

Course Title and Code	CS212 – Discrete Mathematics
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I. Course Identification and General Information:

Course Title	Discrete Mathematics	Course Code	MATH212	Pre-requisite	CS 181
Department	Computer Science	Course Level	5	Credit Hours	3(3+0)

II. Course Description/Topics: The following course topics will be covered.

- Sets, Relations, and Functions
- Basic Logic
- Proof Techniques
- Basics of Counting
- Graphs and Trees
- Discrete Probability

III. Course Outcomes: Summary of the main learning outcomes for students enrolled in the course.

- Apply counting arguments, including sum and product rules, inclusion-exclusion principle and arithmetic/geometric progressions.
- Apply the pigeonhole principle in the context of a formal proof.
- Compute permutations and combinations of a set, and interpret the meaning in the context of the particular application.
- Map real-world applications to appropriate counting formalisms, such as determining the number of ways to arrange people around a table, subject to constraints on the seating arrangement, or the number of ways to determine certain hands in cards (e.g., a full house).
- Solve a variety of basic recurrence relations.
- Analyze a problem to determine underlying recurrence relations.
- Perform computations involving modular arithmetic.

IV. Required Text:

- Discrete Mathematics and its Applications, 7/e, Kenneth H. Rosen, McGraw-Hill Education, 2012, ISBN: 978-0-07-338309-5, MHID 0-07-338309-0

V. References:

- Discrete Mathematics and its Applications:with combinatorics and graph theory, Kenneth H. Rosen, McGraw-Hill Education - Europe; 7th edition (2011), ISBN13: 978-0070681880