C. U. SHAH UNIVERSITY,WADHWAN CITY.

Faculty of: **Computer Science**
Course: **Bachelor of Computer Applications**
Semester**: II**
Subject Code**:4CS02AOB1**
Subject Name: **Object Oriented Concepts**

Sr. No	Branch Code	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								
									Theory				Practical				Total
									Internal Assessment		End Semester Exams		Internal Assessment		End Semester Exams		
				Th	Tu	Pr			Marks	Duration	Marks	Duration	Marks	Duration	Marks	Duration	
1	2	4CS02AOB1	Object Oriented Concepts	4	--	4	8	6	15(SE) 15(CE)	1Hr.	70	2½ Hrs.	50(IP) 50(CE)	1 ½ Hrs.	--	--	200

AIM :

The aim of this subject is to get in-depth practical knowledge of C++ language.

COURSE CONTENTS

Unit I **14 Hrs.**

- Introduction to Procedural Oriented Programming
- Introduction to Object Oriented Programming
- Difference Between C and C++
- C++ Output/ Input
- Keywords in C++
- Comments in C++
- Variables in C++
- Reference Variables in C++
- Importance of function prototyping in C++
- Function Overloading
- Default Arguments
- Inline Function
- Scope Resolution Operator
- Class and object
- Structures in C
- Structure in C++
- Access Specifier
- Classes
- Objects in C++
- Characteristics of Access Specifier
- Function outside a class
- Initialization of variable in C++
- Arrow Operator
- ‘this’ pointer

Unit II **14 Hrs.**

- Member Functions and Data Members
- Friend Functions
- Friend Class
- Array of Class Object
- Passing Class Objects to Function
- Returning Objects from Functions
- Nested Classes
- Namespaces
- Dynamic Memory Management
- Dynamic Memory Allocation Using "new"
- Dynamic Memory Deallocation
- Constructor
- Characteristics of Constructor
- Types of Constructor
- Destructor
- Characteristics of Destructor

Unit III **10 Hrs.**

- Introduction to Inheritance
- Advantages of Inheritance
- 'Protected' Access specifier
- Inheritance using different access specifier
- Initialization of Base class members through derived class object
- Different forms of Inheritance
- Function Overriding
- Virtual function
- Pointers to derived class
- Rules for virtual function
- Pure virtual function
- Virtual Base class
- Abstract class
- Early binding v /s Late binding

Unit IV **6 Hrs.**

- Introduction to Operator Overloading
- Operators that cannot be overloaded
- Overloading Unary Operator using member Functions
- Overloading Unary Operator using friend Functions
- Overloading Binary Operator using member Functions
- Overloading Binary Operator using friend Functions
- Why to Overload Operators using friend Function?
- Rules for Operator Overloading
- Order of Invocation of Constructors and destructors
- Type Conversions

Unit V **4 Hrs.**

- Introduction to template
- Function Templates
- Function Templates with multiple parameters
- Overloading Function Template
- Class Template
- Class Template with multiple parameters

REFERENCE BOOKS:

1. Abhiram G. Ranade. 2018. An Introduction to Programming through C++ (1st ed.). McGraw Hill Education (India) Private Limited.

NPTEL COURSE (https://nptel.ac.in/):

1. An Introduction To Programming Through C++ by Prof. Abhiram G Ranade
   Course Link: https://nptel.ac.in/courses/106101208