Math 501 – Applied Analysis II

Course Description from Bulletin:
Bounded Linear Operators on a Hilbert Space; Spectrum of Bounded Linear Operators; Fourier Series; Linear Differential Operators and Green's Functions; Distributions and the Fourier Transform; Differential Calculus and Variational Methods.

Enrollment: Elective for AM and other majors.

Textbook(s): *Applied Analysis*, by John Hunter and Bruno Nachtergaele (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	7
3. Fourier Series	6
4. Linear Differential Operators and Green's Functions	8
5. Distributions and the Fourier Transform	7
6. Differential Calculus and Variational Methods	6

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

Syllabus prepared by: I. Cialenco, J. Duan, X. Li
Date: March 01, 2015