VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc.(I.C.T.) Programme (2nd Semester)

Paper: 201 / Subject: C#.NET

Effective From: June, 2014

Credits: 4   **Total Hrs.: 04**

Objective: Application development using C# .Net
Prerequisite: Object Oriented Fundamental, .NET Framework, ADO.NET

1. **.NET Architecture**

2. **C# Language constructs**
   2.1.   Data Types
   2.2.   Predefined Types
   2.3.   Complex Types
   2.4.   Variables and Constants
   2.5.   Operators
   2.6.   Flow Control
   2.7.   Program Structure

3. **Object Oriented Programming in C#**
   3.1.   Classes and Structure
   3.2.   Construction and Disposal of object
   3.3.   Inheritance
   3.4.   Method Overloading
   3.5.   Operator Overloading
   3.6.   Interfaces
   3.7.   Collections
   3.8.   Indexers
   3.9.   Generics

4. **Exception & Error Handling**

5. **Assemblies, Threads and AppDomains**

6. **Delegates and Events**
   6.1.   Defining a Delegate
   6.2.   Creating and Invoking Delegate
   6.3.   Asynchronous Invocation of Delegates
   6.4.   Multicast Delegates
   6.5.   Generic Delegates
   6.6.   Defining an Event
   6.7.   Publishing an Event
   6.8.   Subscribing an Event
   6.9.   Raising an Event
   6.10. Events with user defined objects

7. **Attributes**
   7.1.   Intrinsic Attributes
   7.2.   Custom Attributes

References:

1	C# and the .NET Platform	Andrew Troelsen	APress
2	Professional C#	Simon Robinson	Wrox
3	Professional C# 2012 and .NET 4.5	Christian Nagel	Wrox
4	Pro LINQ: Language Integrated Query in C# 2010	Jr. Joseph C. Rattz	Apress
5	C# The Basics	Vijay Mukhi	BPB
6	C# Essentials	Ben Albabari	O'Reilly
7	C# The Nuts & Bolts	Akash Sarat & Sonal Mukhi	BPB
8	C# Unleashed	Joseph Mayo	Sams

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc.(I.C.T.) Programme (2nd Semester)

Paper: 202 / Subject: Advanced.NET

Effective From: June, 2014

Credits: 4   Total Hrs.: 04

Objective: **To impart knowledge of Enterprise application development using .NET Framework.**

Prerequisite: **Object Oriented Programming Fundamental, ADO.NET and ASP.NET**

1. **Web Architecture**
   1.1. Introduction to web Architecture
   1.2. Client-Side Processing
   1.3. ASP.NET Tie-up with Web Architecture

2. **ASP.NET Framework**
   2.1. Overview of ASP.NET
   2.2. ASP.NET State Management

3. **Membership and Role Management in ASP.NET**
   3.1. Authorization
   3.2. Web Site Administrative Tools
   3.3. Public Methods of the Membership API
   3.4. Role Based Security
   3.5. ASP.NET Security Controls

4. **Globalization and Localization**
   4.1. Globalizing an ASP.NET Website
   4.2. Localizing an ASP.NET Webpage
   4.3. Culture and Locale
   4.4. Switching Locale
   4.5. Resource Files
   4.6. Creating Global Resources and Local Resources
   4.7. Satellite Assemblies
   4.8. Implicit Versus Explicit Localization
   4.9. Setting the Culture of the Thread Based on User Selection

5. **Debugging, Tracing and Error Handling**
   5.1. Error Pages
   5.2. Enabling Tracing
   5.3. Tracing Information
   5.4. Writing Trace Information
   5.5. Application Level Tracing
   5.6. Page Level Tracing

6. **Asynchronous JavaScript and XML**
   6.1. Server Side Ajax
   6.2. Client Side Ajax
   6.3. Ajax Toolkit
   6.4. Setting up and implementing Ajax

7. ASP.NET MVC
    7.1.   ASP.NET MVC Framework
    7.2.   URL Routing Engine
    7.3.   Routing Configuration
    7.4.   Wiring Controller, Model, and View
    7.5.   Data Access and Modelling
    7.6.   Unit Testing and ASP.NET MVC

8. Web Services and Windows Communication Foundation
    8.1.   Overview of Web Services
    8.2.   Limitation of Web Services
    8.3.   Fundamental of WCF
    8.4.   Service Endpoints
    8.5.   Service Contract, Operation Contract and Data Contract
    8.6.   Data Contract Serializer
    8.7.   WCF Service Instance Management
    8.8.   RESTfull WCF Services
    8.9.   Testing WCF Service using WCFTestClient
    8.10. Self Hosting of WCF Services
    8.11. Consuming WCF Services

9. IIS Hosting
    9.1.   Web Application Hosting
    9.2.   Web Service Hosting
    9.3.   WCF Service Hosting
    9.4.   Application Pool
    9.5.   Application Configuration in IIS

