

Course name	Application (Re)Engineering		
Course ID:	40478	Credits:	3
Prerequisites:	Database, System Analysis and Design, e-Commerce, Network.		Program: Under Graduate
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Aim

The aim of this course is to answer these questions:

- How can the business strategies in the modern e-business enterprises be translated into working IS solutions?
- What are the key building blocks and what type of methodologies can be used to architect working solutions from these building blocks?
- How e-business models (portal, ERP, CRM,...) support business strategies?
- What are the key enabling technologies (middleware, network,...) to build working solutions?
- How can the modern e-business applications be architected by using components?
- How can the new applications be integrated with an existing (including legacy) applications?
- What are the management, security, and support issues?
- What are the state of the art (research and trends), state of the market (commercial products) and state of the practice (case studies and examples) in this field?
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Outline

1. **Part 1- Introduction**
 - 1.1. **Introduction to business strategies**
 - 1.2. **e-Business and Distributed Systems- From Strategies to Working Solutions**
2. **Part 2- Applications**
 - 2.1. **E-Business- From Strategies to Applications**
 - 2.2. **eBusiness Applications (CRMs, ERPs, eMarkets, SCM, ASPs, Portals)**
 - 2.3. **Business Process Modeling and Process Mapping**
 - 2.4. **From Strategies to Solutions-A Planning Methodology**
 - 2.5. **IT Infrastructure-Overview of Enabling Technologies**
 - 2.6. **Applications State of the Practice, Market, and Art**
3. **Part 3- Architectures: Solution Architecture Through Components**
 - 3.1. **Software Architecture**
 - 3.2. **Architectural Styles**
 - 3.3. **Layered Architectural patterns**
 - 3.4. **Enterprise Application Architectures- A Component-based Approach**
 - 3.5. **Solution Architecture Overview**
 - 3.6. **Enterprise Data Architecture in Web-XML Environments**
 - 3.7. **Data clustering / partitioning**
 - 3.8. **data transmission/replication**
 - 3.9. **Architectures State of the Practice, Market, and Art**

4. **Part 4- Integration: Enterprise Application Integration and Migration**
 - 4.1. **Integration with Existing (Including Legacy) Applications**
 - 4.2. **Enterprise and Inter-Enterprise Application Integration**
 - 4.3. **Data Warehouses and Data Mining for Integration**
 - 4.4. **Migration Strategies and Technologies**
 - 4.5. **Re-Engineering Patterns**
 - 4.6. **Enterprise Application Integration through SOA**

5. **Part 5- Technologies**
 - 5.1. **Service Oriented Architecture and Web Service**
 - 5.2. **Distributed Objects, CORBA, Web Services, J2EE, .Net, SOAP, and EJB**
 - 5.3. **Enterprise Data and Transaction Management**
 - 5.4. **Asynchronous messaging (message queue)**

References

1. Amjad Umar, **Enterprise Architectures and Integration with SOA – Concepts, Methodology and a Toolset**. NGE Solutions, Inc. January, 2010.
2. Amjad Umar, **e-Business and Distributed Systems Handbook (from strategies to working solutions)**, NGE Solutions, 2003.
3. Hans-Erik Eriksson and Magnus Penker, **Business Modeling with UML, 2000**.