

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCA11	Object Oriented programming	3	1	--	3	1	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	---	
Course Outcomes	CO1	Develop algorithmic thinking and problem-solving techniques to apply it to programming
	CO2	Construct programs using basic control structures.
	CO3	Make use of arrays functions pointers concepts to solve problems.
	CO4	Apply object oriented programming concepts like inheritance, polymorphism and exception handling to solve problems.
	CO5	Construct the solutions using File handling and Standard Template Library

Module No.	Unit No.	Topics	Ref.	Hrs.
1		Problem Solving Methodology and Techniques	2	3
	1.1	Understanding of the problem, Identifying minimum number of inputs required for output, Step by step solution for the problem		
	1.2	Breaking down solution into simple steps, Identification of arithmetic and logical operations required for solution		
	1.3	Using Control Structure: Conditional control and looping (finite and infinite)		
2		An Overview of Computers and Programming Languages	1,3	2
	2.1	Why Do We Need Object-Oriented Programming?-Procedural Languages vs Object-Oriented Approach		
	2.2	Characteristics Of Object-Oriented Language (Objects, Classes, Abstraction, Overloading, Inheritance, and Polymorphism)		
3		Basic Elements of C++	1,3,4	3
	3.1	C++ character set, C++ Tokens (Identifiers, Keywords, Constants, Operators), Structure of a C++ Program (include files, main function); Header files – iostream.h, iomanip.h; cout, cin		
	3.2	Use of I/O operators (<< and >>), Use of endl and setw(), Cascading of I/O operators, Error Messages; Use of editor, basic commands of editor, compilation, linking and execution		

	3.3	Standard input/output operations from C language: gets(), puts() of stdio.h header file, Data Types in C++, Scope And Storage Classes.		
4		Control Structures (Selection and Repetition)	1,3	3
	4.1	Conditional Operators, Logical Operators, If, If-Else		
	4.2	If-Else Ladder, Switch, Loops And Controls(for, while, do-while), Nested Loop		
5		Functions	1,3,4	5
	5.1	Function Structure, Objects As Function Arguments, Returning Objects From Functions, Passing Arguments To Functions,		
	5.2	Returning Values From Functions, Reference Arguments, Recursion, Inline Functions, Default Arguments,		
	5.3	macros, friend function, static functions, Constructors, Destructors		
6		Arrays, Strings and Pointers	1,3	6
	6.1	Arrays as class Member Data, Arrays of object, String,		
	6.2	The standard C++ String class, Addresses and pointers, The address of operator and pointer and arrays		
	6.3	Memory management: New and Delete, pointers to objects, Pointers to objects, this pointer, Pointer to functions		
7		Overloading and Inheritance	1,3,5	7
	7.1	Overloaded Functions, Overloading unary operations. Overloading binary operators, data conversion, pitfalls of operators overloading and conversion keywords.		
	7.2	Inheritance: Concept of inheritance. Derived class and based class. Derived class constructors, member function, class hierarchies, public and private inheritance		
	7.3	Aggregation : Classes within classes, inheritance and program development		
8		Exception Handling	1,3,5	4
	8.1	Introduction of Exception handling–throw, catch,		
	8.2	Re-throw an exception , specifying exceptions etc.		
9		Templates and Introducing STL (Standard template library)	1,3	5
	9.1	Class templates, function templates,		
	9.2	Overloading of template function		
	9.3	Introduction to STL, components of STL,		
	9.4	Containers		
	9.5	Iterators and function objects		
10		Managing Console I/O operations and Working with files	1,3	4
	10.1	C++ streams, unformatted / formatted I/O operations,		
	10.2	Managing output with manipulators, creating/ opening / closing / deleting files,		
	10.3	File pointers and their manipulators, random access to file,		
	10.4	Errors handling during file operations, command line arguments.		
			Total	42

References :

- [1] Robert Lafore, "Object-Oriented Programming In C++", Sams Publishing, Fourth Edition
- [2] Walter Savitch, "Problem solving with C++", Pearson/Addison-Wesley, Sixth Edition
- [3] Balaguruswamy, "Object Oriented Programming with C++", McGraw Hill Education, Fourth edition
- [4] Bjarne Stroustrup, "C++ programming language", Third edition
- [5] Joyce Farrell, "Object-Oriented Programming Using C++", Thomson/Course Technology, Fourth Edition