GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: .NET PROGRAMMING
(Code: 3340704)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Engineering	4th Semester

1. RATIONALE

The .NET platform has evolved quickly to become a robust technology platform for enterprise application development and systems integration. It is a very popular platform these days being used to develop web sites/ web based applications. The students of Diploma in Computer Engineering should have skills in .NET Programming techniques using VB.NET. This course aims that student should learn creating simple applications as well as Applications that are database driven using . NET technology

2. COMPETENCY

The course content should be taught and implemented with the aim to develop different types of skills so that students are able to acquire following competency:

- **To design user interface, code, test and debug vb.net applications**

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

  i. Explain the architecture of Dot Net Technology.
 ii. Develop single form based .simple Net applications using basic and advanced control
iii. Develop multiple form and menu based .Net applications
 iv. Develop small ADO.net based database driven .Net application
  v. Implement and trouble shoot simple .Net Applications

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	
3	0	4	7	70	30	40	60	200

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit
ESE - End Semester Examination; **PA** - Progressive Assessment.

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Introduction to Microsoft .NET framework and VB.Net	1a. List the components of Framework and describe CLR	1.1 Overview of Microsoft .NET Framework 1.2 The .NET Framework components 1.3 The Common Language Runtime (CLR) Environment 1.4 The .NET Framework class Library
	1b. Recognize various parts of visual basic .net IDE	1.5 Getting Started with Visual Basic .net IDE : Set up of work environment, start page, the menu system, toolbars, the new project dialog box, graphical designers, code designers, intellisense, the object explorer, the toolbox, the solution explorer, the class view window, the properties window, the dynamic help window, the server explorer, the output window, the command window
	1c. List data types, operators 1d. Implement small programs using operators, loops and array	1.6 Visual basic language concept :variables, Constants, Data Types, Operators, Control Structures and loops, Arrays : single and multidimensional array, declaring, dynamic array
Unit– II Introduction to Windows Common Controls	2a. Design user interface using enlisted controls 2b. List control's important properties, methods and events 2c. Develop, test and debug small applications using enlisted controls	2.1 Working with Form :Properties : appearance, behaviour, layout, windows style etc, methods and events 2.2 Differentiate procedure oriented, object-oriented and event driven programming 2.3 Inputbox, Messagebox 2.4 Working with Common Tool Box Controls: Label & button (Properties: flatstyle, image, imagealign etc.), Textbox (Properties: autosize, maxlength, multiline, readonly, wordwrap etc.), NumericUpDown (textalign, updownalign, value, interceptarrowkeys, decimalplaces, increment, maximum, minimum etc.) Check Box (autocheck, checked, checkaligned, checkstate, threestate etc.), Radio Button (check aligned, check, autocheck etc.), Group Box (gridsize:width, height etc.) control and all important methods and events

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit– III Additional controls and Menus of Windows	3a. List assorted (enlisted) control's and it's properties, events and methods 3b. Develop small applications using appropriate controls	3.1 Working with other controls of toolbox : Date Time Picker, List Box, Combo box, Picture Box, Rich Text Box, Progress bar, Masked Text box, Link Label, Checked List box, Scroll Bars, timer
	3c. Develop applications using menu and popup menu	3.2 Working with Menus: creating menu, inserting, deleting, assigning short cut keys, pop up menu
Unit– IV Advanced Features of VB.Net	4a. Include the dialog boxes in developed applications	4.1 Dialog Boxes: OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog
	4b. Differentiate sub procedures and functions 4c. Create applications using procedures and functions	4.2 Sub Procedures and functions : declaring, passing and returning arguments, exiting from it, pass by value and pass by ref
	4d. Differentiate structured and unstructured error handling 4e. Include and execute exception handling in developed application using structured and unstructured error handling	4.3 Exception Handling : Structured Error Handling (Try ….Catch ….finally), Unstructured Error Handling (On error go to line, goto 0, goto -1, resume next)
	4e. Develop multiple form application	4.4 Multiple document interface (MDI) : MDI Parent form and child form
Unit– V Inbuilt Functions and Database access using ADO.NET	5a. Use mathematical functions in vb .net applications	5.1 Inbuilt Functions : Mathematical Functions(The Abs function, The Exp function ,The Fix Function , The Int Function, The Log Function , The Rnd( ) Function, The Round Function, The Sqrt Function),
	5b. Use string function in vb.net applications	5.2 String manipulation(The Mid Function , The Right Function, The Left Function , The Trim Function, The Ltrim Function , The Rtrim Function , The InStr function , The Ucase and the Lcase Functions , The Chr and the Asc functions, Formatting Functions), Format Functions (Formatting Using ToString Method ,Formatting Date and Time)

