

CSC 253
ADVANCED C# PROGRAMMING

COURSE DESCRIPTION:

Prerequisites: CSC 153

Corequisites: None

This course is a continuation of CSC 153 using the C# programming language with object-oriented programming principles. Emphasis is placed 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, debug, and implement objects using the appropriate environment. Course Hours Per Week: 2. Lab, 3. Semester Hours Credit, 3.

LEARNING OUTCOMES:

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

- a. Design and create graphical user interfaces (GUI).
- b. Learn what exceptions are, how they are handled and when to use them.
- c. Create and manipulate strings, characters and regular expressions.
- d. Understand and use graphics and multimedia.
- e. Create, read from, write to, and update data files.
- f. Access a relational database using Structured Query Language (SQL) and ActiveX Data Objects (ADO) .NET
- g. Develop web applications using ASP .NET 2.0, Web Forms and web controls.
- h. Create web services and clients that use web services.

OUTLINE OF INSTRUCTION

- I. Design and create graphical user interfaces (GUI).
 - a. Create Windows forms.
 - b. Process events that are generated by user interactions with GUI controls.
 - c. Create and manipulate Button, Label, RadioButton, CheckBox, TextBox, Panel and NumericUpDown controls.
 - d. Add descriptive ToolTips to GUI controls.
 - e. Process mouse and keyboard events.
 - f. Create menus, tabbed windows and multiple document interface (MDI) programs.
 - g. Use ListView and TreeView controls for displaying information.
 - h. Display lists of information in ListBox, CheckedListBox and ComboBox controls.
 - i. Input date and time data with the DateTimePicker and MonthCalendar.
 - j. Create custom controls.

- II. Learn what exceptions are, how they are handled and when to use them.
 - a. Use try blocks to delimit code in which exceptions might occur.
 - b. Throw exceptions to indicate a problem.
 - c. Use catch blocks to specify exception handlers.
 - d. Use the finally block to release resources.
 - e. Create user-defined exceptions.

- III. Create and manipulate strings, characters and regular expressions.
 - a. Create and manipulate immutable character string objects of class string.
 - b. Create and manipulate mutable character string objects of class StringBuilder.
 - c. Manipulate character objects of struct Char.
 - d. Use regular expressions in conjunction with classes Regex and Match.

- IV. Understand and use graphics and multimedia.
 - a. Understand graphics controls and graphics objects.
 - b. Manipulate colors and fonts.
 - c. Understand and use GDI+ Graphics methods to draw lines, rectangles, strings and images.
 - d. Use class Image to manipulate and display images.
 - e. Draw complex shapes from simple shapes with class GraphicsPath.
 - f. Use Windows Media Player to play audio or video in a C# application.
 - g. Use Microsoft Agent to add interactive animated characters to a C# application.

- V. Create, read, write and update files.
 - a. Use classes File and Directory to obtain information about files and directories on your computer.
 - b. Become familiar with sequential-access file processing.
 - c. Use classes FileStream, StreamReader and StreamWriter to read text from and write text to files.
 - d. Use classes FileStream and BinaryFormatter to read objects from and write objects to files.

- VI. Access a relational database using Structured Query Language (SQL) and ActiveX Data Objects (ADO) .NET
 - a. Write basic database queries in SQL.
 - b. Add data sources to projects.
 - c. Use the IDE's drag-and-drop capabilities to display database tables in applications.
 - d. Use the classes of namespaces System.Data and System.Data.SqlClient to manipulate databases.
 - e. Use ADO .NET's disconnected object model to store data from a database in local memory.
 - f. Create XML documents from data sources.

- VII. Develop web applications using ASP .NET 2.0, Web Forms and web controls.
 - a. Create Web Forms.
 - b. Create ASP .NET applications consisting of multiple Web Foms.
 - c. Maintain state information about a user with session tracking and cookies.
 - d. Use the Web Site Administration Tool to modify Web application configuration settings.
 - e. Control user access to Web applications using forms authentication and ASP .NET login controls.
 - f. Use databases in ASP .NET applications.
 - g. Design a master page and content pages to create a uniform look-and-feel for a Web site.

- VIII. Create web services and clients that use web services.
 - a. Understand the important part that XML and XML-based Simple Object Access Protocol (SOAP) play in enabling Web services.
 - b. Understand the elements that comprise Web services, such as service descriptions and discovery files.
 - c. Create a client that uses a Web service.
 - d. Use Web services with Windows applications and Web applications.
 - e. Use session tracking in Web services to maintain state information for the client.
 - f. Pass user-defined types to a Web service.

REQUIRED TEXTBOOK AND MATERIALS:

Text to be assigned by the instructor each semester

STATEMENT FOR 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.