

# CSCI 0054 - VISUAL BASIC .NET PROGRAMMING II

## Catalog Description

Prerequisite: Completion of CSCI 27 with grade of "C" or better  
Hours: 72 (54 lecture, 18 laboratory)

Description: Intermediate Visual Basic .NET programming. Includes coverage of multitier applications, database applications, databases using related tables, database updates, using Web forms, Web forms database and updates, XML Web services, and writing database reports using Crystal Reports. (CSU, UC)

## Course Student Learning Outcomes

- CSLO #1: Create a test plan and program using Visual Basic.NET to provide a solution to a well defined programming program.
- CSLO #2: Develop and use classes that have default properties, events, overloaded operators and inherited classes.
- CSLO #3: Compare the different collection classes available in Visual Basic.NET.
- CSLO #4: Use the Dataset Designer to 1) View the schema for the dataset of a data source; 2) Modify a query using Query Builder; 3) Preview the data for a query; 4) Review the SQL statements that are generated for a data source.
- CSLO #5: Use a multiple-document interface (MDI) for an application that includes menus, toolbars and status bars.

## Effective Term

Fall 2020

## Course Type

Credit - Degree-applicable

## Contact Hours

72

## Outside of Class Hours

90

## Total Student Learning Hours

162

## Course Objectives

Lecture Objectives:

1. Distinguish the features of the Visual Studio IDE versus the .NET Framework.
2. Identify the purpose of each of the files listed in the Solution Explorer.
3. Describe what happens at compile time.
4. Discuss features from the VB6 compatibility library and why you should avoid them.
5. Discuss object-oriented terminology.
6. Analyze the proper scope for variables.
7. Explain the relationship of datasets, tables, rows, and constraints.
8. Use MSDE to access SQL Server databases.

9. Describe how to bind a grid, a combo box, and labels to a database field.
  10. Explain the types of table relationships.
  11. Describe how to display related tables using a DataGrid.
  12. Summarize the procedure for retrieving and displaying data from more than two related tables.
  13. Describe how to add, edit, and delete records in bound controls on a form.
  14. Construct update statements to accurately update related tables.
  15. Discuss concepts of Web-based applications.
  16. Distinguish among the various types of button controls.
  17. Describe the event structure used by Web applications.
  18. Explain how to maintain state (data values) from one page to the next.
  19. Determine when to use a data reader rather than a dataset.
  20. Summarize how to display data in a Web DataGrid.
  21. Explain how to edit, add, and delete records on Web Forms.
  22. Determine whether to use bound or unbound fields.
  23. Discuss the concept of a Web service.
  24. Describe how to base a report on a data file or a dataset.
  25. Explain how to display a report at run time based on a user request.
- Laboratory Objectives:
1. Create an MDI project with a parent form, child forms, a toolbar, status bar, context menu, and ToolTips.
  2. Design your own class and instantiate objects based on the class.
  3. Construct a new class based on an existing system class.
  4. Create and throw custom exceptions.
  5. Create and display information from a DataSet object.
  6. Design a multitier application, separating the data tier from the presentation tier.
  7. Create a program to retrieve and display the parent row for a selected child row.
  8. Develop code that will display database fields in bound and unbound controls.
  9. Modify a database table in a grid.
  10. Use the form's binding context to navigate records.
  11. Design an event handler and delegate for a component added in code.
  12. Evaluate Web input using the Validator controls.
  13. Create pagination for a grid.
  14. Use the CheckedList and RadioButtonList controls.
  15. Construct a multitier Web application.
  16. Construct a program to display data from related tables on a Web Form.
  17. Create a Web service.
  18. Design a program that consumes a Web service.
  19. Construct a Web service that performs calculations.
  20. Develop a Web service that accesses data.
  21. Create a Crystal Reports template and display the report from a Windows Form or a Web Form.
  22. Use advanced reporting functions, such as numeric functions, grouping, sorting, and special fields.

