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): Gerald Bilodeau, Paul Thie and G.E Keough, *An Introduction to Analysis*, 2nd ed., Jones & Bartlett
or Robert G. Bartle and Donald R. Sherbert, *Introduction to Real Analysis*, 3rd ed., Wiley

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: Three 50 minute (or two 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

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

Syllabus prepared by: Jeffrey Duan and Art Lubin
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