

MATH 470/570 (CRN 45116/45117)

Complex Analysis I

Winter 2014

M, W, F 9:00–9:50, Room NH 343

Instructor: Prof. Gerardo Lafferriere

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Office Hours: M 10:00–11:30, W 10:00–11:00 and 3:30–4:30, F 10:00–10:30 (or by arrangement)

D2L: All course handouts and some additional materials will be posted on D2L (Desire-to-Learn, the online platform). Please check the site regularly for updates.

General Description: This course is an introduction to the standard theory of functions of a single complex variable. It is aimed at students in mathematics, the physical sciences, and engineering who are taking complex analysis for the first time. As such it is designed to accommodate various educational backgrounds. A core prerequisite is Multivariable Calculus. The theory of complex functions is much richer than that of real functions and has proven influential in many areas of mathematics, physics, and engineering. Some applications include heat conduction, Laplace transforms, the Gamma function, and an elegant proof of the fundamental theorem of algebra. The main topics to be covered include (among others) complex numbers, analytic functions, Cauchy-Riemann Equations, Cauchy's theorem, Cauchy's integral formula, Taylor and Laurent series, the residue theorem, and conformal mappings.

Textbook: *Basic Complex Analysis, 3rd edition* by J. Marsden and M. Hoffman, Freeman. A student guide with solutions to many problems is available but optional. We will cover most of Chapters I through IV. Not every topic or every section will be covered. Some sections may be covered only lightly.

Grading: The grade will be based on homework assignments (30%), a mid-term exam (30%), and a final exam (40%).

Homework: A problem set will be assigned about once a week for grading purposes. Late homework will receive *half the credit* if turned in by the following class and *no credit* after that. You are also expected to read the upcoming section from the book before class. While you are encouraged to discuss problems with others, the homework assignment is individual work.

Exams: The tests will be closed-book and without calculators. Tests must be taken on the scheduled dates: **Midterm on Friday, February 14** and **Final on Tuesday, March 18 (notice the final exam is from 8:00 to 9:50)**. Make-ups will not be allowed unless proper justification is presented.

Other: If you have a disability that requires special accommodations please notify the instructor immediately to arrange needed support. You should be registered with the Disability Resource Center.