



AMITY UNIVERSITY
— UTTAR PRADESH —

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	1	-	-	4

Course Title: Simulation and Modeling
Credit Units: 4
Course Level: UG
Course Code: CSE415

Course Objectives:

To study the basic concepts for simulating various systems.

Pre-requisites: Mathematics and C/C++

Course Contents/Syllabus:

	Weightage (%)
Module I : Introduction	15%
The concept of System, System Environment, Stochastic Activities, Continuous and Discrete Systems, System modelling, types of models, subsystems, system analysis, system design, The techniques of simulation, monte carlo method, types of system simulation	
Module II: Simulation of Continuous systems	15%
Numerical integration vs continuous system simulation, simulation of a servo system, simulation of a water reservoir system, analog vs digital system	

Module III : Discrete System Simulation	15%
Fixed time-step vs event-to-event model, generation of random numbers, monte-carlo computation vs stochastic simulation	
Module IV : Simulation of systems	30%
Simulation of queuing systems- queuing theory, single-server and two-server queues. Simulation of a PERT network-network model, analysis of critical network, critical path computation, simulation of an activity network, resource allocation and cost consideration, Inventory control and forecasting- elements of inventory theory, complex inventory models, forecasting and regression analysis	
Module V: Design and evaluation of simulation experiments	15%
Length of simulation runs, variance reduction techniques, experiment layouts, validation Continuous and discrete simulation languages, GPSS, SIMULA, etc	
Module VI: Simulation Languages	10%
Continuous and discrete simulation languages, GPSS, SIMULA, etc	

Student Learning Outcomes:

The student will be able to create simple programs for simulating systems

Pedagogy for Course Delivery:

Lectures, Case Studies, Lab work

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100		100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Attendance	Class Test	Assignment	Viva Voice	
Weightage (%)	5	10	8	7	70

Text & References:

1. System Simulation with digital computer- Narsingh Deo, PHI