

**Course Name : Electronics Engineering and & Video Engineering Group**

**Course Code : ET/EJ/IE/IS/EN/EX/IC/MU/EV/DE/IU/ED/EI**

**Semester : Fourth**

**Subject Title : Visual Basic**

**Subject Code : 174**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	02	--	--	--	--	25@	25

### Rationale:

Today's most of the electronically operated devices, integrated circuits, controllers, equipments, gadgets are run by specific drivers/software. To understand design, develop and write drivers programming knowledge is required. To run the devices software has to be user friendly. New approach is to use graphical user interface. Graphical user interface can be implemented using visual software's.

Traditionally visual basic is the most popular, versatile, suitable, simple and commonly used visual programming language to write efficient, compact and portable interfaces, drivers/software's.

The subject will enable the students to inculcate visual programming concepts and methodology used to write, debug, compile and execute simple visual basic programs using different powerful data types, built in visual controls and integrated visual basic environment (IDE) provided by Microsoft visual studio. Students will be exposed to event driven programming and bottom up approached used in objects oriented programming.

Students will understand how a complex interface can be easily implemented in visual basic with almost no programming expertise.

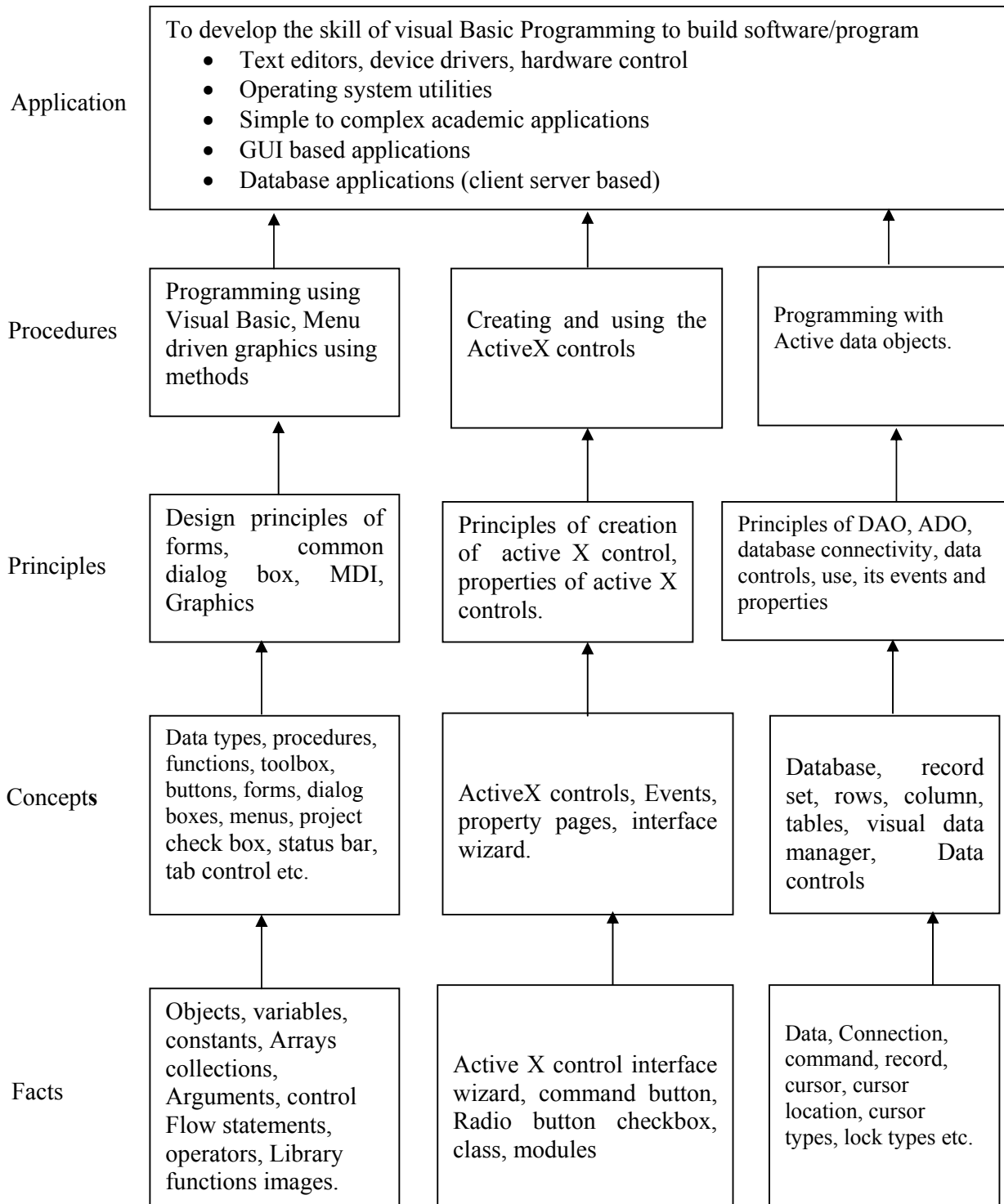
This course will lay the basic foundation of visual programming which will enable students to develop simple to complex programmable systems interfaces in the real world of work

### General Objectives

Students will able to.