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
	5c. Describe objects of ado.net model 5e. Create ado.net connection to SQL and other odbc servers to view database data	5.3 ADO .NET Object Model: Dataprovider(connection, command, data reader, data adapter, datareaders) Dataset (datatablecollection(datatable, datarows, datacolumns, data constraints), datarelationcollection)
	5f. Develop, test, debug small vb.net based database applications	5.4 ADO .NET Programming :Creating a Database Application, Creating Connection to a Database using ADO.NET , Populating Data in ADO.NET, Browsing Records, Datagrid view, Editing, Saving, Adding and Deleting Records using bounded and unbounded

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	**Introduction to Microsoft .NET framework and Basics of VB.Net**	06	6	4	0	10
II	**Introduction to Windows Common Controls**	08	4	4	6	14
III	**Windows More controls and Menus**	12	4	8	8	20
IV	**Advanced Features of VB.Net**	06	2	4	4	10
V	**Inbuilt Functions and Database access using ADO.NET**	10	0	8	8	16
	Total	**42**	**16**	**28**	**26**	**70**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICALS

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	**Practical Exercises** (Outcomes' in Psychomotor Domain)	Hrs. required
1	I	Observe and draw visual .net IDE layout and hands on practice to create, save and open the project	01
2	I	Write, test and debug at least 5 loop, array and operator based vb.net programs	02
3	II	Design forms and write, test and debug programs to test its various properties , methods, events	02
4	II	Write, test and debug program to test input box and message box	01
5	II	Write, test and debug applications to use textbox, label, button	06
6	II	Write, test and debug applications to use radio button, checkbox, numeric updown and group box controls	04
7	III	Write, test and debug application using date time picker, list box, combo box, picture box	04
8	III	Write, test and debug application using rich text box, progress bar, masked text box, link label	04
9	III	Write, test and debug application using checked list box, scroll bars, timer	04
10	III	Write, test and debug applications using menu	02
11	IV	Write, test and debug applications using dialog boxes	04
12	IV	Write, test and debug applications using sub procedures and functions	04
13	IV	Write, test and debug applications using MDI	02
14	V	Write, test and debug applications using math and string manipulation functions	04
15	V	Draw ado.net object model	01
16	V	Create and test connection using ado.net to view SQL express server/Microsoft Access data in textbox etc controls	02
17	V	Create and test connection using ado.net Oracle/other database data in textbox etc controls	02
18	V	Create connection view controls like data-grid view controls	02
19	V	Write, test and debug small application to add, edit, search, delete record in database in bounded mode	03
20	V	Write, test and debug small application to add, edit, search, delete record in database in unbounded mode i.e. through coding	06
		Total Hours	**58**

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

   i. Study available small VB. Net application on internet and reuse in your application
  ii. Develop VB.net related small applications
 iii. Present the application developed

8. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

The course activities include Lectures and Practical Exercises as per teaching scheme. The programmes in would be executed during practical's sessions. Following needs attention:

   i. Concepts will be introduced interactively in lectures using multimedia projector.
  ii. Students should be given sufficient hands on to develop sample web based applications using .NET technology under close guidance of Teachers.

9. SUGGESTED LEARNING RESOURCES

A) List of Books

S. No.	Title of Book	Author	Publication
1.	Visual Basic .net Comprehensive Concepts and Techniques	Shelly, cashman, Quasney	Cengage learning, 2012
2.	Visual Basic .net	Steven Holzner	Dream Tech Press Latest Edition
3.	Murach's Beginning Visual Basic .NET	Anne Prince	Murach
4.	Programming in Visual Basic. NET	Julia Case Bradley, Anita C. Millspaugh	MGH Latest edition

B) List of Major Equipment/ Instrument with Broad Specifications

   i. Computer System with latest configuration and memory
  ii. Multimedia projector
 iii. Internet Access
  iv. Access to library resources

C) List of Software/Learning Websites

   i. Software: Microsoft Visual Studio latest express edition
  ii. http://www.homeandlearn.co.uk/NET/vbNet.html
 iii. http://msdn.microsoft.com/en-us/beginner/default.aspx
  iv. Videos : http://www.youtube.com/watch?v=hE05SqxPs9E,
        http://www.learnvisualstudio.net/
   v. http://www.tutorialspoint.com/vb.net/vb.net_basic_controls.htm
  vi. http://www.freelearn110.com/visualbasic/level1/tutorials.html

vii. http://msdn.microsoft.com/en-us/vstudio/hh388573.aspx,
viii. http://msdn.microsoft.com/en-us/library/dd492171.aspx
ix. http://msdn.microsoft.com/en-in/vstudio/cc136611.aspx

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics
- **Prof. R. M. Shaikh**, H.O.D Computer Department, K. D. Polytechnic, Patan
- **Prof. K. N. Raval**, H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
- **Prof. Manisha P Mehta**, Sr. Lecturer in Computer Technology, K. D. Polytechnic, Patan
- **Prof. R. M. Shah**, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad

Coordinator and Faculty Members from NITTTR, Bhopal

- **Dr.Priyanka Tripathi,** Associate Professor, Dept. of Computer Engineering and Applications.
- **Dr. R. K. Kapoor**, Associate Professor, Dept. of Computer Engineering and Applications.