

MPHIL COURSE: Integrity Information System

4 Credit course

4 Blocks, 16 Units

Block I

The Complexity Advantage – Need for environmental view of information system design for large and complex enterprise

- Growing importance of information, Significance of efficient and economic processing of information for Competitive Advantage, Definition of Information Integrity.
- Overview of existing approaches to information system (IS) design – technical, behavioral, quality, Survey of information systems technologies, Development, implementation and management of IS resources.
- Rise of convergence technology, e.g., IT infrastructure, Network, Enterprise, Applications, Wireless Networks, Mobile Devices, Mobile Users, Emergence of Enterprise Mobility Value Chain.
- Implications of convergence technology for information system design, Requirement to go beyond quality information system, Introduction to integrity information system – Future developments in IS and their organizational and social implications, Complexity of an enterprise, its relationship with the amount of information that it can economically process and transfer and its strategic criticality for increased market share.

Block II

Conceptual Foundations of Information Integrity - Designing information systems for complex and changing environment

- Shift from physical work system to informational and physical work system, Shift from Collective to Individual Design Decision: Socio-technical IS view of an engineering system.
- Shift from information *economics* (economics of constraints) to *information economics* (economics of opportunities), Uncertainty in IS view and its error implications – Shift from simple to complex errors.

- Shift from information retrieving to information origination and evaluation - Economic framework for introduction to Information Integrity,
- Informational risk - Shift from concept of ex-post risk to that of ex-ante risk, information integrity risk, information correctness risk, information exactness risk, Systems approach to error reduction - Basis for I*I Technology Design.

Block III

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

- System Dynamics Approach for Large, Complex Real World Problems.
- Problem Identification and its System Conceptualization.
- Introduction to the Computer Simulation Language, Model Formulation.
- Model Testing and Further Development, Policy Analysis and Recommendation.

Block IV

A Design Basis for Information Integrity Technology Development

- Information Envelop comprising dynamic decision stages and its I*I Implications,
- Existing I*I Mechanisms and their main limitations,
- Usefulness-Usability-Integrity Paradigm, Information Integrity Attributes,
- Modeling integrity information system - Cost Benefit Analysis of Information Integrity, Equation for value of information, Equation for improvement in value of information integrity,
- Information Integrity Technology – A System's View.

- Text Book:** Learners will be given individual lecture notes in the form of the power point slides. The lecture material provided will be complete and comprehensive. In time, the blocks will prepared in the self-learning format.
- Learners may refer to reference books. Referring to these reference books will be absolutely optional, as the lecture notes provided in power point slides, along with the counseling sessions, will take care of all learning needs.
- Block II visualizes use of System Dynamics Modeling software, which is freely available from the Net.

Reference Books:

1. Susanne Kelly and Mary Ann Allison, "The Complexity Advantage", A

- Business Week Book, Mc-Graw Hill, 1999.
2. centerforinformationintegrityresearch.org; Also see Referrals section in the Site.
 3. Rajaraman, and V. V. Mandkc, Editors, "Information Integrity: Issues and Approaches", Proc. Of Discussion meeting at Jawaharlal Nehru Center For Advanced Scientific Research, June 1995.
 4. Gordon B. Davis and Margrethe H. Olson, "Management Information Systems", Mc-Graw-Hill International Editions.
 5. George P. Richardson and Alexander L. Pugh III, "Introduction to System Dynamics Modeling", System Dynamics Series, PEGASUS Communications, 1999.
 6. Neil Storey, "Safety Critical Computer Systems," Addison-Wesley, Reading, Massachusetts Longman. 1996.
 7. Anders Tallberg, "An Economic Framework for Information Integrity", Library, Swedish School of Economics and Business Administration, P.O. Box 479, 00101 Helsinki, Finland, 1999.
 8. Dietrich Dorner, "The Logic of Failure- Recognizing and Avoiding Error in Complex Situations", Perseus Books, Reading, Massachusetts, 1996.
 9. Francois E. Cellier, "Continuous System Modeling", Springer -Verlag, NY, 1991.
 10. I*I research papers in the area published through 1997 – 2003.

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