COLLIN COLLEGE

COURSE SYLLABUS

Course Information

Course Number: MATH 2305

Course Title: Discrete Mathematics

Course Description: A course designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science. Topics include: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, combinatorics, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques. Graphing calculator required.

Course Credit Hours: 3
Lecture Hours: 3
~~Lab Hours: 1~~

Prerequisite: MATH 2413

Student Learning Outcomes:

- **State-mandated Outcomes:** Upon successful completion of this course, students will:
  1. Construct mathematical arguments using logical connectives and quantifiers. (Communication Skills)
  2. Verify the correctness of an argument using propositional and predicate logic and truth tables. (Critical Thinking)
  3. Demonstrate the ability to solve problems using counting techniques and combinatorics in the context of discrete probability. (Empirical/Quantitative Skills)
  4. Solve problems involving recurrence relations and generating functions. (Empirical/Quantitative Skills)
  5. Use graphs and trees as tools to visualize and simplify situations.
  6. Perform operations on discrete structures such as sets, functions, relations, and sequences.
  7. Construct proofs using direct proof, proof by contraposition, proof by contradiction, proof by cases, and mathematical induction. (Communication Skills)
  8. Apply algorithms and use definitions to solve problems to prove statements in elementary number theory. (Critical Thinking)

Withdrawal Policy: See the current *Collin Registration Guide* for last day to withdraw.

Collin College Academic Policies: See the current *Collin Student Handbook.*

Americans with Disabilities Act Statement: Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to contact the ACCESS office, SCC-D140 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations. See the current *Collin Student Handbook* for additional information.