Subject Name : Service Oriented Architecture
Subject Code : IT 603

Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	02	05	4	3	70	30	20	30	150

Learning Objectives:

- To gain understanding of the basic principles of service orientation
- To learn service oriented analysis techniques
- To learn technology underlying the service design
- To learn advanced concepts such as service composition, orchestration and Choreography
- To know about various WS- * specification standards

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Introduction To distributed Computing and SOA	5
2	Web Services Fundamental and Standard	5
3	Principles of Service-Oriented Architecture	5
4	SOA and WS-* Extension	15
5	Principle of Service Oriented Computing	10
6	SOA Platforms	5

Total hours (Theory): 45

Total hours (Lab): 30

Total hours: 75

Detailed Syllabus

Sr. No	Topic	Lecture Hours	Weight age(%)
1	Introduction : Concepts of Distributed Computing, XML, Fundamental of SOA, evolution of SOA	5	10
2	Web Services Fundamental and Standard: Web Services: Definition, Architectures and Standards. Directory services, SOAP, REST WSDL, UDDI	5	10
3	Principles of Service-Oriented Architecture- Service-orientation and object- orientation, SOA Standards Stack, SOA with Web Services, Key Principles of SOA	5	10
4	SOA and WS-* Extension: Message Exchange Pattern, Coordination, Atomic Transactions, Business Activities, Orchestration, Choreography, WS-Addressing, WS-Reliable Messaging, WS-Policy (including WS-Policy Attachments and WS-Policy Assertions), WS-Metadata Exchange, WS-Security (including XML-Encryption, XML-Signature, and SAML)	15	35
5	Principles of Service-Oriented Computing: RPC versus Document Orientation, Service Life Cycle, Service Creation, Service Design and Build, Service Deployment, Publish Web service using UDDI, Service Discovery, Service Selection, Service Composition, Service Execution and Monitoring, Service Termination, Service Composition and Modeling Business Processes with Business Process Execution Language (BPEL)	10	25
6	SOA Platforms: 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)- SOA support in .NET	5	10
	Total	**45**	**100**

Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.

- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

Learning Outcome:

- After the completion of this course student will be able to Understand primary concepts of SOA
- Know the integration of SOA technological points with Web Services.
- Implement of SOA in development cycle of Web Services.

Text Books:
1. Thomas Erl, "Service Oriented Archit ecture: Concepts, Technology, and Design", Pearson education.
2. Service-Oriented Computing: Semantics, Processes, Agents, Munindar P. Singh and Michael N. Huhns, John Wiley & Sons, Ltd., 2005

Reference Books:
1. SOA Using Java™ Web Services by Mark D. Hansen
2. SOA Design Pattern By Thomas Erl PHI
3. Web service contract Design & Versioning for SOA by Thomas Erl PHI
4. SOA with .NET by Rajbalasubhramaniam Prentice Hall

List of Experiment:
1. Create DTD file for student information and create a valid well-formed XML document to store student information against this DTD file
2. Create XMS schema for student information and create a valid well-formed XML document to store student information against this XMS schema file.
3. Using XSL display student information in tabular format.
4. Create web calculator service in NET Beans and consume it.
5. Create web calculator service in .NET and create client to consume this service.
6. Create java client to consume web service created in .NET
7. Create .NET client to consume web service created in JAVA.
8. Create java client to consume existing web service hosted in the internet
9. Create a RESTFUL web-services in Net beans
10. Using JAXP SAX echo given xml file on console.
11. Using JAXP DOM echo given xml file on console.
12. Using AXIS 2 framework and TOMCAT create a simple calculator web service and also create a java client to consume this web service.