

Suggested Teaching Guidelines for Microsoft .NET– PG-DAC August 2018

Duration: 40 class room hrs. + 30 lab hrs (70 Hrs)

Objective: To acquire the knowledge of MS .NET Framework 4.5 or higher version

Prerequisites: Students are expected to have knowledge of COM development and XML

Evaluation method: Theory exam– 40% weightage
Lab exam – 40% weightage
Internal exam– 20% weightage

Note: Training will be carried out on .Net 4.5 or latest version of the software

List of Books / Other Training Material:

Text Book:

1. ASP.Net 4.5 Covers C# and VB Codes: Black Book by Kogent Learning Solutions Inc / Dreamtech Press

Reference books:

1. Beginning ASP .NET 4.5 in C# by Matthew MacDonald/Apress
2. .Net 4.5 Programming 6-in-1: Black Book by Kogent Learning Solution/ Wiley
3. Pro C# 5.0 and the .NET 4.5 Framework by Andrew Troelsen / Apress
4. .NET Programming 4.0, Wrox Publications
5. Introducing Microsoft .NET, Wrox Publications
6. CLR via C# by Jeffrey Richter / Microsoft Press
7. Pro C# 2010 And The .NET 4 Platform, Andrew Troelsen
8. C# 2010 Programming: Covers .Net 4.0, Black Book
9. C# 2010 For Programmers, Paul J. Deitel, Harvey M. Deitel
10. Professional ASP.NET MVC 4 Jon Galloway Phil Haack Brad Wilson K. Scott Allen /Wiley
11. Beginning ASP .Net 4.5 in C# and VB by Imar Spaanjaars /Wiley India
12. Pro ASP.Net 4 In C# 2010, Matthew Macdonald, Adam Freeman, Mario Szpuszta
13. Asp .Net MVC Framework by Stephen Walther /Pearson
14. Murach's ASP.NET 4.5 web programming with C# 2012 5th edition by Mary Delamater, Anne Boehm / Shroff Publishers & Distributors
15. Professional ASP.NET 4.5 in C# and VB Gaylord J N / Wiley India Pvt. Ltd

Duration: 10 class room hrs.

Session 1:

Lecture:

- Introduction to .Net Framework
- Difference between .NET 2.0, .NET 3.5 and .NET 4.0/4.5
- .NET Framework Overview
 - ✓ Objectives of .NET Framework 4.5
 - ✓ Components of .NET Framework 4.5
 - ✓ Development in .NET Framework 4.5

Assignment Reading:

Read about NET 4.5 Framework from MSDN.

Session 2:

Lecture:

- Execution Process in .NET Environment
- Inside .NET Framework

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- ✓ CLR
- ✓ Managed and unmanaged code
- ✓ MSIL
- ✓ CTS
- ✓ MetaData
- JITters

Session 3:

Lecture:

- Assemblies-The Building Blocks
- Assembly Benefits
- Assembly Contents
- Different between a normal .EXE File and a PE file
- Search order of an assembly
- Using reflection to build a dynamically extensible application.
- Discovering type Defined in an assembly

Assignment Lab:

- ✓ Create a Satellite Assembly in NET 4.5 Framework
- ✓ Create a global Assembly in NET 4.5 Framework

Session 4:

Lecture:

- Application Domain
 - ✓ Accessing objects Across AppDomain Boundaries
 - ✓ AppDomain Unloading
 - ✓ CLR hosting
 - ✓ How host use AppDomain
 - ✓ Managing CLR by using Managed Code
 - ✓ How a Host Gets its Thread back.
- Language Interoperability
- . NET Framework Class Library
- The IL dis-assembler
- Migrating to MS .NET

Session 5:

Lecture:

- Windows Presentation Foundation
- Windows Workflow Foundation
- Windows Communication Foundation

Assignment Reading:

Read about WPF, WWF, and WCF from MSDN.

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Duration: 12 class room hrs. + 12 lab hrs

Objective: To acquire the knowledge of C#. NET 4.5

Prerequisites: Knowledge of C++ programming, OOPs, Database Programming and XML is also a must.

Session 1:

Lecture:

- Need of C#
- Strengths of C#
- C# Basics
 - Program Structure
 - Data Types
 - Variables, Constants, Operators
 - Flow Control in C#

Assignment Reading:

Read about C# specification from MSDN.

Assignment Lab:

Write a program in C# to generate prime numbers between 1 and 1000.

Session 2:

Lecture:

- Operators
- Type Safety
- Object Comparison
- Operator overloading
- User defined cast

Assignment Reading:

Read about C# specification from MSDN.

Assignment Lab:

Implement that topics in your program

Session 3:

Lecture:

- Namespaces & Assemblies
- Arrays
 - Simple, multidimensional and jagged array
 - Array class
- Enumerations
- Properties & Indexers

Assignment Reading:

Read about C# specification from MSDN.

Assignment Lab:

Create namespace and assemblies.

Hands on Arrays and properties and indexes

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Session 4:

Lecture:

- Preprocessors
 - Preprocessor Usage
 - Conditional Compilation
 - Assemblies
 - What are Manifests??
 - Writing Private Assemblies
 - Writing Shared Assemblies
- Delegates and Events
- Boxing and Unboxing
- Reflection and the Type class

Assignment Reading:

Read about C# specification from MSDN.

