Mathematics 960 - Functional Analysis
Spring 2006

- **Instructor**: Professor Atanas Stefanov
- **Office**: Snow 615, Phone: 4-3009
- **Office Hours**: By appointment.
- **Web**: stefanov@ku.edu
  http://www.math.ku.edu/~stefanov
- **Prerequisite**: Math 646 or higher, Math 810 or consent of the instructor.
- **Goals**: To expose students to the techniques of the modern theory of functional analysis with applications arising in the theory of optimizations and partial differential equations.
- **Topics**:
  - Hanh-Banach theorem and applications (Chapters 3 and parts of 4)
  - Hilbert and normed linear spaces, Banach spaces (Chapters 5 and 6, brief introduction)
  - Weak and Weak* topologies on Banach spaces and applications. (Chapters 10, 11, parts of Chapter 12).
  - Bounded linear operators (Chapter 15 and parts of 16)
  - Commutative Banach algebras and (analytic) functional calculus (Chapters 17, 18, 19)
  - Compact symmetric operators in Hilbert space (Chapters 28, 29).
  - Spectral theory of Symmetric, normal and unitary operators (Chapter 31).
  - Semigroups of operators and applications to PDE’s (Chapters 34, 36).
- **Homework**: There will be three homework assignments covering specific portions of the material.
- **Final Exam**: There will be a take home final exam, which will take the form of a project.