

Computer Programming

Unit	Objectives
Data Structure Concepts	<ol style="list-style-type: none">1 Create a program using a list2 Create a program using one- and two-dimensional arrays3 Create a program using a sort routine4 Create file structures5 Describe database structures (e.g., fields, records, files, and tables)6 Write code to append, delete, and update a table or a file7 Create a database file with one or more tables for manipulation by program code8 Write code to search, sort, and query a data structure
Logical Problem-Solving Skills	<ol style="list-style-type: none">1 Analyze a problem2 Determine the steps needed to solve a problem3 Create an algorithm to solve a problem4 Illustrate the problem solution using a storyboard, flowchart or pseudocode5 Build a program from a storyboard, flowchart, or pseudocode6 Explain how to create and integrate reusable component into a program7 Explain how a program is tested and accepted for release8 Document code.
Program Algorithms	<ol style="list-style-type: none">1 Use correct syntax and naming conventions of a given programming language2 Create a program using internal documentation3 Identify the use and limitations of different data types (integer, double, and constant)4 Create programs that include: variables and constants; counters and accumulators; arithmetic operations and functions; conditional statement; loop instruction; required user input; input validation; opening, writing, and reading from a data file; producing formatted output; modular program using one or more methods; that passes data to methods using parameters5 Identify type of errors (e.g. syntax, run-time and logic)6 Create a program with a standard graphic user interface (GUI) that includes: objects and menus; and a custom GUI7 Modify an existing program8 Create a program in collaboration with a team9 Describe and practice steps of troubleshooting and debugging
Additional Programming Concepts	<ol style="list-style-type: none">1 Discuss considerations in programming for efficiency (e.g., computer time, programmer time, etc.)2 Discuss how to create a user-friendly program3 Describe event-driven programming4 Describe error catching/handling5 Compare object-oriented programming with structured programming6 Describe and/or practice mobile application programming7 Discuss handicap accessibility considerations in programming8 Create a program using multimedia9 Practice programming for efficiency10 Practice error catching/handling

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Unit	Objectives
Computer Concepts	<ol style="list-style-type: none">1 Trace the development of computers and their impact on society2 Describe the categories and evolution of programming languages3 Explain the functions of computer hardware and architecture4 Demonstrate an understanding of computer theory (e.g., bits, bytes, binary logic, memory, and storage)5 Compare computer operating systems (e.g., DOS, Windows, Linux, Android)6 Discuss legal/ethical issues related to computers7 Identify the application environment/interface for the specific language being covered (e.g., JCreator, BlueJay, and Visual Studio)8 Explain the concept of security and its relationship to programming9 Identify components of the information system model (input, process, output, storage)10 Identify types of Network (Internet, LANs, and Wireless)
Prepare for Employment	<ol style="list-style-type: none">1 Demonstrate working as a team2 Search the web and other places to locate career-planning information and job opportunities related to programming3 Identify careers in the information technology field4 Demonstrate communication skills5 Demonstrate logical thinking6 Demonstrate interpersonal skills7 Create a resume8 Demonstrate good interview skills9 Exhibit leadership skills through a student organization (e.g. FBLA, PBL, ACM)