Assignment Lab:

Work with delegates, events, boxing, unboxing Manifest.

Session 5:

Lecture:

- Regular Expression
- Attributes
- Collections
 - Collection Interface
 - List, Queues, Stack,
 - Dictionaries, Hash set

Assignment Reading:

Read about C# specification from MSDN.

Assignment Lab:

Implement Collections classes in C#

Session 6:

Lecture:

- Error Handling (Exceptions Handling)
 - Checked & Unchecked Statements
 - The try, catch, finally
 - Dos & Don'ts of Exception Handling
- User Defined Exception classes
- Win Forms
 - Control class
 - Standard control and component
- Creating user controls

Assignment Reading:

- Read about C# specification from MSDN

Assignment Lab:

Write a program and do all the exception handling.
Write a Window application in C#.

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Duration: 18 class room hrs + 18 lab hrs

Objective: To acquire the knowledge of ASP.NET 4.5

Prerequisites: Knowledge of COM development, Database Programming and XML is also a must.

Session 1 & 2:

Lecture:

- Introduction and difference between ASP and ASP .Net Application
- **ASP .NET Web Forms**
 - ASP .NET Programming Model
 - Web Forms Code Model
 - The code behind Web Forms
 - Separation of content & Business logic
 - Life Cycle of a Web Forms Page
- The goals of ASP.Net 4.5
- Additional new features of Asp.net 4.5
- **Application and page Frame works**
 - Application location option
 - ASP.Net page Structure options
 - ASP.Net page directives
 - ASP.Net page events
 - Dealing with PostBacks
 - ASP.Net Application Folder
- **Introduction to Asp .net MVC**
 - Architecture of an ASP .Net MVC application
- **Understanding Controllers and Action**
 - Create a controller
 - How actions are invoked
 - Running Action result.
- **Understanding views & Models**
 - Create a view using view data
 - Typed and Untyped Views
- **Debugging and Error Handling Techniques**
 - Design Time Support
 - Immediate and Command Window
 - ASP .NET Tracing
 - Page level
 - Application Level
 - Viewing Trace Data
 - Trace Forwarding
 - TraceListeners
 - Diagnostic Switches
 - Web Events
 - ASP .NET Debugging
 - IIS Versus ASP .NET development Server
 - Starting a Debugging Session
 - Client Side JavaScript debugging
 - SQL Store Proc Debugging
 - Exception and error Handling

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- Handling Exceptions on Page
- Handling Application Exceptions
- Http Status codes

Assignment Lab:

- ✓ Create a simple ASP .Net MVC application Session.
- ✓ Create a custom view engine
- ✓ Create a product repository and a fake Generic Repository.
- ✓ Create a Simple application in ASP .NET 4.5 in which we use all following Authentication
 - Windows Authentication
 - Passport Authentication
 - Form Based Authentication

Session 3:**Lecture:**

- **Site Navigation**
 - XML Based Site Maps
 - TreeView Server Control
 - Menu Server Control
 - SiteMap Data Provider, Nesting SiteMap files
 - Sitemap localization
 - Security Trimming
- **Threading**
 - Threading & Synchronization
 - Life Cycle of a Thread
 - Synchronizing critical data using Synchronization objects
 - Thread Pool
- **Querying with LINQ**
 - LINQ to objects
 - LINQ to XML
 - LINQ to SQL
- **Working with XML and LINQ to XML**
 - Basic of XML
 - XML InfoSet
 - XSD-XML Scheme Definition
 - Editing and XML Schema in Visual Studio 2008/2010
 - XmlReader and XmlWriter
 - XmalDocument and Xpathdocument
 - DataSets
 - The XmalDataSource Control
 - XSLT
 - Database and XML
 - For XML AUTO
 - SQL Server 2008/2012 and XML Data Type

Session 4:**Lecture:**

- **Data Binding in Asp.Net 4.5**
 - Data Source Controls
 - Configuring Data Source Control Caching
 - Storing Connection Information

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- Using Bound List Controls (GridView, Editing GridView Row Data, DetailsView, ListView FormView etc.)
- InLine Data-Binding Syntax
- **Data Management with ADO.NET 4.5**
 - Basic ADO.Net features
 - Connection object, Command object, DataReader, DataAdapter, DataSet and DataTable.
 - DataList Server Control
 - Working with Layout templates and multiple Columns
 - ListView Server Control
 - Creating layout template
 - Creating ItemTemplate
 - Creating EditItemTemplate
 - Creating EmptyItemTemplate
 - Creating Item template
 - Asynchronous command Execution
 - Asynchronous Connections
 - How to create a Crystal report
- **Entity Framework Repository**
 - Introduction to Entity framework
 - Database Objects
 - Entity Framework Data model
 - Entity Framework Blog Repository

Assignment Lab:

- ✓ Create a Simple application in ASP .NET 4.5 where we bind data table with all controls
- ✓ Create a Simple application in ASP .NET 4.5 to prepare an Crystal report
- ✓ Create a Simple application using entity framework

