

Catalog Description:

Theoretical treatment of complex analysis.

Prerequisite:

C or better in 5520H or permission of department.

Text:

Vary, for example:

- An Introduction to Complex Function Theory, by B.P. Palka
- <u>Elementary Theory of Analytic Functions of One or Several Complex Variables</u>, by H. Cartan
- <u>Complex Analysis</u>, 2nd edition, by Bak-Newman
- <u>Complex Analysis with Applications</u>, by Silverman

Topics List:

- 1. Complex numbers, Riemann's sphere. Complex functions, elementary functions, Möbius transformations.
- 2. Holomorphic functions, Cauchy-Riemann equations.
- 3. Line integrals. Cauchy's integration theorem and its consequences.
- 4. Harmonic functions.
- 5. Sequences and series of holomorphic functions. Power series, analytic functions.
- 6. Isolated singularities, meromorphic functions, the calculus of residues.
- 7. Conformal mappings, the Riemann mapping theorem.
- 8. Geometric principles.
- 9. Mittag-Leffler's and Weierstrass's expansions of meromorphic functions.
- 10. Analytic continuation, Riemann surfaces.
- 11. Applications to number theory, geometry, physics.