

MATH 414 Introduction to Analysis III

1. Catalog Description

MATH 414 Introduction to Analysis III

4 units

Prerequisite: MATH 413.

Continuation of Introduction to Analysis II covering such topics as differentiation and integration of functions of several variables and other advanced topics. 4 lectures.

2. Required Background or Experience

Math 412.

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 and several variables. 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.

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. Topology of \mathbb{R}^n
- b. Differentiation in \mathbb{R}^n
- c. Integration in \mathbb{R}^n
- d. Inverse and implicit function theorems

8. Methods of Assessment

The primary methods of assessment are: essay examinations, quizzes and homework. Typically, there will be one or more hour-long examinations during the quarter, and a required comprehensive final examination. Students are required to show their work and are graded not only on the correctness of their answers, but also on their understanding of the concepts and techniques.