GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN INFORMATION TECHNOLOGY
TEACHING SCHEME (w.e.f. 18th July '2011)

SEMESTER- V

SR. NO	SUB. CODE	SUBJECT	TEACHING SCHEME (HOURS)			CREDITS
			THEORY	TUTORIAL	PRACTICAL	
1	2350703	Java Programming	3	0	4	7
2	2351601	Windows Programming with VB.NET	4	0	4	8
3	2351602	Wireless Communication	3	0	4	7
4	2351603	Dynamic Web Development	3	0	4	7
5	2351604	Project - I	0	0	4	4
		Total	**13**	**0**	**20**	**33**

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN INFORMATION TECHNOLOGY
Semester – V

Subject Code **: 2350703**
Subject Name **: Java Programming**

Sr. No.	Subject Content	Hrs
1.	**INTRODUCTION TO JAVA** 1.1 Advantages of Java 1.2 Features of Java 1.3 Data types, variables and array 1.4 Operators 1.5 Overview of control statements 1.6 Input and output in Java	3
2.	**INTRODUCTION TO CLASSES.** 2.1 Class fundamentals 2.2 Declaring objects 2.3 Assigning object reference variables 2.4 Introducing methods 2.5 Constructors 2.6 The this keyword 2.7 Garbage collection 2.7.1 The finalize method 2.8 Wrapper class	4
3.	**MORE ABOUT METHODS AND CLASSES** 3.1 Overloading methods 3.2 Using object as parameters 3.3 Returning objects 3.4 Recursion 3.5 Static and Final keyword 3.6 Nested and inner classes 3.7 Command line arguments	4
4.	**INHERITANCE** 4.1 Inheritance basics 4.2 Super keyword 4.3 Creating multilevel hierarchy 4.4 Method overriding 4.5 Using abstract classes	4

	4.6 Using final with inheritance	
5.	**PACKAGES AND INTERFACES.** 5.1 Packages (Defining package, CLASS PATH) 5.2 Access protection 5.3 Importing packages 5.4 Interfaces	**4**

6.	**EXCEPTION HANDLING**
	6.1 Exception – Handling fundamentals
	6.2 Exception types
	6.3 Using try and catch
	6.4 Un caught exceptions
	6.5 Multiple catch clauses
	6.6 Nested try statements
	    • Throw
	    • Throws
	    • Finally
	6.7 Creating your own exception sub classes
		4

7.	**MULTITHREDED PROGRAMMING** 7.1 The Java thread model 7.2 The main thread 7.3 Creating a thread 7.4 Creating multiple threads. 7.5 Using alive( ) & join( ) 7.6 Thread priorities 7.7 Synchronization 7.8 Inter thread communication 7.9 Suspending, resuming, stopping threads	**5**
8.	**STRING HANDLING** 8.1 The string constructors 8.2 String length 8.3 Special string operation 8.4 Character Extraction 8.5 String comparison 8.6 Searching strings 8.7 Modifying a string 8.8 Using valueOf( ) 8.9 String buffer. • Give the overview of Vector Class	**4**

9.	**APPLETS AND APPLICATIONS**
	9.1 The applet class
	9.2 Applets and HTML (The applet Tag)
	9.3 Life cycles of an applets. (Init(), start, stop, destroy method)
	9.4 Graphics class
	    Drawstring, drawline, drawrect, fillrect, clearrect, fillroundrect,
	    drawovall)
	9.5 Painting the applet
		5

	Update, paint, repaint method 9.6 Passing parameters to applets getparameter() method	

10	**USING AWT IN APPLICATION**
	 10.1.1 The AWT classes
	       10.1.1 Layout Managers
	       10.1.1.1 Flow Layout
	       10.1.1.2 Grid Layout
	       10.1.1.3 Border Layout
	       10.1.1.4 Card Layout
	 10.1.2 Containers
	       10.1.2.1 Panel & Canvas
	 10.2 Window fundamentals
	 10.3 The frame class
	 10.4 The dialog class
	 10.5 Controls
	       Textbox, push button, label
		5

	Total	**42**

Laboratory Experiences:

Students should write programmes on the basic of prescribed curriculum of this
Subjects (minimum 20 programmes)
It should includes the followings:

