



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

(Established under section 3 of the UGC Act 1956, by notification No.F.9-12/2001-U3
Government of India)

Sub Committee - Specialization for Curriculum Development Systems & IT Management

Post Graduate/ Under Graduate –Both

Course Title: System Dynamics

Course Code: T3525

Number of Credits: 2

Level: 2

Learning Objective/Outcome (s):

The course aims to prepare the students to identify and model systems using System Dynamics.

Pre-learning: Nil

Course Outline :

Sr.No.	Topics	Hours
1.	Introduction to System Dynamics – Tools, Concepts and Definition - MIT Sloan P.V	3
2.	The Idea of Systems as drivers of change: Paradigms of change, Methods to recognize systems, Behavior as the outcome of systems.	2
3.	Generic behaviors of systems: Exponential, oscillatory, goal seeking.	2
4.	Accumulation and flows: Measuring the state of a system, Quick and slow change.	2
5.	System Dynamic Techniques; Causal loop diagram, Stock & flow diagram, Equation in discrete time, Examples	3
6.	System Dynamics: Forrester's Principles of Feedback, the basis of counter intuitive behavior.	2
7.	System archetypes: Limits to Growth, Shifting the Burden, Eroding Goals, Escalation, Success to the Successful, Tragedy of the Commons, Fixes that Fail, Growth and Underinvestment, Accidental Adversaries, Attractiveness Principle.	3
8.	Modeling (business) processes: Human resources, supply chain, finance, production, distribution, markets, land use, natural resources, crime, corruption, projects.	2
9.	Scenarios: Exploring the impact of alternative decisions, the idea of leverage.	3

10.	The utility and validity of systems models: Flight simulators or forecasting tools, real or imaginary worlds.	2
11.	Other systems approaches: Saraph's Syslogic, Beer's VSM, Maturana and Varella's Autopoetic Systems, Complex Systems Methods.	3
12.	Case Study	3
	Total	30 HRS.

Pedagogy

Books Recommended

- Jay Forrester, Principles of Systems, MIT Press, 1968
- Donella Meadows, Thinking in Systems: a primer, Chelsea Green Publishing, 2008
- Peter Senge, The Fifth Discipline, Century Business, 1990

S. No.	Name of the Course	Name of University where it is offered
1	System Dynamics	MIT

Name of Members	Dr. Anupam Saraf				
Designation	Adjunct Prof				
Org. / Inst.	SICSR				
Signature					

Signature of Dean:

Date: