MATH 555
Theory of Functions of a Complex Variable, Spring 2025

Instructor: Özcan Yazıcı

Course Description:
Basic properties of analytic functions: Cauchy theory, power series, analytic continuation,
Singularities: Laurent series, classification of singular points, Residue theorem
Zeros of analytic functions: argument principle, Rouch e's theorem, Hurwitz's theorem, open mapping theorem
Global properties of analytic functions: Schwarz lemma, conformal mappings, Riemann mapping theorem, reflection principle
Compact families of functions: Montel and Picard theorems. Approximation theorems: Runge theorem, Mittag-Lefler theorem, infinite products,

Textbook Complex Analysis, by T. Gamelin, Springer-Verlag, New York, Inc., 2001. We will cover most of the chapters II-XIII.

Other reference books:
David Ullrich, Complex Made Simple, AMS.

John B. Conway, Functions of One Complex Variable.

L.V.Ahlfors, Complex Analysis, McGraw Hill (1966).

S.G.Krantz, Complex Analysis : The Geometric Viewpoint, MAA (1990).

Exams and Grading: Midterm 30% , homework 30% (Late hw will not be accepted) , final exam 40%
Attendance Policy: Students must attend to the lectures regularly.