



**Level 6 Advanced Diploma in Computer Science (907)**  
**203 Credits**






<b>Unit:</b> Visual Basic .Net	<b>Guided Learning Hours:</b> 300
<b>Exam Paper No.:</b> 7	<b>Number of Credits:</b> 30
<b>Prerequisites:</b> Knowledge of C Programming Language.	<b>Corequisites:</b> A pass or higher in Diploma in System Design or equivalence.
<b>Aim:</b> This unit introduces the learners to the development of Visual Basic applications using the .Net framework. The unit provides basic understanding of how to use Visual Studio .Net and write simple programs using VB .Net programming language. Learners are encouraged to grasp the functionality and syntax of VB .Net and develop desktop and web-based applications.	
<b>Required Materials:</b> Recommended learning resources.	<b>Supplementary Materials:</b> Lecture notes and tutor extra reading recommendations.
<b>Special Requirements:</b> This is a hands-on course, hence practical use of computers is essential. Requires intensive lab work outside of class time.	
<b>Intended Learning Outcomes:</b> 1. Comparing Visual Basic .Net to other high-level languages, structured programming and Microsoft .Net.  2. The overview of Visual Studio .Net the menu bar, toolbar, how to save and close Visual Studio .Net  3. Constructing simple applications and identifying how objects are used.	<b>Assessment Criteria:</b> 1.1 Navigate Visual Studio .Net's <b>start page</b> 1.2 Describe how to create a Visual Basic .Net solution 1.3 Identify how to use the IDE's menus and toolbars 1.4 Identify how to manipulate Windows in the Visual Studio .Net IDE 1.5 Describe how to set the auto hide feature 1.6 Describe how to use the visual studio .Net IDE's help features 1.7 Describe how to close a Visual Basic .Net solution.  2.1 Describe how to set the text in the form's title bar 2.2 Define how to change the form's background color 2.3 Describe how to place a label control on the form 2.4 Demonstrate how to display text in a label control 2.5 Demonstrate how to place a picturebox control on the form 2.6 Identify how to display an image in a picturebox control 2.7 Demonstrate how to execute an application.  3.1 Identify how to visually program, using GUI design guidelines 3.2 Identify how to rename a form and set the form as the startup object 3.3 Demonstrate how to add labels, textboxes, and a button to the form 3.4 Describe how to use the textalign and borderstyle properties for labels. 3.5 Add Labels, Textboxes and Buttons to a form and demonstrating how to implement each.

	<p>4.1 Describe how to add an event handler for a button control</p> <p>4.2 Identify how to insert code into an event handler</p> <p>4.3 Outline how to access a property's value by using Visual Basic .Net code</p> <p>4.4 Demonstrate how to use the assignment and multiplication operators.</p>
<p>4. Developing the set options for Visual Studio .Net environment, event handler, debugger and syntax errors.</p>	<p>5.1 Describe how to create variables</p> <p>5.2 Outline how to handle the textchanged event</p> <p>5.3 Illustrate how to apply basic memory concepts using variables</p> <p>5.4 Describe the precedence rules of arithmetic operators</p> <p>5.5 Demonstrate set breakpoints to debug applications</p>
<p>5. Variables, memory concepts and arithmetic operations, algorithms, pseudocode, program control structures, assignment operators and formatting text.</p>	<p>5.1 Demonstrate basic problem-solving techniques</p> <p>5.2 Describe control structures</p> <p>5.3 Define and create pseudocode</p> <p>6.4 Demonstrate how to use the <i>if...then</i> and <i>if...then...else</i> selection statements to choose among alternative actions</p> <p>5.5 Identify how to use the assignment operators</p> <p>5.6 Identify how to use the debugger's <b>watch</b> window.</p> <p>5.7 Use CheckBoxes, message dialogs, logical operators and demonstrate how to implement each</p> <p>5.8 Demonstrate how to use checkboxes to allow users to select options</p> <p>5.9 Demonstrate how to use dialogs to display message</p> <p>5.10 Describe how to use logical operators to form more powerful conditions</p>
<p>6. The Do While ... Loop, Do Until ... Loop repetition statements and the syntax.</p>	<p>8.1 Describe how to use the <b>do while...loop</b> and <b>do until...loop</b> repetition statements to execute statements in a program repeatedly</p> <p>8.2 Define how to use counter-controlled repetition</p> <p>8.3 Demonstrate how to display information in listboxes</p> <p>8.4 Demonstrate how to use the <b>do...loop while</b> statement</p> <p>8.5 Demonstrate how to use the <b>do...loop until</b> statement</p> <p>8.6 Describe counter-controlled repetition</p> <p>8.7 Analyse how to transfer the focus to a control</p> <p>8.8 Demonstrate how to enable and disable buttons.</p>
<p>7. The For...Next statement, the counter-controlled repetition; the syntax, the multiple-</p>	<p>9.1 Demonstrate how to execute statements repeatedly with the <b>for...next</b> repetition</p>

