CM5093 MANUFACTURING SYSTEM SIMULATION

DETAILED SYLLABUS

OBJECTIVES

- Introduce computer simulation technologies and techniques
- Introduce concepts of modeling layers of society's critical infrastructure networks
- Build tools to view and control simulations and their results

UNIT I INTRODUCTION

Systems and modeling – statistical models in simulation –discrete and continuous system – Monte Carlo Simulation. Simulation of Single Server Queuing System. Simulation of manufacturing shop Simulation of Inventory System

UNIT II RANDOM NUMBERS

Random number generation –Properties of Random Numbers –Generation of Pseudo Random Numbers – Techniques –Tests for Random Numbers

UNIT III RANDOM VARIATES

Random variate generation-Inverse Transform Technique –Direct Transform Techniques Convolution Method Acceptance Rejection Technique– Routines for Random Variate Generation, Testing – Analysis of simulation data.

UNIT IV ANALYSIS OF SIMULATION DATA

Input odeling- Fitness tests – verification and validation of simulation models – output analysis for a single model, Comparison and evaluation of alternate system design, Optimization using simulation.

UNIT V SIMULATION LANGUAGES

Simulation languages and packages-Case studies in WITNESS; FLEXSIM, ARENA, SIMQUICK Simulation based optimization-Modelling and Simulation with Petrinets – Case studies in manufacturing and material handling system.

REFERENCES

1. Geoffrey Gordon, "System Simulation", 2nd Edition, Prentice Hall, India, 2002.
2. Jerry Banks & John S.Carson, Barry L Nelson, "Discrete event system simulation", Prentice Hall.

3. Law A.M, “Simulation Modelling and Analysis”, Tata Mc Graw Hill
4. NarsinghDeo, “System Simulation with Digital Computer”, Prentice Hall
5. Pidd, M, “Computer Simulation in Management Science”, John Wiley & Sons, Inc.