# Syllabus for "C++ Programming Language – introduction"

**Textbook**

"*C++ programming language*" 3rd edition by Bjarne Stroustrup.

**Description:**

In this class, we will learn the basics about C++ programming language such as variables, data types, arrays, pointers, functions and classes etc.

**Objective:**

At the end of the class, we expect people to have a good understanding about the concept of object-oriented programming using C++, be able to write and read basic C++ code.

**Prerequisite:**

No prior knowledge about C++ is required, but people are expected to have some basic knowledge about computers, some knowledge about one or two other programming languages such as Perl, PHP, Python or Java etc is preferred.

**Course Outlines:**

**Introduction**

What is C++?
Why C++?
C and C++
Exception Handling
Object Oriented Programming
Standard Template Library

**Types and declarations**

Types

- Booleans
- Integer Types
- Floating-Point Types
- Sizes
- Void
- Enumerations
- Declarations

**Pointers, Arrays and Structures**

- Pointers
- Arrays
- Pointers into Arrays
- Constants
- References
- Pointers to void
- Structures

**Expressions and Statements**

- A Deck Calculator
- Operator Summary
- Statement Summary
- Comments and Indentation

**Functions**

- Function Declarations
- Argument Passing
- Value Return
- Overloaded Function Names
- Default Arguments
- Pointer to Function
- Macros

**Namespaces and Exceptions**

Namespaces
Exceptions

**Source Files and Programs**

Separate Compilation
Linkage
Using Header Files
Programs

**Classes**

Classes
Access Control
Constructors
Member functions
Static members
Destructors
Memory allocation
Member initialization

**Operator overloading**

Introduction
Operator Functions
A Complete Number Type
Conversion Operators
Friends
Large Objects
Essential Operators
Subscripting
Functions Calls
Dereferencing
Increment and Decrement
A String Class

**Derived class**

- Introduction
- Derived Classes
- Abstract Classes
- Design of Class Hierarchies
- Class Hierarchies and Abstract Classes