

First Year B.C.A. (Under Science) Semester I

Course Code: BCA 103

Course Title: Applied Mathematics -I

Total Contact Hours: 48 hrs.
(60 Lectures)

Total Credits: 04

Total Marks: 100

Teaching Scheme: Theory- 05 Lect./ Week

Course Objectives: The objective of this course is to study the applied Mathematics.

UNIT NO.	DESCRIPTION	No. of LECTURES
UNIT 1	1. Numbers, Sets, and Functions 1.1. The Quadratic Formula 1.2. Elementary Inequalities 1.3. Sets 1.4. Functions 1.5. How to Approach Problems	08
UNIT 2	2. Language and Proofs 2.1. Two Theorems about Equations 2.2. Quantifiers and Logical Statements 2.3. Compound Statements 2.4. Elementary Proof Techniques, 2.5. How to Approach Problems	12
UNIT 3	3. Induction 3.1. The Principal of Induction 3.2. Applications 3.3. Strong Induction 3.4. How to Approach Problems	08
UNIT 4	4. Bijection and Cardinality 4.1. Representation of Natural Numbers 4.2. Bijections 4.3. Injection and surjections 4.4. Composition of Functions 4.5. Cardinality 4.6. How to Approach Problems	12
UNIT 5	5. Combinatorial Reasoning 5.1. Arrangements and Selections 5.2. Binomial Coefficients 5.3. Permutations 5.4. Functional Digraphs 5.5. How to Approach Problems	10
UNIT 6	6. Divisibility 6.1. Factors and Factorization 6.2. The Euclidean Algorithm 6.3. The Dart Board Problem 6.4. Polynomials	10

Reference Books:

1. *Mathematical Thinking–Problem Solving and Proofs*. (Second Edition)by John P. D'Angelo& Douglas B. West. Prentice Hall.
2. *Applied Discrete Structure for Computer Science* by Alan Doerr&KnennethLevasseur.