Math 301 – Real Analysis – Course Policies

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OFFICE HOURS:	Posted on webpage **And by appointment** (Really!)
TEXT:	*Understanding Analysis, 2nd Edition* by Stephen Abbott

Overview

We will delve into the wonders of the real line and explore some of the surprising ways that our intuition can lead us astray when considering properties of the real numbers and continuous and differentiable functions. We will focus not only on the amazing, rich content of analysis but also on understanding the need for rigorous, precise mathematical exposition.

This is going to be a really fun semester!

Goals for a 300-level Mathematics Course

Real Analysis plays an important role in your mathematical development and in the math curriculum at Wheaton. There are several primary objectives of any upper-level math course at Wheaton. In particular, by the end of this semester you should:

- Be able to write a concise, precise proof, including recognizing when an argument is complete or when further justification is needed.
- Be able to formulate a rigorous mathematical statement precisely.
- Be willing to approach a problem even if you do not know whether or not it will be successful. If it doesn't work out, try another!
- Appreciate the necessity of rigorous mathematical arguments.
- Continue in your development from being a *consumer* of mathematics to being a *producer* of mathematics.

Goals Specific to Real Analysis

Much of the mathematical content we will study this semester can be motivated by:

> "How do we take intuitive ideas that we understand very well and
> make them more precise and rigorous?"

Specifically, you should gain a deeper understanding of:

- The properties that distinguish the integers, the rational numbers, and the real numbers.
- What it means for two sets to have the same cardinality, or size, and how infinite sets may have different cardinalities.

- The rigorous definition of a limit and how to apply it in various concepts.
- The difficulty of forming precise definitions of continuity and differentiability based on our intuitive understanding of these concepts.
- The strong connections between differentiability and integrability.

Expectations

One of the features that makes your Wheaton education so special is that we have face-to-face time in small classes to explore material together. You should look at the Tentative Daily Syllabus on the course webpage and read the section from the text before each class. You will probably not completely understand all of the content from this first reading, but the class meetings will be much more valuable if you are already familiar with some of the basic ideas. The class meetings are not intended to be a complete encapsulation of the course material, but instead they will focus on the major concepts and clarifying the more subtle ideas in the course.

You should expect to put in at least 3 hours outside of class for each hour in class. In other words, expect to spend a minimum of 9 hours per week on Real Analysis outside of class. There will be some weeks where you spend more time, and there may be some weeks where you spend slightly less.

The Honor Code

We operate under the Honor Code for all of your academic work at Wheaton. This carries certain freedoms and responsibilities for both you as a student and me as a professor. I take this quite seriously.

Most likely, no Honor Code issues will arise this semester. If you are uncertain about whether a particular situation falls under the Honor Code, then please consult with me. However, if an Honor Code issue does come up, I will assume that you are prepared for the full consequences. Remember that you should write out, and sign, the following statement on all course work:

"I have abided by the Wheaton College Honor Code in this work."

Evaluation

Your final grade will be determined by

Two In-Class Exams	35%
Comprehensive Final Exam	20%
Problem Sets	40%
Book Review	5%

Exams

The two exams during the semester will be given in the evening so that you are not constrained by the 50 minute class period. See the Tentative Daily Schedule on the course webpage for the dates of the exams. The comprehensive final exam will be given during the scheduled exam period.

Problem Sets

You will have a Problem Set due most Friday mornings at 9:30 a.m. at the beginning of class. The Problem Sets will alternate between Group and Individual assignments. You will work on the Group Problem Sets in groups of two that I assign, and each group will turn in a single paper. There are more details about the logistics of the Problem Sets on the course webpage.

I will not accept any late Problem Sets with one exception: I will allow you to turn in *one* Individual Problem Set late during the semester. You do not need to give me any justification, but you must inform me via email before the homework is due that you intend to take advantage of your one late assignment. The late assignment is due at 3:00 pm on the following Monday.

Book Review

The motivation for this assignment is that there are a lot of really interesting expository books about mathematics, and as part of your general education, you should develop the habit of reading them. This is an opportunity to learn about a mathematician or area of mathematics that you might not be exposed to otherwise. I'll give you a handout in a few weeks that describes the project in detail.

Class Attendance

Although class attendance is not a specified percentage of your grade, I will keep a class roll to help me determine borderline grades at the end of the semester. If you do miss class, you are responsible for the material that was covered.

Getting Help with Real Analysis

Please come see me during my office hours! If you have a conflict and cannot make my office hours, please email me and we can set up an appointment for another time.

Accommodations for Students with Disabilities

Wheaton is committed to ensuring equitable access to programs and services and to prohibit discrimination in the recruitment, admission, and education of students with disabilities.

Individuals with disabilities requiring accommodations or information on accessibility should contact Abigail Cohen, Assistant Dean for Accessibility and Assistive Technology at the Filene Center for Academic Advising and Career Services, cohen_abigail@wheatoncollege.edu or (508) 286-8215.

Campus Counseling Center

The Counseling Center is a confidential resource on campus for all students, providing short term solution focused therapy, case management, emergency services and support. This year the Counseling Center is open Monday – Fridays from 8:30 am to 4:30 pm. Students can call (508) 286-3905 or stop by 42 Howard Street, the white building between Beard and Art Haus, to make an appointment or seek emergency services during office hours.

Counseling Center staff is available to support students with a wide range of challenges including, but not limited to, anxiety, depression, sleeping and eating concerns, identity exploration, substance use and concentration challenges. The Center welcomes any student to come and have a discussion regarding what their needs are, and the Center will help with next steps of care, whether here on campus, or locally off campus. Outside of office hours, mental health concerns and emergencies should be directed to the Area Coordinator On Call via calling Public Safety at x3333 or (508) 286-3333.