1. Class & Object related programs.
2. Programs for Constructors, this keyword finalizes method.
3. Programs by using Final keyboard, and static keyword
4. Programming for Command Line Arguments.
5. Programs for Array, Inner class and Nested class
6. Using Inheritance which also enhance the Super & This keyboard
7. Abstract class and use of Final key word in Inheritance
8. Creating Package, and the scope of data in packages
9. Importing Packages
10. Programs using Interface, Creating Multiple Inheritance Using Interface.
11. Exception Handling using pre-defined Exception Class.
12. Creating User –defined Exception class.
13. Multi-Threading Programming
14. Programs for I/O stream class, Reading the data from Console Input etc.
15. String Handling Programs
16. Use of Vector Class
17. Creating Applet
18. Event Handling Programs.
19. Programs for the apple using AWT classes, Frame and File Dialog.
20. Programs for the applet using Layout and Menus.

Note : Number of programs for any topics can be vary, depends on the weightage of
the topic.

Reference Books:

1. Complete Reference Java 2, Herbert Schildt, TMH.
2. Java programming , E.Balagurusamy, TMH.
3. Java Programming, Sachin Malhotra, Saurabh Choudhary, Oxford.
4. Programming with Java, M. P. Bhave S.A. Patekar, Pearson.
5. Introduction to Java Programming 7th ed., Y. Daniel Liang, Pearson.
6. Java For programmers, Paul J. Deitel & Harvey M. Deitel , Pearson.
7. Teach yourself Java 2 in 21 Days, Rogers Cadenhead, Laura Lemay, SAMS.

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN INFORMATION TECHNOLOGY
Semester – V

Subject Code **: 2351601**
Subject Name **: Windows Programming with VB.NET**

Sr. No.	Subject Content	Hrs.
1.	**Introduction to .NET and VB.NET:** What is Microsoft .NET .NET Framework Overview Common Language Runtime Overview of Visual Studio.NET Creating Console Applications Debugging Applications Writing First VB.NET Program	7
2.	**Fundamentals of VB.NET:** Program Structure Namespaces Data Types Variables Conversions Operators and Expressions Console I/O	7
3.	**Control Structures:** If Statement Select Case Statement Loop Statements For/Next Statement	5
4.	**Procedures:** Subroutines Functions Pass-by-value Versus Pass-by-reference Access modifiers Overloading Optional Parameters	5
5.	**Advanced Data Types and Exception Handling:** Arrays	5

	Enumerations Structures Error Detection Exception Handling	
6.	**Object-Oriented Programming:** Object Oriented Concepts Defining Classes Methods and Properties Shared Data and Methods Constructors	**5**
7.	**Inheritance:** Inheritance Controlling Base Class Construction Access Control Polymorphism Abstract and Not Inheritable Classes	**5**
8.	**Interfaces:** Interface Fundamentals Programming with Interfaces Using Interfaces at Runtime Resolving Ambiguities	**5**
9.	**Windows Forms:** Building a Windows Application Common Controls Dialog Boxes Menus Status Bars Toolbars	**6**
10.	**Interacting with Databases Using Windows Forms:** ADO.NET Building Commands and Adapters with Wizards Dataset Binding a Control to a Dataset	**6**
	Total	**56**

List of Practicals / Tutorials:

1. To study .NET framework and comparison with others.
2. Study of .NET architecture with CLR,CTS,Garbage collection.
3. Introduction to Visual studio IDE and its features.
4. Program to implement Arithmetic calculator using console.
5. Program to implement overloading,overriding,constructor,with methods and properties.
6. Form based application using menus,dialog box,tool tip.
7. Implementation of Interface, and inheritance.
8. Study of ADO.NET.
9. Implement database using Dataset,DataReader,Data Sources with Windows application.
10. Program to Implement Data list,Grid view,Detail view,Repeater.

Reference Books:

1. Beginning.Visual.Basic.2005 - Thearon Willis,Bryan Newsome-Wrox Publications.
2. Visual Basic 2005 Programmer's Reference (2005) - Rod Stephens- Wrox Publications.
3. Windows Programming with VB.NET, VB.NET in nutshell, Steven Roman , Paul Lomax, O-REILLY

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN INFORMATION TECHNOLOGY
Semester – V

Subject Code **: 2351602**
Subject Name **: Wireless Communication**

Sr. No.	Subject content	Hrs.

