

**Course
Calendar:**

W1: C++ Language Fundamentals **(quiz)**

W2: Object Oriented Concepts

- *Structured programming vs. Object Oriented Programming.*
- *A sample program in structured approach using C/C++.*
- *Memory Layout of the program.*

W3, 4: Object Oriented Programming in C++.

- *Classes in C++, declaration, public and private members, instantiation, usage.*
- *Memory Layout of the objects/program.*
- *“this” pointer*
- *Basic Program Organization*
- *Same program in OOP approach using C++*
- *Program organization using C++ namespaces*
- *The sample C++ program using namespaces*

W5: Constructor and Destructor

- *Initializer List, Constructor Types, Copy Constructor, Destructors.*
- *Dynamic Memory Allocation within a Class.*
- *The sample C++ program with Constructors and Destructors. **(quiz)***

W6: Some Useful C++ Features

- *Static Class Members*
- *“const” Keyword*
- *Inline Member Functions*
- *Modifying Sample C++ program using these features*

W6: OHT-1

W7,8, 9: Inheritance in C++

- *Base Classes and Derived Classes*
- *Inherited Member access.*
- *Constructors and Destructor revisited*
- *Protected Members*
- *Types of inheritance*
- *C++ Pointer Casts.*
- *Overriding Base-Class Members in a Derived Class*

- *Multiple Inheritance, multiple access, ambiguous base classes.*
- *The sample Program reorganized using inheritance. (quiz)*

W10, 11: Virtual Functions and Polymorphism

- *Virtual Functions*
- *vtables*
- *Pure Virtual Functions, Abstract Classes*
- *Ambiguous Virtual Functions.*
- *Polymorphism*
- *Virtual Destructors*
- *The sample C++ program written using Virtual Functions and Polymorphism. (quiz)*

W12: Operator Overloading in C++

- Operator Overloading
- User defined conversions
- Copy assignment operators
- *Friend Functions and Friend Classes,*
- *Operator overloading with Friend Functions*
- The sample C++ program employing operator overloading

W12: OHT-2

W13, 14: Templates

- Explicit Specialization
- Partial Specialization
- Standard Template Library (STL) **(quiz)**

W15: Exceptions in C++

- Try blocks
- Catch blocks
- Throw expressions
- Stack unwinding
- Exception specifications **(quiz)**

W16: C++ I/O streams

W17: Project Presentations

W18: Revision

W19: End Semester Exam