Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
CPE7022	Elective-II Computer Simulation and Modeling	4	-	-	4	-	-	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	-	
At end of successful completion of this course, student will be able to		
Course Outcomes	CO1	Apply simulation concepts to achieve in business, science, engineering, industry and services goals
	CO2	Demonstrate formulation and modeling skills.
	CO3	Perform a simulation using spreadsheets as well as simulation language/package
	CO4	Generate pseudorandom numbers using the Linear Congruential Method
	CO5	Evaluate the quality of a pseudorandom number generator using statistical tests
	CO6	Analyze and fit the collected data to different distributions

Module No.	Unit No.	Topics	Ref.	Hrs.
1	1.1	Introduction to Simulation. Simulation Examples. General Principles.	1,2,3	15
2	2.1	Statistical Models in simulation. Queuing Models	1,2,3	8
3	3.1	Random Number Generation. Testing random numbers (Refer to Third edition) Random Variate Generation: Inverse transform technique, Direct Transformation for the Normal Distribution, Convolution Method, Acceptance-Rejection Technique (only Poisson Distribution)	1,2,3	9
4	4.1	Analysis of simulation data: Input modeling, verification and calibration,Validation of Simulation , Models. Estimation of absolute performance.	1,2,3	12
5	5.1	Application on case study on: Processor and Memory Simulation, Manufacturing and Material Handling	1,2,3	4
			Total	48

References:

[1] Jerry Banks, John Carson, Barry Nelson, and David M. Nicol, "Discrete Event System Simulation; Third Edition", Prentice-Hall

[2] Jerry Banks, John Carson, Barry Nelson, and David M. Nicol, "Discrete Event System Simulation; Fifth Edition", Prentice-Hall

[3] Averill M Law,"System Modeling & Analysis", TMH, 4th Edition.