1.	**Digital Communication :**
	1.1 Information capacity, bits, bit rate and baud.(Shannon's and Hartley's law)
	1.2 Introduction to digital modulation techniques
	    1.2.1 Amplitude Shift keying
	    1.2.2 Frequency Shift Keying
	    1.2.3 Phase shift keying
	    1.2.4 QPSK
	    1.2.5 Quadrature Amplitude Modulation
	1.3 Bandwidth efficiency
	1.4 Advantages and disadvantages of digital transmission
	1.5 Pulse code modulation
	1.6 Coding methods
	1.7 Multiple access systems
		10

2.	**Global System for Mobile Communications (GSM):**
	2.1 History of mobile communication
	2.2 Cell, cluster and coverage area
	2.3 Frequency Reuse Concept
	2.4 GSM Architecture
	2.5 Frequency allocation
	2.6 GSM Identifiers
	    IMEI, IMSI, MSISDN, LAI, MSRN, TMSI, LMSI
	2.7 GSM Entities
	    • Mobile Stations
	    • Base Station Subsystem
	    • Network and Switching Subsystem
	    • Operation and Support Subsystem
		9

3.	**GSM Call Processing:** 3.1 Roaming 3.2 Call routing 3.3 Radio wave to speech and speech to radio wave conversion 3.4 Handover 3.5 Mobile originated call	9

	3.6 Mobile terminated call
	3.7 SMS
	     3.7.1 Features
	     3.7.2 Architecture
	     3.7.3 Operator centric pull, operator independent push and Operator independent pull	

4.	**GPRS:**
	    4.1 Emergence of GPRS
	    4.2 GPRS network architecture
	    4.3 GPRS network operations
	    4.4 Mobility management
	    4.5 Data Services(Application and tunnelling mode)
	    4.6 GPRS handsets
	    4.7 Applications
		7

5.	**Recent trends:**
	    5.1 Radio Frequency Identification(RFID)
	      5.1.1 Specifications
	      5.1.2 Categories(On frequency, On application, power based and
	    5.2 Bluetooth
	      5.2.1 Specifications
	      5.2.2 Protocols
	      5.2.3 Security
	      5.2.4 Applications
	    5.3 Wireless Broadband
	      5.3.1 Specifications
	      5.3.2 Layers
	      5.3.3 Mobile Broadband
	      5.3.4 Applications
	    5.4 Wireless in Local Loop
	      5.4.1 Architecture
	      5.4.2 Application
		7

	Total	**42**

Laboratory Experiences:

1. To study and perform ASK.
2. To study and perform FSK.
3. To study and Perform Pulse Coded Modulation.
4. To Study the architecture of GSM.
5. To study and perform data transfer using GPRS using Mobile Handset.
6. To study and perform data transfer using Bluetooth Technology.
7. To study and perform data transfer using RFID.
8. To study wireless broadband technology.
9. To study the WLL technology.

Reference Books:

1. A.K.Talukder and R.R. Yavgal ,Mobile computing,TMH.
2. Dasbit and Sikdar, Mobile Computing PHI.
3. Wayne Tomasi, Electronics communications systems fifth edition Pearson.
4. Mobile & Cellular Communication-3e- Lee- MGH.

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN INFORMATION TECHNOLOGY
Semester – V

Subject Code **: 2351603**
Subject Name **: Dynamic Web Development**

Sr. No.	Subject content	Hrs.
1.	**Introduction:** Introduction to Internet History of Internet Internet Service Provider Domain Name System Web Server HTTP	5
2.	**Application of Internet:** World Wide Web Search Engines Electronic Mail Web Portal Chat TELNET FTP servers Proxy servers News servers Directory servers	5

3.	**Introduction to HTML:**
	HTML Tags
	Text formatting tags
	HTML List(Ordered Unordered)
	Adding Graphics
	Colors
	Frames
	Cascading style sheets and types
	HTML Forms:
	    • Text Box
	    • Radio Button
	    • Check box
	    • List box
	    • Buttons
	      Text Area
		7