1. Learn visual programming development environment, concepts and methodology.
2. Use essential components (visual tools ) of Visual software's
3. Develop the skill of visual basic programming to build custom standalone applications
4. Develop applications with Multiple documents interface ( MDI) using common dialog, menus and graphics
5. Use ADO for database connectivity with different databases.
6. Create simple reports using data report, Seagate crystal reports and integrating it with visual basic
7. Develop applications using class modules

**Learning Structure:**



## Theory

Name of Topics	Hours
<p><b>Topic 1] Introduction to Visual Environment</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Familiar with IDE of Visual basic</li> <li>➤ Use concepts of object based language</li> <li>➤ Use basic elements of visual interface</li> <li>➤ Use properties, events and methods at design time and runtime</li> <li>➤ Create objects, place them on forms</li> </ul> <p><b>Contents:</b></p> <p>1.1 Concepts of visual programming, object, features, properties, methods, events.  1.2 Environment of VB – Menu bar, toolbar, project explorer, toolbox, properties window, form designer, form layout, immediate window.  1.3 Concept of project, elements of projects, form, their properties, methods and events.</p>	02
<p><b>Topic 2] Introduction to Visual Basic</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Use different data types</li> <li>➤ Use powerful features of arrays and collections</li> <li>➤ Write procedures and functions</li> <li>➤ Call procedures and functions</li> <li>➤ Differentiate between procedure and functions</li> <li>➤ Use library functions for math and string operations</li> <li>➤ Use Inputbox and MsgBox functions</li> </ul> <p><b>Contents:</b></p> <p>2.1 Data types, variables, constants, arrays, collections  2.2 procedures, Arguments, function, return values, control flow statements, loop statements, Nested control structures, exit statement  2.3 Math operators &amp; formulas, logical operators, string functions, special functions available in VB like Input Box ( ), Message Box ( ), Format ( ).</p>	02
<p><b>Topic 3] Controls and Events</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Use basic controls</li> <li>➤ Select appropriate controls for given data</li> <li>➤ Set properties of different basic controls</li> <li>➤ Call methods and events of basic controls</li> <li>➤ Demonstrate the use of each control with simple examples</li> </ul> <p><b>Contents:</b></p> <p>3.1 Basic controls: Text box, list Box , Combo Box , Scroll Bar, frame , Option button, checkbox, command button, OLE controls  3.2 File, Drive, directory, Picture box, Image and timer controls .Designing a form using controls, concepts of event &amp; properties, changing properties (runtime &amp; design time) Important events of each control &amp; creating applications using controls.</p>	02
<p><b>Topic 4] Advance Controls &amp; Events</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Add extrinsic controls in an application</li> <li>➤ Use common dialog box control and its properties such open, save as, font, color, print and help</li> <li>➤ Use rich text box to design simple ms-word like application</li> <li>➤ Use and create explorer like utilities using tree view and list controls</li> <li>➤ Familiar with windows common controls</li> </ul>	03

<p><b>Contents:</b>  4.1 Common Dialog Box controls, The Tree view and List, View controls, the rich textbox controls  4.2 Windows common controls – status Bar, Tab control, image list control, Important properties, changing properties at design or run time, event handling.</p>	
<p><b>Topic 5] Module, Class Module, Mdi, Menu Graphics</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Write class modules</li> <li>➤ Define functions and procedures in class module</li> <li>➤ Access functions and procedures from class module</li> <li>➤ Use multiple document interface</li> <li>➤ Design menu based applications such as notepad editor</li> <li>➤ Work with graphic functions and methods</li> </ul> <p><b>Contents:</b>  5.1 Concept of module, class module, using class module to define functions, procedures, variables and accessing them using objects  5.2 MDI- MDI form and child form, Creation and use in  5.3 Menu: Creating own menu using menu editor, popup menu.  5.3 Graphics: Basic controls – Line &amp; shape control , line method, circle method, Pset method, RGB ( ) Functions, Paint picture ( ) method, Load picture ( ) function.</p>	03
<p><b>Topic 6] Database and Report</b>  <b>Specific Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Create database</li> <li>➤ Use ADO and its properties, methods and events</li> <li>➤ Select appropriate concepts such as back-end and front-end</li> <li>➤ Make database connectivity with different databases</li> <li>➤ Generate report using Data Report and Crystal Report</li> </ul> <p><b>Contents:</b>  6.1 Concept of database, Record, Record set, Data control &amp; its important properties  6.2 validating data, entering data, visual data manager.  6.3 Programming with ADO ( Active data objects ), using ADO Objects at design time-connection, command, record set , parameter, Creating &amp; closing a connection; executing a command,  6.4 Using ADO Objects at run time, attaching visual controls to record set at run time, Using delete, save, search, update exit, new, add, methods.  6.5 Report generation using data report and crystal report</p>	04
<b>Total</b>	<b>16</b>

