

## WCF Syllabus

### Overview:

Like all other things Programming models have been evolving, from Structured Programming to Object Oriented Programming to Componentization to eventually Service Orientation Architecture (SOA). Windows Communication Foundation (WCF) is the best to implement SOA in an enterprise application development. WCF encompasses all older technologies of Microsoft like Web Services, Remoting, MSMQ and COM+ into a single basket. And because of this advantage it has become very easy to upgrade applications from intranet to internet environment and make discrete technologies interoperate with each other.

### Course Objectives:

- Understand the inspiration and architecture of SOA & WCF
- Create WCF service and host in IIS Webserver or Self host Console based application
- Build client application and consume WCF Service
- Understand the role of End Point – ABC of WCF Service
- Understand channels, bindings, and configuration options.
- Learn about Service Contracts, Operation Contracts and Data Contracts.
- Handle and interoperate Exceptions between client and server.
- Manage transactions across service boundaries
- Implement Asynchronous communication using MSMQ Server
- Implement Security (Authenticate and authorization) access to services

**Pre-requisite / Target Audience:** Anyone who wants to learn WCF must have in-depth knowledge of Object Orientation and C# programming language.

### Module 1:- Introduction to WCF

In this module you learn evolution of WCF. Importance of SOA and its characteristics. Also you find here the advantages of WCF.

- ❖ Introduction to WCF and SOA

### Module 2:- Developing WCF Service Application and Client

In this chapter you get knowledge about how to create WCF application and setting up project initials with basic examples.

- ❖ Hosting WCF Service in IIS/ASP.NET Development Server
- ❖ Using a Service in the client application
- ❖ Understand Contracts in the service.
  - ServiceContract.
  - OperationContract.
  - DataContract.
- ❖ Understand Instancing behavior in the service.
  - Single
  - PerCall
  - PerSession
- ❖ Building WCF Library based Host and Client application.

### Module 3:- Endpoints in configuration file

In this chapter you will know how to configure a service using a XML-based configuration file i.e. web.config. We will also see definition of endpoints, multiple endpoints and publishing metadata.

- ❖ ABC - Address, Binding & Contract of the service in Configuration File.
- ❖ Understanding importance of base address.
- ❖ Importance of IMetadataExchange Contract / Endpoint.
- ❖ Configuring service behavior in configuration file
- ❖ WCF Service Configuration Editor
- ❖ Creating Endpoints through Code

### Module 4:- Channel Stacks & Bindings in WCF

In this chapter you will learn WCF Bindings in detail, it's important to understand the Channel Stack as part of the WCF runtime.

- ❖ Understanding Channel Stack
- ❖ Introduction to Binding
- ❖ Types of Bindings.
- ❖ Binding Comparison
- ❖ Thumb rules in choosing endpoint binding
- ❖ Configuring a Service and Client for Multiple Bindings
- ❖ Binding Class Properties.

**Module 5:- Understanding Service and Data Contracts**

In this chapter you will learn how to use Data Contracts and Service Contracts in our WCF Service. Also Importance of Version Tolerance in our WCF Service.

- ❖ About Service Contract
- ❖ Data Contract & Data Member
- ❖ Versioning using Interface IExtensibleDataObject
- ❖ Version Tolerance
- ❖ Implications of Modifying Service Operations
- ❖ Implications of Modifying Data Contracts
- ❖ Working with Known Types

**Module 6:- Handling WCF Exceptions/Faults**

In this chapter you will learn How do we handle exceptions in WCF Service?. How to consume exceptions through fault exception to WCF client?

- ❖ Overview
- ❖ Producing Faults
  - SOAP fault with FaultCode and FaultReason
  - Culture specific SOAP fault
  - Strongly Typed SOAP fault
- ❖ Consuming Faults
- ❖ Proxy State for Managed Exceptions Vs SOAP Fault

**Module 7:- Message Exchange Patterns**

In this chapter you will learn how clients and services pass messages. Also importance of request/reply, one-way and duplex message exchange patterns.

- ❖ Request – Reply Pattern
- ❖ One way Operations
- ❖ Duplex Pattern
- ❖ Duplex Publisher Subscriber Example

**Module 8:- Transactions**

In this chapter you will learn how to add transaction support to a WCF service and how to start a transaction in a client application. You also saw how to add transaction support to stateful WCF services.

- ❖ What is Transaction and ACID
- ❖ How to enable Transaction in WCF Service
- ❖ TransactionScope in to begin a transaction.
- ❖ Transaction Isolation
- ❖ Transactions and Sessions

### **Module 9:- Microsoft Message Queue**

In this chapter demonstrates how a Message Queuing (MSMQ) application can send an MSMQ message to a Windows Communication Foundation (WCF) service.

- ❖ Introduction
- ❖ Advantages of using MSMQ
- ❖ Transactional Queues
- ❖ Setup and View MSMQ Server
- ❖ Steps to follow to Build a MSMQ application

### **Module 10:- Security**

In this chapter you will learn the security system available in WCF service. When WCF service is created, it is required to secure the service so that only required client can consume the service. This will make sure that communication channel between client and service is secured.

- ❖ Concepts.
- ❖ Security Mechanisms.
- ❖ Default Security Settings.
- ❖ Demonstrate how Messages are encrypted.
- ❖ Authentication
  - Windows Authentication
  - HTTPS / SSL Authentication.
  - ASP.NET Membership Authentication
  - Custom Authentication
- ❖ Authorization
  - Windows Group/Role based Authorization
  - Custom Role based Authorization
  - ASP.NET Role Provider

**At the end of the course participants will be able to**

1. Able to create WCF application.
2. Able to consume WCF Services to the different types of applications.
3. Able to create secure services.
4. Able to handle exceptions in WCF service.