

## 4/4 B.Tech - FIRST SEMESTER

**IT7T6B****SERVICE ORIENTED ARCHITECTURE****Credits:3****Lecture: 3 Periods/week****Internal assessment: 30 marks****Practice/Interaction: 1Period/week****Semester end examination: 70 marks****Objectives:**

- To understand implementation model for SOA and its Principles and Benefits.
- To Understand XML concepts, paradigms needed for testing web services.
- To explore different Test Strategies for SOA-based applications.
- To implement functional testing, compliance testing and load testing of Web Services.
- To identify bug-finding ideas in testing Web Services.

**Outcomes:**

Students will be able to

- Understand the importance of Web Services and Service oriented Architecture.
- Explore the knowledge on WSDL and Web Service Architecture.
- Explore the knowledge on SOAP.
- Understand the concepts of UDDI.
- Understand Web Service Security and categorize different frame works.

**Prerequisite:**

Web Technologies

**Syllabus:****UNIT -I**

Evolution and Emergence of Web Services – Evolution of distributed computing. Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA). Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

**UNIT -II**

Web Service Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services. Describing Web Services – introduction, non functional service description, WSDL1.1 Vs WSDL 2.0, WSDL document, WSDL elements, WSDL binding, WSDL tools, WSDL port type, limitations of WSDL.

**UNIT -III**

Brief Overview of XML. SOAP : Simple Object Access Protocol, Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP envelope, Encoding, Service Oriented Architectures, SOA revisited, Service roles in a SOA, Reliable messaging, The enterprise Service Bus, SOA Development Lifecycle, SOAP HTTP binding, SOAP communication model, Error handling in SOAP.

**UNIT- IV**

Registering and Discovering Services : The role of service registries, Service discovery, Universal Description, Discovery, and Integration, UDDI Architecture, UDDI Data Model, Interfaces, UDDI Implementation, UDDI with WSDL, UDDI specification, Service Addressing and Notification, Referencing and addressing Web Services, Web Services Notification.

**UNIT -V**

SOA and web services security considerations, Network-level security mechanisms, Application-level security topologies, XML security standards, Enterprise management Framework, Standard distributed management frameworks, Web service management, Richer schema languages, WS-Metadata Exchange.

**Text Books:**

1. Web Services & SOA Principles and Technology, 2<sup>nd</sup> Edition, Michael P. Papazoglou.
2. Developing J2EE Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.
3. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

**Reference Books:**

1. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
2. Building web Services with Java, 2<sup>nd</sup> Edition, S. Graham and others, Pearson Education.
3. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly, SPD.
4. McGovern, et al., "Java web Services Architecture", Morgan Kaufmann Publishers, 2005.
5. J2EE Web Services, Richard Monson-Haefel, Pearson Education.

**e- Learning Resources:**

1. [http://www.nmeict.iitb.ac.in/nmeict/avproduction/rtmpstream/stream.php?cs\\_id=2](http://www.nmeict.iitb.ac.in/nmeict/avproduction/rtmpstream/stream.php?cs_id=2)
2. [https://www.youtube.com/watch?v=sOvD\\_VLr7Z0](https://www.youtube.com/watch?v=sOvD_VLr7Z0)
3. <https://www.youtube.com/watch?v=nRayJZmj2oY>