Institute of Computer Science/Information Technology (ICS&IT)
Faculty of Management Sciences & CS/IT (FMCS)
The University of Agricultural Peshawar

Program: BS (CS+IT)-I
Course Name: Programming Fundamentals
Course Code: CC-301
Course Hours: 03
 Total Weeks: 16
Total Hours: 48

Course Objective

        The aim of this course is to provide basic concepts of programming language using C++, which is important for higher level programming. After completing this course the students will be able to make small and medium programs.

Week-1
        - Introduction to Programming Languages
        - History of C++
        - Basic elements of C++
                - C++ character set
                - C++ words
                        - Reserve words
                        - User define words/identifier
                -Rules for identifier

Week-2
        - Basic Data Types
                - Int
                - Float
                - Char
                - Modifiers
                        - Long
                        - Signed
                        - Unsigned
                        - Double
                        - Long Double
                        - Short
Week-3
        -Numbers
                -Integer Numbers
                -Real Numbers
        -Types of identifiers
                -Constant identifier
                -Variable identifier
        -Statement
                -Single statement
        - Compound statement Program

Week-4
- General Structure of C++ Program
- Output Statement
- Input Statement
- String/message
    - Char/Char identifier
- Assignment Statement
-Operators
    -Arithmetic Operators
    -Relational Operators
    -Logical Operators

Week-5
- Expression
- Initialization Statement
- Increment Operator (Prefix & Postfix forms)
- getche () function
- getch () function
- Escape sequences

Week-6
- Comments in C++ Program
- Pre-processor Directives
- Difference between Declaration & Definition
- Arithmetic Assignment Expression
- Priority of Operators
- Conversion of Mathematical formula into C++ expression

Week-7
- Control structures/Decision Control structure
    - Transfer of control Statements (TOCS)
    - Repetitive Control structure/statements (Loops)
-Conditional TOCS

    -Single alternative if statement
        -Nested if statement
    -Double alternative if statement (if-else statement)
        -Nested if-else statement

Week-8
-Conditional operator/Ternary Operator (? :)
-Switch statement/Multiple Branching statement
    -Nested Switch statement
Week-9
-Manipulators
    -endl manipulator
    -setw manipulator
-Continue statement
-Break statement
-Go to statement

Week-10
- Loop
  - Types of Loop
  - Fixed loop (count control loop)
  - Non-fixed loop (event control loop)
  - Fixed loop/for loop
  - Variations in for loop
    - Defining variable in for loop
    - Multiple initializations in for loop
    - Multiple inc/dec expressions in for loop
    - Initialization outside for loop
    - Inc/dec expression inside for loop
    - No testing (infinite loop)
    - Output statement inside for loop
    - Nested for loop

Week-11
- Non-fixed loop (event control loop)
  - While-loop (Pre-tested loop)
  - Do-while loop (Post-tested loop)
  - Nested while & do-while loop

Week-12
- Arrays
- Types of Array
  - One-dimensional array
  - Two-dimensional array

Week-13
- Sorting and searching
  - Bubble sort
  - Linear search
- Strings (array of characters)

Week-14-15
- Function
- Types of Function
  - Built-in function
  - User-defined function
  - Parts of user defined function
  - Function with values and no return
  - Function with values and return
  - Passing values from a function
  - Passing arguments to a function

Week-16
- Pointers Basic Concepts
- Structure
  - Specifying structure
  - Defining structure variable
  - Accessing structure members

Total Marks: 100

<u>Recommended Books</u>

1. OBJECT ORIENTED PROGRAMMING IN C++, Robert Lafore
2. C++ HOW TO PROGRAM, H.M. Dietel