

# **University of Pune**

## **Two Year M.Sc. Degree Course in Computer Science**

**M.Sc. Computer Science**

**(Credit and Semester based Syllabus for affiliated colleges to be implemented  
from Academic Year 2013-14)**

**CS-204 Project**

The Project can be platform, Language and technology independent. Project will be evaluated by project guide. Assessment will be done weekly in the respective batch. Evaluation will be on the basis of weekly progress of project work, progress report, oral, results and documentation and demonstration.

You should fill your status of the project work on the progress report and get the Signature of project guide regularly. Progress report should sharply focus how much time you have spent on specific task. (The format of progress report is given as follow.) You should keep all signed progress report. Project will not be accepted if progress report is not submitted and all responsibility remains with student.

## **Elective Course [CS-205]: Programming with DOT NET**

Objectives:

- To understand the DOTNET framework, C# language features and Web development using ASP.NET

### **Prerequisites –**

- Knowledge of object-oriented programming concepts such as data abstraction, encapsulation, inheritance, and polymorphism.

- Familiarity with programming language such as C++ and/or Java.

- Knowledge of web development

### **Topics to be covered:**

#### **Part I : C#**

#### **Unit 1. DOTNET Framework (2)**

- a. Introduction to DOTNET
- b. DOT NET class framework
- c. Common Language Runtime
  - i. Overview
  - ii. Elements of .NET application
  - iii. Memory Management
  - iv. Garbage Collector : Faster Memory allocation, Optimizations
- d. Common Language Integration
  - i. Common type system
  - ii. Reflection API
- e. User and Program Interface

#### **Unit 2. Introduction to C# (8)**

- a. Language features
  - i. Variables and Expressions, type conversion
  - ii. Flow Control
  - iii. Functions, Delegates
  - iv. Debugging and error handling, exception handling ( System Defined and User Defined)
- b. Object Oriented Concepts
  - i. Defining classes, class members, Interfaces, properties
  - ii. Access modifiers, Implementation of class, interface and properties
  - iii. Concept of hiding base class methods, Overriding
  - iv. Event Handling
- c. Collections, Comparisons and Conversions
  - i. Defining and using collections, Indexers, iterators
  - ii. Type comparison, Value Comparison
  - iii. Overloading Conversion operators, as operator
- d. Generics
  - i. Using generics
  - ii. Defining Generics, generic Interfaces, Generic methods, Generic Delegate

#### **Unit 3. Window Programming (6)**

- a. Window Controls
  - i. Common Controls
  - ii. Container Controls
  - iii. Menus and Toolbars
  - iv. Printing
  - v. Dialogs
- b. Deploying Window Application
  - i. Deployment Overview
  - ii. Visual studio setup and Deployment project types
  - iii. Microsoft windows installer architecture
  - iv. Building the project : Installation

#### **Unit 4. Data Access (6)**

- a. File System Data
- b. XML
- c. Databases and ADO.NET
- d. Data Binding

#### **Unit 5. Web Programming (6)**

- a. Basic Web programming
- b. Advanced Web programming
- c. Web Services
- d. Deployment Web applications

#### **Unit 6. .NET Assemblies (3)**

- a. Components
- b. .NET Assembly features
- c. Structure of Assemblies
- d. Calling assemblies, private and shared assemblies

#### **Unit 7. Networking (2)**

- a. Networking overview
- b. Networking programming options
  - i. WebClient
  - ii. WebRequest and WebResponse
  - iii. TcpListener & TcpClient

#### **Unit 8. Introduction to GDI+ (2)**

- a. Overview of Graphical Drawing
- b. Pen Class, Brush Class, Font Class
- c. Using Images
- d. Clipping, Drawing2D, Imaging

### **Part II : ASP.NET**

#### **Unit 1. Introduction to ASP.NET (1)**

#### **Unit 2. Server Controls and Variables, control Structures & Functions (4)**

- a. Forms, webpages, HTML forms, Webforms
- b. Request & Response in Non-ASP.NET pages
- c. Using ASP.NET Server Controls
- d. Datatypes : Numeric, text, arrays, datacollections
- e. Overview of Control structures
- f. Functions : web controls as parameters

#### **Unit 3. Even Driven Programming and PostBack (3)**

- a. HTML events
- b. ASP.NET page events
- c. ASP.NET Web control events
- d. Event driven programming and postback

**Unit 4. Reading from Databases (3)**

- a. Data pages
- b. ADO.NET

**Unit 5. ASP.NET Server Controls (4)**

- a. ASP.NET Web Controls
- b. HTML Server Controls
- c. Web Controls

**Unit 6. DOTNET assemblies and Custom Controls (2)**

- a. Introduction to Cookies, Sessions
- b. Session events
- c. State management Recommendations

**Unit 7. Web Services (2)**

- a. HTTP, XML & Web services
- b. SOAP
- c. Building ASP.NET web service
- d. Consuming a web service

**Recommended Text and Reference books:**

Beginning Visual C#, Wrox Publication  
 Professional Visual C#, Wrox Publication  
 Inside C#, by Tom Archer ISBN: 0735612889 Microsoft Press © 2001, 403 pages  
 Beginning ASP.NET 3.5, Wrox Publication  
 Programming ASP.NET 3.5 by Jesse Liberty, Dan Maharry, Dan Hurwitz, O'Reilly  
 Illustrated C# 2008, Solis, Publication Apress, ISBN 978-81-8128-958-2  
 Professional C# 4.0 and .NET 4 by Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson,  
 Morgan Skinner, WROX  
 Beginning C# Object-Oriented Programming By Dan Clark , Apress  
 ADO.NET Examples and Best Practices for C# Programmers, By Peter D. Blackburn Apress  
 Database Programming with C#, By Carsten Thomsen, Apress

## (CORE) CS 401: Full Time Industrial Training/ Industrial Project

### Period – Minimum 4 months

1. There will be a teacher coordinator for a group of students. A teacher coordinator will take care of joining letters from students along with other necessary submission listed below.
2. A student will have to submit 2 reports during the period of ITP to the Department of the college.
3. After the completion of the ITP, a student will have to submit a synopsis along with the project completion certificate from the respective industry/research institute /educational institute.
4. A student will submit one hard copy (Student Copy) and a soft copy's (preferably 2 CDs) of the work carried out towards ITP.
5. The project will be graded by the experts (One internal examiner, one external examiner(academic expert) and one industrial expert) as follows:

<b>O</b> – 75 and above	<b>C</b> – 50 and above	<b>F</b> - A student will have to carry out project once again for a complete semester
<b>A</b> – 65 and above	<b>D</b> – 45 and above	
<b>B</b> – 55 and above	<b>E</b> – 40 and above	

**Important Note:** A student can complete ITP with a research project of a teacher / an expert funded by the University of Pune/ a funding agency.

**Evaluation for internal 50 Marks will be done according to Progress Report written by Teacher Coordinator**

**Evaluation for external 50 Marks will be done by Industrial Expert, Academic Expert and One Internal Examiner.**