

COMPONENT	OBJECTIVES	COMPETENCY
<p>I Basic Operations and Concepts</p>	<ol style="list-style-type: none"> <li>1. Compare, contrast, and appropriately use the various input, processing, output, and primary/secondary storage devices.</li> <li>2. Demonstrate knowledge and appropriate use of operating systems.</li> <li>3. Delineate and make necessary adjustments regarding compatibility issues including digital file formats and cross platform connectivity.</li> <li>4. Differentiate current programming languages and discuss the use of the languages in other fields of study.</li> <li>5. Demonstrate knowledge of specific programming terminology and concepts.</li> </ol>	<ol style="list-style-type: none"> <li>A. Demonstrate proper care and operation of equipment.</li> <li>B. Demonstrate coding proficiency in a contemporary programming language.</li> </ol>
<p>II Problem-Solving Tools</p>	<ol style="list-style-type: none"> <li>1. Apply problem-solving strategies such as design specifications, top-down design, step-wise refinement, or algorithm development.</li> <li>2. Develop sequential and iterative algorithms to solve practical problems modeled from school and community.</li> <li>3. Evaluate solution to a specified problem by testing results for correctness.</li> </ol>	<ol style="list-style-type: none"> <li>A. Use visual organizers to design solutions such as flowcharts or schematic drawings.</li> </ol>
<p>III Structured Programming</p>	<ol style="list-style-type: none"> <li>1. Develop code using various data types.</li> <li>2. Demonstrate effective use of predefined input and output procedures for lists of computer instructions including procedures to protect from invalid input.</li> <li>3. Develop coding with correct and efficient use of expressions and assignment statements: <ul style="list-style-type: none"> <li>• standard/use-defined functions</li> <li>• data structures</li> <li>• operators/proper operator precedence</li> <li>• sequential/conditional/repetitive control structures</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>A. Produce a program or a series of programs that demonstrate block-structured programming.</li> <li>B. Write code that demonstrate conditional statements and iterated, pretest and posttest loops.</li> <li>C. Create a menu-driven program that branches and allows user input.</li> <li>D. Write a program or series of programs that demonstrate the correct use of one-dimensional arrays (lists).</li> </ol>

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IV Algorithms	<ol style="list-style-type: none"> <li>4. Identify and use structured data types of one-dimensional arrays, records, and text files.</li> <li>5. Use correct programming style to enhance the readability and functionality of the code such as spacing, descriptive identifiers, comments, or documentation.</li> <li>1. Understand and implement a simple sorting algorithm (bubble/exchange, insertion, or selection).</li> <li>2. Understand and implement sequential (linear) search.</li> <li>3. Understand and implement binary search.</li> <li>4. Apply simple numerical algorithms: counting, summing, averaging, rounding.</li> <li>5. Compare and contrast search and sort algorithms including linear and binary searches for different purposes and search time.</li> <li>6. Manipulate data structures using string processing.</li> </ol>	<ol style="list-style-type: none"> <li>E. Annotate coding properly with comments, indentation, and formatting.</li> <li>A. Write a programming module for each of the listed algorithms.</li> </ol>
V Social, Ethical, and Human Issues	<ol style="list-style-type: none"> <li>1. Recognize and model ethical acquisition and use of digital information regarding: <ul style="list-style-type: none"> <li>• piracy</li> <li>• privacy</li> <li>• censorship</li> <li>• unauthorized access</li> <li>• virus detection/prevention</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>A. Demonstrate proper ethical and responsible computer use.</li> </ol>