**TERM WORK:-**

Minimum 10 experiment should be conducted during the course out of which one should be mini project based on assignment either from 11, 12, 13 and the record (journal) for the same shall be submitted

- 1) Design a form1 to accept username and password. If username and password are correct then open another form2 to accept students data as follows
  - a. Name (text box)
  - b. Address (text box with multiple rows)
  - c. Gender (option button)
  - d. Hobbies (check boxes)
  - e. Category (List box)
  - f. Qualification (combo box)
Display the data accepted on form2 on form3.

- 2) Write a program to demonstrate the design of simple calculator. It should work very similar to calc application of windows with functions such as add, sub, mul, div, inverse, negation, square, square root, memory functions. Use array of command objects, use error handling routines, explain global and local variables, some useful mathematical library functions and string functions.
- 3) Define a structure data type and initialize the data of 5 students as Name, address, roll no, city, country, marks obtained and birth date using array. Use command button to Show data on a screen in a loop. (i.e. 1 to 5 after last record repeat it in same order. (Implement the program using class module, class variables, functions or procedures as appropriate)
- 4) Write a program to demonstrate list box using two list boxes one sorted and another sorted with provision to add names at runtime using inputbox function. Write three common buttons below each to remove, add and clear list of items. Set sorted list for windows type selection using ctrl and shift keys combinations. Also show to buttons ( <<, >>) to transfer any items from one list to another list using arrow directions.
- 5)
  - a. Write a program to demonstrate change of a colour box using horizontal scroll bar control. Display value of R,G,B on screen using three horizontal scroll bar. Also show change of colors from black to white using continuous scrolling and ticking in steps on each horizontal scrollbar.
  - b. Develop a project to demonstrate file, folder and drive controls. Link them to each other such that when drives are selected it should show the respective folders. When folders are selected then the selected files as shown in combo box should be displayed.
- 6) Design a form to display a picture using image box and picture box. Set appropriate properties. Show interface to display pictures selected from files listed in list box, text box.
- 7) Design to demonstrate open, save, color, font, printer and help dialog boxes using common dialog box control.
- 8) Write a menu driven program to implement text editor having options such as File, Edit, Customize menu on main menu bar. Add menus under file as new, open, save, save as and exit option. Under Edit add cut, copy, paste. Under customize add font and color option. Implement these menus very similar to text editor such as notepad.
- 9) Design and demonstrate the concept of MDI form and child form. Show in a application to create 10 child form using load and unload option in a menu under child menu. Also demonstrate to arrange these forms with cascade, tile horizontal, and tile vertical.
- 10) Demonstrate graphic functions in a VB such as load picture, paint picture, line, circle, basic shapes drawing and saving drawing applications
- 11) Write a program to demonstrate a application of database access of student having fields such as name, rollno, address, city, country, marks and birthdate with appropriate controls on screen. Show record movement buttons such as First, Previous, Next, Last. Also add code for buttons such as new, edit, delete, search, print options. New option should have save or cancel sub options when selected. Similarly for edit options should have update or cancel sub options when selected. Application should use ADO and attach to controls in design time. Use access as back end. Use class module for opening and closing of a database.
- 12) Write the same application as shown in example 11 but use ADO and save or read data in controls during runtime and not design time.
- 13) Develop a simple report to display data of 10 students with crystal report and format it with appropriate heading, labels, logos, current date, page options, header and footers, running totals, formulas and text formatting properties. Also add and activate this report in examples 11,12 above under command button print.

**Reference Books:**

<b>Sr. No.</b>	<b>Author</b>	<b>Title</b>	<b>Publisher</b>
01	MSDN library on line reference	--	From Microsoft MSDN library
02	EvangelosPetroustus	Mastering VB6	WILEY India
03	Steven Holzner	Visual basic 6	DreamTech Press
04	Content Development Group	Visual Basic 6.0 Programming	Tata Mcgraw Hill
05	Mohammed Azam	Programming with visual basic 6.0	Vikas Publishers
06	Nel Jerka	The complete referenceVB6	Tata Mcgraw Hill publishing

**Implementation Strategies-**

- In practical hours teacher should clear all the theoretical and practical concepts of respective practical using LCD projector or 46" TV or similar display arrangement.
- Teacher should demonstrate the idea by taking example and demonstrate the key concepts in each practical assignment.
- Teacher should install MSDN library on machine and demonstrate context online help with suitable example and teach how to copy and paste examples from MSDN and run.
- Give more emphasis on students self learning using MSDN library