

Generic Elective
GE – 1a: Programming using C++

S. No.	Unit Name	Chapters	References	Weeks
1.	Unit 1 Introduction to C++	1, 2 Pg 10 – 17 Pg 20 – 22	[2] [1] [3]	1 – 3
2.	Unit 2 Programming Fundamentals	3 (3.1 – 3.5, 3.9 – 3.13, 3.15, 3.18 – 3.22, 3.24 – 3.25) 4 (4.1 – 4.6, 4.10)		4 – 8
3.	Unit 3 Object Oriented Programming	5 (except 5.2, 5.15, 5.18) 6 (except 6.5, 6.6 and 6.8 – 6.10) 8 (upto 8.5) 12	[2]	9 – 15

Essential/recommended readings

1. Stephen Prata, *C++ Primer Plus*, 6th Edition, Pearson India, 2015.
2. E. Balaguruswamy, *Object Oriented Programming with C++*, 8th edition, McGraw-Hill Education, 2017.
3. D.S. Malik, *C++ Programming: From Problem Analysis to Program Design*, 6th edition, Cengage Learning, 2013

Sample Practical List

1. Write a program to compute the sum of the first n terms of the following series:

$$S = 1 - 2 + 3 - 4 + \dots + n$$

The number of terms n is to be taken from the user.

2. Write a program to display the following pattern:

```
1
22
333
4444
55555
```

The number of rows to be displayed is to be taken from the user.

3. Write a program to compute the factors of a given number.
4. Write a menu driven program to perform the following operations on an array:
 - a) Find the minimum, maximum and average of the array elements
 - b) Search an element in the array using linear search
5. Write a menu driven program to perform the following operations on a string:
 - a) Calculate length of the string
 - b) Check whether the first character of every word in the string is in uppercase or not
 - c) Reverse the string
6. Create a class Triangle. Include overloaded functions for calculating the area of a triangle.
7. Create a template class TwoDim which contains x and y coordinates. Define default constructor, parameterized constructor and void print() function to print the coordinates. Now reuse this class in ThreeDim adding a new dimension as z. Define the constructors and void print() in the subclass. Implement main() to demonstrate the use of these classes.