Computer programming
Course Outline

		Classroom
1	An Overview of the Modern Computer	
	• Commonly Used Computer Terms • Introductory Concepts ➢ Overview of computers in everyday life ➢ Defining computer hardware and software ➢ Information processing cycle ➢ Computers in business ➢ Classification of computers • Central Processing Unit (CPU) ➢ CPU components and functions ➢ Primary Storage components (random access memory) ➢ Internal data representation • Peripheral Devices ➢ Input media and input devices o Hard and floppy disks o Optical scanners o Magnetic ink characters readers o Terminal Keyboards o Voice recognition systems o Light pens o Touch sensitive screen ➢ Output devices o Hard copy (printers, plotters) o Monitors ➢ Secondary storage devices o Magnetic disk o Magnetic tape o Cartridge units o Optical disks	10 10 10 15
	Unit Objective	
	• Demonstrate competency in defining the most commonly used computer terms. • Demonstrate competency in describing the components and the functions of a modern computer system. • Demonstrate competency in describing, comparing, and contrasting various input, output and storage devices commonly used in modern	

	computer systems. • Demonstrate competency in creating, printing, and removing files using the operating systems commands for a microcomputer.	
2	Programming **with Structured Programming Languages**	
	• The Role of Software Development ➢ Low level languages ➢ High level languages	5
	• Variables, Assignments, and Simple In/Out (I/O) ➢ Variables and Expressions ➢ Redirection and File Access ➢ Comments and Errors	25
	• Characteristics of Data Types ➢ Introduction to data types ➢ String data Types ➢ The Floating Point Types ➢ Enumerated Types	20
	• Conditional Execution ➢ Relational Operators ➢ Conditional Statements – if ➢ Logical Operators ➢ Nested if Statements and other ifs within ifs ➢ The switch statement ➢ The Conditional Operator	40
	• Iteration ➢ Iteration ➢ Infinite Loops ➢ The for Statement ➢ Loop Termination: break, continue, and go to ➢ Efficiency in Iteration	30
	• Functions ➢ Arrangement of Functions within a program ➢ Standard Library Functions ➢ String Functions	50
	• Arrays and Strings ➢ Array Declarations and Assignment ➢ Arrays and Functions ➢ Internal Representations ➢ Searching and Sorting ➢ Strings and Standard String Routines ➢ Multidimensional Arrays	25

		Classroom
	Unit Objective:	
	• Demonstrate their ability in having the computer assign values as the program is coded or assign values during run time. • Demonstrate a competency in displaying the results of a program to file or to the monitor. • Demonstrate a competency in assigning appropriate data type different types of numbers and characters. • Demonstrate a competency using the "IF" command to execute different parts of a program. • Demonstrate a competency using nested "if" commands for multiple choices. • Demonstrate a competency using the "AND" and "OR" commands to control for complex choices. • Demonstrate a competency using "Switch" command for menu type operations. • Demonstrate a competency using of the DO, WHILE and FOR commands for loop control. • Demonstrate a competency using of arrays for sorting, searching and manipulating sets of data.	
3	**Debugging and Running Structured Programming Languages**	
	• Running and using a high level compiler ➢ Purpose of a compiler ➢ Correcting errors found in the compiling process ➢ Debugging a completed program • Alpha and Beta Testing ➢ Software Revision Proccess ➢ Releasing Software Versions ➢ The public Beta process	30 20
	Unit Objective:	
	• Demonstrate the ability to run and compile software using a compiler • Demonstrate a competency for understanding and correcting errors found in the compiling process. • Demonstrate a competency for testing and debugging software prior to public release using the user interface. • Demonstrate a competency for understanding the different types of open public testing, including Alpha and Beta release of software. • Demonstrate a competency for correcting and identifying user errors	

	reported in the Beta period.	
4	**Creating the User Interface**	
	• User Interface Designs ➢ Command Line ➢ Consoles ➢ Graphical User Interfaces • Button and Menu Design ➢ Creating and Designing buttons ➢ Creating and Designing a menu system ➢ Linking user input to program operations • Linking and Storing Data ➢ Databases ➢ Computer Memory Usage ➢ Debugging the user interface	20 25 25
	Unit Objective:	
	• Demonstrate a competency for developing a user interface using several different modes. • Demonstrate an ability to create a user interface with a Graphical Interface, that includes buttons, menus, and user content. • Demonstrate a competency for linking data between user input and program operations using buttons and command line input. • Demonstrate the ability to create program menus. • Demonstrate a competency for creating user content in the computer memory using a database or other stored memory. • Demonstrate the ability for a program to access stored data. • Demonstrate the ability for a program to save and retrieve user input data. • Demonstrate a competency for testing the user interface for functionality, correct output, and overall design characteristics.	
	Classroom Hours	**360**
	Community Classroom Hours	**180**
	TOTAL HOURS	**540**