



STANLEY

COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE, New Delhi | Affiliated to Osmania University ,Hyderabad)
Address : Chapel Road, Abids ,Hyderabad

BIT 454

SIMULATION & MODELING

UNIT-I

System and System Environment, Components of a System, Discrete and Continuous Systems, Model of a System, Types of Models Introduction to Simulation. Advantages and Disadvantages of Simulation, Areas of Applications, Discrete-Event System Simulation, Simulation Examples.

UNIT-II

Overview of Statistical Models and Queuing Systems, Programming Languages for Simulation, Continuous and Discrete Simulation Languages - GPSS, SIMAN, SIMSCRIPT, SLAM II and MODSIM III .

UNIT-III

Generation of Pseudo-Random Numbers, Properties of Random Numbers, Tests for Randomness, Generation of Random Variable for Continuous and Discrete Probability Distributions. Uniform, Exponential, Weibul, Possion and Normal Distributions.

UNIT-IV

Input Data Analysis: Data Collection, Identification of the Distribution, Parameter and Estimation. Goodness of Fit Tests. Multivariate and Time Series input models. Output Data Analysis: Stochastic Nature of Output Data. Types of Simulation with respect to Output Analysis. Measures of Performance and their estimation, Comparison and evaluation of alternative system designs.

UNIT-V

Verification, Validation and Calibration of Models, Validation of Model Assumptions, Validation of input/output Transformations, Input/output validation using historical Input Data, Input/output Validation using Turing Test.

SuggestingReading:

- 1) Anerill M Law and W. David Kelton, "Simulation, Modeling and Analysis", 3rd Edition, McGraw Hill.
- 2) Jerry Banks, John S. Carson II, Barry L. Nelson, and David M. Nicol, "Discrete-Event System Simulation", Pearson Education Asia, 2001.
- 3) Narsingh Deo, "System Simulation with Digital Computers", Prentice Hall of India, 1979.