ELEMENTARY TOPOLOGY

MATH 4610/8616

Course Description:

This course covers topological spaces, connectedness, compactness, homotopy of paths, covering spaces, and fundamental groups. **3 credits**

Prerequisites:

MATH 1960 with a C- or better and MATH 2230 with a C- or better, or permission of instructor.

Overview of Content and Purpose of the Course:

This course will equip students with the basic knowledge of point set topology and introduces them to several topics in algebraic topology. Students will learn basic definitions, study the proofs of the standard theorems and solve problems. Students will study many different topologies e.g. metric topologies, finite compliment topologies, product topologies and quotient topologies. Students will explore connected and compact spaces including homeomorphisms between them. Students will learn definitions and basic properties of homotopy, covering spaces and how they relate to homeomorphisms. Lastly, students will explore the isomorphism between fundamental groups induced by a homeomorphism.

Anticipated Audience/Demand:

This course is primarily for Mathematics majors.

Major Topics:

1) Topological spaces

2) Connectedness and compactness

3) Homeomorphism

4) Fundamental Groups

Methods:

This course will be presented by lectures, exams, homework exercises, and class discussions.

Student Role:

Students should be active readers, attend and participate in class discussions, and be fully engaged with their homework problems.

Textbook:

Munkres, James R. *Topology, 2nd ed*. Upper Saddle River: Prentice Hall, 2000.

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