

**I. CATALOG DESCRIPTION:**

A. Department Information:

Division: Science and Math  
Department: Computer Science  
Course ID: CS 220  
Course Title: Visual Basic .NET Programming II  
Units: 3  
Lecture Hours: 2  
Laboratory Hours: 3  
Prerequisite: CS 120

B. Catalog and Schedule Description:

Advanced programming using Visual Basic.NET with emphasis on software development and maintenance. Topics include object-oriented design, multiple class modules, interface and linking, windows and Internet controls, and database access.

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One**

**III. EXPECTED OUTCOMES FOR STUDENTS:**

Upon completion of the course the student should be able to:

- A. Design an efficient algorithm for an application;
- B. Define the vocabulary of extended Visual Basic.NET features;
- C. Use object-oriented methods;
- D. Read and write Visual Basic.NET programs;
- E. Create programs with multiple forms, dialog boxes and menus;
- F. Access a database with Visual Basic.NET;
- G. Design and implement user-friendly interface for applications;
- H. Design and implement multiple forms with an MDI;
- I. Reuse code with class modules;
- J. Design and implement multiple class modules;
- K. Create an active X control for applications;
- L. Use internet controls for applications;
- M. Develop Visual Basic.NET applications for distribution.

**IV. COURSE CONTENT:**

- A. The Visual Basic.NET environment
  - 1. Using an event-driven language
  - 2. Project and module files
  - 3. Objects and controls
  - 4. Debugging techniques
- B. The language elements
  - 1. Procedures and functions
  - 2. Boolean and variant data
  - 3. Decision-making and repetition statements
- C. Using multiple forms, dialog boxes, and menus
  - 1. Startup object and App object
  - 2. Control arrays
  - 3. Keyboard and mouse events
  - 4. Menus and dialog boxes
- D. Accessing a database using controls and by programming objects
  - 1. Interactions with a database
  - 2. Using Record set object to manipulate data

3. Error handling and database objects
- E. Accessing a database with SQL and Active X controls
  1. SQL programming language
  2. Using data bound Active X controls
- F. Using the windows common controls
  1. Programming the MS Flex Grid control
  2. Programming the Tree View and List View controls
- G. Multiple forms with an MDI
  1. Creating a multiple document interface application
  2. Programming the Rich Text Box, Common Dialog, and Toolbar controls
  3. Using files
- H. Reusing code with class modules
  1. Class module and objects
  2. Polymorphism using implements statement
- I. Creating a collection hierarchy
  1. Collection of objects
  2. An Active X server
- J. Creating an Active X control
  1. OLE or COM
  2. Events, properties, and methods
  3. Improving the behavior of the properties window
- K. Extending Active X control features
  1. Adding property pages
  2. Enabling a control for use on the Internet
  3. Active X documents
- L. Using Internet controls
  1. Sending mail using Winsock control and SMTP
  2. Transferring files with FTP
- M. The windows application programming interface
  1. The windows registry
  2. Windows dynamic link libraries
  3. Calling DLL functions

**V. METHODS OF INSTRUCTION:**

- A. Lecture
- B. Discussion
- C. Multi-media
- D. Projects

**VI. TYPICAL ASSIGNMENTS:**

- A. Read the first chapter and outline the relevant material. Email your outline to the instructor before the next laboratory meeting.
- B. Analyze the sample program in Chapter 2 and deduce the algorithm used to create the program.
- C. Develop and implement applications using Visual Basic.NET
  1. Sample lab projects:
    - a) Write a program that will play a tile puzzle game with the user
    - b) Write a program that uses the built-in graphics available to show a "screen saver"
    - c) Write a program that will collect data from a class of students, and sort the data into different groups. Output the data according to a menu presented from the program
- D. Discuss the special programming techniques in class

**VII. EVALUATION(S):**

- A. Programming projects: One project per week

- B. Examinations and quizzes
  - 1. Two exams: midterm and final
  - 2. Weekly quizzes on reading assignments
  - 3. Sample test questions:
    - a) What is data input validation?
    - b) What are the differences between Private Sub, Public Function, and Public Sub?
    - c) List all the data types for Visual BASIC
    - d) List all the graphical methods for visual BASIC
    - e) How is the LOAD instruction different from the SHOW instruction?

**VIII. TYPICAL TEXT(S):**

- 1. Advanced Programming in Visual Basic .NET, Gefen, David, et al.; Prentice Hall, 2003.
- 2. Advanced Programming Using Visual Basic .NET, Bradley, Julia Case, et al.; McGraw-Hill, 2004.
- 3. Visual Basic. NET, complete concepts and Techniques, Shelly, Cashman, and Quasney; Course Technology, 2003.

**IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None**