**Unit-1**

Introduction to classical set theory, Relation, Functions. fuzzy set theory: representation, capturing uncertainty, examples. Fuzzy Set: Fuzzy membership, graphic interpretation of fuzzy sets,empty space, ( 3 weaks)

**Unit -2**

Fuzzy Operations: inclusion, comparability, equality. Complement, Union, Intersection, Difference. Fuzzy Properties: Related to union – Identity, Idempotence, Associatively, Commutativity. Related to Intersection – Absorption, Indentity, Idempotence, Associatively. Additional properties – Distributivity. Law of excluded middle, law of contradiction, Cartesian product. (2 weaks)

**Unit -3**

Uncertainty, non-monotonic reasoning, truth maintenance systems, default reasoning and closed world assumption, Introduction to probabilistic reasoning, Bayesian probabilistic inference, introduction to fuzzy sets and fuzzy logic, reasoning using fuzzy logic.

Game Playing: introduction to game playing, min-max and alpha-beta pruning algorithms.( 3 weeks )

**Unit 4**

Fuzzy Relations – Definition of Fuzzy Relation, examples. Forming Fuzzy Relations – Membership matrix, graphical form, Projections of fuzzy relations- first, second and global, Max-Min and Min-Max compositions. (2 weeks)before T2

**Unit -5**

Fuzzy Systems : Fuzzy system elements : Input vector, Fuzzification, Fuzzy Rule Base, Membership function, Fuzzy Inferencing, Defuzzyfication, Output vector. Statement, Symbols, Tautology, Membership functions from facts, Modus Ponens and Modus Tollens; Fuzzy logic : Proposition, Connectives, Quantifiers. (2 weaks)

MCDM + Fuzzy Entropies