

<b>University of Mumbai</b>			
<b>CLASS: F.E</b> <b>(All Branches of Engineering)</b>		<b>Semester - I</b>	
<b>SUBJECT: Computer Programming - I</b>			
Periods per week (each of 60 min.)	Lecture	03	
	Practical	02	
	Tutorial	-	
		Hours	Marks
Evaluation System	Theory Examination	03	100
	Practical	-	-
	Oral Examination	-	-
	Term Work	-	25
	Total		125

### Details of the Syllabus:

Sr No	Details	Hrs
01	<b>Structured Programming using C++</b> 1.1.C++ as a superset of C programming language 1.2.C++ Fundamentals: Character set, Identifiers and keywords, Data Types, Constants, and Variables Declarations, Operators & Expressions, Library functions, statements, Symbolic Constants, Preprocessor directives	05
02	2.1 Data Input and Output: Getch(), putchar(), scan(), printf(), gets(), puts(), cin, cout, setw, endl etc. 2.2 Control Statements: if-else, while, do-while, go to, for statements, nested control structures, switch, break, continue statements, comma operator	06
03	3.1. Functions: Functions prototypes, passing arguments to a function by value and by reference, recursion, over loading functions, storage classes 3.2. Arrays: Defining- processing array, passing arrays to function, Introduction to Multidimensional arrays, Arrays and strings	08
04	4.1.Pointers Declarations, Referencing and de- referencing, passing pointers to functions, pointer to functions, pointer to arrays. Creation and manipulation of linked list 4.2.Structures and Unions: Defining and processing a structure	07

05	5.1. Introduction to Object Oriented Programming in C++ Classes, Objects, data encapsulation, access specifiers: private, public and protected, inheritance in details, operator overloading of Unary and Binary arithmetic operators, virtual functions, pure virtual functions.	08
06	6.1 late binding, friend functions, object as function parameter, overriding functions and over loaded constructors, copy constructor, static class members.	06

### Term work:

Each student is to appear for at least one written test (preferably on-line) during the term. Term work shall consist of graded answer paper of the test and at least five assignments as follows:

- 1) Five programs developed under control structures using C++.
  - 2) Ten program under arrays, functions and structures using C++.
  - 3) Ten debugged program listing demonstrating Object oriented constructs and concepts.
- Programs should be debugged (hand written & computer print -out) and should have suitable comments.

Recommended compilers turbo C++/Borland C++ or visual C++

The distribution of marks for term work shall be as follows,

Laboratory work (Experiments/Programme and Journal) : 10 marks.

Test (at least one) : 10 marks.

Attendance (Practical and Theory) : 05 marks.

The final certification and acceptance of term-work ensures the satisfactory performance of laboratory work and minimum passing in the term-work.

### Recommended Books:

- Programming in C++, Balagurusamy, Tata McGraw Hill
- Programming in C++, schuam out line series
- Let us C, Yashwant kanetkar, BPB publications
- Practical C++, programming 0' Reilly
- Algorithms with C++, 0' Reilly