

MATH 412 Introduction to Analysis I

1. Catalog Description

MATH 412 Introduction to Analysis I

4 units

Prerequisite: MATH 306.

Introduction to concepts and methods basic to real analysis. Topics such as the real number system, sequences, continuity, uniform continuity and differentiation. 4 lectures.

2. Required Background or Experience

Math 306, completion of a calculus sequence which includes functions of several variables, and sufficient mathematical maturity.

3. Learning Objectives

Students should:

- a. Re-emphasize and obtain a deeper understanding of the definition of function in the context of this course.
- b. Obtain an understanding of the limiting processes basic to functions of a single variable. This understanding will make much of the literature of mathematics accessible, and will provide a deeper insight into computational processes with which students are somewhat familiar.

4. Text and References

See course supervisor. Suggested texts include:

- Bartle, Rudin or Goldberg.
- Fundamental Ideas of Analysis, Reed.

5. Minimum Student Materials

Paper, pencils, and notebook.

6. Minimum University Facilities

Classroom with ample chalkboard space for class use.

7. Content and Method

- a. The real number system
- b. Sequences
- c. Topology of \mathbb{R}^1
- d. Continuity and uniform continuity

e. Differentiation

8. Methods of Assessment

Comprehensive final exam, mid-term exams or quizzes, homework.