## General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

## Articulation Information

- CSU Transferable
- UC Transferable

## Methods of Evaluation

- Essay Examinations
  - Example: Discuss how to do the following with Web Forms: interact with the user, maintain state, render controls, display data, and generate appropriate HTML. Rubric Grading.
- Objective Examinations
  - Example: Sample Questions: The commands for interacting with the database take the form of \_\_\_\_\_. a. .NET b. XML c. SOAP d. SQL
- Problem Solving Examinations
  - Example: Write the code to build and retrieve data through a Web Form. Rubric Grading.
- Projects
  - Example: The semester project is an opportunity for you to apply what you have learned in class to a real-world situation. You get to choose the topic. The only requirement is that the project must incorporate some of the concepts and principles that you have learned in class this semester. The semester project must be an original web site. If your web site was not created from scratch, then you must show us what it looked like before you started. In other words, if you are planning to do a "makeover" on an existing web site, then you must show the "before" and "after", so that we have a clear picture of your involvement. Rubric Grading.
- Reports
  - Example: Write a research paper that covers the following topic: Compare and contrast ADO data handling with object-oriented programming. In particular, explain the use of Encapsulation, Inheritance, and Polymorphism. Use examples to illustrate the differences as they relate to a particular task. Cite references to current published works. Rubric Grading.

## Repeatable

No

## Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Following an instructor discussion on Databinding, each student will create a program that demonstrates Databinding Data to User Interface Controls. Tasks would be design, coding, and debugging. The topic for the hands-on activity is chosen to reinforce the lecture and to prepare them for the homework assignment. (Laboratory Objective 10)

Lecture:

1. Slide show presentation interspersed with topic-specific video clips and live demonstrations of programming techniques. For example, the lecture topic might be Databinding using Visual Basic. First, review background and general terminology using PowerPoint. Second, do a live demonstration on Databinding Data to User

Interface Controls. Third, students will then investigate further by summarizing a topic-specific video clip from a website like this one: <http://msdn.microsoft.com/en-us/beginner/bb30882>

- 2..aspx. (Lecture Objective 9)

Distance Learning

1. Instructor present a video lecture on Databinding. Have each student create a program that demonstrates Databinding Data to User Interface Controls. Tasks would be design, coding, and debugging. The topic for the hands-on activity is chosen to reinforce the lecture. Students need to upload their work to Canvas. (Lecture Objective 9; Laboratory Objective 10)

## Typical Out of Class Assignments Reading Assignments

1. Students will read the assigned pages from the textbook and be prepared to discuss in class the use of databases in conjunction with Web Forms.
2. Students will read the assigned pages from the textbook and be prepared to discuss in class the use of Crystal Reports for generating database-driven reports.

## Writing, Problem Solving or Performance

1. Students will complete all of the Case Studies at the end of the chapter and test the retrieval of data through a Web Form to make sure that it works correctly.
2. Students will complete all of the Case Studies at the end of the chapter and generate reports that show customer information.

## Other (Term projects, research papers, portfolios, etc.)

### Required Materials

- Murach's ADO.NET 4 Database Programming with VB 2010
  - Author: Anne Boehm & Ged Mead
  - Publisher: Mike Murach & Associates
  - Publication Date: 2011
  - Text Edition: 4th
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Microsoft Visual Basic 2010 for Windows, Web, Office, and Database Applications: Comprehensive
  - Author: Gary B. Shelly & Corinne Hoisington
  - Publisher: Course Technology
  - Publication Date: 2010
  - Text Edition: 1st
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Advanced Programming Using Visual Basic 2010
  - Author: Julia Case Bradley, Anita C Millspaugh
  - Publisher: McGraw-Hill
  - Publication Date: 2010
  - Text Edition: 5th
  - Classic Textbook?: No

- OER Link:
- OER:

**Other materials and-or supplies required of students that contribute to the cost of the course.**