Subject Code : P8MAE4

STOCHASTIC PROCESSES

UNIT I

Stochastic Processes: Some notions – Specification of Stochastic processes – Stationary processes – Markov Chains – Definitions and examples – Higher Transition probabilities – Generalization of Independent Bernoulli trails – Sequence of chain – Dependent trains.

UNIT II

Markov chains : Classification of states and chains – determination of Higher transition probabilities – stability of a Markov system – Reducible chains – Markov chains with continuous state space.

UNIT III

Markov processes with Discrete state space : Poisson processes and their extensions – Poisson process and related distribution – Generalization of Poisson process- Birth and Death process – Markov processes with discrete state space (continuous time Markov Chains).

UNIT IV

Renewal processes and theory : Renewal process – Renewal processes in continuous time – Renewal equation – stopping time – Wald's equation – Renewal theorems.

UNIT V

Stochastic processes in Queuing – Queuing system – General concepts – the queuing model M/M/1 – Steady state Behaviour – transient behaviour of M/M/1 Model – Non-Markovian models - the model GI/M/1.

TEXT BOOK(S)

[1] J. Medhi, Stochastic Processes, Howard M. Taylor – Second edition.

UNIT I	Ch. II : Sec 2.1 to 2.3, Ch III : Sec 3.1 to 3.3
UNIT II	Ch III – Sec 3.4 tp 3.6, 3.8, 3.9 and 3.11
UNIT III	Ch IV : Sec 4.1 to 4.5
UNIT IV	Ch VI : Sec 6.1 to 6.5
UNIT V	Ch X : Sec 10.1 to 10.3, 10.7 and 10.8 (omit sec 10.2.3 & 10.2.3.1)

REFERENCE(S)

1. Samuel Korlin, Howard M. Taylor, A first course in stochastic processes, II Edn.
2. Narayan Bhat , Elements of Applied Stochastic Processes,
3. Srinivasan and Metha, Stochastic Processes,
4. N.V. Prabhu, Macmillan (NY), Stochastic Processes.