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 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 “B” grade or better may earn college credit at one of the following colleges:

<table>
<thead>
<tr>
<th>College</th>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Bates Technical College</td>
<td>SOFT 102 (CIP Code: 11.1004)</td>
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<tr>
<td>Clover Park Technical College</td>
<td>CPW 101 (CIP Code: 11.0201)</td>
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<tr>
<td>Pierce College</td>
<td>CIS 122 (CIP Code: 11.0301)</td>
<td>5</td>
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