



**Catalog Description:**

Introduction to analytic functions of a complex variable, integral theorems, power series, residues, conformal mapping.

**Prerequisite:**

C- or better in 2153, 2162.xx, 2173, 2182H, or 4182H; or credit for 254.xx, 263.xx, 263.01H, or 264H.

**Exclusions:**

Not open to students with credit for Math 5522H, 552 or 514.

**Purpose:**

This course provides a comprehensive introduction to complex analysis, emphasizing applications that are useful in science and engineering.

**Text:**

*Complex Variables and Applications*, 8<sup>th</sup> edition, by Brown & Churchill, published by McGraw-Hill, ISBN: 9780073383170

**Topics List:**

Complex numbers, polar form (Ch. 1)  
Analyticity, Cauchy-Riemann equations (Ch. 2)  
Elementary functions (Ch. 3)  
Cauchy integral theorem and consequences (Ch. 4)

*Midterm 1*

Power series (Ch. 5)  
Residues and poles (Ch. 6)  
Applications of residues (Ch. 7)  
Mapping by elementary functions (Ch. 8)  
Conformal mappings (Ch. 9)

*Midterm 2*

Applications of conformal mappings (Ch. 10)  
Schwarz-Christoffel transformation (Ch. 11)  
Poisson integral, Dirichlet problem (Ch. 12)