<p>selection statement and how to implement a multiple-selection.</p>	<p>statement</p> <p>9.2 Describe how to obtain user input with the numeric updown control</p> <p>9.3 Describe how to display information, using a multiline textbox.</p> <p>10.1 Describe how to use the select case multiple-selection statement</p> <p>10.2 Demonstrate how to use the <i>is</i> keyword</p> <p>10.3 Analyse how to use case</p> <p>10.4 Illustrate how to use the textbox property passwordchar statement</p> <p>10.5 Demonstrate how to display a date and time</p>
<p>8. Classes, procedures, function procedures; sub procedures; including how they performs tasks and then returns control to the calling code.</p>	<p>11.1 Demonstrate how to construct applications modularly from pieces called procedures</p> <p>11.2 Analyse how to work with “built-in” procedures</p> <p>8.3 Distinguish between function procedures and sub procedures, and determine when each should be used;</p> <p>8.4 Describe how to create your own function procedures and sub procedures</p> <p>8.5 Explain how to use dates, timers controls, and the timer control's useful features.</p> <p>12.1 Illustrate how to create and manipulate date variables</p> <p>12.2 Define how to execute code at regular intervals using a timer control</p> <p>12.3 Analyse how to retrieve date input with a datetimepicker control</p> <p>12.4 Illustrate how to use group controls using a groupbox control.</p>
<p>9. The scope of a variable, passing arguments – pass-by-value versus pass-by-reference and how to implement each.</p>	<p>13.1 Demonstrate how to create variables that can be used in all the form's procedures</p> <p>13.2 Describe how to pass arguments by reference</p> <p>13.3 Define how to eliminate subtle data-type errors by enabling option strict</p> <p>13.4 Describe how to change a value from one data type to another, using methods of class convert.</p>
<p>10. Arrays; declaring, allocating arrays, sorting arrays, two-dimensional arrays and implementing RadioButtons.</p>	<p>14.1 Define how to create and initialise arrays;</p> <p>14.2 Describe how to store information in an array;</p> <p>14.3 Demonstrate how to convert a string to lowercase letters</p> <p>14.4 Identify how to refer to individual elements of an array</p> <p>14.5 Describe how to sort array options in a drop-down list;</p> <p>14.5 Determine whether a specific character is in a string</p> <p>10.7 Identify how to remove a character from a string</p>

<p>11. Sequential access files; files streams and reading from and writing to a file.</p>	<p>10.8 Define the difference between one-dimensional and two-dimensional arrays</p> <p>10.8 Declare and manipulate two-dimensional arrays</p> <p>10.10 Describe the usefulness of two-dimensional arrays</p> <p>14.10 Demonstrate how to use <b>radiobuttons</b> to enable users to select exactly one option out of several</p> <p>11.1 Demonstrate how to create, read from, write to and update files</p> <p>11.2 Describe sequential-access file processing</p> <p>11.3 Identify how to use <b>streamreader</b> and <b>streamwriter</b> classes to read from, and write to, sequential-access files</p> <p>11.4 Describe how to add and configure a <b>monthcalendar</b> control</p>
<p><b>Methods of Evaluation:</b> A 2½-hour written examination paper with five essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in VB .Net with a weighting of 100%.</p>	

### Recommended Learning Resources: VB .Net

<p><b>Text Books</b></p>	<ul style="list-style-type: none"> <li>• Beginning VB.NET (Programmer to Programmer) by Thearon Willis, Jonathan Crossland and Richard Blair. ISBN-10: 0764556584</li> <li>• VB.NET Language Pocket Reference by Steven Roman, Ron Petrusha and Paul Lomax. ISBN-10: 0596004281</li> </ul>
<p><b>Study Manuals</b></p> 	<p>BCE produced study packs</p>
<p><b>CD ROM</b></p> 	<p>Power-point slides</p>
<p><b>Software</b></p> 	<p>VB .Net</p>