

MATH 113: ANALYSIS I: COMPLEX FUNCTION THEORY

Instructor: Will Boney

Class Location: SC 222

Class Time: TR 2:30-4:00pm

Textbook: Marsden and Hoffman, **Basic Complex Analysis**, 3rd ed.

Instructor's Office: Science Center 238

Course Website: <http://www.math.harvard.edu/~wboney/113/>

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| Tuesday | 4:00-5:00pm |
| Wednesday | 10:00-11:00am |
| Friday | 12:00-1:00pm |

1. COURSE DESCRIPTION

The goal of complex analysis is to extend the notions of analysis to the complex numbers \mathbb{C} . Topics covered include:

- complex differentiability and entire functions
- Cauchy's Integral Formula and the calculus of residues
- Laurent series
- applications to real analysis

1.1. **Prerequisites:** A background in real analysis (Math 23, 25, or 112) and familiarity with proofs. I also assume you've seen the complex numbers before, and can calculate i^2 .

1.2. **References:** The textbook is Marsden and Hoffman, **Basic Complex Analysis**, 3rd ed. Additional (and free!) resources are listed on the website.

2. POLICIES

The website goes into more detail on several of these items.

2.1. **Problem Sets.** Every week, we will have homework due on Wednesday in class. Homework will be assigned in class and posted to the course website. At the latest, the assignments will be posted when you turn in the previous ones. Late homework will not be accepted. However, you are given two 'grace' assignments that can be turned in up to one week late.

I encourage you to collaborate with classmates. We will be covering some hard material, and often quickly. Discussing these concepts with other students is one of the best ways to get to the heart of the matter. Math Night is an excellent venue for this. Additionally, I will be putting you into small groups for the first three assignments. It is not required that you do anything with these groups, but I will

give you extra credit on these assignments if you spend at least 1 hour working together.

In order to encourage you to learn from your mistakes (one of the most important skills), you are able to resubmit assignments for up to half of the points back. These resubmissions should be clean rewrites (rather than marking up the initially submitted work) and are due a week after you get the graded assignment back.

I want you to learn how to type your assignments using LaTeX. There is a scaling requirement of how many of your problem set problems must be type each semester detailed on the website, as well as some resources to get you started.

As for doing the homework, the work that goes into the answer, rather than just the answer, is the most important part. Thus, all problems require justification. Failure to give justification will result in no credit for the problem. Not providing enough justification will also result in lost points.

2.2. Readings. Each week, there will be a reading from Marsden and Hoffman that should be done by the start of that week.

2.3. Exams. There will be two exams: a take-home midterm and an in-class final on Thursday, May 10 2:00-5:00pm. The midterm is tentatively scheduled for the weekend after spring break.

2.4. Percentage Breakdown.

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| Homework | 50% |
| Midterm | 20% |
| Final | 30% |

2.5. Accessibility. I'm happy to accommodate any modifications suggested by the Accessible Education Office (AEO). Please be sure to provide me with the introductory letter as soon as possible.

2.6. Academic Integrity. I expect students at all time to follow Harvard's Honor Code and practice academic integrity. I understand that the line between collaboration and plagiarism can be murky on problem sets, but the following is a good (and oft quoted) rule of thumb: working together is fantastic, but you should always be able to separate and right up your solutions individually. If you have any questions, please don't hesitate to ask.