SES's L. S. RAHEJA COLLEGE OF ARTS AND COMMERCE

(AUTONOMOUS)



Syllabus of Object Oriented Programming with C++ under NEP 2020 vertical - Major with effect from 2024-25

Department of Information Technology and Data Science

HoD/Sr. Person of the Department: Prajakta Joshi

Date of approval by the BoS: 27/04/4024

Approved by the Academic Council: 29/04/2024

Ratified by the Governing Body on: 06/05/2024



Programme: B.Sc.(IT)					Semester : II	
Course : Objec Academic Year	t Oriented Progr :: 2024-2025	Code: UGE	Code: UGBSCITIIMJ124			
r	Feaching Scheme	e	Evaluation Scheme			
Lectures	Practical	Tutorials	Credits	Internal Continuous Assessment (ICA) (weightage)	Term End Examinations (TEE) (weightage)	
45	Nil	Nil	3	40%	60%	

Learning Objectives :	1. Be able to explain the difference between object oriented
	programming and procedural programming.
	2. Be able to program using more advanced C++ features such as
	composition of objects, operator overloads, dynamic memory
	allocation, inheritance and polymorphism, file I/O, exception
	handling, etc.
	3. Be able to build C++ classes using appropriate encapsulation and
	design principles
	4. Be able to apply object oriented or non-object oriented techniques
	to solve bigger computing problems
Learning Outcomes :	1. Understand the concept of OOPs, feature of C++ language.
	2. Understand and apply various types of Datatypes,
	Operators, conversions while designing the program.
	3. Understand and apply the concepts of Classes & Objects, friend
	function, constructors & destructors in program design.
	4. Design & implement various forms of inheritance, String class,
	calling base class constructors.
	5. Apply & Analyze operator overloading, runtime
	polymorphism, Generic Programming.
	6. Analyze and explore various Stream classes, I/O operations and
	exception handling.
Pedagogy:	Experiential learning, problem-based learning, peer learning

Detailed Syllabus: (per session plan)

Session Outline For: Object Oriented Programming with C++

Each lecture session would be of one hour duration (45 sessions).

Module	Module Content	Module Wise	Module	
		Pedagogy	Wise	
		Used	Duration	
Ι	INTRODUCTION OF OBJECT-ORIENTED DESIGN			
	: Introduction, Objects, Class and Instance, Polymorphism,	Experiential		
	Inheritance, Structure of a C++ Program	learning,	15	
	STARTING WITH C++: C++ Character Set, C++	problem-	15	
	Tokens, Variables, Data Types, Your First C++ Program,	based		
	Styles of	learning, peer		

	OPERATORS AND REFERENCES IN C++:	learning	
	Introduction Scope Resolution Operator Reference	louining	
	Variables The Bool Data Type The Operator New and		
	Delete Melles Va New Deinter Member Operators		
	Delete, Manoc VS. New Pointer Member Operators.		
	FUNCTION IN C++: Introduction ,Function		
	Declaration/Prototyping, Recursion, Call by Reference Vs		
	Call by Address, Return by Reference, Function		
	Overloading ,Function with Default Arguments, Friend		
	Function, Static Class Members, Constant Member		
	Function		
П	WORKING WITH CONSTRUCTOR AND		
	DESTRUCTOR: Introduction. Constructor with		
	Parameters, Implicit and Explicit Call to Constructor, Copy	Exportion	
	Constructor, Dynamic Initialization of Objects, Dynamic		
	Constructor, Destructor WORKING WITH OPERATOR	learning,	
	OVERLOADING: Introduction. Operator Overloading	problem-	
	with Binary Operator Overloading Assignment (=)	based	
	Operator, Overloading Unary Operators, Overloading Using	learning, peer	
	Friend Function, Rules of Operator Overloading	learning	
	WORKING WITH INHERITANCE IN C++:	_	15
	Introduction, Types of Inheritance, Public, Private and		
	Protected Inheritance, Multiple Inheritance, Hierarchical		
	Inheritance, Virtual Base Class, Pure virtual Function,		
	Abstract class.		
	EXCEPTION HANDLING IN C++ : Introduction,		
	Basics of Exception Handling, Exception Handling		
	Mechanism, Programming Examples, Exception Handling		
	with Class Catching all Exceptions, Specifying Exception		
	for a Function		
III	POINTERS TO OBJECTS AND VIRTUAL	Experiential	
	FUNCTIONS: Pointer to Objects, The This Pointer, What	learning.	
	is Binding in C++?, Virtual Functions, Working of a	problem-	
	Virtual Function ,Rules for Virtual Function ,Pure Virtual	based	
	Function and Abstract Class ,Object Slicing ,Some Facts	loorning noor	
	about Virtual Function, Virtual Destructor	learning, peer	
	INPUT-OUTPUT AND MANIPULATORS IN C++:	learning	
	Introduction, C++ Stream Classes, Unformatted		
	Input/Output, Formatted Input /Output Operations,		
	Manipulators		
	FILE HANDLING IN C++: Introduction, File Streams,		15
	Opening and Closing a File, File Opening Modes Checking		15
	End of File, Random Access in File, Command Line		
	Arguments, Working with Binary Mode Error Handling		
	INTRODUCTION TO THE STANDARD TEMPLATE		
	LIBRARY : Introduction ,Components of STL ,		
	Containers, Algorithms, Iterators, Application of		
	Container Classes Function Objects		
	NEW FEATURES OF ANSI C++ STANDARD :		
	Introduction New Data Types, New Operators, Class		
	Implementation, Namespace Scope, Operator Keywords,		
	New Keywords, New Headers		

REFERENCE BOOKS

- 1. Behrouz A. Forouzan, Richard F. Gilberg (2020), C++ Programming: An Object-Oriented Approach, McGraw-Hill Education
- 2. E Balagurusamy, Object Oriented Programming in C++, Tata McGraw-Hill
- 3. Bhushan Trivedi, Programming with ANSIC++, Oxford University Press
- 4. Dorothy R. Kirk (2021), Demystified Object- Oriented Programming with C++, Packt Publishing