# Math 6400, 8400 Syllabus Fall 2009

**Space-Time:** Health Sci and Human Services 2603 MWF 1-1:50pm

**Instructor:** Mao-Pei Tsui

**Office Hours:** UH2080B M 2:00-4:00pm, W 2:00-4:00pm, F 2:00-3:00pm

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**Homepage:** http://www.math.utoledo.edu/∼mtsui/

**Class Web Site:** http://www.math.utoledo.edu/∼mtsui/top09f/top09f.html

**Text:** *Introduction to Topological Manifolds (Graduate Texts in Mathematics Vol 202) (Paperback) by John M, Lee*

**Prerequisites:** *MATH 5450 or equivalent.*

**General description:** *Topology is the study of shape and space in their most abstract forms, in which all the inessential ideas like distances, lengths, angles, areas, and volumes have been stripped away, and only a notion of nearness remains (and a very abstract one, at that). Topological ideas provide a foundation for many other branches of mathematics, as well as for many of its applications such as those in physics, computer science, graphics, biology, optimization, and engineering. In this course, you will learn to use the most important tools that are needed for asking and answering topological questions. Since the course will focus on understanding and writing proofs, it will also help you develop your skill at mathematical reasoning and writing. Specifically, this course will cover the following topics: Metric spaces, topological spaces, continuity, convergence, subspaces, product spaces, quotient spaces, connectedness, compactness, homotopy, and the fundamental group. This is (most of) Chapters 1-7 of the textbook.*

**Homework:** *There will be several homework assignments to be handed-in in class. I encourage you to form study groups to work together on the homework problems (it's usually the best and fastest way to learn). However, when you write up your solutions to hand in, you must write your own solutions in your own words.*

**Exams:** *Midterm: October 12 (Monday)    Final Exam: December 16(Wednesday)*

**Grading:** *The following percentages are assigned to the components of the student's grade.*

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| *Homework* | *50%* |
| *Midterm* | *20%* |
| *Final Exam* | *30%* |