Subject Code	Subject Name	Credits
MCA101	**Object Oriented Programming**	**4**

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract	Tut	Theory	TW	Tut.	Total
MCA101	**Object Oriented Programming**	**04**	**--**	**--**	**04**	**--**	**--**	**04**

Subject Code	Subject Name	Examination Scheme							
MCA101	**Object Oriented Programming**	Theory Marks				TW	Pract	Oral	Total
		Internal Assessment			End Semester Exam				
		Test1 (T1)	Test2 (T2)	Average of T1 & T2					
		20	20	20	80	-	-	-	100

Pre-requisites:

Basic Understanding of C Programming Language
Knowledge of Algorithms and Control Flow of a program

Course Educational Objectives (CEO):

CEO 1	To Explore and Study Object oriented programming and advanced C++ concepts.
CEO 2	To Improve problem solving skills by applying object oriented techniques to solve bigger computing problems.
CEO 3	To provide a Strong foundation for advanced programming.

Course Outcomes: At the end of the course, the students will be able to:

MCA101.1	Comprehend Object oriented programming concepts and their application
MCA101.2	To write applications using C++.
MCA101.3	Implement programming concepts to solve bigger problems.

Syllabus

Sr. No.	Module	Detailed Contents	Hours
1	**Programming Basics**	Introduction to Programming, Programming Paradigms, Programming Languages and Types. Introduction to C - Basic Program Structure, Execution flow of C Program, Directives, Basic Input /Output Introduction to Object Oriented Programming- OOP concepts, Advantages, Applications, Comparison of C and C++-Data Types, Control Structures, Operators and Expressions	**8**
2	**Introduction to C++**	Structure of a C++ program, Execution flow, Classes and Objects, Access modifiers, Data Members, Member Functions, Inline Functions, Passing parameters to a Function(pass by Value, Pass by Address, Pass by Reference), Function with default arguments, Function Overloading, Object as a Parameter, Returning Object Static data members and functions, Constant Data members and functions Constructors- Default, Parameterized, Copy, Constructor Overloading, Destructors Arrays, Array as a Class Member, Array of Objects, Strings-Cstyle strings and String Class	**10**
3	**Operator Overloading and Pointers**	Operator Functions-Member and Non Member Functions, Friend Functions Overloading Unary operators Overloading binary operators(Arithmetic, Relational, Arithmetic Assignment, equality), Overloading Subscript operator Type Conversion Operators- primitive to Object, Object to primitive, Object to Object Disadvantages of operator Overloading, Explicit and Mutable Pointers, Pointer and Address of Operator, Pointer to an Array and Array of Pointers, Pointer arithmetic, Pointer to a Constant and Constant Pointer, Pointer Initialization, Types of Pointers(void, null and dangling), Dynamic Memory Allocation, Advantages and Applications of pointers	**10**

4	**Inheritance and Polymorphism**	Inheritance Concept, Protected modifier, Derivation of Inheritance- Public, Private and Protected, Types of Inheritance-Simple, Multilevel, Hierarchical, Multiple, Hybrid, Constructors and Inheritance, Function Overriding and Member hiding Multiple Inheritance, Multipath inheritance – Ambiguities and solutions Polymorphism, Static and Dynamic Binding, Virtual Functions, Pure Virtual Functions, Virtual destructors, Abstract Classes, Interfaces	**8**
5	**Streams and Exceptions**	Files, Text and Binary Files, Stream Classes, File IO using Stream classes, File pointers, Error Streams, Random File Access, Manipulators, Overloading Insertion and extraction operators Error handling, Exceptions, Throwing and catching exceptions, Custom Exceptions, Built in exceptions	**8**
6	**Advanced C++**	Casting- Static casts, Const Casts, Dynamic Casts, and Reinterpret Casts. Creating Libraries and header files. Namespaces Generic Programming, Templates, Class Templates, Function Templates, Template arguments, STL Database Programming with MySQL	**8**

Reference Books:

1. The Complete Reference C, 4th EditionHerbert Sehlidt,Tata Mcgraw Hill
2. Object Oriented Programming in C++,4th Edition,Robert Lafore,SAMS Techmedia
3. The Complete Reference-C++,4th Edition. Herbert Schildt,Tata McGraw-Hill
4. The C++ Programming Language, 4th Edition,BjarneStroustrup,AddisonWesly
5. Starting Out with C++ Early Objects,8th Edition,Tony Gaddis et al,Addison-Wesley
6. C++ How to Program,8th Edition,Deitel and Deitel, Prentice Hall
7. Practical C++ Programming,2nd Edition,Steve Quoaline,O'reilly Publication
8. Absolute C++,4th Edition, Walter Savitch,Pearson Education

Web References:

1. https://dev.mysql.com
2. www.github.com

Assessment:

Internal:
Assessment consists of two tests (T1 and T2) .The final marks should be the average of the two tests.

End Semester Theory Examination: Guidelines for setting up the question paper.

1. Question paper will comprise of total six questions.
2. Question Number One should be compulsory.

3. All question carry equal marks.
4. Students can attempt any three from the remaining.
5. Questions will be mixed in nature (for example supposed Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3).

In question paper weightage of each module will be proportional to number of respective lecture hours as mention in the syllabus.

Subject Code	Subject Name	Credits
MCA102	**Software Engineering & Project Management**	**04**

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract	Tut	Theory	TW	Tut.	Total
MCA102	**Software Engineering & Project Management**	**04**	**--**	**--**	**04**	**--**	**--**	**04**

Subject Code	Subject Name	Examination Scheme							
MCA 102	**Software Engineering & Project Management**	Theory Marks				TW	Pract	Oral	Total
		Internal Assessment			End Semester Exam				
		Test1 (T1)	Test2 (T2)	Average of T1 & T2					
		20	20	20	80	-	-	-	100

Pre-requisites:

Knowledge of structure programming language and Application development.

Course Educational Objectives (CEO):