Semester Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim - Goa

Name of Faculty: Nilesh Natekar	**Subject:** Computer Science

Paper code: CSC200 – Programming using C++	**Program/Course: S.Y.B.Sc.**	**Division: A**

Academic year: 2024 - 2025	**Semester: III**	**Total Lectures: 45**

Course Objectives:

1. Describe the principles of Object Oriented Programming

2. Understand the basics of C++ programming language.

3. Analyse the Object oriented concepts applied to C++.

4. Implement the Object Oriented Concepts using C++.

Course Learning Outcome:

Upon completion of the course students should be able to::

CO1. Remember the basic concepts & terminologies of Object-Oriented

 Programming.

CO2. Understand basic computing concepts in C++ programming language.

CO3. Apply Object Oriented Programming concepts in designing solutions to

simpler problems using algorithm, flowchart and pseudocode.

CO4. Code, debug and analyze a well-structured programming logic using C++.

Month	Lectures From: To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
June/July	28/06/2024 to 04/07/2024	03	**Principles of Object Oriented Programming** Software evolution, Procedure Oriented Programming (POP) vs Object Oriented Programming (OOP), Benefits of OOP, Applications of OOP, Object based vs Object Oriented languages	Introduction to object oriented programming	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
July	05/07/2024 to 11/07/2024	03	Objects, Classes, Data Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message passing,	Basics of OOP	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited

			What is C++, Applications of C++,			
July	12/07/2024 to 18/07/2024		Simple C++ program, Comments, I/O Operators, the iostream file, return type of main (), Structure of C++ Program Keywords, Identifiers, Constants, Basic data types, User defined datatypes-Structures,	Basic of C++ programming	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
		03				
July	19/07/2024 to 25/07/2024		Classes, Enumerated data types, Variables, reference variables, scope resolution operator, memory management operators, typecast operator,	- Classes and objects - Control structures	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
		03				

			operator overloading		
			Control structures: if statement, if else statement, switch statement, do while statement, while statement, for statement		
July/August	26/07/2024 to 01/08/2024	03	Functions in C++- the main () function, function prototyping, call by reference, return by reference, inline functions, default arguments, constant arguments, function overloading, friend functions, virtual functions, library functions	Functions	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	02/08/2024 to 08/08/2024	03	**Classes and Objects** Structures, Limitations of structures, Classes, Class declaration, visibility modifiers-public and private, creating objects,	- Classes and objects - Members of class	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited

			accessing class members, defining member functions inside and outside class definition, making a class function inline			
August	09/08/2024 to 15/08/2024	03	Private member functions, memory allocation for objects, static data members, static member functions	- Various types of members	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	16/08/2024 to 22/08/2024	03	Array of objects, objects as function arguments, friendly functions, returning objects, pointers to members	Arrays of objects, returning and passing of objects and friend functions	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	23/08/2024 to 29/08/2024	03	Constructors- default, parameterised, copy, constructor	constructors	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th

					Edition, Tata McGraw-Hill Publishing Company Limited
August/ September	30/08/2024 to 05/09/2024	03	Operator overloading-unary, binary operators, rules for overloading operators, type conversion	Operator overloading	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
September	13/09/2024 to 19/09/2024	03	**Inheritance, Templates and Exception handling** Reusability, Extendibility, class, derived class, Inheritance-single, multiple, hierarchical, multilevel, hybrid, visibility modifiers in inheritance, making private member inheritable,	Inheritance and its types	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited

			protected visibility modifier, Virtual base classes, abstract classes, Constructors in derived class,			
September	20/09/2024 to 26/09/2024	03	Compile time vs runtime polymorphism, pointers to objects, this pointer, pointers to derived classes, virtual functions, rules for virtual functions, pure virtual functions	Polymorphism	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
September/ October	27/09/2024 to 03/10/2024	03	Templates and Exception Handling	Templates	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
October	04/10/2024 to 10/10/2024	03	Generic programming, class template, function	Generic programming	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th

			template, member function templates			Edition, Tata McGraw-Hill Publishing Company Limited
October	11/10/2024 to 17/10/2024	03	Errors and exceptions, basics of exception handling, exception handling mechanism, throwing mechanism, catching mechanism	Exception handling	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
October	18/10/2024 to 22/10/2024	03	multiple catch statements, catching all exceptions, rethrowing exception	Exception handling	Microsoft Powerpoint Presentation, LCD Projector	1. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited

Practical Component

Month	Lectures From: To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
June/July	28/06/2024 to 04/07/2024	02	Basic programs in C++, saving, compiling, executing programs with main () function with simple Input, output, comments, iostream.h file, basic data types, variable declaration, basic keywords	Basic C++ programs	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
July	05/07/2024 to 11/07/2024	02	basic program constructs (if else, while, do while, switch, for)	Basic programs using control structres	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
July	12/07/2024 to 18/07/2024	02	Programs implementing C++ functions, main () function, function prototyping, call by value, call by reference, return by reference, inline functions	Basic programming with functions	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited

July	19/07/2024 to 25/07/2024	02	default arguments, constant arguments, function overloading, library functions	Implement default arguments, constant arguments, function overloading, library functions	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
July/August	26/07/2024 to 01/08/2024	02	Programs implementing structure , class, data and functions, class instance, visibility modifiers, defining functions inside and outside class	Implement Programs for structure , class, data and functions, class instance, visibility modifiers, defining functions inside and outside class	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	02/08/2024 to 08/08/2024	02	inline functions, static data members, static member functions	Implement inline functions, static data members, static member functions	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	09/08/2024 to 15/08/2024	02	Programs implementing Array of objects, objects as	Programs implementing Array of objects, objects as	Microsoft Powerpoint Presentation,	2. Object Oriented Programming with

			function arguments, friendly functions, returning objects	function arguments, friendly functions, returning objects	LCD Projector	C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	16/08/2024 to 22/08/2024	02	pointers to members Constructors-default, parameterised, copy, constructor overloading, dynamic constructors, destructors	Implementation of pointers to members Constructors-default, parameterised, copy, constructor overloading, dynamic constructors, destructors	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August	23/08/2024 to 29/08/2024	02	Operator overloading-unary, binary operators, rules for overloading operators, type conversion	Operator overloading	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
August/ September	30/08/2024 to 05/09/2024	02	Programs implementing Inheritance Reusability, Extendibility, class,	Inheritance and its types	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th

					Edition, Tata McGraw-Hill Publishing Company Limited
September	13/09/2024 to 19/09/2024	02	making private member inheritable, protected visibility modifier, Virtual base classes, abstract classes, Constructors in derived class	Inheritance and visibilty	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
September	20/09/2024 to 26/09/2024	02	Programs implementing Compile time vs runtime polymorphism	Polymorphism	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
September/ October	27/09/2024 to 03/10/2024	02	pointers to objects, this pointer, pointers to derived classes, virtual functions, pure virtual functions	Virtual functions	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill

					Publishing Company Limited
October	04/10/2024 to 10/10/2024	02	Programs implementing class template, function template, member function templates	Generic programming	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
October	11/10/2024 to 17/10/2024	02	Errors and exceptions, basics of exception handling, exception handling mechanism, throwing mechanism, catching mechanism	Exception handling	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited
October	18/10/2024 to 22/10/2024	02	multiple catch statements, catching all exceptions, rethrowing	Exception handling	Microsoft Powerpoint Presentation, LCD Projector	2. Object Oriented Programming with C++, E Balagurusamy, 8th Edition, Tata McGraw-Hill Publishing Company Limited