**Information :**

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| **Course Code :** | EMP311 | **Level** : | Undergraduate | **Course Hours :** | 3.00- Hours |

**Department :**   Communication and Computer Engineering

**Description :**

Sets: basics, set operations; Functions: one-to-one, onto, inverse, composition, graphs; Euclidean algorithm; Sequences and Summations; Mathematical reasoning: Proof strategies, Mathematical Induction, Recursive definitions, Structural Induction; Counting: basic rules, Pigeon Hall principle; Permutations and combinations, Binomial coefficients and Pascal triangle. Relations: properties, Combining relations, Closures, Equivalence, partial ordering; Graphs, directed, undirected graphs.
Numerical methods: interpolation, Least-Squares methods, numerical solutions to initial & boundary value problems: Euler and Rung-Kutta methods, numerical differentiation and integration, solution of non-linear algebraic equation. Applications using MATLAB.

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