

## MATH 400 – Real Analysis

**Course Description from Bulletin:** Real numbers, continuous functions; differentiation and Riemann integration. Functions defined by series. (3-0-3)

**Enrollment:** Required for AM majors

**Textbook(s):** Stephen D. Abbott, *Understanding Analysis*, Springer-Verlag, 2001, ISBN 0-387-95060-5.

OR Gerald Bilodeau and Paul Thie, *An Introduction to Analysis*, McGraw-Hill

**Other required material:** None

**Prerequisites:** Math 251

### Objectives:

1. Students will learn to understand basic statements and be able to write basic proofs according to principles of quantificational logic.
2. Students will understand thoroughly and precisely the concept of “limit” in its various forms.
3. Students will be able to prove using delta and epsilon that a given function is continuous.
4. Students will learn to show whether a given series converges or diverges.
5. Students will learn to construct examples illustrating properties of sequences and functions.

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

### Course Outline:

	Hours
1. Basic properties of real numbers	5
2. Limits	8
3. Sequences	8
4. Continuous functions	5
5. Integration	5
6. Series	6
7. Sequences and series of functions	5
8. Introduction to more general space	2

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

**Syllabus prepared by:** Jeffrey Duan and Art Lubin

**Date:** 12/15/05 (updated 8/19/07)