

# Math 500 – Applied Analysis I

## Course Description from Bulletin:

Measure Theory and Lebesgues Integration; Metric Spaces and Contraction Mapping Theorem, Normed Spaces; Banach Spaces; Hilbert Spaces.

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

## Textbook(s):

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

*Real Analysis for Graduate Students*, Richard F. Bass, CreateSpace, 2014. ISBN: 978-1502514455.

## Other required material:

**Prerequisites:** MATH 400 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. Measure theory and Lebesgue Integral	10
2. Metric spaces and Normed Spaces	8
3. Continuous Functions, and Contraction Mapping Theorem	6
4. Banach Spaces	9
5. Hilbert Spaces	9

<b>Assessment:</b>	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