II B.COM IV SEMESTER

Course 3C PROGRAMMING WITH C & C++

Hours per week: 5 **Credits: 4**

Learning Outcomes:

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

B. Remembers and states in a systematic way (Knowledge)*

12. Develop programming skills
13. Declaration of variables and constants use of operators and expressions
14. learn the syntax and semantics of programming language
15. Be familiar with programming environment of C and C++
16. Ability to work with textual information (characters and strings) & arrays

C. Explains (Understanding)*

17. Understanding a functional hierarchical code organization
18. Understanding a concept of object thinking within the framework of functional model
19. Write program on a computer, edit, compile, debug, correct, recompile and run it

*D. Critically examines, using data and figures (Analysis and Evaluation**)*

20. Choose the right data representation formats based on the requirements of the problem
21. Analyze how C++ improves C with object-oriented features
22. Evaluate comparisons and limitations of the various programming constructs and choose correct one for the task in hand.

D. Working in 'Outside Syllabus *Area' under a Co-curricular Activity*(Creativity) Planning of structure and content, writing, updating and modifying computer programs for user solutions

E. Exploring C programming and Design C++ classes for code reuse (Practical skills***)

Syllabus

Unit – I: Introduction and control structures:

History of 'C' - Structure of C program – C character set, tokens, constants, variables, keywords, identifiers – C data types - C operators - Standard I/O in C - Applying if and switch statements - use of while, do while and for loops - use of break and continue statements

Unit – II: Arrays and functions:

Array notation and representation - manipulating array elements - using multi dimensional arrays - Declaration and initialization of string variables - string handling functions -defining functions - function call -, call by value, call by reference – recursion

Unit – III: Classes and Objects:

Introduction to OOP and its basic features - C++ program structure - Classes and objects - Data members - member functions - Friend Functions- Static Functions – Function over loading

Unit – IV: Constructors and Operator Overloading:

Constructor – Types of constructors – Destructors - Operator overloading- Overloading Unary Operators, Overloading binary operators - Rules for Operator Overloading

Unit – V: Inheritance:

Inheritance - Types of Inheritance -Types of derivation- Public – Private - Protected Hierarchical Inheritance - Multilevel Inheritance – Multiple Inheritance - Hybrid Inheritance

References:

1. E. Balagurusamy "Object oriented programming with C++
2. R.Ravichandran "Programming with C++"
3. Mastering C by K R Venugopal and Sudeep R Prasad, McGraw Hill
4. Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden
5. Let Us C Yashavant Kanetkar
6. The C++ Programming Language Bjarne Stroustrup
7. C++ Primer Stanley B.Lippman,Josee Lajoie,Barbara E.Moo

Practical Component: @ 2 hours/week/batch

1. Write C programs for
   a. Fibonacci Series
   b. Prime number
   c. Palindrome number
   d. Armstrong number.
2. ‘C’ program for multiplication of two matrices
3. ‘C’ program to implement string functions
4. ‘C’ program to swap numbers
5. ‘C’ program to calculate factorial using recursion
6. ‘C++’ program to perform addition of two complex numbers using constructor
7. Write a program to find the largest of two given numbers in two different classes using friend function
8. Program to add two matrices using dynamic contructor
9. Implement a class string containing the following functions:
   a. Overload + operator to carry out the concatenation of strings.
   b. Overload == operator to carry out the comparison of strings.
10. Program to implement inheritance.