Syllabus – MATH 6120: Complex Analysis
Spring 2026

Lecture: Tue, Thur 1:25pm - 2:40pm

Instructor:
Benjamin Dozier
Email: `benjamin.dozier@cornell.edu`
Office: Malott 507
Office hours: Tue, Wed 4-5pm

TA/Grader:
Colby Kelln
Email: `ck765@cornell.edu`
Office hours: Wed 1:00-2:30pm and 3:20-3:50pm, in Malott 416.

Prerequisites:
Strong performance in an undergraduate analysis course at the level of MATH 4140, or permission of instructor. [I'd suggest taking MATH 4180 instead of this course if you're an undergraduate who's never taken complex analysis before.]

Texts:

- Required: *Complex Analysis*, by Stein and Shakarchi

- Also useful: McMullen's notes:

  https://people.math.harvard.edu/~ctm/papers/home/text/class/harvard/213a/course/course.pdf

Course Description:
We will start with a rapid review of basic complex analysis, including: complex differentiability, Cauchy-Riemann equations, contour integration, Cauchy's theorem, maximum modulus principle, Taylor and Laurent series, Residue theorem, Möbius transformations.

We will then cover more advanced topics, which may include: Schwarz Lemma, conformal mapping, Riemann mapping theorem, normal families, Schwarz-Christoffel formula, Weierstrass infinite products, the Gamma function, elliptic functions.

Homework: Weekly homework assignments will be the most important part of the course. You may, in fact are encouraged to, work on the problems with other students. You must write up your solutions in your own words, either (i) electronically, or (ii) by hand (legibly), and then scan them (legibly). I strongly suggest you limit the use of resources beyond the course materials, such as other books, AI, etc.

All homework will be submitted on Gradescope. We have configured it to accept submissions up to 2 hours after the deadline. Your submission will be marked late, but there will be no penalty. After these 2 hours have passed, —no further submissions will be accepted by Gradescope. You will be granted a single 48 hour extension that you can use on one homework assignment of your choice – to use this, you must email our TA Colby Kelln **before** 11:59pm on the day it is due to let her know.

Your lowest score will be dropped (even if it is zero).

Presentations and discussion section: Part of the course will involve you researching a topic related to complex analysis that is not covered in lecture, and then presenting on it. The weekly discussion sections will be focused on this, and you will give a substantial presentation in section in the latter part of the semester. Attendance and participation in discussion section is required, and will be part of your course grade (you may miss 2 sessions without penalty).

Prelim and Final: There will be one in-class written prelim held during lecture session.
Date: **Thur, March 5**.

There will be a written final during finals week in the registrar's allotted slot for this class.
Date: **TBA**, Room: TBA.

Grading:

- Homework: 30%. The lowest score will be dropped (even if it is zero).

- Presentation: 10%

- Attendance/participation in discussion section: 5%. You may miss 2 sessions without penalty.

- Prelim: 20%

- Final: 35%