

COMPLEX VARIABLES

MATH 4270/8276

Course Description:

Differentiation, integration, and power series expansions of analytic functions, conformal Mapping, residue calculus, and applications. **3 credits**

Prerequisites:

MATH 3230/8325 or equivalent

Overview of Content and Purpose of the Course:

This is a standard first course in complex variables, designed to give the student a basic knowledge of functions of a complex variable and some of their applications.

Major Topics:

1. Complex numbers
2. Analytic functions
3. Exponential, logarithmic, and trigonometric functions
4. Complex integration
5. Power series
6. Residues and poles
7. Mapping by elementary functions
8. Conformal mapping and applications

Methods:

The presentation is by lecture with recitation and discussion. Numerous problems are assigned. Graduate students will be required to do additional, more challenging problems not required of undergraduate students.

Textbook:

Staff, Edward B., and Arthur D. Snider. *Fundamentals of Complex Analysis with Applications to Engineering, Science, and Mathematics*, 3rd ed. London: Pearson, 2003.

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