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
ITC803	Computer Simulation and Modeling	4	-	-	4	-	-	4
		Examination Scheme						
		ISE	MSE		ESE			
		10	30		100 (60%Weightage)			

Pre-requisite Course Codes		
After successful completion of the course, student will be able to:		
Course Outcomes	CO1	Explain Modeling, Simulation and the use of Statistical models in simulation
	CO2	Analyze the system and develop a Queuing model
	CO3	Analyze the system and develop an Inventory model
	CO4	Test the performance of Simulation
	CO5	Design a simulation system for real-life scenario using modern tools

Module No.	Topics	Ref.	Hrs.
1	**Introduction to simulation** Introduction to Simulation, Simulation Examples. General Principles	1, 3	15
2	**Mathematical & Statistical Models in Simulation** Statistical Models in simulation. Queuing Models	1 4	08
3	**Random Numbers** 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	09
4	**Analysis of simulation data** Input Modeling Verification, Calibration and Validation of Simulation Models, Estimation of absolute performance.	1	12
5	**Application** Case study. Processor and Memory simulation. Manufacturing & Material handling	1 ,2	04
	Total hours of instructions		48

References:

1. Jerry Banks, John Carson, Barry Nelson and David M. Nicol, "*Discrete Event System Simulation*" ,Third Edition , Prentice-Hall
2. Averill M. Law , "System Modeling &Analysis", 4th Edition TMH.
3. Geoffrey Gordon "*System Simulation*", EEE
4. Jerry Banks ,C M , Sokolowski J A "*Principles of Modeling and Simulation*",Wiley