MT-623 Simulation and Modeling

- Overview of Simulation
- Simulation of a single-server queuing system, Simulation of an inventory system, Parallel/distributed simulation.
- Modeling computer systems, Poisson Process, FIFO Systems, Priority Queuing Systems, Applications, Chapman-Kolmogorov Equations, Regular Markov chains.
- Random Variables, Stochastic processes, Estimation of means, variances, and correlations, Confidence intervals and hypothesis test for mean.
- Random number Generator, Method for generating random numbers, building valid, credible and appropriately detailed simulation models.
- Guidelines for determining the level model detail Verification of simulation of computer programs, Techniques for increasing model validity and credibility.

Management role in the simulation process, Statistical procedures for comparing real-world observations and simulation output data.

Books:

1. Misra J. C, *Computational Mathematics, Modelling and Algorithm,* Narosa , 2003
2. Lawand A. M and Kelton W. David, *Simulation Modelling and Analysis,*3rd Edition, McGraw-Hill Companies, 2000
3. A selection of conference and journal papers as appropriate.