Math 637.600  
Topology II  
Course Information

Course Description and Goals
From the catalog: set theory, topological spaces, generalized convergence, compactness, metrization, connectedness, uniform spaces, function spaces.

This is the second semester of a one year course designed to provide a modern introduction to Topology. The entire full-year course is broadly divided into three parts: General Topology, an introduction to Differential Topology, and an introduction to Algebraic Topology.

In General Topology, we cover the basic notions of topological spaces and subspaces and their basic attributes, including a selection of these topics:

- Connectivity and connected components, separation and countability axioms
- Quotient spaces, nets and convergence, compactness and local compactness, products, Tychonoff theorem, metrization theorems
- Paracompactness and basic notions in homotopy theory

In Differential Topology, we cover basic notions in the theory of differentiable manifolds including a selection of these topics:

- Examples, vector fields and tangent bundles
- Sard’s theorem
- Immersions and submersions
- Embedding theorems
- Transversality and Pontryagin-Thom theory

In Algebraic Topology, we study the basic notions of algebraic techniques in topology, include a selection of these topics:

- Fundamental group and classification of covering spaces
- Homology and cohomology theories and their axioms
- CW-complexes and cellular homology
• Classical applications including the Borsuk-Ulam theorem, Generalized Jordan curve theorem, and Lefschetz-Hopf index.

In this second semester, we will spend most of our time on algebraic topology, but there will be applications from both general and differential topology.

Prerequisite: Approval of the instructor.

Instructor and Class Information
Jon Pitts
Office: MILN 312
Email: j-pitts@tamu.edu
URL: http://www.math.tamu.edu/~jon.pitts/
Class meets MWF 10:20–11:10 in BLOC 155.
Office hours are TBA.
Students with disabilities can get assistance from the Office of Services for Students with Disabilities (845-1637).

Text

Basis for Grading
Semester grades will be determined on the basis of classwork (including both homework and class participation), (at least one) major examination, and a final exam, all equally weighted. Problem sets will be assigned periodically and graded. Class participation, in the form of meaningful questions, answers, proofs, constructions, and discussion, is required. Makeups are subject to university policy.

Course grades will be awarded on the following basis:

A – Excellent performance in all aspects of the course.
B – Satisfactory completion of all course requirements.
C – Passing.