

MATH 440 Topology I

1. Catalog Description

MATH 440 Topology I

4 units

Prerequisite: MATH 412. Co-requisite: MATH 481.

Introduction to general topological spaces with emphasis on surfaces and manifolds. Open and closed sets, continuity, compactness, connectedness. Quotient spaces. 4 lectures. Not open to students with credit in MATH 540.

2. Required Background or Experience

Math 412 and concurrent enrollment in or completion of Math 481.

3. Learning Objectives

The student should:

- a. Develop facility with basic topological spaces and surfaces.
- b. Be able to define and use the concepts of continuity, compactness, and connectedness.
- c. Understand and be able to construct spaces using the quotient topology.

4. Text and References

To be chosen by the instructor.

5. Minimum Student Materials

Paper, pencils and notebook.

6. Minimum University Facilities

Classroom with ample chalkboard space for class use.

7. Content and Method

Topic

- a. Introduction to topological spaces, including product, metric and quotient spaces
- b. Continuity
- c. Compactness and connectedness
- d. Separation Axioms
- e. Fundamental group
- f. Classification of Surfaces

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.