AIML	Mathematics-IV	3	1	0	4

Course Objective:

- To understand and conduct computer systems modeling and performance analysis.
- To introduce the basic probability tools and concepts this is useful in modeling, such as Markov models and queuing theory.
- To provide necessary mathematical support and confidence to tackle real life problems.
- To provide the required mathematical support to develop probabilistic models which can be used in several areas of science and engineering.

UNIT I: CLASSIFICATION OF RANDOM PROCESSES   12

Definition and examples – First order – Second order – Strictly stationary – Wide-sense stationary and ergodic process – Markov process – Poisson and Normal process.

UNIT II: QUEUEING THEORY-I   12

Markovian queues – Birth and Death Queuing models- Steady state results- Single server queuing models-(M/M/1): (∞/FIFO) Model–(M/M/1): (k/FIFO) Model -Characteristics of parameters of models.

UNIT III: QUEUEING THEORY-II   12

Multiple server queuing models- Little's Formula - queues with finite waiting rooms- Finite source models.-(M/M/C): (∞/FIFO) Model –Characteristics of parameters of models,

(M/M/C): (k/FIFO) Model –Characteristics of parameters of models.

UNIT IV: NON-MARKOVIAN QUEUES   12

Finite source models - M/G/∞ queues – Pollaczek -Khinchine formula - M/G/1:(∞/GD) model as special cases.

UNIT V: QUEUEING NETWORKS   12

Queueing Networks - Classification and Basic Concepts.Open and Closed Networks of M/M/m Type Queues, Jackson's Theorem.

Total hours:60

TEXT BOOKS:

T1: Gross. D. and Harris C.M, "Fundamentals of Queueing Theory", Wiley Student edition, 2004.

T2: Sivaramakrishna Das. P and Vijayakumari. C, "Probability &Queueing Theory", Pearson Eduaction Asia, 6th Edition ,2013.

T3. S.Palaniammal, "Probability &Queueing Theory", Eastern Economy Edition, 2012.

REFERENCE BOOKS:

R1. A.O. Allen, "Probability, "Statistics and Queueing Theory with Computer Applications", Elsevier, 2nd edition, 2005.