

**MOREHOUSE COLLEGE
DEPARTMENT OF MATHEMATICS**

DISCRETE MATHEMATICS

Math 211

COURSE DESCRIPTION

This course introduces the student to logic and proofs, set theory, algebraic structures, algorithms, counting methods, recurrence relations, graph theory, trees and Boolean Algebra. It is especially designed for students in computer science and other disciplines needing a background in discrete mathematics. There is a prerequisite requirement for this course - Pre-calculus (Math120 with a grade of "C" or better. Math 211 is a three (3) credit hour course.

COURSE OBJECTIVES

1. To enrich mathematical skills needed for computer science and other disciplines which apply mathematics.
2. To emphasize the interplay between Mathematics and Computer Science.
3. To complement the study of continuous methods as taught in most other mathematics courses, especially Calculus.
4. To introduce logic and formal proof techniques.
5. To development an appreciation for the interplay between abstract ideas and concrete applications.
6. To enhance understanding of the language of Discrete Mathematics and its importance in giving clarity and conciseness to discussions in applied areas.

TEXT BOOK: Rosen, Kenneth H., Discrete Mathematics and Its Applications, 6th Edition, McGraw Hill, 2007

Topics will come from the following chapters as time permits:

- Chapter 1 The Foundations: Logic and Proof, Sets and Functions
- Chapter 2 The Fundamentals: Algorithms, the Integers, and Matrices
- Chapter 3 Mathematical Reasoning, Induction and Recursion
- Chapter 4 Counting
- Chapter 6 Advanced Counting Techniques
- Chapter 7 Relations
- Chapter 8 Graphs
- Chapter 9 Trees
- Chapter 10 Boolean Algebra