

MATH 441 Topology II

1. Catalog Description

MATH 441 Topology II

4 units

Prerequisite: MATH 440.

Introduction to general topological spaces with emphasis on surfaces and manifolds. Fundamental group. Triangulations of spaces, classification of surfaces. Other topics may include covering spaces, simplicial homology, homotopy theory and topics from differential topology. 4 lectures. Not open to students with credit in MATH 541.

2. Required Background or Experience

Math 440. Math 304 recommended.

3. Learning Objectives

The student should:

- a. Be able to define and use the fundamental group.
- b. Develop facility with triangulations of surfaces.
- c. Understand the classification of surfaces.

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

Content

Topic

- a. The fundamental group
- b. Triangulations
- c. Classification of surfaces, Euler characteristic
- d. *Optional*: Introduction to simplicial homology

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.