C. U. SHAH UNIVERSITY
Wadhwan City

Publisher-**FACULTY OF**:- Computer Science
DEPARTMENT OF: - Master of Computer Applications
SEMESTER: -II
CODE: - 5CS02MCP1
NAME: – OBJECT ORIENTED PROGRAMMING USING C++ (OOCP)

Teaching and Evaluation Scheme

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	Total
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS02MCP1	OBJECT ORIENTED PROGRAMMING USING C++	4	-	-	4	4	30	1.5	70	3	---	---	---	100

Objectives:

- The C++ language most demanding language as a tool for all types of work. How this important language is to be mastered and how to use this knowledge in building efficient and flexible code is one of the prime requirements today.
- The course helps to the students to improve the object oriented programming skills.

Prerequisite:

Knowledge of C programming

Programming concepts including algorithm designing and logic

Course Outline:-

Sr. No.	Course Contents	Number of Hours
1	**Introduction to Object Oriented Concepts** Object Oriented Concepts, Object, Class, Keywords, Identifiers, Data types, Constants, Features of C++, Differentiate Object Oriented V/s Procedure Oriented	3
2	**Overview of C++ Language** Operators in C++, Conditional structure and looping structure, Differentiate struct v/s class, Differentiate union v/s class, Application of pointer in object oriented concepts, Pointer to objects and pointer to members of class, The local classes, Assigning objects	4
3	**Functions Utility in object oriented Approach** Function Introduction, The inline function, Default arguments to the function, Object as a	5

	parameter, Call by reference and return by reference, Function Prototyping, Function overloading, Friend Function, utility of friend function with examples, Constant and volatile function, Static function, Private and public function, Function using pointer	
4	**Application of Constructors & Destructors in Object oriented Concepts** Constructor, Application of Constructor & Rule to define the constructor, Types of Constructor, Explicit constructor, Parameterized constructor, Multiple Constructor(With Example), Dynamic Initialization, Constructor with dynamic allocation, Copy constructor	4
5	**Operator Overloading & User define function:** Arithmetic operator overloading, Unary , Binary Operator Overloading, Assignment Operator Overloading, Subscript operator overloading, Operator overloading with Friend Function, The need for user defined conversion, Four different cases where user defined conversions are needed, Comparison of both the methods of conversion.	5
6	**Templates** Use of Templates, Define Function Templates, Function Templates with Generic & Non Generic Types, Define Class Templates, Specialization In templates, Define Class and Generic Data Types, Static Data Member in Templates, Export, typename Keyword	5
7	**Inheritance** Application of Inheritance, Defining derived class using single base class, Define Different Types of Derivation using Access modifiers, The implementation of inheritance in the C++ object model, The Access Control, Declaration, The multiple-inheritance, Abstract classes, Composite objects	3
8	**Runtime Polymorphism:** Difference Between Compile time and Run time polymorphism, Pointers to Objects, This pointer, Compatibility of Derived and base class pointers, The sub object concept, Virtual functions, Static invocation of virtual function, Default arguments to virtual functions, Virtual destructors, Pure virtual functions, RTTI.	4
9	**Exception Handling** Introduction, Exception Handling, Mechanism, Try, Catch and throw mechanism, Re throwing an exception , Terminate and Unexpected functions, Drawbacks of exception handling approach, The exception Class	3
10	**IO Streams**	4

	Stream, Difference of C and C++ IO Stream, The C++ Predefined streams, Formatting IO, IOS Members, Manipulators, Creating own manipulator	
11	**Using Files for IO** Why IO is special, Different File Modes, File Handling, Create, Update, Delete, Files, Random Access using seek, IO Modes, Handling File Control Errors	4
12	**Namespaces** Introduction and need of name space, Defining namespaces, Extending the namespace	2
13	**The Standard Template Library** Introduction, Generic Programming Technique, Generic Software Designing technique, Components, Generic Algorithms, Iterators, Containers, Algorithms	2
	Total hours	48

Learning Outcomes:

Students should be able to understand and appreciate the Object Oriented approach of Programming

Students should be able to solve problems given to him/her using C++ with keeping balance between efficiency and flexibility language.

Books Recommended:

1. Object Oriented programming with C++, **E. Balagurusamy**, Publisher-TMH

2. Complete Reference C++ , **Herbert Schildt,** Publisher-McGraw Hill Publications

3. Computer Science- A Structured approach using C++", **Forouzan ,Gilburg**, THOMSON Books

4. Object Oriented programming in C++, **Robert Lafore**, Publisher-Pearson Education

5. C++ Primer, **Stanley Lippmann**, Publisher-Pearson Education

6. The C++ Programming Language, **Bjarne Stroustrup**, Publisher-Pearson Education

7. Effective C++, **Scott Mayer Addison Wesley**

8. OOP with C++, **S .Sahay,** Publisher-Oxford Higher Education.

9. C++ and OOP Paradigm, **D.Jana,** 2nd Edition, Publisher-PHI.