

III Semester

PROGRAMMING IN C++			
Course Code	21CS382	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1:0:0:0	SEE Marks	50
Total Hours of Pedagogy	12	Total Marks	100
Credits	01	Exam Hours	01
Course Objectives: CLO 1. Understanding about object oriented programming and Gain knowledge about the capability to store information together in an object. CLO 2. Understand the capability of a class to rely upon another class and functions. CLO 3. Understand about constructors which are special type of functions. CLO 4. Create and process data in files using file I/O functions CLO 5. Use the generic programming features of C++ including Exception handling.			
Teaching-Learning Process (General Instructions) These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes. <div><div>1.</div><div>Lecturer method (L) need not to be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.</div></div> <div><div>2.</div><div>Use of Video/Animation to explain functioning of various concepts.</div></div> <div><div>3.</div><div>Encourage collaborative (Group Learning) Learning in the class.</div></div> <div><div>4.</div><div>Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking.</div></div> <div><div>5.</div><div>Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.</div></div> <div><div>6.</div><div>Introduce Topics in manifold representations.</div></div> <div><div>7.</div><div>Show the different ways to solve the same problem with different circuits/logic and encourage the students to come up with their own creative ways to solve them.</div></div> <div><div>8.</div><div>Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.</div></div>			
Module-1			
Introduction to Object Oriented Programming: Computer programming background- C++ overview- First C++ Program -Basic C++ syntax, Object Oriented Programming: What is an object, Classes, methods and messages, abstraction and encapsulation, inheritance, abstract classes, polymorphism.			
Textbook 1: Chapter 1(1.1 to 1.8)			
Teaching-Learning Process	Chalk and board, Active Learning, practical based learning		
Module-2			
Functions in C++: Tokens – Keywords – Identifiers and constants – Operators in C++ – Scope resolution operator – Expressions and their types – Special assignment expressions – Function prototyping – Call by reference – Return by reference – Inline functions -Default arguments – Function overloading.			
Textbook 2: Chapter 3(3.2,3.3,3.4,3.13,3.14,3.19, 3.20) , chapter 4(4.3,4.4,4.5,4.6,4.7,4.9) .			
Teaching-Learning Process	Chalk and board, Active Learning, Demonstration, presentation, problem solving		
Module-3			
Inheritance & Polymorphism: Derived class Constructors, destructors-Types of Inheritance- Defining Derived classes, Single Inheritance, Multiple, Hierarchical Inheritance, Hybrid Inheritance.			
Textbook 2: Chapter 6 (6.2,6.11) chapter 8 (8.1 to,8.8)			

Teaching-Learning Process	Chalk and board, Demonstration, problem solving
Module-4	
I/O Streams: C++ Class Hierarchy- File Stream-Text File Handling- Binary File Handling during file operations.	
Textbook 1: Chapter 12(12.5) , Chapter 13 (13.6,13.7)	
Teaching-Learning Process	Chalk and board, Practical based learning, practical's
Module-5	
Exception Handling: Introduction to Exception - Benefits of Exception handling- Try and catch block- Throw statement- Pre-defined exceptions in C++ .	
Textbook 2: Chapter 13 (13.2 to13.6)	
Teaching-Learning Process	Chalk and board, MOOC
Course Outcomes (Course Skill Set): At the end of the course the student will be able to: <ul style="list-style-type: none"> CO 1. Able to understand and design the solution to a problem using object-oriented programming concepts. CO 2. Able to reuse the code with extensible Class types, User-defined operators and function Overloading. CO 3. Achieve code reusability and extensibility by means of Inheritance and Polymorphism CO 4. Identify and explore the Performance analysis of I/O Streams. CO 5. Implement the features of C++ including templates, exceptions and file handling for providing programmed solutions to complex problems. 	
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together Continuous Internal Evaluation: Three Unit Tests each of 20 Marks (duration 01 hour) <ol style="list-style-type: none"> 1. First test at the end of 5th week of the semester 2. Second test at the end of the 10th week of the semester 3. Third test at the end of the 15th week of the semester Two assignments each of 10 Marks <ol style="list-style-type: none"> 4. First assignment at the end of 4th week of the semester 5. Second assignment at the end of 9th week of the semester Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks (duration 01 hours) <ol style="list-style-type: none"> 6. At the end of the 13th week of the semester The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks (to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /question paper has to be designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course. Semester End Examination: Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (duration 01 hours) SEE paper will be set for 50 questions of each of 01 marks. The pattern of the question paper is MCQ. The time allotted for SEE is 01 hours	

Textbooks <ol style="list-style-type: none"> 1. Bhushan Trivedi, "Programming with ANSI C++", Oxford Press, Second Edition, 2012. 2. Balagurusamy E, Object Oriented Programming with C++, Tata McGraw Hill Education Pvt.Ltd , Fourth Edition 2010.
Reference Books <ol style="list-style-type: none"> 1. Bhavne, " Object Oriented Programming With C++", Pearson Education , 2004. 2. Ray Lischner, "Exploring C++ : The programmer's introduction to C++" , apress, 2010 3. Bhavne, " Object Oriented Programming With C++", Pearson Education , 2004
Weblinks and Video Lectures (e-Resources): <ol style="list-style-type: none"> 1. Basics of C++ - https://www.youtube.com/watch?v=BCIS40yzssA 2. Functions of C++ - https://www.youtube.com/watch?v=p8ehAjZWjPw Tutorial Link: <ol style="list-style-type: none"> 1. https://www.w3schools.com/cpp/cpp_intro.asp 2. https://www.edx.org/course/introduction-to-c-3
Activity Based Learning (Suggested Activities in Class)/ Practical Based learning <ul style="list-style-type: none"> • Demonstration of simple projects