

404210: Management Information Systems

Teaching Scheme

Lectures: 4 Hrs/week

Examination Scheme

Paper: 100 Marks

Unit I

Introduction to Management Information Systems for Large and Complex Engineering Enterprise

1. Overview of Management Information Systems (MIS),
2. Survey of Information Systems Technologies, MIS structure,
3. Information System Requirements,
4. Development, implementation and management of IS resources,
5. Rise of Convergence Technology I - IT infrastructure, Network, Enterprise Applications,
6. Rise of Convergence Technology – Wireless Networks, Mobile Devices, Mobile Users, Emergence of Mobility value Chain,
7. Future developments in MIS and its organizational and social implications,
8. Enterprise as a self-organizing, open system for competitive advantage in a complex and changing environment,

Unit II

Conceptual Foundations - Designing systems for complex and changing markets

9. Shift from Collective to Individual Design Decision: IS view of an engineering system,
10. Shift from information *economics* (decision-making under constraints) to *information economics* (decision-making under opportunities),
11. Uncertainties in IS view,
12. Implications of uncertainty in IS view - System failure from Complex Errors,
13. Need for Information Evaluation - Introduction to Information Integrity,
14. Definition of Information Integrity,
15. Information Integrity Risk,
16. Significance of Efficient & Economic Processing of information: On Criticality of Information Integrity for Competitive Market Advantage,
17. Systems approach to error reduction- Basis for I*I Technology Design,

Unit III

Introduction to System Dynamics Modeling and Computer Simulation Language

Tool for I*I Technology Development – I

18. Complex Real World Problems, Problems and Models,
19. Feedback Systems,
20. Overview of System Dynamics Approach,
21. Introduction to System Dynamics Tools-DYNAMO, Vensim, STELLA,
22. Defining Problem Dynamically,
23. System Conceptualization,
24. Example,
25. Introduction to the Computer Simulation Language.

Unit IV

Introduction to System Dynamics Modeling and Computer Simulation Language - Tool for I*I Technology Development – II

26. Formulating Equations,
27. Formulating Model – An example,
28. Principles of Model Formulation,
29. Model Testing and Further Development,
30. Policy Analysis and Recommendation,
31. Practice of System Dynamics Application using Vensim - I,
32. Practice of System Dynamics Application using Vensim- II,
33. Practice of System Dynamics Application using Vensim – III,
34. Practice of System Dynamics Application using Vensim- IV.

Unit V

Information Integrity Technology Development –I

35. Information Envelop comprising dynamic decision stages & its I*I Implications-I,
36. Information Envelop comprising dynamic decision stages & its I*I Implications-II,
37. Information Envelop comprising dynamic decision stages & its I*I Implications-III,
38. Existing I*I Mechanisms and their main limitations – Security and Audit,
39. Existing I*I Mechanisms and their main limitations – Quality, Noise reduction under Communication Theory, and Decision Making under Expected Utility Theory,
40. Usefulness-Usability-Integrity Paradigm.

Unit VI

Information Integrity Technology Development –II

41. Information Integrity Attributes - I,
42. Information Integrity Attributes – II,

43. Cost Benefit Analysis of I*I – A qualitative treatment,
44. Equations for Information value and for Improvement of I*I – A qualitative treatment,
45. I*I Technology - a Systems View –I: Environmental Anomaly and Concept of Environment/ Information Topology,
46. I*I Technology - a Systems View –II: Decentralized and Distributed Database Design,
47. I*I Technology - a Systems View –III: Acquisition Cycle,
48. I*I Technology - a Systems View –IV: Utilization Cycle,
49. I*I Technology - a Systems View –V: Feedback and I*I Control
50. Summarization: Comparison between Traditional IS, Quality IS, and Integrity IS.

Texts Books:

1. Gordon B. Davis and Margrethe H. Olson, "Management Information Systems", Mc-Graw-Hill International Editions.
2. George P. Richardson and Alexander L. Pugh III, "Introduction to System Dynamics Modeling", System Dynamics Series, PEGASUS Communications, 1999, Pounds 25.95
3. Susanne Kelly and Mary Ann Allison, "The Complexity Advantage", A Business Week Book, Mc-Graw Hill, 1999.
4. Neil Storey, "Safety Critical Computer Systems," Addison-Wesley, Reading, Massachusetts Longman. 1996.

Reference Books:

- Anders Tallberg, "An Economic Framework for Information Integrity", Library, Swedish School of Economics and Business Administration, P.O. Box 479, 00101 Helsinki, Finland, 1999.
- Dietrich Dorner, "The Logic of Failure- Recognizing and Avoiding Error in Complex Situations", Perseus Books, Reading, Massachusetts, 1996
- Fraçois E. Cellier, "Continuous System Modeling", Springer -Verlag, NY, 1991.

V. Rajaraman, and V. V. Mandke, Editors, "Information Integrity: Issues and Approaches", Proc. Of Discussion meeting at Jawaharlal Nehru Center For Advanced Scientific Research, June 1995.

Further, course will also refer to latest research papers in the area published through 1997 – 2003

www.centerforinformationintegrityresearch.org..