Department of Computer Application

Value-Added Course

VACCACP22 – CLASS BASED PROGRAMMING

Code	Title of The Paper	Hours
VACCACP22	Class Based Programming	30

Course Learning Outcomes:

- To understand the basic concepts of Object and Classes, Pointers, Functions, and File Operations.
- To gain knowledge about various types of data along with the structures and its algorithms.

Unit I:

Advanced Classes and Object Oriented programming: Objects- Classes – Inheritance – Reusability – Creating New Data types – Polymorphism and Overloading - Recursion: Need of Recursion – Properties of Recursion – Recursion Functions.

Unit II:

Virtual functions and Polymorphism: Pointers to Objects – this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions. - Exceptions, Templates, and Standard Template Library.

Unit III:

Linked Lists: Representation in Memory - Traversing a Linked List - Searching - Insertion and Deletion - Two way Lists - Application Stacks - Array Representation - Arithmetic Expressions- Queues - Priority Queues.

Unit IV:

Trees - Binary Trees - Representation in Memory - Tree Traversals - Binary Search Trees - Searching Inserting and Deleting. Mapping Console I/O Operations - Files: File streams – File operations – File pointers – Command Line Arguments.

Unit V:

1. Program to implement String Manipulations.
2. Program to implement Recursion.
3. Program to implement Classes and Objects.
4. Program to implement Virtual Functions and Polymorphism.
5. Program to implement using Stack.
6. Program to implement using Queue.
7. Program to implement using Searching Techniques.
8. Program to implement File concepts.

Books for Study:

1. Balagurusamy E., "Object Oriented Programming with C++", Sixth Edition, Tata McGraw Hill Publication, 2014.
2. Seymour Lipschutz, "Data Structures: Schaum's Outline Series", Revised Edition, McGraw Hill Publication, 2011.

Books for Reference:

1. Herbert Schildt, "The complete Reference C++", Edition IV, Tata McGraw Hill Publication, 2015.
2. Yashawant P. Kanetkar, " Let Us C++", Edition II, BPB Publication, 2003.
3. Ellis Horowitz,Sartaj Sahni,Susan Andeson Freed, "Fundamentals of Data Structures in C", 2nd Edition, Universities Press Pvt Ltd, ,2018
4. Alfred V.Aho, John E.Hopcroft, Jeffrey D.Ullman , "Data Structures and Algorithms" , 1st Edition, Pearson Education, 2004.

Open Educational Resources (OER):

1. https://beginnersbook.com/2017/08/cpp-oops-concepts/
2. https://www.tutorialspoint.com/cplusplus/cpp_object_oriented.htm
3. https://www.youtube.com/watch?v=h4kUiFOb_v0
4. http://www.ddegjust.ac.in/studymaterial/mca-3/ms-17.pdf