10. Windows Presentation Foundation and XAML
    10.1. Introduction to WPF and XAML
    10.2. Types of WPF Application
    10.3. WPF Assemblies
    10.4. XAML-Free WPF Application
    10.5. XAML-Centric WPF Application
    10.6. Transforming Markup into a .NET Assembly
    10.7. Programming with WPF Controls

References:

1	ASP.NET 4.0 Unleashed	Stephen Walther	Sams
2	Beginning ASP.NET 4.5: In C# and VB (Programmer to Programmer)	Imar Spaanjaars	Wrox
3	Professional ASP.NET 4.5: In C# and VB	Bill Evjen Bill Evjen	Sams
4	ASP.NET MVC Framework Unleashed	Stephen Walther	Wrox
5	Essential Windows Communication Foundation (WCF): For .NET Framework 3.5	Steve Resnick	Pearson
6	Windows Presentation Foundation Unleashed (WPF)	Adam Nathan	Sams
7	Programming Microsoft ASP.NET 4	Dino Esposito	Microsoft Press
8	C# 5.0 in a Nutshell: A Desktop Quick Reference	Joseph Albahari	O'Reilly
9	Microsoft Visual Studio 2012 Unleashed	Lars Powers	Sams
10	Pro ASP.NET 4.5 in C#: Third Edition (Paperback)	Matthew MacDonald	Apress
11	Beginning ASP.NET 4.5 in C#: From Novice to Professional	Matthew MacDonald	Apress

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc. (I.C.T.) (2nd Semester)

Paper: 203 / Subject: Smart Device Computing using Android

Effective From: June, 2014

Credits: 4   **Total Hrs.: 04**

Objective: To provide a thorough introduction to the Android environment, tools for creating Android applications.

Prerequisite: Previous experience with an object oriented language and XML format is helpful but not required.

1. **Introduction to Smart Devices**
   1.1. Definition
   1.2. Evolution of Smart Devices
   1.3. Pervasive Computing
   1.4. Categories and Features of Smart Devices
   1.5. Comparison of Devices like mobile phones, PDAs.
   1.6. Introduction to smart device Operating Systems

2. **Introduction to Android**
   2.1. What is Android?
   2.2. Android Architecture
   2.3. Setting up development environment
   2.4. Dalvik Virtual Machine & .apk file extension
   2.5. Basic Building blocks - Activities,Services,Broadcast Receivers & Content providers
   2.6. UI Component
   2.7. Android API levels (versions & version names)

3. **Application Structure**
   3.1. AndroidManifest.xml
   3.2. uses-permission & uses-sdk
   3.3. Resources & R.java
   3.4. Assets
   3.5. Layouts & Drawable Resources
   3.6. Emulator-Android Virtual Device
   3.7. Launching emulator
   3.8. Editing emulator settings
   3.9. Logcat usage
   3.10.   Introduction to DDMS

4. **Basic UI design**
   4.1. Android Activity and Activity lifecycle
   4.2. Form widgets
   4.3. Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, RadioGroup Views, ProgressBar View and AutoCompleteTextView View
   4.4. Text Fields
   4.5. Views and ViewGroups
   4.6. Layouts
   4.7. LinearLayout, AbsoluteLayout, TableLayout, RelativeLayout, FrameLayout
   4.8. Picker Views
   4.9. TimePicker View, DatePicker View, ListView View, Customizing the ListView, Using the Spinner View
   4.10. Fragments

5. **Notifications and Menus**
   5.1. Parameters on Intents
   5.2. AlertDialogs
   5.3. Custom Dialog
   5.4. Status bar notifications
   5.5. Toast notifications
   5.6. Option menu, Context menu, Sub menu
   5.7. Menu using xml and code

6. **Intents, Broadcast Receivers, and Adapters**
   6.1. Explicit Intents
   6.2. Implicit intents
   6.3. Broadcasting events and actions
   6.4. Adapters for data binding
   6.5. Array adapter
   6.6. Cursor adapter
   6.7. GridView using adapters
   6.8. Tabs and Fragments

7. **Working with Data**
   7.1. Android Database Design considerations
   7.2. SQLite Programming
   7.3. SQLiteOpenHelper
   7.4. SQLiteDatabse
   7.5. Working with Cursor
   7.6. Content Provider and its operations
   7.7. Shared preferences
   7.8. Preferences Activity
   7.9. File I/O Access

8. **Location Based Services**
   8.1. Displaying Maps

8.2. Displaying the Zoom Control
8.3. Navigating to a Specific Location
8.4. Geocoding and Reverse Geocoding Notifications
8.5. Working with Google Maps

9. Working in background
9.1. Introducing Service and its life cycle
9.2. Types of services
9.3. Creating and starting a service
9.4. Working multi-threading and AsyncTask
9.5. Triggering Notifications

10. Graphics, Multimedia, and Animation
10.1. drawable resources for shapes, gradients (selectors)
10.2. style attribute in layout file
10.3. Applying themes via code and manifest file
10.4. Playing Audio and Video
10.5. Recording Audio and Video
10.6. Using Camera and Capturing picture
10.7. View Animation and Drawable Animation

