

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
COURSE PLAN (November 2024 – April 2025)

Department : MATHEMATICS
Name of the Faculty : Dr. V. DHANALAKSHMI
Course Title : FUZZY SETS AND APPLICATIONS
Course Code : 23MT/PE/FT15
Shift : 1

COURSE OUTCOMES (COs)

| COs | Description | CL |
|------------|---|-----------|
| CO1 | recall and list key concepts and operations relating to fuzzy sets and number | K1 |
| CO2 | grasp the underlying principles behind various operations and understand the implications of applying these operations to model uncertainty | K2 |
| CO3 | apply the principles of fuzzy sets, including their operations, relations, and arithmetic, to solve practical problems in various domains | K3 |
| CO4 | analyse the implications of fuzzy operations, while considering their mathematical intricacies and practical consequences | K4 |
| CO5 | evaluate and critique the practical impact, limitations, and future potential of fuzzy sets and operations, and fuzzy logic applications in various domains | K5 |

| Week | Unit No. | Content | Cognitive Level | Teaching Hours | COs | Teaching Learning Methodology | Assessment Methods |
|---|---|--|-----------------|----------------|-------|-------------------------------|---------------------|
| Nov 18 – 25, 2024 (Day Order 1-6) | 1 | Fuzzy Sets and Operations 1.1 Fuzzy Sets – Basic Concepts 1.2 Characteristics and Significance of the Paradigm Shift | K1-K5 | 5 | CO1-5 | Lecture | Questioning |
| Nov 26- Dec 3, 2024 (Day Order 1 to 6) | 1 | Fuzzy Sets and Operations 1.3 Operations on Fuzzy Sets | K1-K5 | 5 | CO1-5 | Lecture | Slip Test |
| Dec 4-11, 2024 (Day Order 1 to 6) | 1 | Fuzzy Sets and Operations 1.4 Types of Fuzzy Sets 1.5 Properties of α – cuts | K1-K5 | 5 | CO1-5 | Visual Aids | Real World Examples |
| Dec 12-19, 2024 (Day Order 1 to 6) | 2 | Properties of Fuzzy Sets 2.1 Decomposition Theorems 2.2 Extension Principle for Fuzzy Sets | K1-K5 | 5 | CO1-5 | Lecture | Questioning |
| Dec 20, 2024 (Day Order 1) | 2 | Properties of Fuzzy Sets 2.2 Extension Principle for Fuzzy Sets – contd. | K1-K5 | 1 | CO1-5 | Lecture | Questioning |
| Jan 3 – 7, 2025 (Day Order 3 to 6) | 2 | Properties of Fuzzy Sets 2.3 Crisp and Fuzzy Relations – Binary Relations | K1-K5 | 3 | CO1-5 | Problem Solving | Workshops |
| Jan 8 – 17, 2024 (Day Order 1 to 6) | 2 & 3 | Properties of Fuzzy Sets 2.4 Fuzzy Relational Equations Operations on Fuzzy Sets 3.1 Fuzzy Complements | K1-K5 | 5 | CO1-5 | Examples | Questioning |
| | C.A. Test – I (Unit 1 and Unit 2 – 2.1, 2.2) | | | | | | |
| Jan 24 -31, 2025 (Day Order 1 to 6) | 3 | Operations on Fuzzy Sets 3.2 Fuzzy Union 3.3 Fuzzy Intersection | K1-K5 | 5 | CO1-5 | Lecture | Questioning |

| Week | Unit No. | Content | Cognitive Level | Teaching Hours | COs | Teaching Learning Methodology | Assessment Methods |
|---|--|--|-----------------|----------------|-------|-------------------------------|--|
| Feb 3-8, 2025 (Day Order 1 to 6) | 3 & 4 | Operations on Fuzzy Sets 3.4 Combination of Operations Fuzzy Arithmetic 4.1 Fuzzy Numbers | K1-K5 | 5 | CO1-5 | Lecture | Real World Examples |
| Feb 10– 18, 2025 (Day Order 1 to 4) | 3 | Fuzzy Arithmetic 4.2 Linguistic Variables 4.3 Arithmetic Operation of Fuzzy Intervals | K1-K5 | 4 | CO1-5 | Problem Solving | Problem Solving (20 marks) 2.2, 2.3, 3.1, 3.2 |
| Feb 19- 26, 2025 (Day Order 1-6) | 4 | Fuzzy System with Applications 5.1 Fuzzy Systems and Neural Networks | K1-K5 | 5 | CO1-5 | Visual Aids | Questioning |
| Feb 27- Mar 6, 2025 (Day Order 1 to 6) | 5 | Fuzzy System with Applications 5.2 Fuzzy Systems and Genetic Algorithms | K1-K5 | 5 | CO1-5 | Presentation | Seminar-Unit 5 (20 marks) |
| Mar 7 – 11, 2025 (Day Order 1 to 3) | 5 | Fuzzy System with Applications 5.3 Current Applications | K1-K5 | 3 | CO1-5 | Presentation | Seminar |
| Mar 12 –17, 2025 | C.A. Test – II (Unit 3 & 4 – 4.1, 4.2, 4.3) | | | | | | |
| Mar 18 – 20, 2025 (Day 4 to 6) | 4 | Fuzzy Arithmetic 4.4 Arithmetic Operation of Fuzzy Numbers 4.5 Lattice of Fuzzy Numbers | K1-K5 | 2 | CO1-5 | Lecture | Questioning |
| Mar 21 - 28, 2025 (Day Order 1 to 6) | 4 | Fuzzy Arithmetic 4.6 Fuzzy Equations | K1-K5 | 5 | CO1-5 | Lecture | Test– Unit 5 (10 marks) |
| Mar 29- Apr 2, 2025 (Day Order 1 to 3) | REVISION | | | | | | |