MATH 4510, INTRODUCTION TO TOPOLOGY, FALL 2010

Classroom:	LCB 225	**Time:** MWF 10:45 – 11:35, and problem session Tuesdays as needed
Instructor:	Domingo Toledo	
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Office:	JWB 324	**Phone:** (801) 581-7824
Office Hours:	Mon, Tues 11:50–12:40, or by appointment.	
Web-page:	`http://www.math.utah.edu/~toledo/4510.html`	
Prerequisites:	Math 3220. (Concurrent) Math 5320 could help.	
Textbooks:	Bert Mendelson, *Introduction to Topology*, Third Edition. John Stillwell, *Geometry of Surfaces*.	

Course Description: This course is the first half of a one year sequence, the second half being Math 5520, which I will teach in the Spring. The year sequence is an introduction to topology and geometry. The first semester covers general (point-set) topology, while the second semester gives an introduction to algebraic topology. The two semesters also give an introduction to differential geometry, particularly to what are called the constant curvature geometries, or geometries with many isometries. In the first semester we will discuss Euclidean and spherical geometry, in the second semester we will discuss hyperbolic geometry. All these concepts are illustrated and unified by their application to surfaces. We will study the classification of surfaces, both from the topological and geometric points of view, and we will see how the two points of view are related.

Over the year we should cover these broad topics:

- Basic concepts of topology.
- Topology of surfaces, classification of surfaces.
- Fundamental group of a topological space, applications.
- Covering spaces, applications.
- Euclidean, spherical and hyperbolic geometry.
- Geometry of surfaces.

The first semester will cover the following basic concepts of topology and geometry:

- Metric spaces, isometries, Lipschitz mappings.
- Surfaces as metric spaces.
- Groups of isometries of the plane and sphere.

- Topological spaces and continuous mappings.
- Construction of topological spaces, identification topology.
- Compact spaces, connected spaces.
- Surfaces as identification spaces.

You can take the first semester without going on to the second. But the first semester will be a prerequisite for the second.

The textbook by Mendelson will be used the first semester, the one by Stillwell will be used both semesters. The textbooks will be supplemented by online references and some notes.

Homework: I will be assigning homework problems to be collected roughly every two weeks. As the semester goes on, we will decide how many problem sessions to have on Tuesdays.

Exams: There will be two midterm exams on September 29 and November 10, and a comprehensive final exam on Tuesday, December 14, 10:30–12:30.

Grading:	Homework , drop lowest 2:	35 %
	Midterm Exams:	40 %
	Final Exam:	25 %

Important dates: Last day to drop (delete) classes: Wednesday, September 1. Last day to add classes: Tuesday, September 7. Last day to withdraw from classes: Friday, October 22.

ADA: The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, cognitive, systemic, learning, and psychiatric disabilities. Please contact me at the beginning of the semester to discuss any such accommodations you may require for this course.