



CLUSTER UNIVERSITY SRINAGAR
SYLLABUS (FYUP UNDER NEP 2020)
Offered by the Department of Information Technology,
Batch 2022, 2023, 2024

2nd Semester - Minor : Foundational Mathematics

Course Code:UGICT24N201

Credits: 4 (Theory: 3, Practical: 1)

Contact Hrs: 75 (Theory: 45, Practical: 30)
06

Max. Marks: 100

Theory External: 60; **Min Marks:** 24

Theory Internal (Continuous Assessment): 15 Marks, **Min Marks:**

Practical Experimental Basis= 15, **Min. Marks:** 06

Practical Experimental (Continuous assessment) = 10, **Min. Marks:** 04

Objectives

The course will introduce students to basics of Mathematics used in Computer Science.

Learning Outcomes

Understand and perform operations on sets and relations, Solve simple problems involving arrangement and selection of objects, Understand the concepts of limits and continuity, Work on Matrices and determinants.

UNIT 1: (15 Hrs)

Sets, Concept, Subsets, Universal Sets, Venn Diagram, Operations on Sets, Union, Intersection and Complement of Sets, Cartesian product. Relations, Properties, Equivalence Relations, Closures, Reflex and Symmetric Closure. Matrices & Determinants: Matrix, Types of Matrices, Matrix Operations, Transpose. Determinants, Minors and Cofactors, Properties of Determinants. Elementary Transformations. Solution of Linear Equations by Matrix Method & Determinants.

UNIT 2: (15 Hrs)

Counting: The basics of counting, the pigeonhole principle, permutations and combinations (simple problems). Sequences and summation of Discrete structures (AP and GP) Probability: Random Experiments, Sample Spaces, Events, Algebra of Events, Definitions of Probability, Conditional Probability, Independent Events

UNIT 3: (15 Hrs)

Functions, Concept, Domain and Range, Types of Functions. Limits and Continuity: Limit of a Function, Algebra of Limits, Simplification and Evaluation of Limits. Standard Limits, Continuity, Geometric Meaning. Differentiation: Derivatives of some Common Functions, Rules to Find Derivatives, Geometric Interpretation of Derivative.

Suggested TUTORIAL WORK (2 Credits): (30 Hrs)

Constant, identity, polynomial, modulus, signum functions with their graphs. Application of Recurrence relations, Bayes Theorem, Random Variables and Probability Distributions. Maxima and Minima of Functions, Monotonicity, Applications of derivatives, Cramer's Rule, Adjoint and Inverse of Matrix.

SUGGESTED READING:

1. Engineering Mathematics by Grewal

