

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**  
**COURSE CURRICULUM**

**Course Title: .Net Programming**  
**(Code: 3340704)**

|   |                                  |
|---|----------------------------------|
| <b>Diploma Programmes in which this course is offered</b> | <b>Semester in which offered</b> |
| <b>Computer Engineering</b>                               | <b>4<sup>th</sup> Sem.</b>       |

### 1. RATIONALE

The .NET platform has evolved quickly to become a robust technology platform for enterprise application development and systems integration. The students of this course will be able to cultivate programming skills by imparting in-depth knowledge of .NET Programming techniques using VB.NET. Hence student will be able to create simple applications as well as database connectivity which help the students to develop projects in forthcoming semesters.

### 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 related vb.net applications

### 3. Course Outcomes:

- Describe the architecture of Dot Net Technology.
- Develop single form based .simple Net applications using basic and advanced control
- Develop multiple form and menu based .Net applications
- Develop small ADO.net based database related .Net application
- Implement and trouble shoot simple to complex level .Net Applications

### 4. Teaching and Examination Scheme

| Teaching Scheme<br>(In Hours) |   |   | Total<br>Credits<br>(L+T+P) | Examination Scheme |    |                    |    |                |
|-------------------------------|---|---|-----------------------------|--------------------|----|--------------------|----|----------------|
|                               |   |   |                             | Theory Marks       |    | Practical<br>Marks |    | Total<br>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  | Topics and Sub-topics   |
|---|--|---|
| <b>Unit – I</b><br><b>Introduction to Microsoft .NET framework and Basics of VB.Net</b> | 1a. List the components of Framework and describe CLR  | 1.1 Overview of Microsoft .NET Framework<br>1.2 The .NET Framework components<br>1.3 The Common Language Runtime (CLR) Environment<br>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<br>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  |
| <b>Unit– II</b><br><b>Introduction to Windows Common Controls</b>                       | 2a. Design user interface using enlisted controls<br>2b. List control's important properties, methods and events<br>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<br>2.2 Differentiate procedure oriented, object-oriented and event driven programming<br>2.3 Input box, Message box<br>2.4 Working with Common Tool Box Controls: Label & button (Properties: flat style, image, image align etc.), Textbox (Properties: auto size, maxlength, multiline, read-only, word-wrap etc.), NumericUpDown (textalign, updownalign, value, interceptarrowkeys, decimalplaces, increment, maximum, minimum etc.) Check Box (auto check, checked, check aligned, check state, three state etc.), Radio Button (check aligned, check, auto check etc.), Group Box (gridsize:width, height etc.) control and all important methods and events |
| <b>Unit– III</b><br><b>Additional controls and Menus of Windows</b>                     | 3a. List assorted (enlisted) control's and it's properties, events and methods<br>3b. Develop small  | 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   |

| Unit   | Major Learning Outcomes  | Topics and Sub-topics   |
|--|--|---|
|  | applications using appropriate controls  |   |
|  | 3c. Develop applications using menu and popup menu   | 3.2 Working with Menus: creating menu, inserting, deleting, assigning short cut keys, pop up menu   |
| <b>Unit– IV<br/>Advanced<br/>Features of<br/>VB.Net</b>                                    | 4a. Include the dialog boxes in developed applications   | 4.1 Dialog Boxes: OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog  |
|  | 4b. Differentiate sub procedures and functions<br>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<br>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  |
| <b>Unit– V<br/>Inbuilt<br/>Functions<br/>and<br/>Database<br/>access using<br/>ADO.NET</b> | 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  | Topics and Sub-topics   |
|------|--|---|
|      | 5c. Describe objects of ado.net model<br>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(data table, data rows, data columns, 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, Datagridview, 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          |
|          | <b>Total</b>  | <b>42</b>      | <b>16</b>                    | <b>28</b> | <b>26</b> | <b>70</b>   |

**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 cognitive and practical skills (**Outcomes in cognitive, psychomotor and affective domain**) so that students are able to acquire the competencies. 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 **Programme Outcomes/Course Outcomes in affective domain** as given in a common list at the beginning of curriculum document for this programme. Faculty

*should refer to that common list and should ensure that students also acquire those Programme Outcomes/Course Outcomes related to affective domain*

| S. No.       | Unit No. | Practical Exercises<br>(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 it's various properties , methods, events                             | 02            |
| 4            | II       | Write, test and debug program to test inputbox and messagebox   | 01            |
| 5            | II       | Write, test and debug applications to use textbox, label, button  | 06            |
| 6            | II       | Write, test and debug applications to use radiobutton, checkbox, numericupdown and groupbox 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 datagridview 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            |
| <b>Total</b> |          |   | <b>60</b>     |

## 7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- i. Develop VB.net related small applications
- ii. Seminar on various controls, ado.net object model

- iii. Present developed small database application where database developed in advance database management and SRS prepared in fundamental software design
- iv. Study available small VB. Net application on internet and reuse in your application

## 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 in lectures using multimedia projector.
- ii. Power point presentation for each control
- iii. Practical work will be through laboratory sessions.
- iv. Debate/Group Discussions for comparison of various controls

## 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](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**

1. Prof. R. M. Shaikh, H.O.D Computer Department, K. D. Polytechnic, Patan
2. Prof. K. N. Raval, H.O.D Computer Department, R. C. Technical Institute, Ahmedabad
3. Prof. Manisha P Mehta, Sr. Lecturer in Computer Technology, K. D. Polytechnic, Patan
4. Prof. R. M. Shah, Sr. Lecturer in Computer Technology, Government Polytechnic, Ahmedabad

### **Coordinator and Faculty Members from NITTTR, Bhopal**

1. Prof. (Mrs.) Susan S. Mathew
2. Dr. Joshua Earnest,