GUJARAT TECHNOLOGICAL UNIVERSITY

COMPUTER ENGINEERING (SOFTWARE ENGINEERING) (02) /INFORMATION TECHNOLOGY (23)

SERVICE ORIENTED ARCHITECTURE
SUBJECT CODE: 2722301
SEMESTER: II

Type of course: Core

Prerequisite: NA

Rationale: NA.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks		Practical Marks				
				ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Introduction: Fundamental SOA, Characteristics of contemporary SOA, Misperception about SOA, Tangible benefits of SOA, An SOA timeline, Continuing evolution of SOA, Roots of SOA Service-orientation and object-orientation, SOA Standards Stack, SOA with Web Services, Key Principles of SOA	8	22
2	Enterprise architectures -Integration versus interoperation , J2EE ,.NET, Model Driven Architecture , Concepts of Distributed Computing, XML	4	11
3	Basic concepts – Web services framework, Services (Web services: Definition, Architecture and standards), Service descriptions with WSDL, Messaging with SOAP, UDDI	6	15
4	Principles of Service-Oriented Architecture- WS-* Specifications: Message Exchange Pattern, Coordination, Atomic Transactions, Business Activities,Orchestration,Choreography,WS-Addressing,WS-ReliableMessaging,WS-Policy (including WS-Policy Attachments and WS-PolicyAssertions),WS-Metadata Exchange, WS-Security (including XML-Encryption, XML-Signature, and SAML),	10	30
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	8	22

	,Service Composition and Modeling , Orchestration and Choreography, Apache ODE , Business Processes with Business Process Execution Language (BPEL)		

Reference Books:
1) Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson education.
2) Mark D Hansen, "SOA using Java™ Web Services", Prentice Hall Publication.
3) Muninder Singh & Michael Huhns, "Service Oriented Computing", Wiley
4) Michael Rosen & et el., "Applied SOA", Wiley Publication.
5) Rosheta "SOA based Enterprise Integration", TMH Publication

Course Outcome:

After learning the course the students should be able to:

1. Understand the concepts of Service Oriented Architecture along with the evolution of SOA
2. Understand primary concepts of SOA
3. Know the integration of SOA technological points with Web Services.
4. Implementation of SOA in development cycle of Web Services. •
5. Integrate SOA technologies with Web Services paradigms.
6. Can learn the reference model of Service Oriented base line backend design for cloud environment.

List of Tutorials:

Pr.1   Develop DTD and XSD for University Information System having Exam Enrollment from beginning of Semester, along with Exam Registration and Marks submission by Teachers to University from Various Colleges and Results Sheets Generation by University on Online Report
P3.2   Develop Mark sheet XML Document and display Mark sheet based on CSS and XSL presentation Format
Pr. 3   Develop Java Based Program using JAXP or XML API in reading XML file for Students Information and Display HTML Table
Pr.4   Develop Java Based web Service using REST and SOAP Based web service in Netbeans for University Course List and Search Course based Course Title and Course ID
Pr.5   Create DTD file for student information and create a valid well-formed XML document to store student information against this DTD file.
Pr. 6 Create XMS schema file for student information and create a valid well-formed XML document to store student information against this DTD file.
Pr. 7 Create web calculator service in . NET Beans and create Java client to consume this web service.
Pr. 8 Develop same web service using JX-WS
Pr. 9 Create web calculator service in .NET and Pr. 9 Create java client to consume web service developed using Apache AXIS.
Pr. 10 Using WS –GEN and WS-Import develop the java web service & call it by Java Client.

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website