

# Several Complex Variables

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## The course

This course is an introduction to the theory of functions of several complex variables. The emphasis is on the part of the theory that intersects with analysis and with partial differential equations.

Here are some of the topics that will be discussed (although not in linear order).

- Multi-variable power series
  - Reinhardt domains
  - domains of convergence
  - the Hartogs phenomenon
  - entire functions
- Integral representations
  - Cauchy integral
  - Bochner-Martinelli integral
  - Bergman kernel function
- Notions of convexity
  - linear convexity
  - polynomial convexity
  - holomorphic convexity
  - pseudoconvexity
- Levi problem
- $\bar{\partial}$  problem
- Holomorphic mappings

**Prerequisites** You should have some acquaintance at the first-year graduate level with both real analysis and (one-variable) complex analysis. The official prerequisites for this course are Math 608 and Math 618.

**Venue** The course meets 9:35–10:50 on Tuesday and Thursday in room 121 of Thompson Hall.

**Web site** The course web site is <http://www.math.tamu.edu/~boas/courses/650-2005a/>

**Textbook** There is no required textbook. The following books will be on reserve in the library with a three-day check-out period.

- H. Grauert and K. Fritzsche, *Several complex variables*, Springer-Verlag, 1976; QA331 .G69.
- Lars Hörmander, *An introduction to complex analysis in several variables*, second edition, North-Holland, 1973; QA331 .H64 1973.
- Steven G. Krantz, *Function theory of several complex variables*, second edition, American Mathematical Society, 2001; QA331.7 .K74 2001.
- Raghavan Narasimhan, *Several complex variables*, University of Chicago Press, 1971; QA331 .N29.
- R. Michael Range, *Holomorphic functions and integral representations in several complex variables*, Springer-Verlag, 1986; QA331 .R355 1986.

## Grading

Grades will be based on class participation.

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### The instructor

The instructor is Dr. Harold P. Boas. Office hours are in 202 Milner Hall, 11:00–12:00 on Tuesday and Thursday; also by appointment. The office telephone number is (979) 845-7269, and the email address is [boas@tamu.edu](mailto:boas@tamu.edu).

### Other information

#### **Americans with Disabilities Act Statement from the Department of Student Life**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the office of Services for Students with Disabilities at the Department of Student Life in Cain Hall (telephone 845-1637, web site <http://studentlife.tamu.edu/ssd/>).

#### **Academic Integrity Statement from the Aggie Honor System Office**

The Aggie Honor Code states: “An Aggie does not lie, cheat or steal, or tolerate those who do.” Information about the Honor Council Rules and Procedures may be found at the web site <http://www.tamu.edu/aggiehonor/>.