

Branch Name:	Computer Engineering (Software Engineering)
Program Code:	ET203
Course Title:	Service Oriented Architecture
Course Code:	2ET2030209T
Pre-requisite Course:	Basic understanding of web based application and programming

Course Objectives: This course provides Service-Oriented Architecture (SOA) concepts and practical aspects in the development and implementation of web applications and composite business services. The course aims to explore detailed understanding of enterprise architectures & security aspect related to e-business services. It also comprises principles of service-oriented computing with goal & challenges for composition service in SOA. Moreover, course aims to develop the basic concepts of services, to evaluate existing strategies, and to make accessible technologies from other fields that can be adopted for emerging technology. It also discusses the challenges and limitation for ebusiness on demand.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	INTRODUCTION TO SOA AND WEB SERVICES: Fundamental of Service Oriented Architecture (SOA), Common characteristics of contemporary SOA, Common misperceptions about SOA, Common tangible benefits of using SOA, Common pitfalls of adopting SOA, Evolution of SOA, SOA lifecycle phases.	03	15
2	WEB SERVICES AND PRIMITIVE SOA: The Web services framework, Services (as Web services), XML, Service descriptions (with Web Service Definition Language-WSDL), Messaging (with Simple Object Access Protocol-SOAP), Directory Services, Universal Description, Discovery, and Integration (UDDI).	03	15
3	ENTERPRISE ARCHITECTURES & PRINCIPLES OF SOA : SOA in J2EE, SOA in .NET, Elements of Service-Oriented Architectures, SOA standard stacks, RPC versus Document Orientation, Major Benefits of Service-Oriented Computing, Composing Services, Goal & Challenges for Composition	05	20
4	SOA AND WS-* EXTENSIONS: Message exchange patterns, Service activity, Coordination, Atomic transactions, Business activities, Orchestration, Choreography, Addressing, Reliable messaging, Correlation, Policies, Metadata exchange.	04	15
5	SERVICE ORIENTATION IN ENGG & SECURITY: Building SOC Applications, Elements of SOC Design, Quality of Service, How to Create a Process Model, How to Design Agent-Based Systems, How to Construct Agent-Based Systems. How to Engineer Composed Services, Exception Handling, Service Management, and Security in SOA.	05	20
6	E-BUSINESS ON DEMAND AND SERVICE-ORIENTED ARCHITECTURE : E-Business on demand, The on demand operating environment, Integration , Automation, Virtualization, Service-oriented architecture for on demand ,On demand technologies, Trends & research track in SOA	04	15

Reference Books:

1. Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson education.
2. Muninder Singh & Michael Huhns, "Service Oriented Computing", Wiley Publication.
3. Mark Endrei & et al., "Patterns: Service Oriented Architecture and Web Services" IBM Redbook.
4. Michael Rosen & et al., "Applied SOA", Wiley Publication.
5. Mark D Hansen, "SOA using Java Web Services", Prentice Hall Publication

List of Open-Source Software/learning website:

- www.redbooks.ibm.com
- www.oracle.com/us/products/middleware/soa/resources/index.html
- www.enterprise-architecture.info/EA_Services-Oriented-Enterprise.htm
- msdn.microsoft.com/en-us/library/bb833022.aspx
- www.javatpoint.com/service-oriented-architecture
- www.j2eebrain.com/soa

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	understand the fundamental of service oriented architecture (SOA)	Understanding (1)
COL2	study the Designing, development and testing of services in service oriented architecture	Understanding (1) Applying (2)
COL3	learn the enterprise architectures as per current industries uses	Understanding (1)
COL4	learn the fundamental architecture view of Service Oriented Architecture in industries	Understanding (1)
COL5	learn basic principles of service oriented architecture and apply these concepts to develop a sample web based application	Understanding (1) Applying (1)
COL6	understand the implementation of web services security in SOA.	Understanding (1)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M		M											
CLO2	H	M			M							L				
CLO3	H	M	M		M											
CLO4	M	M	M		M							L				
CLO5	M	M										L				

H: High, M: Medium, L: Low