1.0 INTRODUCTION

System dynamics has emerged as a very powerful methodology to understand how the structure and policies govern the time behavior of complex systems. Starting as Industrial Dynamics (ID) its nomenclature has changed to System Dynamics (SD) and subsequently to Business Dynamics (BD).

Accelerating economic, technological, social, and environmental change challenges managers and policy makers to learn at increasing rates, while at the same time the complexity of the systems in which we live is growing. Many of the problems we now face arise as unanticipated side effects of our own past actions. All too often the policies we implement to solve important problems fail, make the problem worse, or create new problems.

"Effective decision-making and learning in a world of growing dynamic complexity requires us to become systems thinkers—to expand the boundaries of our mental models and develop tools to understand how the structure of complex systems creates their behavior."

Computers software is used to simulate a system dynamics model of the situation being studied. Running "what if" simulations to test certain policies on such a model can greatly aid in understanding how the system changes over time.

2.0 OBJECTIVES

The course BUSINESS DYNAMICS is designed with the following objectives.

a) To provide the concept and the methodology of BUSINESS DYNAMICS (BD)

b) To acquaint students with the BD Model building procedure with the help of some suitable exercises.

c) To acquaint the students with the application areas of BD such as manufacturing, marketing & distribution, R&D. Management Control & Finance and Social Problems with the help of some case studies and published articles.

3.0 TEXT REFERENCE BOOKS

8. Journals and Articles

4.0 EVALUATION — It will be based on Assignments, Model Building Exercise, Application Areas Case Presentation, Exercise/Problems, Quizzes, Class Participation and Examination

5.0 SESSION WISE COVERAGE:

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<thead>
<tr>
<th>Session No.</th>
<th>Topic</th>
<th>Book</th>
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<td>1.</td>
<td>An Introduction to Systems thinking and System Dynamics</td>
<td>Robert</td>
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<td>SD Fundamentals:</td>
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<td>(Causal Loop Diagram)</td>
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<td>(Symbols, Flow Diagram)</td>
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<td>Forrester</td>
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<td>Sterman</td>
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<td>b) Half time, Doubling time,</td>
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<td>c) Introduction to ithink software</td>
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<td>6-8</td>
<td>Casual Loop Diagram (1st Attempt)</td>
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<td>Principals of Systems</td>
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<td>Introduction to Delays:</td>
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6.0 PRACTICE PROBLEMS, CASES AND APPLICATION AREAS
(for sessions 6-8, 9-10, 14-16, 21-24)

A) Some SD Practice Problems:

1. Pollution Systemional
2. Advertising
3. Money in the Bank
4. Typist Pool
5. Labour Management System
6. New Product Adoption
7. Construction Company
8. Air Conditioners Company
9. Air Conditioners Discard
10. Energy Planning
11. Business Fluctuations
12. Marketing Management
13. Financial Management
14. Operations Management
15. Human Resources Management
16. Bread Producing unit
17. Pulse Beatles Growth in a Godown
18. Growth of an Industrial Area
19. Precision Machining Corporation
20. Personnel Absorption problem in Corporate Growth

B. Some BD Practices Cases

(a) Pushed Back by the Airel Launch
(b) Deil, galloping Growth
(c) Study of Advertisement Policies for a Production – Distribution System
(d) SD Modelling of a Development Bank
(e) Production – Distribution of Reverse Euro Connectors
(f) Manpower Planning Model
(g) STQC Programme

C. Some BD application areas (Students Presentation)
(for Sessions 11-13)

Financial applications

(a) Managing Working Capital Crises
(b) Designing Financial Policies with Limited Financial Resources
(c) System Dynamic Modeling of Stock price fluctuation
(d) Simulation of financial crises
Marketing & distribution

(a) Advertising: A problem in Industrial Dynamics
(b) Design of Resource Control and Marketing Policies
(c) Sales Response to Advertising, Pricing Policy and consumer Buying Behaviour
(d) Market Growth as Influenced by Capital Investment

Manufacturing

(a) Modeling Computer integrated manufacturing system dynamics
(b) How Manager use Industrial Dynamics
(c) An Industrial Dynamics Case Study

Research & Development

(a) R & D Policy Making
(b) Modeling Strategies for Corporate Growth

Management Control & Corporate Planning

(a) Design of Management Control System
(b) Industrial Dynamics and Management Information System
(c) System Dynamics and Corporate LRSP
(d) Energy Policy Analysis for the Indian
(e) Economy through integration of system
(f) Dynamics with physical system theory
(g) System Dynamics Modelling of Soyabean
(h) Processing Industries in India.

Business Societal problems

(a) Students Performance in Elementary
(b) Class Room: A System Simulation

NOTE:

i) One model Building Exercise and a SD application topic will be given to each students.

ii) SD Practice Problems, Practice cases and Applications areas will be selected by the students as per their preference. Some another Problems, Practice cases and applications may be taken/given.

Assignments must be submitted on the date of submission announced in the class for each of the assignments. Failing to submit on the date announced will fetch no credit.

Any group assignment should be done by a group not exceeding 5 students. Credit to individual members in the groups on specific assignment will be based on contribution of each of the member. Every member is supposed to be involved in the complete assignments right from beginning to completion.