**Course code**

Four Year Undergraduate Programme

(CBCS and Accordance with NEP 2020)

# OBJECT ORIENTED PROGRAMMING THROUGH C++

Block 2

Fourth Semester

Discipline Specific Core Course

## BACHELOR OF COMPUTER APPLICATIONS

**Hiranya Chandra Bhuyan School of Science and Technology**

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

## Subject Experts

**Prof. Shikhar Kumar Sarma,** Department of Information Technology, Gauhati University
**Prof. Hiren Kumar Deva Sarma,** Department of Information Technology, Gauhati University
**Dr. Sanjib Kr. Kalita,** Department of Computer Science, Gauhati University

## Course Co-ordinator : **Dr. Tapashi Kashyap Das**, KKHSOU

## SLM Preparation Team

| Units | Authors |
|---|---|
| 8 | **Arabinda Saikia**, KKHSOU |
| 9, 10, 11, 12 | **Dr.Tapashi Kashyap Das**, KKHSOU |
| 13 | **Pritam Medhi,** Gauhati University |
| 14 | **Dr. Sruti Sruba Bharali**, KKHSOU |

## Editors

**Content** ঙ **Prof. Kandarpa Sarma,** Gauhati University
**Language:** **Prof. (Retd.) Robin Goswami,** Cotton College
**Structure & Format :** **Dr.Tapashi Kashyap Das**, KKHSOU

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Headquarters: Patgaon, Rani Gate, Guwahati - 781 017
City Campus: NH 37, Resham Nagar, Khanapara, Guwahati - 781 022; www.kkhsou.in

# DETAILED SYLLABUS

**UNIT 8: Introduction to Classes and Objects**

Classes in C++, class declaration, declaring objects, Defining Member functions, Inline member function, Array of objects, Objects as function argument, Static data member and member function, friend class

**UNIT 9: Constructors and Destructors**

Constructors, Instantiation of objects, Default constructor, Parameterized constructor, Copy constructor and its use, Destructors, Constraints on constructors and destructors, Dynamic initialization of objects, Constructor Overloading.

**UNIT 10: Operator Overloading**

Overloading unary operators: Operator keyword, arguments and return value; Overloading Unary and binary operators: arithmetic operators, manipulation of strings using operators, Type conversions.

**UNIT 11: Inheritance**

Derived class and base class: Defining a derived class, Accessing the base class member, Inheritance: multilevel, multiple, hierarchical, hybrid; Virtual base class, Abstract class.

**UNIT 12: Virtual Functions and Polymorphism**

Virtual functions, Pure virtual functions; Polymorphism, Categorization of polymorphism techniques: Compile time polymorphism, Runtime polymorphism.

**UNIT 13: File Handling**

File classes, Opening and Closing a file, File modes, Manipulation of file pointers, Functions for I/O operations, File handling functions.

**Unit 14: Templates**

Introduction to Template, Function Template, Function Template Overloading, Class Template, Default Template Arguments.

## BLOCK INTRODUCTION: BLOCK 2

This is the second block of the course **Object Oriented Programming through C++**. In this block importannt concept like classes and objects, constructors, overloading etc. are explained giving various examples in C++ codes. *Unit 8* is about classes and objects which are the building blocks of C++ programming. *Unit 9* is about constructors and destructors. Rules for declaring constructors, characteristics of constructors, their types and overloading are explaind in this unit. *Unit 10* provides the concept of operator overloading. In *Unit 11*, concept of iInheritance in C++, types of inheritance and their implementation are discussed. *Unit 12* discusses the virtual function and polymorphism. *Unit 13* is about how to handle files in C++. *Unit 14* introduces the concept of templates in C++. It includes types of templates, template overloading etc.

While going through a unit, you will notice some boxes, containing such information as would help you to understand some of the difficult, unfamiliar terms. You will find an item called “ACTIVITY’ where you will apply your knowledge and thoughts in some questions pertaining to the relevant topic. Again, we have included some relevant concepts in “LET US KNOW” along with the text. And, at the end of each seection, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be better if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit.