Topics in Several Complex Variables (Math 689 proposal for fall 2005)

Harold P. Boas

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This course addresses various aspects of the contemporary theory of multi-dimensional complex analysis. The proposed topics are the following.

1. Integral representations and applications
    a) Bochner-Martinelli integral
    b) Cauchy-Fantappiè forms
    c) Bergman and Szegő integrals
    d) Cauchy integral for convex domains
    e) Hartogs phenomenon via integrals
    f) Integral solutions of the $\overline{\partial}$-equation
    g) Tangential Cauchy-Riemann equations
2. Holomorphic mappings
    a) Classification problem of domains
    b) Boundary behavior of biholomorphic maps
    c) Automorphism groups of domains
    d) Invariant metrics; Wong-Rosay theorem
    e) Approximate Riemann mapping theorems
    f) Proper holomorphic maps
    g) Automorphisms of $\mathbb{C}^n$; Jacobian conjecture

Grades will be based on class participation. Math 618 is the prerequisite course.