

**Faculty of Engineering & Technology**  
**Discrete Mathematics & Numerical Methods**

**Information :**

**Course Code :** EMP311

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Electrical Power Engineering

**Instructor Information :**

Title	Name	Office hours
Lecturer	Hany Abd El Ghaffar Abd El Aty El Deeb	2
Teaching Assistant	Salma Motaz Fouad Ali El Sherif	

**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.