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