

INTRODUCTION TO PROGRAMMING

Pierce County Careers Connection Dual Credit Articulation Agreement

Prerequisite: *Advanced Algebra or equivalent algebra courses.*

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 its 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
- Employ debugging techniques.
 - Examine code by hand.
 - Use appropriate debugging tools.
- Depending on the language being used, employ the Required Integrated Development Environment

- Explain the purpose and uses of Variables and Constants.
 - Work effectively with numbers.
 - Work effectively with strings.
- Define the various data types.
- Describe the use of variable [scope](#).

- Describe or demonstrate how to structure output to provide:
 - Output to a console
 - Output to a GUI
- Describe or demonstrate various ways to validate user input.
 - Using relational operators to validate input.
 - Using any built in functions to help in validating input.
- Describe or employ Built-In Functions that may be available in programming languages such as:
 - Various numeric functions.
 - Various string functions.
 - Various String-Related Numeric Functions.
 - Various Formatting Functions.
 - The ability to create randomly generated numbers.
- Describe or demonstrate the use of General Procedures
 - Design or define a Function Procedure.
 - Explain passing by value and passing by reference.
- Explain or apply different naming conventions.
 - For objects.
 - For variables.
- Explain Object Oriented Programming.
 - Define Classes and Objects.
- Describe Decision Structure as they would apply to
 - Relational operators.
 - Logical operators.
 - Single and nested If Blocks.
- Describe and /or apply [switch](#)
 - The use of "To" within a Select Case Block
 - The use of "Is" within a Select Case Block.
- Demonstrate the use of various looping structures.
 - Do While Loop
 - Do Until Loops
 - For Next Loops
- Predict the output of programs involving nested selection and looping constructs and arrays.
- Describe and/or demonstrate the use of various arrays.
 - Single dimensional array.

- Describe and/or demonstrate various uses and types of searching schemes.

A student earning a “C” grade or better may earn college credit at one of the following colleges:

<u>College</u>	<u>Course</u>	<u>Credits</u>
Bates Technical College	SOFT 102 (CIP Code: 11.1004)	5
Clover Park Technical College	CPW 101 (CIP Code: 11.0201)	5
Pierce College	CIS 122 (CIP Code: 11.0301)	5