11. Integrating with Networks and Internet
11.1. Using Bluetooth
11.2. Transferring data using Wi-Fi Direct
11.3. Near Field Communication
11.4. Using WebView
11.5. Setting Internet Permissions
11.6. Web URLs, Email address, text, map address, phone numbers
11.7. MatchFilter & TransformFilter

12. Advanced Android Programming
12.1. Live Folders
12.2. Using sdcards
12.3. XML Parsing
12.4. JSON Parsing
12.5. Accessing Phone services (Call, SMS, MMS)
12.6. Sensors

13. Testing and Debugging Android Application
13.1. Role and Use of Dalvik Debug Monitor Server (DDMS)
13.2. How to debug android application
13.3. Use of Step Filters, Breakpoints, Suspend and Resume
13.4. How to use LogCat (Verbose, Debug, Info, Warn, Error, Assert)

13.5. Use of Perspectives

14. Publishing Apps
14.1. Preparing for Publishing
14.2. Signing and preparing the graphics
14.3. Publishing to Android Market

Reference Books:
1. Professional Android 4 Application Development by Reto Meier WROX Publication-Wiley-India, 2012
2. Android Essentials by Chris Haseman Apress Publication, 2009
3. Beginning Android by Mark L Murphy Wiley India Pvt Ltd, 2009
4. Sams Teach Yourself Android Application Development in 24 Hours by Lauren Darcey and Shane Conder, Sams Publishing, 2012
5. Android in Action by Frank Ableson, dreamtech press, 2012
6. Android Apps with Eclipse by Onur Cinar, Apress Publicatoin, 2013

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc.(I.C.T.) Programme (2nd Semester)

Paper: 204 / Subject: Digital Communication

Effective From: June, 2014

Credits: 4   **Total Hrs.: 04**

Objective: To provide a thorough introduction of communication system, data transmission techniques and Data handling techniques for communication Network

Prerequisite: Basic knowledge of Computer Network is helpful but not required.

1. **Introduction of communication system**
    1.1. Introduction of Electronic communication systems
    1.2. Wave property and characteristics
    1.3. The Electromagnetic spectrum, bandwidth and information capacity
    1.4. Noise Analysis, Signal Analysis and losses.

2. **Electromagnetic wave generation and propagations**
    2.1. Electromagnetic waves and polarizations radiation, wave attenuation and absorption
    2.2. Optical properties of radio waves
    2.3. Oscillators
    2.4. Phased Locked Loop(PLL)
    2.5. Frequency synthesizer

3. **Analog modulation and transmission media**
    3.1. Amplitude modulation(AM), Phase Modulation(PM) and Frequency modulation(FM)
    3.2. Metallic cable transmission media, optical fiber transmission media
    3.3. Antennas and Waveguides

4. **Digital Modulation and transmission techniques**
    4.1. Pulse modulation
    4.2. Pulse code modulation(PCM)
    4.3. Delta modulation PCM
    4.4. Amplitude Shift Key(ASK), Phase Shift Key(PSK), Frequency Shift Key(FSK)

5. **Multiplexing techniques and network switching.**
    5.1. Frequency Division Multiple Access (FDMA)
    5.2. Time Division Multiple Access (TDMA)
    5.3. Wavelength division multiplexing(WDM)
    5.4. Circuit and Data (Packet) Mode, Circuit Switching, Packet Switching & Channel Capacity

6. **Fundamental concepts of Data communications and networks**
    6.1. Data communication codes, data communication hardware and circuits

6.2. Serial interfaces and data communication in modems
6.3. PSTN network, telephone instruments and call procedure in PSTN

References:

1	Electronics Communications Systems	Wayne Tomasi	Pearson
2	Electronic Communication Systems	Kennedy and Davis	Tata Macgrawhill
3	Electronic Communication	Dennis Roddy &john coolen	PHI
4	Electronics Communication Techniques	Paul H. Young	PHI
5	Modern Electronic Communication	Gary M Miller	PHI
6	Optical Fiber Communication	Gerd Keiser	Macgrawhill

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc.(I.C.T.) Programme (2nd Semester)

Paper: 206 / Subject: Project

Effective From: June, 2014

Credits: 8   **Total Hrs: 8**

- The students are required to develop part time project based on .NET Technology.

- The students must prepare documentation of the project completed as per the Software Engineering Guidelines.

- At the end of the semester, the students have to submit their project report in bounded form to the institution.

- Project Completion Certificate issued by the institute [M.Sc.(I.C.T.) Programme] is mandatory for appearing in Project Presentation and Viva – Voce.

- The Project Presentation and Viva – Voce will be conducted as per the University exam schedule.

The students have to submit the following reports at the institution:

1. Project Joining Report
2. Project Title Report
3. Progress Report
4. Project Completion Certificate
5. Institution Certificate
6. Non disclosure of Source Code Certificate (In case the student is unable to submit project source code)