

CSE11103	Principles of Programming Language	L	T	P	C
Version 1.0	Contact Hours 45 Hours	3	0	0	3
Pre-requisite/Exposure	Knowledge on programming basics				
Co-requisite	NIL				

Course Objectives:

- To motivate students to solve the problems in engineering using the concepts of object-oriented programming.
- To enable students to apply OOP concepts in building solutions to real-world problems
- To help the student to acquire knowledge of software development
- To enable students to debug simple C++ programs.
- To enable students to execute C++ programs successfully.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Discuss fundamentals of programming such as variables, conditional and iterative execution, methods, etc.

CO2: Understand fundamentals of object-oriented programming in C++, including defining classes, invoking methods, using class libraries, etc.

CO3: Explain important topics related to functions and pointers.

CO4: Understand the scope of variables and utility of exception handling. **CO5:** Utilise the OOP knowledge to create, debug and run simple C++ programs.

Course Description:

This course introduces students to C++ programming language, a dominant language in the industry today. Students will be taught the fundamentals of programming. These concepts are applicable to programming in any language.

Topics covered include basic principles of programming using C++, algorithmic and procedural problem solving, program design and development, basic data types, control structures, functions, arrays, pointers, and introduction to classes for programmer-defined data types.

Course Content:

Units	Lecture Hours
Unit-I: C Refresher: Procedural programming, variables, data types, operators, conditions, loops, functions, arrays, pointers, strings and structures	09
Unit-II: Introduction to OOP: Need for OOP Paradigm, Procedural programming vs object oriented programming, object oriented concepts. Class concept in	09

Units	Lecture Hours
OOP: Difference between C structure and class, specifying a class, defining member functions:inside and outside class, scope resolution operator, Array within a class, array of objects, Static data members and member functions, Object as function arguments, returning objects, Friend function	
Unit-III: Functions: Main function, function prototyping, inline functions, reference variables, call by reference ,Defaultsarguments, function overloading, Math library functions. Pointers: memory allocation for objects, pointer to members, pointer to object, this pointer local classes. Constructor and destructor: Constructor, types of constructors: default, parameterized and copy constructor,constructor overloading, constructor with default parameter, dynamic initialisation of objects, destructor Operator overloading and Type Conversion: Defining operator overloading, overloading unary and binary operator, Data Conversion: Basic to User Defined , User defined to basic, Conversion from one user-defined to other.	09
Unit-IV: Scope: Local and global scope, Inheritance and polymorphism: Base class, derived class, visibility modes, derivation and friendship, Types of inheritance, Containership, virtual function binding, pure virtual functions,Abstract class, pointer to derived class. Console IO operations: C++ stream classes, Unformatted IO operations, formatted IO operations, managingoutput with manipulators. Exceptions: Run time errors, exception handling using try, catch and throw, Working with files: Classes for filestream operations, opening and closing files, File opening modes, file Pointers, Error handling during file operations, command line arguments, templates	09
Unit-V: Problem solving with C++: Case study for problem solving on various real life systems like Bank, Library, Hospital, Hotel, Employee management system etc.	09

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between Course Outcomes (COs) and Program Outcomes (POs):

1 = Weakly Mapped, 2 = Moderately Mapped, 3 = Strongly Mapped

[illegible]

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
	Program	CO111	2	3	3	2	2	2	1	-	1	-	-	2	2	3	3
	ming	03.2															
	Language	CO111	3	3	2	3	3	3	1	-	2	-	-	2	3	3	2
		03.3															
		CO111	2	3	1	2	2	1	2	-	3	-	-	2	1	1	3
		03.4															
		CO111	2	2	2	3	3	1	1	-	3	-	-	3	1	1	2
		03.5															
		CO111	2.	2.	1.	2.	2.	1.	1.	-	2.	-	-	2.2	1.6	2.2	2.4
		03	2	8	8	2	2	6	4		2						