

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2020-21

Programme:	Bachelor of Engineering (Information Technology)
Semester:	VIII
Course Code:	102047810
Course Title:	Service Oriented Computing
Course Group:	Professional Elective Course - VI

Course Objectives: This course describes the foundation of Service Oriented Architecture with its characteristics and advantages. It strongly describes distinction between client-server, two-tier, three-tier and Enterprise architectures. Course continuous with Basic of web services and Introduction to SOAP, REST, WSDL and UDDI. It also highlights the SOAP and REST architecture along with its importance and standards. At the end, WS-BPEL specifies the framework for Web services.

Teaching & Examination Scheme:

Contact hours per week			Course	Examination Marks (Maximum / Passing)				
Locture	Tutorial	Dractical	Credits	The	eory	J/V/P*		Tatal
Lecture	Tutorial	Practical	Л	Internal	External	Internal	External	Total
3	0	2	4	40/14	60/21	20/07	30/10	150/52

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction:	5
	Concepts of Distributed Computing, XML, Fundamental of SOA, evolution of SOA	
2	Web Services Fundamental and Standard:	5
	Web Services, Architectures and Standards. Directory services, SOAP, REST WSDL,	
	UDDI.	
3	Principles of Service-Oriented Architecture:	5
	Service orientation and object- orientation, SOA Standards Stack, SOA with Web	
	Services, Key Principles of SOA	
4	SOA and WS-* Extension:	10
	Message Exchange Pattern, Coordination, Atomic Transactions, Business Activities,	
	Orchestration, Choreography, WS-Addressing, Reliable Messaging, WS-Policy	
	(including WS-Policy Attachments and WS-Policy Assertions), WS-Metadata	
	Exchange, WS-Security (including XML-Encryption, XML Signature, and SAML)	

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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)			
6	SOA Platforms:	5		
	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			
	Total	40		

List of Practicals / Tutorials:

1	Introduction of XML language.					
2	Develop Mark sheet XML Document and display Mark sheet based on CSS presentation					
	Format.					
3	Develop Mark sheet XML Document and display Mark sheet based on XSL presentation					
	Format.					
4	Create DTD file for student information and create a valid well-formed XML document to					
10	store student information against this DTD file.					
5	Develop DTD and XSD for University Information System having Exam Enrolment 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					
6	Create web calculator service in .NET and Experiment.					
7	Developed JAXB application.					
8	Create web calculator service in .NET Beans and create Java client to consume this web					
	service.					
9	Develop web calculator service using JX-WS.					
10	Create JAX-RS example using jersey implementation.					
11	Analyze and implement SOAP based web service to create to-do list application in XML					
	language.					
12	Consider library management system for your college and create REST based web service for					
	it to manage all the functionalities of your college library.					
Reference Books:						

1	Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson
	education.
2	Munindar P. Singh and Michael N. Huhns, "Service-Oriented Computing: Semantics,
	Processes, Agents", John Wiley & Sons, Ltd.
3	Mark D. Hansen, "SOA Using Java Web Services", Prentice Hall
4	Thomas Erl, "SOA Design Pattern", PHI
5	Thomas Erl, "Web service contract Design & Versioning for SOA", PHI
6	Raj Balasubhramaniam, "SOA with .NET", Prentice Hall

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Supplementary learning Material:

NPTEL - Swayam Courses

Pedagogy:

1

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Seminar/Poster Presentation
- Industrial/ Field visits
- Course Projects

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %					larks i	n %	R : Remembering; U : Understanding; A : Applying;
5	R	U	Α	Ν	Ε	С	N: Analyzing; E: Evaluating; C: Creating
/	15%	25%	25%	15%	20%		

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage		
CO-1	To understand principles & technologies of service-oriented architecture.	20		
CO-2	To analyze the appropriate framework components and market leading tools to create, implement and consume web services.	35		
CO-3	To apply object-oriented programming principles for the creation of web service solutions. 30			
CO-4	To identify the requirements of a medium-difficulty programming task and create software that meets the requirements.	15		

Curriculum Revision:					
Version:	1.0				
Drafted on (Month-Year):	June-2020				
Last Reviewed on (Month-Year):					
Next Review on (Month-Year):	June-2025				

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