

MATH 413, 414 Introduction to Analysis II, III (4) (4)

1. Catalog Description

MATH 413, 414 Introduction to Analysis II, III (4) (4)

A continuation of Introduction to Analysis I covering such topics as integration, infinite series, uniform convergence and functions of several variables. Highly recommended for students planning to enter graduate programs or secondary teaching and those interested in applied mathematics. 4 lectures. **MATH 413** prerequisite: MATH 412 or consent of instructor. **MATH 414** prerequisite: MATH 413.

2. Required Background or Experience

Math 412.

3. Learning Objectives

Students should re-emphasize and obtain a deeper understanding of the definition of function in the context of this course. Additionally, students should 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. Typical text choices are ones by 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

1. Integration on \mathbb{R}^1
2. Sequences and series of functions
3. Uniform convergence
4. Improper integrals
5. Topology of \mathbb{R}^n
6. Differentiation in \mathbb{R}^n
7. Integration in \mathbb{R}^n
8. Inverse and implicit function theorems

8. Methods of Assessment

Homework and examinations.