

# MA424.01 Spring 19: Complex Analysis Syllabus



12:00 MWF 305 Knott Hall

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**Class webpage:** (<http://math.loyola.edu/~loberbro/ma424/index.html>)

**Piazza:** (<https://piazza.com/loyola/spring2019/ma4240119sp/home>)

**Moodle:** (<http://moodle.loyola.edu>)

**Office Hours:** 10-11 MWF. Also by appointment (see my schedule (<http://math.loyola.edu/~loberbro/scheduleS19.html>))



I reserve the right to make changes to the syllabus at any time during the term by announcing them in class and on the webpage. You are responsible for knowing not only what is discussed/announced in class but also what is posted on Piazza website.

## Prerequisites

MA351: Calculus III.

## Course Description

Geometry of complex numbers, complex functions, analytic functions, harmonic functions, contour integration, Cauchy's Integral Formula, Laurent series, residue theory, conformal mappings.

## Learning Goals

By the end of the course, one should understand the complex number system and calculus with complex functions. The majority of the time will be spent on the basics of complex numbers, functions (complex, analytic, and harmonic), and differentiation and integration of these functions including Cauchy's Integral formula. As time allows we will learn about Laurent series, residue theory and conformal mappings. In addition, this course follows the broader University Learning Aims and the Natural and Applied Sciences Learning Aims.

## Text

Required: *Complex Variables*, 2nd Edition by Stephen D. Fisher.

## Grading

### Based on:

Homework

Exams\*

\*2 in-class and final. Highest exam is worth 25%, lowest worth 15%

40%

15, 20, and

25%

### Basic Scale:

A 90-100%

B 80-89%

C 70-79%

D 60-69%

F 0-59%

I give +/- grades, the cutoffs being at the 7's and 3's, respectively. Thus 80-82.9 = B-, 83-86.9 = B, 87-89.9 = B+.

## Homework

This course will emphasize problem solving and writing; thus homework is the most important aspect of the course. You must show all of your work clearly -- NO WORK = NO CREDIT. Assignments will consist of exercises from the book and additional exercises or computer problems that are assigned. They will be posted on Piazza. They will be collected every week unless told otherwise (adjustments to the exact sections are due that week may be announced the class period before). Of the set of problems turned in on an assignment, I will choose a handful to correct and give feedback. **The homework will be time consuming so do not procrastinate. The lowest homework score will be dropped in calculating your final grade.**

## Late Homework

Each homework set is worth 40 points. I will dock 4 points on any late homework. I will not accept any late homework one week beyond the due date.

## Exams

There will be 2 in-class exams during the term. They are tentatively scheduled on Monday, February 18 and Wednesday, March 27. Other information about the exams will be announced in class as each exam approaches.

## Final Exam

The final exam is cumulative and is on **Friday, May 10 at 9 AM.**

## Honor Code

All students of the University are expected to understand the meaning of the Loyola University Honor Code (<http://www.loyola.edu/academics/honor-code>). Ignorance of the Code is not a valid reason for committing an act of academic dishonesty. The following constitute violations of the Code and are defined in the Community Standards Handbook: cheating, stealing, lying, forgery, plagiarism and the failure to report a violation.

**As it pertains to this course:** I expect and encourage you to work with others on homework (**by collaborating, not copying!**). However, you must write and understand the work that you turn in and you may not share written solutions before they are turned in. If you learn how to solve a problem by talking to a classmate, looking it up in a book or on the internet, you should cite the source in your homework write-up, as you would for a literature paper. As stated above, you may not discuss homework redos with each other. I will ask you to sign a pledge on exams but not on all assignments although I will expect the same honesty on all of them. Any questions or concerns should be directed immediately to me.

## Extra Credit:

Do not count on extra credit in this course to boost your grade. I make it a policy to not give extra credit on an individual basis so do not ask for it, especially at the end of the semester.

## Classroom Etiquette:

When you come to class, I expect you to not only be in attendance physically but also mentally. That means no cell phones, no leaving class during lecture, no extraneous chatter, etc. If you know you must leave class, sit by the door to minimize the disruption. If cell phones and texting become a problem, I will confiscate the phone.

The goals of this course are best accomplished when in a setting of mutual respect. The study of mathematics does not usually lead to much controversy. That being said, we must all work to provide a safe environment that is conducive to learning. All are welcomed and encouraged to actively participate in the learning of analysis, regardless of gender, race, nationality, native language, sexual orientation, gender identity, political ideology, and especially personal mathematical history. Any student who feels she or he is experiencing a hostile environment should speak to me immediately.

## Student Athletes:

If you are a student athlete, please provide me with your travel and game schedule indicating when you will need to miss class to participate in athletic events. While travel for athletics is an excused absence, you will need to make up any missed work. Absences only on the travel letter will be accommodated.

## Students Needing Accommodations:

If you are registered with the Disability Support Services Office (DSS) and wish to discuss academic accommodations, please contact me as soon as possible. If you have a learning disability that has not been documented, you may contact the Disability Support Services Office (410-617-2602) for assistance.

## GENERAL SUGGESTIONS:

- This course will test your study and time management skills. The **homework WILL be time consuming** so DO NOT put off the homework until the night before they are due. I cannot and will not give extensions on these due dates.
- Participate in class, ASK QUESTIONS, **stop by my office**. If you get behind or stuck, see me or work with other students RIGHT AWAY.
- This course will be much more enjoyable if you form a study group with others in the class. You may work together on homework but everyone must join in and work.
- READ THE BOOK. Lectures will be much more understandable. It will be important to READ the book, not just look at the highlighted boxes because I will not be able to cover all of the details or show nearly enough examples in class.
- If you think you'll need extra help, get it as soon as possible. Do not wait until right before an exam! There are tutoring services available -- some are FREE.