DEPARTMENT OF PRODUCTION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY,
TIRUCHIRAPPALLI

Programme and Specialization	**M Tech Industrial Engineering and Management**		
Course Title	**Modeling Simulation and Analysis**		
Course Code	**PR655**	**No. of Credits**	**03**
Pre-requisite subject(s)			
Session	**Jan 2021**		
Name of Faculty	**Dr S Kumanan**	**Department**	**Production**
Email	**kumanan@nitt.edu**	**Telephone No**	**0431 2503507**
COURSE TYPE	**CORE Course**		

COURSE OVERVIEW COURSE TEACHING AND LEARNING ACTIVITIES

PR655 Modelling, Simulation and Analysis

OBJECTIVES:

Building of Models with logic
Develop routines to capture uncertainty in systems
Modelling and Simulation of Discrete Event Systems

Topics ONLINE CLASSES on Weekdays with Tutorials

Introduction to systems and modelling
Discrete and continuous system
Monte Carlo Simulation.
Simulation of Single Server Queuing System
Simulation of a manufacturing shop
Simulation of Inventory System
Random number generation and properties
Generation of Pseudo Random Numbers
Tests for Random Numbers
Random variates
Inverse Transform Technique
Direct Transform Techniques
Convolution Method
Acceptance Rejection
Routines for Random Variate Generation
Testing -Analysis of simulation data
Input modelling
Verification and validation of simulation models
Output analysis for a single model.
Simulation languages and packages
Case studies in WITNESS; FLEXSIM, ARENA, SIMQUICK
Simulation based optimization
Modelling and Simulation with Petri nets
Case studies in manufacturing systems

Evaluation Scheme: Two Term Tests 40 Tutorials and Practical Assignments 30
Final Examination 30 Marks

REFERENCES:

1.Jerry Banks & John S.Carson, Barry L Nelson, “Discrete event system simulation” ,Prentice Hall
2.Law A.M, “Simulation Modelling and Analysis”, Tata Mc Graw Hill
3.NarsinghDeo, “System Simulation with Digital Computer”, Prentice H
4.Geoffrey Jordon, “System Simulation”, Prentice hall India Ltd

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week	Duration	% Weightage
1	Cycle Test I		1 hour	20
2	Cycle Test ii		1 hour	20
3	Class Assignment	Every Week		30
CPA	Compensation Assessment*		1 hour	--
4	Final Assessment *		2 hours	30

COURSE EXIT SURVEY FEED BACK FORM

MODE OF CORRESPONDENCE Class and office in person
COMPENSATION ASSESSMENT POLICY Only on Genuine Grounds with prior intimation

ATTENDANCE POLICY **As Per Institute Norms**

Delivery of Contents: Chalk and Talk, PPTs, Video presentations, Tutorials

Contact Classes (Theory and Tutorials)

COURSE OUTCOMES:
1. Develop manufacturing models of discrete event systems
2. A generation of uncertainty using random numbers and random variates
3. Perform input, output analysis: Verification and validation of models and optimization

Faculty CC Chairperson HOD