

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Mechatronics (Branch Code - 47)

Year – II (Semester – III) (W.E.F. July 2013)

Subject: Simulation and Modeling (734701)

Sr. No	Content	Hours
1	Systems and Models, Examples of models, Models for Systems and Signals.	3
2	Principles of Physical Modeling, Basic relationship, Bond Graphs, Computer Aided Modeling.	5
3	Estimating Transient Response, Spectra and Frequency Functions, Parameter Estimation in Dynamic Models, System Identification as a Tool for Model Building.	5
4	Simulation: Simulation of a system of rigid bodies, mechanical systems and components including machine elements. Modeling systems for control strategies and design of control strategies in physical domain.	6
5	Numerical prototyping as modeling for design and synthesis using computational tools.	4
6	Introduction to techniques for validation of models. Simulation of electromechanical, thermo-mechanical, hydraulic & pneumatic elements.	5
	TOTAL	28

REFERENCE BOOKS:

1. Gordon, G., "System Simulation", Prentice Hall.
2. Lennart, L. and Torkel, G., "Modeling of Dynamic Systems" Prentice Hall.
3. Bhonsle, S.R. and Weinmann, K.J., "Mathematical Modeling for Design of Machine Components", Prentice Hall.
4. D'Souza, A.F., and Garg, V.K., "Advanced Dynamics: Modeling and Analysis", Prentice-Hall.
5. Mukherjee, A., Karmaker, R. and Samantaray, A.K., "Bond Graph in Modeling, Simulation and Fault Identification", I & K International.