

COMPETENCY PROFILE

Introduction to Programming

BTC: Introduction to Programming -- IT 121 (90 hours / 5 credits)

WCC: Computers and Software -- CS 101 (5 credits)

This course introduces students to the fundamentals of good program design, coding, testing and documentation. Covers the architecture, organization & operations of a computer, information representation, the primary tasks of operating systems, and the fundamentals of computer programming.



Note: instructors may choose to teach the programming skills/competencies using C#, Visual Basic.NET, C++ or Java programming techniques.

Upon completion of high school courses equivalent to the following competencies:

- Define basic computer programming terms and concepts.
- Compare procedural programming with event driven programming.
- Demonstrate the correct use of programming environment software features, including debugging tools, editor features and help options.
- Incorporate comments and other techniques within programs to enhance clarity and maintainability.
- Use the Program Development Cycle:
 - Analyze: Define the problem
 - Design: Plan the solution to the problem
 - Choose Interface: Select appropriate objects
 - Code: Translate the algorithm into code
 - Test & Debug: Locate and remove errors
 - Documentation: Organize materials that describe program and program design
- Employ algorithm analysis techniques and critical thinking skill sets including:
 - Flow charts
 - Pseudo code
 - Iterative design process
- Employ debugging techniques.
 - Examine code by hand
 - Use debugging tools
- Explain and use Variables and Constants.
 - Discuss the reasons for using variables and constants.
 - Work effectively with numbers
 - Work effectively with strings
- Define the various data types.
 - Effectively use different variable types
 - Work with procedural level variables
 - Work with form level variables
- Validate user input.
 - Effectively use relational operators to validate input
 - Use various built in functions to validate input
- Employ Built-In Functions.
 - Use of various numeric functions
 - Use of various string functions
 - Use of String-Related Numeric Functions
 - Use of Formatting Functions
 - Create randomly generated numbers
- Identify and use General Procedures.
 - Design and apply Function Procedures
 - Explain passing by value and passing by reference
- Explain different naming conventions.
 - Apply a standard naming convention for objects
 - Apply a standard naming convention for variables
- Explain Object Oriented Programming.
 - Discuss Classes and Objects
- Apply Decision Structure.
 - Employ relational operators
 - Employ logical operators
 - Design & apply single and nested If Blocks
 - Understand and apply Select Case Block
- Employ the various looping structures.
 - Use Do While Loop
 - Use Do Until Loops
 - Use For Next Loops
- Predict the output of programs involving nested selection and looping constructs.

College Textbook Reference:

- [Programming with Microsoft Visual Basic.NET](#) by Diane Zak, Thomson Course Technology
- [Learning Computer Concepts](#), 2nd ed., Prentice Hall
- [Computer Programming with C#](#) by Michael Koepp
- [SQL in 10 minutes](#), SAMS

This document is to certify that this student has completed the required coursework as defined by the Whatcom County Tech Prep Articulation Agreement and has demonstrated mastery for college credit. Further information about any aspect of this program may be obtained by contacting the school and instructor named on this profile.