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

Program: BS (CS) - II
Course Name: Object Oriented Programming - I
Course Code: CC-311
Course Hours :   03
Total Weeks: 16
Total Hours: 48

Course Objectives

This course would help the students to develop programming language skills using C++. By the end of this module the students should be able to know what is involved in creating a fully functional program, Be able to design and develop a small application, also this course is intended to give the students a grounding in object-oriented paradigm. After completing this course, the students would be acquainted with some of the underlying concepts of object-orientation and would be able to develop small object-oriented applications.

Week-1-2

- Functions
- Built-in Functions
- User-Defined Functions
- Function Declaration (Prototype)
- Function Definition
- Function Calling
- Passing Arguments to Functions
- Returning Data from Functions
- Return Statement
- Declaration of Function that return a value
- Calling a Function that returns a value
- Function Definition that returns a value
- Function Overloading
- Recursion Function

Week-3-4
- Pointers
- Combining Pointers with Function
- Pointers and Arrays
- Structures
- Structure Variables
- Accessing Members of a Structure
- Initialization of Structure Variables
- Array of Structure
- Initialization of Array of Structure

Week-5
- Introduction to Object oriented Programming
- Structured programming vs. Object oriented programming

Week-6
- Defining classes
- General form of a class
- Members of class
  - Data Members
  - Member Functions
- Member Access Specifiers

Week-7
- Class Objects
- Declaring objects of a class
- Calling Member Functions
- Storage of Objects in Memory

Week-8-9
- Constructors
- Constructor overloading
- Destructors
- Friend Functions
- This pointer

Week-10-11
- Introduction to Inheritance
- Access Specifiers
  - Public Access Specifiers
  - Private Access Specifiers
  - Protected Access Specifiers
- Types of Inheritance
  - Single Inheritance
  - Multiple Inheritance
  - Multi - Level Inheritance
  - Hierarchical Inheritance
  - Hybrid Inheritance

Week-12-13
- Introduction to Polymorphism
  - Virtual and pure virtual functions
  - Abstract Base classes and Concrete derived classes

Week-14-15
- Operators and its types
- Operators overloading
  - Unary operators overloading
  - Binary operators overloading

Week-16
- File Handling
- Storing and reading data from data files.

Total Marks: 100

<u>Recommended Books:</u>
1.   OBJECT ORIENTED PROGRAMMING USING C++, <u>Robert Lafore</u>
2.   C++ HOW TO PROGRAM, <u>Deitel & Deitel</u>
3.   Programming with C++, Aikman Series