MATH 520, Complex Analysis
(Spring 2024)

Lecture: 39734R, MWF 2–2:50 PM, KAP-134, Dr N Haydn

Textbook: *Complex Analysis*, Lars Ahlfors, McGraw-Hill (3rd edition)

Office Hours: M: 3–5PM, W: 3–4PM, or by appointment (ext. 04293), KAP-444D

Rough Course Outline

Complex numbers
Complex functions (Cauchy-Riemann equations)
Conformal maps
Cauchy's theorem and formula
Liouville's theorem
Fundamental theorem of algebra
Harmonic functions (Poisson's formula)
General Dirichlet problem (with subharmonic functions)
Residues
Argument principle (open mapping theorem, Rouché's theorem)
Meromorphic functions (Mittag-Leffler partial fraction decomposition)
Entire functions (Weierstrass product decomposition, Jensen's formula)
Normal families
Riemann mapping theorem
Conformal mapping of polygons (Schwartz-Christoffel formula)

Assignments, Mid-term, Exam

(i) Assignments will be announced at the end of each lecture and will consist of the text sections and problems covered. The homework will be collected and graded. It will count 30% of the final grade.

(ii) There will be one mid-term exam which amounts to 30% of the final grade.

(iii) The final exam takes place on Monday 6 May, 2–4 PM. It amounts to 40% of the term grade.