



SILVER OAK UNIVERSITY

College of Technology

Bachelor of Technology

Information Technology

Course Name: Fundamentals of Programming-2

Course Code: 1010043114

Semester: 2nd

Prerequisite:

Knowledge of Basic Programming.

Course Objectives:

1. To Provide the Knowledge of Advanced Programming and OOPs Concept.
2. To understand how C++ improves C with object-oriented features.
3. To learn how to design C++ classes for code reuse.
4. To understand the concept of data abstraction, encapsulation, inheritance, polymorphism.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
3	0	2	5	4

Contents:

Unit	Topics	Teaching Hours	Weightage %
1	Pointers & Structures in C: Basics of pointers, pointer to pointer, pointer and array, pointer to array, array to pointer, function returning pointer, Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers	10	20
2	Dynamic Memory Allocation: Introduction to Dynamic memory allocation, malloc, calloc, free, Realloc	4	10
3	File Management in C: Introduction to file management and its functions	4	10
4	Basic Concepts of OOPS: Procedural Vs Object Oriented Programming, Principles of OOPs, Class, Object, Abstraction, Encapsulation, Polymorphism, Inheritance.	4	10
5	Class and Objects: Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors, operator overloading, type conversion	8	20

6	Inheritance & Polymorphism: Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class, Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism	12	30
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Course Outcomes:

Sr. No.	CO Statement	Unit
CO-1	Illustrate the usage of pointers and structures in C	1
CO-2	Apply the concept of Dynamic Memory Allocation	2
CO-3	Implement file management functionalities using C.	3
CO-4	Understand concepts of OOPs in detail.	4,5
CO-5	Implement the programming concepts like inheritance, polymorphism	6

Teaching & Learning Methodology:

The various methods or tools follows by the faculties to teach the above subject are:

1. Problem-Based Learning.
2. Design Thinking.
3. Live Demonstration on Projector
4. Online Quiz
5. Cooperative-based learning

List of Experiments:

Total Hours: 28

Sr. No.	Practical Name
1	Write a C program to print the address of a variable using a pointer.
2	Write a C program to add the two values using pointers.
3	Write a C Program which stores the address of pointer variable
4	Define a structure type struct personal that would contain person name, Date of birth and age using this structure to read this information of 4 people and display the same
5	Design a structure student data to contain name, branch and total percentage obtained. Develop a program to read data for 10 students in a class and print them.
6	Write a C program to demonstrate the concept of dynamic memory allocation.
7	A file named "New" contains a series of integer numbers. Write a c program to read all numbers from a file and then copy all odd numbers into a file named "odd" and write all even numbers into a file named "even". Then display the values of files odd and even on the screen
8	Write a C++ program to Check if number is even or odd.
9	Write a C++ program that reads a number in meters, converts it to feet, and displays the result
10	Write a C++ program to compute the power of given number.
11	Write a C++ program that prompts the user to enter three integers and display the integers in decreasing order.
12	Write a C++ program that prompts the user to enter a letter and check whether a letter is a vowel or constant.
13	Write a C++ program to implement Simple Inheritance

