



International School of
Information Management

Information Management (PhD) Syllabus

1. Theories of Information: Shannon's theory; Decision Theories Game Theory and Zipf's law
2. Macroeconomics of Information: Applications in bargaining and auctions. Applications of information economic principles to finance.
3. Foundations of computing: Mathematical Logic; Set Theory ; Graph ; Proof Techniques ; Turing Machines ; Limits of Algorithmic Computing
4. Software engineering processes, tools, and techniques used in software development and quality assurance. Life-cycle models, process modelling, requirements analysis and specification techniques, quality assurance techniques, verification and validation, testing, project planning, and management.
5. Data Representation and organization. Categorization, indexing and content analysis. Data structures and databases. Database Management – Database design, development and administration. Database Systems and Applications – Logical data models, relational database systems, structured query language (SQL), conceptual modelling, database design, web-connected databases
6. Content Management Systems: XML. Open Source CMS packages such as Joomla, Drupal, Wordpress and others.
7. Network technologies – The techniques of telecommunication networks and the management of information technologies and networks. Internet architectures, technologies, applications, and protocols
8. IR Models including Boolean Model; Vector Space Model; Relational DBMS ; Probabilistic Models ; Language Models . Web Information Retrieval; citation network analysis; social collaboration (PageRank and HITS algorithms)
9. Data Mining: Overview; Types of Patterns; Algorithms for Classification, Clustering, Association Rules, Outliers, Privacy Preservation; Data Pre-processing (Feature Selection, Discretization, Sampling); Web Mining; Applications and Case Studies
10. Knowledge Organization Systems – Term Lists; Classification and categorization systems; Relationship Models. Taxonomy – Descriptive taxonomies; Navigational taxonomies; Data management vocabulary; The Semantic Web Vision. Ontology Languages for the Semantic Web – RDFS, OWL, OIL and DAML+OIL