

CSC 139
VISUAL BASIC PROGRAMMING

COURSE DESCRIPTION:

Prerequisites: CIS 115

Corequisites: None

This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level. *This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a premajor and/or elective course requirement.* Course Hours Per Week: Class, 2. Lab, 3. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completion of this course, the student will be able to:

- a. Create, compile, execute and debug simple Visual Basic applications.
- b. Navigate Visual Basic's IDE.
- c. Create code using .
- d. Illustrate the use of assignment statements.
- e. Use different data types
- f. Write and call subroutines and functions
- g. Use relational and logical operators
- h. Create and access 1 and 2 dimensional arrays.
- i. Follow syntax rules in coding a program

OUTLINE OF INSTRUCTION:

- I. Overview of Visual Basic
 - A. Discuss the history of Visual Basic and .NET.
 - B. Navigate the Integrated Development Environment (IDE) and Help features.
 - C. Create, compile, and execute simple Windows Forms and Console applications.
 - D. Write statements that input data from the keyboard and output data to the screen.
 - E. Use message dialogs to display messages.
 - F. Declare and use data of various types.
 - G. Store and retrieve data from memory.
 - H. Use arithmetic operators to perform calculations.
 - I. Use the precedence of arithmetic operators to determine the order in which operators are applied.
- II. Control Statements
 - A. Develop algorithms through top-down, stepwise refinement.
 - B. Use equality, relational, and logical operators to compare operands and form conditions.
 - C. Write selection/decision-making statements to choose among alternative actions.
 - D. Use counter-controlled and sentinel-controlled repetition statements to execute statements in a program repeatedly.
 - E. Use compound assignment operators to abbreviate assignment operations.
 - F. Use nested control statements.

- G. Use logical operators to form more complex conditions.
- H. Use Exit and Continue statements to break out of a repetition statement or the current iteration of a repetition statement.

III. Arrays

- A. Declare, allocate, and initialize array data structures.
- B. Access and modify individual elements of arrays.
- C. Iterate through elements of arrays.
- D. Sort and Search lists or tables of data stored in arrays.
- E. Declare and manipulate multidimensional arrays.
- F. Pass arrays to methods.

IV. Classes, Objects, Methods and Instance Variables

- A. Create Objects and Call Methods.
- B. Create Classes with Methods, Instance Variables and Properties.
- C. Understand different types of scope and how it affects access.
- D. Instance variables vs. local variables
- E. Declare and use constructors to initialize objects
- F. Differentiate value types and reference types
- G. Create constant members at compile time and at runtime
- H. Use the Object Browser to navigate the .NET Framework Class Library
- I. Declaring Methods with Parameters
- J. Instance Variables and Properties
- K. Value Types and Reference Shared/Class Methods vs. Instance Methods
- L. Subroutine vs. Function Methods
- M. Declaring and Using Methods
- N. Passing Arguments: Pass-by-Value vs. Pass-by-Reference
- O. Method Overloading
- P. Optional parameters
- Q. Recursion
- R. Scope
- S. Constructors
- T. Composition
- U. Inheritance

REQUIRED TEXTBOOK AND MATERIALS:

Text to be assigned by the instructor each semester

STATEMENT OF STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling (919) 536-7208 x1403 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.