the problem. If you can not do so, then you haven't really understood the solution, so you should throw away your draft and try again (at this point, it is probably smart to ask me for help). I recognize that this process can be burdensome, but it seems to me the only way to be sure that you've understood the key ideas of HW.

For the tests and solo problems, no collaboration is allowed.

Anticipated Schedule by week:

8/29–9/2	Definition of the real numbers, completeness, supremum/infimum 9/5: No class on Labor Day
9/7–9/9	Consequences of completeness
9/12–9/16	Cardinality, limit of a sequence
9/19–9/23	Properties of limits, Monotone and Cauchy convergence theorems
9/26–9/30	Subsequences, Infinite series
10/3–10/7	Infinite series (con't) 10/5: Test # 1 due (on material 8/29–9/26)
10/10–10/14	Fall break
10/17–10/21	Open and closed sets
10/24–10/28	Compat and connected sets
10/31–11/4	Baire's Theorem, Functional limits
11/7–11/11	Continuity, properties of continuity 11/9: Test # 2 due (on material 9/28–10/31)
11/14–11/18	Uniform continuity, Sets of discontinuity
11/21	Differentiation 11/23–11/25: Thanksgiving Break
11/28–12/2	Differentiation (con't)
12/5–12/9	Revisiting definition of \mathbb{R} , generalizations to metric spaces Test # 3 during final exam period (on material 11/2–12/5)