



**CS 519**

**PERFORMANCE EVALUATION OF COMPUTER SYSTEMS**

**UNIT-I**

**Fundamentals:** Need for performance evaluation - Role of performance evaluation - Performance evaluation methods - Performance metrics and Evaluation criteria - CPU and I/O architectures - Distributed and Network architectures - Secondary storage - Topologies - Computer architecture – Fundamental concepts and performance measures.

**UNIT-II**

**Probability and Stochastic Processes:** Scheduling algorithms -Workloads - Random variables – Probability distributions - Densities -Expectation - Stochastic processes - Poisson process - Birth death process - Markov process. Discrete TimeMarkov chains (DTMC) - Bayes theorem - Conditional probability - Total probability - Discrete and Continuous random variables - Common distributions - Probability generating functions(PGF) and Laplace Transforms (LST) numerous examples from computer networking.

**UNIT-III**

**Queuing Theory:** Queuing systems - Networks of queues - Estimating parameters and Distributions - Computational methods - Simulation process - Time control - Systems and Modeling.

**UNIT-IV**

**Petrinets and System Performance:** Petri nets - Classical petri nets - Timed petri nets - Priority-based petri nets - Colored petri nets - Generalized petri nets - Tool selection - Validation of results - Performance metrics - Evaluation - Multiple server computer system analysis.

**UNIT-V**

**Analysis:** OS components- System architecture - Workloads - Design - Simulation - Analysis - Database systemperformance - Computer networks components - Simulation modeling of LAN.

**Suggested Reading:**

1. Paul J. Fortier.Howard E. Michael, "*Computer Systems Performance Evaluation and Prediction*".Elsevier Science, 2003.
2. Thomas G. Robertazzi, "*Computer Networks and Systems Queuingtheory andPerformance Evaluation*", 3rd edition, Springer, 2000.
3. Domenico Ferrari. Giuseppe Serazzi and Alexandra Zeijher, "*Measurement & Tuning of Computer Systems* ", Prentice HallInc, 1983.
4. Michael F. Mories and Paul F. Roth, "*Tools and techniques Computer Performance Evaluation*", Van Nostrand. 1982.
5. K.Kant and M.M.Srinivasan. "*Introduction to computer system performance Evaluation*",

McGraw Hill, 1992.

6. Herbert Hellerman and Thomas F. Conroy, "*Computer system performance*", McGraw-Hill, 1992.

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