NSC 336
REAL ANALYSIS
FALL 2017

Credits: 4
Level: Intermediate
Class time and room: TF 1:30 – 2:50 Sci 217
Instructor: Kaethe Minden, `kminden@marlboro.edu`
Course webpage: `http://cs.marlboro.edu/courses/fall2017/real_analysis/home`

Text: Abbott, Stephen. *Understanding Analysis*.

Blurb: Real Analysis is the study of the real number system and functions of a real variable. In this course we look at how the real numbers are built and put the results developed in the Calculus sequence on a more rigorous footing. More importantly, we'll probe the limits of what the tools of Calculus can do, meeting lots of exotic examples that test and stretch our intuition (and hence provide motivation for the aforementioned rigor).

 Each class will consist of three parts. In the beginning of class, we will typically discuss the current section of the book and questions from the previous class. This might involve short writing prompts, or brief quizzes. Then I will introduce topics and ideas in the second part of class. Finally, the end of each class will be focused on problem solving. The hope is to get to the proof of the Fundamental Theorem of Calculus, chapter 7 of the book.

 For the homework, aim for 60 problems total, at least two from each of the sections. You can turn homework in at any time, and revisions are accepted. By the date that Midterm evaluations are due, you need to have turned in at least 10 problems. There will also be a final project, which should be chosen from one of the project sections of the book (of particular interest, I think, are 1.5: Cantor's Theorem, 3.5: Baire's Theorem, 4.6: Sets of discontinuity, 5.4: A continuous nowhere-differentiable function, 8.2: Metric Spaces and the Baire Category Theorem, 8.4: A Construction of $\mathbb{R}$ from $\mathbb{Q}$). We might choose to cover these topics in class, and limit projects to section 8. So choose your project section early.

 This is a four credit course. This means you should be expecting to spend about 12 hours each week, including class time, working on the material.

Grading: Homework will be worth 60% and the final project will be worth 40% of the overall average. If attendance and class participation are a problem I will bump down your grade one letter grade.

What now: Obtain a copy of Abbott's book (there's also one on reserve at the library). Read the preface. Think about what you would like to work on for your project, from one of the sections listed in the preface.