

**B. TECH. SEMESTER – VI (CE)**  
**SUBJECT: WEB SERVICE DEVELOPMENT**

Teaching Scheme (Hours/Week)				Credits	Examination Scheme				
Lect	Tut	Prac	Total		Ext	Sess.	TW	Prac	Total
2	0	2	4	3.0	40	-	25	25	90

**A. COURSE OBJECTIVE**

The objective of this course is to familiarize the students with the concepts and principles of service orientation. We aim to cover SOAP-based and RESTful web services and to guide the students to implement them. The course will give detailed knowledge of concepts of micro-services architecture and make students aware about the concepts of application containers.

**B. DETAILED SYLLABUS**

**[1] Principles of Service Orientation**

Common principles, interrelation between principles, comparing service orientation with object orientation.

**[2] Web services**

Web Services roles, Service Descriptions with WSDL and Messaging with SOAP, UDDI basics. Web service coordination, orchestration, and choreography. Windows Communication Foundation: Introduction, Operations, Service, data and message contracts.

**[3] Web API**

Introduction, controller, configuration, routing, parameter binding, action return type, media type formatters. message handlers, action filters, CRUD operation, Http client to consume Web API, dependency injection.

**[4] Micro services**

Introduction, architecture, features, monolithic vs. micro-services, principles, advantages.

**[5] Containers:**

Introduction, creation, configuration, commands. e.g. Docker, Podman, Coordinating containerized applications: Introduction, architecture, components, commands, configuring cluster. e.g. Docker Swarm, Kubernetes

**C. RECOMMENDED TEXT / REFERENCE BOOKS**

- 1) Thomas Erl, “Service-Oriented Architecture: Concepts, Technology, and Design”, Pearson Education.
- 2) Tugberk Ugurlu, Alexander Zeitler and Ali Kheyrollahi, “Pro. ASP .NET Web API”, Apress.
- 3) Sam Newman, “Building Microservices”, O’Reilly.
- 4) Sean P. Kane and Karl Matthias, “Docker: Up & Running”, O’Reilly.

- 5) Brendan Burns and Kelsey Hightower, “Kubernetes: Up and Running” , O’Reilly.
- 6) Kurtz, Jamie, Wortman, Brian, “ASP.NET Web API 2: Building a REST Service from Start to Finish”, Apress.
- 7) Ronnie Mitra and Irakli Nadareishvili, “Microservices: Up and Running”, O’Reilly.

#### **D. COURSE OUTCOMES**

At the end of the course, students should be able to:

- understand service orientation concepts and principles.
- design and develop service oriented applications in standard manner
- develop SOAP based and RESTful web services.
- design and development of micro-services and containers.