ERP
CS-604C
Contact: 3L
Credits: 3

Module 1: Overview of ERP (Lectures : 9)
a) The evolution of ERP systems: A historical perspective
Evolution through Payroll system, Inventory Control system, Materials Requirement Planning (MRP I) system, Manufacturing Resource Planning (MRP II) system, Their advantages and disadvantages. Definition and Concept of ERP, Business reasons for rise and popularity of ERP system - Benefits of an ERP system

b) Business processes supported by ERP systems
Various business functions in an Organization – Purchasing, Materials Management, Manufacturing, Sales & Distribution, Plant Maintenance, Quality Management, Finance & Accounting including Costing, Human Resources etc. ERP market place – SAP, Oracle, PeopleSoft, JD Edwards, Baan, Microsoft's suit of products etc.
Business modules in these ERP packages – a brief comparative description of business function modules and sub-modules.

Overview of key end-to-end business processes supported in two major ERP systems (preferably SAP and Oracle) – Order to Cash, Procure to Pay, Plan to Produce and Despatch.

Module 2 : Information Technology and ERP systems (Lectures : 9)
1. The evolution of Information Technology (IT): A historical perspective
Evolution of computer generations (hardware and software) – Operating systems, File systems to Database Management systems, Communication Networks. Enabling of ERP systems by IT evolution.

2. The evolution of ERP systems architecture
Client-Server based architecture, Multi-Tier architecture – Presentation layer, Application layer, and Database layer (Online Transaction Processing – OLTP). Brief discussion on Extended ERP systems - Web-enabled ERP architecture, Service-Oriented Architecture and Cloud Computing. Open Source ERP.

3. Related technology concepts
ERP and Supply Chain Management (SCM), and Customer Relationship Management (CRM), ERP and Business Intelligence (some of the popular tools like Cognos, Business Objects should be mentioned), ERP and Data warehousing (Data Mart, Data Mining and On-line Analytical Processing - OLAP), ERP and E-business.

Module 3 : Implementation of ERP system (Lectures : 11)
Types of services required in implementation – Consulting, Configuration, Customization and Support
1) ERP implementation approach
Single vendor versus Best-of Breed ERP implementation, Big Bang versus
Phased (by module/ site) implementation, Using ERP of Application Service Provider (ASP).

2) ERP implementation life cycle
Planning different aspects (Economic viability, Senior Management commitment, Resource requirements, Change management etc.), Understanding requirements and Process preparation – Gap analysis and Business Process Engineering, User Acceptance criteria, Design, Configuration, Customization (difference between Configuration and Customization, advantages and disadvantages), Extensions, Data migration, End-user training, User Acceptance, Going live, Roll-out.
Differences between ERP implementation life cycle and Custom Software development phases. Drawbacks of ERP system.

3) Organizing implementation
Interaction with Vendors, Consultants, and Users. Contracts with Vendors, Consultants, and Employees. Project Management and Monitoring. ERP Project Organization – Formation of Steering Committee and different User Groups. Top Management Commitment and Steering Committee meetings. Change Management, Risks and Challenges in ERP implementation.

4) Post-implementation Support, Review, Maintenance and Security of ERP systems
A typical Support Cycle (Planning, Stabilization, Ongoing and Upgrade phases). Post-implementation Review of ERP systems – measures of review (Efficiency, Effectiveness, and Competitive Advantage), and approaches for review (User attitude survey, Cost/benefit analysis, Compliance audit, Budget performance review, Service level monitoring, Technical review, Product review, Integration review etc.). System maintenance and ERP system maintenance. Software upgrade (patch, release, version). Security and Access control of ERP systems.

Module 4 : Emerging Trends and Future of ERP systems (Lectures : 7)
1. Emerging Technologies and ERP
Service-oriented Architecture (SOA): Enterprise SOA layers – Business processes, Business services, Components and

Integration services, Advantages and Drawbacks of SOA, When to use SOA, Difference between multi-layered Client-server architecture and SOA, basic awareness of NetWeaver from SAP, Websphere from Oracle and .Net from Microsoft. *Enterprise Application Integration (EAI)*: Basic understanding of the concept, Types of EAI (levels) – User Interface, Method (logic), Application Interface, Data.

EAI architecture – Typical framework (Business Processes, Components &Services, Messaging service, and Transport service. Mention of some of the leading EAI vendors – IBM, Microsoft, Oracle, SAP, TIBCO.

Radio Frequency Identification (RFID) and ERP: awareness of RFID technology, Benefits of RFID integrated with ERPs. *M-Commerce*: basic concept and applications, difference with E-Commerce, benefits of integration with ERPs.

2. Future of ERP
Technology transformation to SOA, more E-Commerce features, Growing mobile applications, Economical and Easy models of ERP deployment etc.

Books Recommended:
i) Enterprise Resource Planning – A Managerial Perspective by D P Goyal, Tata McGraw Hill Education, 2011
ii) Enterprise Resource Planning by Ashim Raj Singla, Cengage Learning, 2008

References:
1. Enterprise Resource Planning, 2nd Edition by Alexis Leon, Tata McGraw Hill Education, 2008