# Course Handout
## For
## Programming using C++ (ECSE379L)

Faculty Name : Sanjeet Kumar Nayak

Course Type : Core

Semester and Year: VI Semester and III Year

L-T-P : 2-0-2

Credits : 3

Department : Computer Science Engineering

Course Level : UG

**SCHOOL OF ENGINEERING AND APPLIED SCIENCES**

**Department of Computer Science Engineering**


Bennett University

Greater Noida, Uttar Pradesh

**ECSE379L: Programming using C++**

| Course Type: | Elective |
|---|---|

| L | T | P | Credits |
|---|---|---|---|
| 2 | 0 | 2 | 3 |

Pre-requisites: NA

**Course Learning Outcomes:**

**CLO1:** Understand the usage of different data types, operators and console I/O function in a computer program.

**CLO2:** Design programs involving decision control statements, loop control statements, case control structures, arrays, pointers, functions and implement the dynamics of memory by the use of pointers.

**CLO3:** Comprehend the concepts of structures and classes and apply basics of object-oriented programming, polymorphism and inheritance.

**Module 1 (Contact hours: 6)**

Introduction to 'C++' programming: Fundamentals, Structure of a C++ program, Compilation and linking processes. Expressions and Console I/O : Basic Data types, Identifier Names, Variables, Scope, Type qualifiers, Storage class specifier, Constants, Operators, Reading and writing characters, Reading and writing strings, Formatted and console I/O, cin(), cout(), Supressing Input. Statements: True and False, Selection statements, Iteration statements, Jump statements, Expression statements, Block statements, STL.

**Module 2 (Contact hours: 8)**

Arrays and Strings: Single dimension array, two-dimension array, Strings, Array of strings, Multi-dimension array, Array initialization, Variable length arrays. Structures, Unions, Enumerations, and Typedef: Structures, Array of structures, passing structures to functions, Structure pointers, Arrays and structures within structures, Unions, Bit-fields, Enumerations, typedef. Introduction to Object Oriented Programming with C++: Objects and Classes, basic concepts of OOPs (Abstraction, Encapsulation, Inheritance, Polymorphism), Constructors/Destructor, Copy constructor, Dynamic Constructor, Overloading (Function and Operator).

**Module 3 (Contact hours: 8)**

Pointers: Pointer variables, Pointer operators, Pointer expressions, Pointers and arrays, multiple indirection, Pointer initialization, Pointers to arrays, dynamically allocated arrays, Problems with pointers, Pointers and classes, pointer to an object, this pointer. Functions: General form of a function, understanding scope of a function, Function arguments, Command line arguments, Return statement, Recursion, Function prototype, Pointers to functions, Friend function and class.

**Module 4 (Contact hours: 6)**

Pre-processor and Comments: Pre-processor, #define, #error, #include, Conditional compilation directives, #undef, Single line and multiple line comments. File I/O: Streams and files, File system basics, fread() and fwrite(), fseek() and random access I/O, fprintf() and fscanf(), Standard streams.

**Lab Experiments**

To implement programs for various kinds of programming constructs using C++.

**Suggested Textbooks:**


1) *Yashavant Kanetkar, Let Us C++ (15th Edition), BPB Publications ,2016. ISBN 978-8183331630.*
2) *Balaguruswamy E , Object Oriented Programming with C++ (6th Edition), McGraw Hill Education, 2013. ISBN 978-1259029936.*


**References:**


3) *Schildt H., C++: The Complete Reference (4th Edition), Tata McGraw Hill, 2003. ISBN 978-0070532465.*
4) *Brian W. Kernighan and Dennis M. Ritchie, The C++ Programming Language (2nd Edition), Pearson Education India, 2015. ISBN 978-9332549449.*
5) *Microsoft : Dev210x Introduction to C++ (edX).* https://courses.edx.org/courses/course-v1:Microsoft+DEV210x+3T2019/course/
6) *Udemy: Learn C++ Programming- Beginner to Advance- Deep Dive in C++* https://www.udemy.com/course/cpp-deep-dive/


## Evaluation Components:

| Components of Course Evaluation | Percentage |
|---|---|
| Quiz | 30 |
| Mid Term Examination | 15 |
| End Term Examination | 35 |
| Lab | 20 |