MATH 3460
Foundation of Higher Mathematics
(Course syllabus when last taught)

Prerequisites: Math 1920

Instructor Dr. Mary B. Martin
Email: mmartin@mtsu.edu • Office: KOM 203F • Phone: 904-8236

Text: Introduction to Advanced Mathematics by Barnier and Feldman

Purpose: This course is part of the mathematics core. It is designed to introduce students at the sophomore or junior level to some of the fundamental ideas that are necessary to make a transition from elementary to advanced mathematics.

Objective: Upon completion of this course the student will have:

i. Acquired and applied concepts of formal logic.
ii. Enhanced their facility with the language of mathematics.
iii. Strengthened basic set theory skills and knowledge.
iv. Reviewed and extended knowledge of functions and relations.
v. Developed skills for constructing mathematical proofs.
vi. Developed mathematical thinking and problem solving skills.
vii. Explored mathematical structures.
viii. Broadened their perspective on mathematics.

Topical Outline: The course consists of selected topics from Chapters 1 – 9 in the required text. In particular, the course includes.

i. Introduction to Logic
ii. Methods of Proof
iii. Set Theory
iv. Relations and Functions
v. Equivalence Relations and Partial Orders
vi. Cardinality
vii. Boolean algebra
viii. The Integers
ix. Limits of Functions