

Math 543 Complex Variables II

MWF 10AM, 147 Altgeld Hall

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This course explores geometric aspects of complex function theory.

Material covered leads to current research in geometric function theory, and provides tools in geometric analysis, potential theory and PDEs.

Topics include

- Conformal Mappings - distortions, level sets and boundary values.
- Subharmonic Functions - Dirichlet Problem, Green function, and Picard Theorem.
- Harmonic Measure and Applications.
- Module of Curve Families and Extremal Domains.
- Quasiconformal Mappings - geometric and analytic definitions, Beltrami equations, Beurling-Ahlfors extensions.

Prerequisites. Math 542 or consent of the instructor.

Texts. None required. Material selected from the following:

- L.Ahlfors, Conformal Invariants-Topics in Geometric Function Theory.
- W.H.J.Fuchs, Topics in the Theory of Functions of One Complex Variable.
- J.Garnett and D.Marshall, Harmonic Measure.
- O.Lehto, First Chapter (Quasiconformal Mappings) of Univalent Functions and Teichmüller Spaces.

Books are on reserve in the Math Library.