

Minnesota State University Moorhead

MATH 581: Introduction to Topology

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course is an exploration of the beginnings of topology. The majority of the course will focus on point-set topology and the very end will discuss some topics of Algebraic topology. We will discuss topologies, bases, separation axioms, separable spaces, second countable spaces, compactness, functions and continuity, quotient spaces, connected spaces, metric spaces, and the classification of two-manifolds.

B. COURSE EFFECTIVE DATES: 01/08/2021 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Topologies, bases, separations axioms, separable and 2nd countable spaces, compact spaces, continuous functions, homeomorphisms, open and closed maps, connected spaces, metric spaces, 1 and 2 dimensional manifolds and classification theorems

D. LEARNING OUTCOMES (General)

1. Use the definition of a topology to describe different qualities of a topological space.
2. Use your knowledge of a topological space to understand concepts that define spaces, like separation, countable bases, compactness, etc.
3. Use your knowledge to create new topological spaces from old by considering subspaces, product spaces, and quotient spaces.
4. Define and prove that functions from one space to another are continuous, open, closed, or bijective.
5. Show that a space is connected and how connected spaces can be used to create other connected spaces.
6. Use a metric on a space to define a topology and determine qualities of that topological space.
7. Understand the classification of one and two-manifolds.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted