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GENERAL SYLLABUS FOR MA532. FOUNDATIONS OF MATHEMATICS

The course begins with a review of informal set theory and first-order logic. It then focuses on axiomatic set theory both as the basic framework for mathematics and as a distinctive field of mathematics. With emphasis on the historical context, the theory is developed from its beginnings in the work of Cantor and Zermelo through to modern preoccupations.

Proceeding through the basic axioms and operations, relations and functions are incorporated and mathematical concepts of number from integers to reals are objectified. Then Cantor's transfinite numbers Continuum Hypothesis are considered, and Zermelo's Axiom of Choice and its role in mathematics surveyed. Finally, recent results and current problems are broached.

Required Text: Herbert Enderton, *Elements of Set Theory*, Academic Press 1977.

Grading: Exercises, 50%; midterm 16.7%; and final 33.3%. Exercises will be periodically assigned, collected on the date due, and corrected. They can be recycled once for full credit up to the collection date of the succeeding assignment.

Incompletes and Withdrawals: The incomplete grade *I* is given only in exceptional cases to students who have maintained a good record through much of the course and suddenly find themselves in difficult circumstances (illness, death in the family). Others who find early on that they are not keeping up are urged to drop or withdraw from the course.

Please be aware of the last date to process a Withdrawal. Currently, it seems to be in the 8th week of the semester.