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MATH 531.01: Topology

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Recommended Citation

Class: MWF: 11:10 pm – 12:00 noon; MA 211; CRN: 73628

Class website: http://www.math.umt.edu/~stroet/531.html

Instructor: Karel Stroethoff

Contact Coordinates: Office: MA 309
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Office Hours: See webpage.

Description: One of the most important developments in twentieth century mathematics has been the formation of topology as an independent field of study and the systematic application of topological ideas to other fields of mathematics. The beginnings of algebraic and geometric topology can be traced to the results of Leonhard Euler (1707–1783) on polyhedra and graph theory. Point-set topology or general topology has its origin in nineteenth century works establishing a rigorous basis for the Calculus. Currently topological ideas are prevalent in many areas of mathematics, not only in pure subject areas, but even in the most applied fields. The ideas of point-set topology or general topology provide a large part of the language and techniques of analysis. This branch of topology deals with generalizations of the notions of convergence and continuity. This course will give an introduction to general topology.

For an interesting account of the history of the various branches of topology see the web article *Topology enters Mathematics* (by John O'Connor and Edmund Robertson of the The MacTutor History of Mathematics archive at the University of St. Andrews, Scotland).

Students planning to take Math 555, Functional Analysis, in Spring 2001, who have not yet taken topology, should be taking this course.

Prerequisites: Will be kept to a minimum. Contrary to the catalog description it is not necessary to have taken Math 451; we will discuss metric space theory in the framework of general topology. The equivalence of a rigorous proof-oriented 400-level mathematics course should be sufficient preparation for this course. I will make an effort to teach the course at a level appropriate for all enrolled in the course. If you have questions about the level of the course please do not hesitate to contact me.

Text: Theodore W. Gamelin and Robert Everist Greene, *Introduction to Topology*, 2nd edition, Dover Publications, Mineola, New York, 1999.

Grading: Your grade will be based on several written homework assignments given throughout the semester and a written take-home exam at the end of the semester. Late homework problems will only be accepted within a week of the due date, and will be worth at most 80% of the points.