Session 5:

Lecture:

- **Files I/O and Streams**
 - Working with drivers, Directories, and Files
 - Reading and Writing files
 - Working with Serial ports
 - Networks Communications
 - WebRequest and WebResponse
 - Sending mail
- **.NET Remoting**
 - Accessing .NET component across Application Domain
- **.NET Remoting Architecture**
 - Creation of Proxy Objects by the CLR
 - Using the Channel Services to transport the Remotable component across Application Domains
 - Using HTTP and TCP Channel
 - Formatter for creating Message & encoding it
 - SOAP & Binary Formatter
- **WebServices**

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- The Need for Web Services
 - Introducing Web Services
 - The Web Technology Stack and .NET
 - The .NET Alternatives to WebServices
 - Common Web Service Scenarios
- Implementing a Web Service
 - Creating a Web Service Project
 - Implementing Web Service Methods, exposing them and controlling their behavior
 - Managing State in an ASP .NET Web Service
 - Debugging Web Services

Session 6:**Lecture:**

- **Windows Communication foundation**
 - WCF Overview
 - Contracts
 - Service Contracts
 - Data Contracts
 - Message Contracts
 - Channel
 - Channel Shapes
 - Operation Contract and Channel Shapes
 - Channel Listeners
 - Channel Factories
 - ChannelFactory<>
 - ICommunicationObject
 - Binding
 - Cross-Machine Communication Between .NET Applications
 - Local Machine Communication Between .NET Applications
 - Communication Using Basic Web Services
 - Communication Using Advanced Web Services
 - wsHttpBinding
 - ws2007HttpBinding
 - wsDualHttpBinding

Assignment Lab:

- ✓ Creating a simple WCF service

Session 7:**Lecture:**

- **Windows Communication foundation**
 - Binding
 - Comparing Binding Performance and Scalability
 - Creating a Custom Binding
 - User-Defined Bindings
 - Binding Element
 - Exposing a Service Contract over Multiple Bindings
 - Behaviors
 - Concurrency and Instancing (Service Behavior)
 - Exporting and Publishing Metadata (Service Behavior)
 - Implementing Transactions (Operation Behavior)

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- Hosting
 - Hosting a Service in Windows Process Activation Services
 - Hosting a Service in IIS 7
 - Enabling ASMX Features in an IIS-Hosted Service
 - Self-Hosting
 - Self-Hosting in a Managed Windows Service
 - Hosting Multiple Services in One Process
 - Defining Service and Endpoint Addresses
- Workflow
 - Calling a WCF Service from WF
 - Using a Send Activity
 - Writing a Custom Activity

Assignment Lab:

- ✓ Create a online shopping portal in ASP.NET and WCF service for communicating between asp.net application and database, Host the WCF service and Asp.NET application on IIS.

Session 8:

Lecture:

- **Localization**
 - Cultures and regions
 - Understand Culture Type
 - Server side culture declaration
 - Client Side culture declaration
 - Asp .Net 4.5 recourse files
 - Making use of local resources
 - Making use of global resources
 - Looking at the resource editor
- **Deploying Asp .Net Applications**
 - Asp .Net Applications and the Web Server
 - How web server works
 - The virtual directory
 - Web Farms
- **IIS7**
 - Modular Architecture of IIS7
 - IIS7 and asp .net Integrated pipeline
 - Building a customized Web Server
 - IIS Manager
 - Application pool, web sites, delegation
 - Deploying a Simple Site
- **Deploying ASP .NET MVC application**
 - Configuring IIS for ASP .Net MVC
 - Mixing ASP .net Web Form and Asp .net MVC
 - Bin Deploying an Asp .NET MVC application

Assignment Lab:

- ✓ Create a Virtual directory for an ASP .NET 4.5 application
- ✓ Create a simple Currency Converter web application that uses the user culture to determine the type of conversion to convert one language to other language.
- ✓ Deploy Sample Asp.Net MVC application on IIS.

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Session: 9:**Lecture:**

- **Master pages and user control**
 - Master Page
 - A Simple Master & Content Page
 - A Master Page with Multiple Content Regions
 - Master Page & Relative Paths
 - Themes
 - How Theme works
 - Applying Simple Theme and Handling Theme conflicts
 - Creating Multiple Skins for same control and Advanced Skins
 - User Controls
 - Creating Simple User Control
 - Working with Independent and Integrated User Control
 - Using User Control Events and Passing information with Events
- **Understanding HTML Helpers**
 - Standard HTML Helper
 - Custom HTML helper
 - DataGrid Helpers
- **Validating form data**
 - Validation Helpers
 - Model State
 - Prebinding and Postbinding Validation
- **Model Binders and action Filters**
 - Default Model Binder
 - Bind with classes and complex classes
 - Attribute
 - Log Action Filter
- **Authenticating users**
 - Authorizing User
 - Membership and Role Manager API
 - Window Authentication
- **Understanding Routing**
 - Default Route
 - Custom route
 - Constraints
 - Catch –ALL Routes

Assignment Lab:

- ✓ Create a custom Model binder.
- ✓ Create a Simple application using custom Route