Name of the Faculty:JAYA RANI
Discipline: Computer science & Engg.
Semester:5th
Subject: Simulation & Modelling(CSE 309N)
Work Load (Lecture/Practical) per week (in hours): Lectures- 3 Hours , Practicals- 3 Hours

	Theory		Practical	
Week	**Lecture day**	**Topic (including assignment/test)**	**Practical day**	**Topic**
1st	**1st**	**Modeling**:System Concepts	**1st**	Write a program to print the detailed marks certificate (D.M.C) of a student by using different binary operators.
	2nd	**Modeling:**boundariesand environment,continuous and discrete systems,system modeling		
	3rd	**Modeling:**typesof Models, Model validation,		
2nd	**4th**	**Modeling:**Principles & Nature of Computer modeling.	**2nd**	Write a program toDraw graph of sine wave with respect to the time.
	5th	**Simulation:** Introduction		
	6th	**Simulation**:Basic nature of simulation, when to simulate(Assignment 1)		
3rd	**7th**	**Simulation:**Advantages, disadvantages and limitations of simulation	**3rd**	Write a program to solve following differential equation dy/dt = -exp(-t)×y2 by using any simulation technique
	8th	**Simulation**:Concepts of simulation of continuous and discrete system with the help of example.		
	9th	**Continuous System Simulation:** Introduction		
4th	**10th**	**Continuous System Simulation:**Analog vs. digital simulation	**4th**	Write a program to simulate Pure-Pursuit problem of continuous system simulation.
	11th	**Continuous System Simulation**:continuous simulation vs. numerical integration		
	12th	**Continuous System Simulation**:simulation of a chemical reactor		
5th	**13th**	**Continuous System Simulation**:simulation of a water reservoir system.(Assignment 2)	**5th**	Write a program to select a policy among different given policies with minimum total cost of an inventory system.
	14th	**Discrete system simulation**:Fixed time-step vs. event-to-event model		
	15th	**Discrete system simulation:** Monte-Carlo computation vs. stochastic simulation		
6th	**16st**	**Discrete system simulation:** generation of random numbers,	**6th**	Write a program to generate and print a sequence of 30 pseudo random numbers between 150 to 250 by using any simulation technique.
	17nd	**Discrete system simulation:** generation of non-uniformly distributed random numbers.		
	18rd	**Unit test-II**		
7th	**19th**	**Simulators for the Live systems:** Introdution	**7th**	Write a program to determine the approximate value of √2 using 1000 random numbers.
	20th	**Simulators for the Live systems:**Simulation of queuing Systems		
	21th	**Simulators for the Live systems:**basic concepts of queuing theory		
8th	**22th**	**Simulators for the Live systems:**simulation of single server,	**8th**	Write a program to simulate single server queuing system with Poisson arrival pattern and FCFS queue discipline.
	23th	**Simulators for the Live systems:** Simulation of two server and more general queuing system		
	24st	**Simulation of PERT network:**Introduction		
9th	**25rd**	**Simulation of PERT network:**Network model of a project(Assignment 3)	**9th**	Write a program to find minimum time of completing the project by PERT.
	26th	**Simulation of PERT network:**analysis of an activity network		
	27th	**Simulation of PERT network:**critical path computation		
10th	**28th**	**Simulation of PERT network**:uncertainties in activity durations,	**10th**	Write a program to simulate an inventory system with the objective to determine the re-order combination (P,Q) which yields the highest service level for a given value of average stock
	29th	**Simulation of PERT network:**simulation of an activity network.		
	30th	**Unit Test-III**		
11th	**31st**	**Simulation of inventory control systems:Introduction**	**11th**	Write a program to solve following differential equation by using 4th order Runge-Kutta method dy/dx = -2x-y , with initial condition y = -2 when x = 0
	32nd	**Simulation of inventory control systems:**Elements of inventory theory,		
	33rd	**Simulation of inventory control systems:**inventory models(Assignments 4)		
12th	**34th**	**Simulation of inventory control systems:**generation of Poisson and Erlang variates	**12th**	Write a program to generate a sample of pseudo random values by using rejection method from a given non-uniform distribution, when the probability function of the distribution is non
	35th	**Simulation of inventory control systems:**simulator for complex inventory systems.		
	36th	Simulation of hypothetical computers.		
	37th	Simulation of hypothetical computers.		

13th	**38th**	Design and Evaluation of Simulation Experiments	**13th**	
	39st	Design and Evaluation of Simulation Experiments		
14th	**40rd**	Variance reduction techniques	**14th**	
	41`th	Variance reduction techniques		
	42th	Experiment layout and Validation.		
15th	**43th**	Case Study: SciLab	**15th**	
	44th	Case Study: Octave		
	45th	Unit Test-IV		