

## Math 501 – Applied Analysis II

**Course Description from Bulletin:** Bounded Linear Operators on a Hilbert Space; Spectrum of Bounded Linear Operators; Linear Differential Operators and Green's Functions; Distributions and the Fourier Transform; Measure Theory, Lebesgue Integral and Function Spaces; Differential Calculus and Variational Methods. (3-0-3)

**Enrollment:** Elective for AM and other majors.

**Textbook(s):** John Hunter and Bruno Nachtergaele, *Applied Analysis* (Corrected reprinting, 2005), World Scientific, ISBN 9810241917.

**Other required material:**

**Prerequisites:** MATH 500 or consent of the instructor

**Objectives:**

1. Students will learn basic methods and theory in fundamentals of analysis.
2. Students will focus on those parts of modern analysis that are most useful in applications.
3. Students will improve their problem solving skills in analysis.
4. Students will improve their presentation and writing skills.

**Lecture schedule:** 3 50 minutes (or 2 75 minutes) lectures per week

**Course Outline:**

	Hours
1. Bounded Linear Operators on a Hilbert Space	8
2. The Spectrum of Bounded Linear Operators	6
3. Linear Differential Operators and Green's Functions	8
4. Distributions and the Fourier Transform	6
5. Measure Theory, Lebesgue Integral and Function Spaces	8
6. Differential Calculus and Variational Methods	6

<b>Assessment:</b>	Homework	10-30%
	Computer Programs/Project	10-20%
	Quizzes/Tests	20-50%
	Final Exam	30-50%

**Syllabus prepared by:** J. Duan, J. Frank and A. Lubin

**Date:** March 22, 2006