4.	**Components of Dynamic Web:** VBScript XML XML elements XML attributes Extended Style sheet Language (XSL) Client Side Scripting	6
5.	**Active Server Pages:** Introduction to Active Server Pages Dynamic page handling by Web Server ASP Compatability Run ASP on PC ASP Syntax ASP Variables Difference between VBScript and Javascript ASP Objects	7
6.	**Communication with user:** ASP Forms Request Object 　　Methods,　Properties,　Collections Response Object 　　Methods, Properties,Collectons Form Validation ASP Cookies 　　Creating and Retrieving Cookies State Management in ASP Session Object 　　Methods,Properties,Collections Retrieving variables with application Object Global.asa File 　　Declaration, Example	6
7.	**Database Handling with ASP:** Components of ASP 　　Adrotator,Browser Capabilities Component ActiveX Data Objects (ADO) Communicating with Database using ODBC 　　File DSN,System DSN,ODBC connection string Communicating with Database using OLE 　　UDL, OLE connection string Connection,Recordset,Command Objects Recordset Object Cursors,Locks using Recordset Reading from Database Writing Into Database Updating database	6
	Total	**42**

Reference Books:

1. Computer Networks and Internets with Internet Applications by Douglas E Comer, Pearson.
2. Internet & World wide Web: How to Program by Deitel and Deitel, Person.
3. HTML 4 Bible - Bryan Pfaffenberger, Bill Karrow; Paperback.
4. Beginning ASP 3.0- Wrox Publication.
5. Web Technology-Technical Publication.

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN INFORMATION TECHNOLOGY

Semester – V

Subject Code **: 2351604**
Subject Name **: Project – I**

The guideline is made keeping in view generalizing the work carried out by students. The project guide or concerned faculty may suggest necessary changes in this guideline to fulfill his/her requirement. Project –I should be extended in semester – VI with necessary modification given by the concerned guide. The project may be developed considering following points.

Sr. No.	Subject Content
1.	The project selection must be based on problem which may be found by visiting industries, observing current trend, tackling the same problem or by literature studies. The size and complexity must justify the time duration given for it considering possible extension of the project for sixth semester.
2.	Students are encouraged to use latest technologies to implement the project .Students are also encouraged to use the latest technologies other than the syllabus with prior permission of the guide.
3.	Students should finish necessary steps of the project suggested by the guide in case of extension of the same project in the sixth semester. Guide should precisely instruct the students to complete certain steps /modification depending upon the utility and complexity of the project.
4.	**Analysis:** Explain in detail any relationship between the system you intend to produce and the existing manual system. Identify qualitative and quantitative evaluation criteria (obviously, these should be heavily influenced by the end-user's requirements specification). Explain clearly how your system will improve the current system (avoid vague statements such as "to save time", "to improve efficiency", "to make system user friendly" etc.) What hardware and software will be used and why? You should show an appreciation of the full potential of the hardware and software that you intend to use. List the Inputs, Outputs and Processes. Fully explain the information flow (include a Data Flow Diagram or system flowchart).

5.	**Design:** Select Appropriate Database as per your requirement. Follow a process of Normalization. Produce entity-relationship diagrams. Break down all envisaged tasks into sub-tasks (process Decomposition).
6.	**Implementation:** All or most of the facilities of the software and the hardware must be fully exploited. This means a fully relational database, which utilizes the advantages of relational databases, forms based on multiple tables, reports that include grouping and calculations, sub forms and Action Queries to make the system "reusable". Printing out regularly and annotating fully must show Progression of work.
7.	**Testing:** Involve clear evidence of end-user testing (e.g. evidence of an end-user test plan being Followed). Test outputs should be fully annotated and cross-referenced. Test typical, extreme and erroneous data and ensure that the functionality of the system is tested. Testing should show appreciation of different circumstances (e.g. the difference between a standalone computer and one on a network).
8.	**Evaluation:** Consider clearly a full range of qualitative and quantitative criteria for evaluating the solution. Make it clear that these criteria relate to the requirement of the user(s). What problems did you encounter and how did you overcome them?
9.	**Layout & Report Generation:** Project should be able to generate various reports using any report generation tools. Student should include minimum required reports in their project.
10.	**Layout & Report Generation:** Project should be able to generate various reports using any report generation tools. Student Should include minimum required reports in their project.