Course announcement

ASU Department of Mathematics and Statistics

MAT 410 Intro to General Topology
Spring 2009. Line number 18599

Time: MW 10:30 – 11:45
Location: ECA 219
Instructor: Matthias Kawski, GWC 354
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Course WWW-site: http://math.asu.edu/~kawski/classes/mat410/09sprg/mat410.html

Brief description: Topology is the study of continuity and properties preserved by continuous functions that have continuous inverses. These concepts are of fundamental importance in many areas of mathematics, ranging across analysis, (differential) geometry, dynamical systems, partial differential equations, and many more. Unlike many courses in these “applications” which often restrict themselves to epsilon-delta characterizations, topology goes right to the heart: Everything is based on an abstract notion of open sets.

The course provides deep insights into fundamental notions such as continuity, compactness, connectedness and the like. Due to its axiomatic character, this course is also distinguished by clinically clean arguments - extremely elegant definitions and proofs. It is an excellent training ground to hone one’s proof-writing skills, going substantially beyond MAT 300 and MAT 371.

The main topics covered are topological spaces, metric spaces, compactness, connectedness, and product spaces. This course has multiple objectives: Provide deeper understanding of fundamental concepts in analysis, differential equations, differential geometry etc. Prepare for follow-on studies in algebraic or differential topology. Practice problem-solving and precision in proof-writing. Develop an appreciation for the power of abstraction.

Prerequisites: MAT 300 or 371 or instructor approval.
Textbook: Topology 2/e (Prentice Hall) by James Munkres.
Recommended reference: Counterexamples in Topology (Dover) by L. Steen and J. Seebach.