

3/3 MCA First Semester

CA5T5B

SERVICE ORIENTED ARCHITECTURE

Credits : 4

Lecture Hours : 4 periods / week

Internal assessment : 30 Marks

Semester and Examination: 70 Marks

Course Description:

This course has been created for students to implement or currently implementing SOA in industries. It gives the overview of pros and cons of SOA and explains when, why and which part of SOA you should use in live environment or project designing.

Course Objectives:

- Understand the benefits of SOA.
- Understand the risks associated with the SOA approach.
- Understand assess potential profit with SOA.
- Understand extent SOA should be implemented.
- Understand migrate from existing solutions to SOA and why migration to SOA does NOT require rebuilding the whole existing infrastructure.
- Understand simplification and decomposition benefits.

UNIT I :

Roots of SOA: Characteristics of SOA - Comparing SOA to client-server and distributed internet architectures.

Unit II:

Anatomy of SOA: How components in an SOA interrelate - Principles of service orientation.

UNIT III:

Web services: Service descriptions – Messaging with SOAP –Message exchange Patterns – Coordination –Atomic Transactions – Business activities – Orchestration – Choreography.

UNIT IV:

Service layer: abstraction – Application Service Layer – Business Service Layer – Orchestration Service Layer.

UNIT V:

Service oriented analysis: Business-centric SOA – Deriving business services- service modeling - Service Oriented Design – WSDL basics – SOAP basics – SOA composition guidelines.

UNIT VI:

Entity-centric business: service design – Application service design – Taskcentric business service design.

UNIT VII:

SOA platform basics : SOA support in J2EE – Java API for XML-based web services (JAX-WS) - Java architecture for XML binding (JAXB) – Java API for XML Registries (JAXR) - Java API for XML based RPC (JAX-RPC)- Web Services Interoperability Technologies (WSIT) - SOA support in .NET – Common

Language Runtime - ASP.NET web forms – ASP.NET web services – Web Services Enhancements (WSE).

UNIT VIII:

WS-BPEL basics: WS-Coordination overview - WS-Choreography, WSPolicy, WSSecurity.

Learning Resources

Text Books:

1. Thomas Erl, "Service-Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 1/e, 2005.

Reference Books:

1. Thomas Erl, "SOA Principles of Service Design "(The Prentice Hall Service-Oriented Computing Series from Thomas Erl), 2005.

2. Newcomer, Lomow, "Understanding SOA with Web Services", Pearson Education, 2005.

3. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services, An Architect's Guide", Pearson Education, 2005.

4. Dan Woods and Thomas Mattern, " Enterprise SOA Designing IT for Business Innovation" O'REILLY, 1/e, 2006.