

## MATH 251 – Discrete Math (3 Credits)

### DESCRIPTION:

Topics include fundamental principles of logic and proof methods, elements of set theory, equivalence relations and partitions, counting techniques, mathematical induction, cardinality, power set, Cartesian product, inclusion-exclusion principle, pigeonhole principle, binomial theorem, probability and expectation.

**Prerequisite:** MATH 127 or MATH 128 with a Grade of C or Better, or Satisfactory ACT/SAT Score

### OUTCOMES:

- a. Study fundamental principles of logic including truth tables; the use of quantifiers, implications, and biconditionals; and method of direct proof and reductio ad absurdum.
- b. Solve problems involving equivalence relations, partitions, and the elements of set theory.
- c. Apply the counting techniques of combinations and permutations.
- d. Apply the axiom of mathematical induction to the proofs of numerical and set theoretic results.
- e. Work with the basics of functions between sets and apply these ideas to the proofs of theorems on power sets.
- f. Solve problems involving probability, discrete random variables, and mathematical expectation.
- g. Apply and extend all concepts.

### TEXT:

To be announced in class.

### OUTLINE:

To be announced in class.

### EVALUATION:

Grades may be determined by student performance in one or more of the following areas: in-class tests, take-home tests, homework assignments, quizzes, special projects, papers, attendance, and class participation. Degree of importance and types of assessment used will depend on the instructor.

**This course satisfies the math requirement in the General Education Core component for selected degree and certificate programs at CSN.**