

Course Outline 2017
INFOSYS 740: Systems Dynamics for Complex Modelling
(15 POINTS)
Semester 1 (1173)

Course Prescription

The concepts, theories and modelling tools of system dynamics are used to deal with the dynamic complexities arising from interdependencies and interactions amongst various parts and functions within organisations and societies alike. Qualitative and computer modelling are used to gain insight and to foresee the intended outcomes as well as unintended consequences of policies and strategic decisions. All aspects of organisations including HR, IT, operations, marketing and strategy are considered and their interdependencies explored.

Programme and Course Advice

Restriction: OPSMGT 765.

Goals of the Course

The course will utilise a variety of teaching and learning approaches including, lecture/discussion, modelling workshops, videos, and strategy laboratories. The main objective is to introduce and to reinforce a holistic approach to understand and manage business and other organisations, in a dynamic manner.

Learning Outcomes

By the end of this course it is expected that the student will be able to:

1. Understand the systems paradigm;
2. express ideas and communicate in systems terms;
3. describe common phenomenon and identify leverages to problems using standard systems archetypes;
4. dynamically model real world phenomenon using computer simulation; and
5. identify underlying mental models of issues and problem symptoms.

Content Outline

Week 1	Models and Reality, Decision Making, Principles of Systems Thinking
Week 2	Systems Methodology I – Overview and Events
Week 3	Systems Methodology II – Patterns and Systemic Structure
Week 4	Systems Methodology II cont'd – Systemic Structure
Week 5	Systems Methodology III – Leverages and Mental Models
Week 6	Test
Week 7	Stock and Flow Simulation Models I (Lab)
Week 8	Stock and Flow Simulation Models II (Lab)
Week 9	Stock and Flow Simulation Models II (Lab)
Week 10	Systems Thinking and System Dynamics
Week 11	Group Project Finalisation and Presentations

Learning and Teaching

Classes will be held at the City campus.

A variety of instructional methods will be employed, including lectures, computer labs, management flight simulators, videos, and case studies. To make the class more lively and valuable for everyone, all students are expected to have read and contemplated on the material assigned for each day.

The procedures and the course schedule are subject to change though all effort has been taken to plan lectures according to the schedule given. In the spirit of continuous improvement, feedback and ideas on this course are welcomed. The expectation is that students spend an average of 7-9 hours per week on the course outside of class (approximately evenly split between reading/studying and assignments).

Teaching Staff

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Learning Resources

The prescribed textbook for this course is **Maani & Cavana, Systems Thinking, System Dynamics, Pearson Prentice Hall, 2010**. Readings and/or handouts may be distributed in class. You are advised to familiarise yourself with the class material before lectures in order to facilitate discussions.

Assessment

Individual Assignments	20% (10% each)
Mid-semester Test	15%
Group Project	20%
Exam	45%
Total	100%

Each student will undertake two individual assignments and a group project. Assignments 1 and 2, and the project report are to be submitted to turnitin.com before midnight on the due date. Please note the material in the Student Handbook regarding Cheating and Plagiarism.

A 50-minute mid-semester test (worth 15% of the course grade) will be held during class. Time and venue to be confirmed.

The projects will be presented by the assignment groups in the final week of class.

A 3-hour open-book Final Examination (worth 45% of the course grade) will be conducted during exam week (date and time TBA). The exam will emphasise an integration of the concepts discussed in the course.

Note: Examinable material may include course notes and readings (including case studies) and class discussion.

To gain a pass for this course, students are required to achieve a mark of:

1. 50% or greater in the aggregate for the course; and
2. 50% or greater in either the final exam or the combined totals of the mid-semester test and the final exam.

Learning Outcome	Assignment 1	Assignment 2	Group project	Test	Final Exam
1	X		X	X	X
2	X		X	X	X
3		X	X	X	X
4		X	X		X
5		X	X		X

Learning outcomes are listed in the sequence in which they will be achieved; their relationship to the various pieces of assessment manifests accordingly. The assessments will strongly emphasize students' ability to apply theory in lifelike/real-life scenarios as opposed to regurgitating theory in response to questions that test their rote learning.