MTH 243: Discrete Structures I

This is the first course in a two-course sequence that presents the topics from discrete mathematics and logic needed in the study of computer science, focusing on mathematical reasoning, discrete structures, combinatorial analysis, algorithmic thinking, and various applications. Topics include: propositional logic; set theory; methods of proof; basic number theory; recursive definitions; and counting problems. Prerequisite(s): A grade of C- or higher in MTH 152, or a score of 237 or higher on the Advanced Algebra and Functions (AAF) Accuplacer Test. Three lecture hours per week. Instructional Support Fee applies. Gen. Ed. Competencies Met: Quantitative and Symbolic Reasoning.

Course Student Learning Outcomes

1. Gain knowledge in the logical basis of mathematics.
2. Learn how to write proofs and gain insight into various strategies to approach proving a statement.
3. Understand the basic structures in mathematics, including sets, functions, sequences, sums and matrices.
4. Perform modular arithmetic and work with congruences in various applications such as cryptography.
5. Learn the concepts of proof by induction and recursion.
6. Solve basic counting problems, including those using the Pigeonhole Principle.

7. Work with permutations, combinations and manipulate various binomial identities.

Credits: 3
Program: Mathematics