

**MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION,
MUMBAI -51**

1	Name of Syllabus	C. C. In C & C++ (101113)																																															
2	Max.Nos of Student	25 Students																																															
3	Duration	6 Months																																															
4	Type	Part Time																																															
5	Nos Of Days / Week	6 Days																																															
6	Nos Of Hours /Days	4 Hrs																																															
7	Space Required	Practical Lab = 300 Sq feet <u>Class Room = 200 Sq feet</u> TOTAL = 500 Sq feet																																															
8	Entry Qualification	H.S.C. Passed																																															
9	Objective Of Syllabus/ introduction	Student Should achieve expertise in c and c++																																															
10	Employment Opportunity	Self employment:- candidate can assist as professional programmer in c and c+ Job Opportunities:- After Graduation Candidate have opportunities in IT Companies as C & C++																																															
11	Teacher's Qualification	BE/BSC IT/ BSC C.S/DIPL CPMUTER TECHNOLOGY/DIP IN IT																																															
12	Training System	<table><tr><th colspan="3">Training System Per Week</th></tr><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>6 Hours</td><td>18 Hours</td><td>24 Hours</td></tr></table>						Training System Per Week			Theory	Practical	Total	6 Hours	18 Hours	24 Hours																																	
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13	Exam. System	<table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>10111311</td><td>C PROGRAMMING</td><td>TH - I</td><td>3 hrs.</td><td>100</td><td>35</td></tr><tr><td>2</td><td>10111312</td><td>C ++ PROGRAMMING</td><td>TH – II</td><td>3 hrs.</td><td>100</td><td>35</td></tr><tr><td>3</td><td>10111321</td><td>C PROGRAMMING</td><td>PR – I</td><td>3 hrs.</td><td>100</td><td>50</td></tr><tr><td>4</td><td>10111322</td><td>C++ PROGRAMMING</td><td>PR - II</td><td>3 hrs.</td><td>100</td><td>50</td></tr><tr><td></td><td></td><td>Total</td><td></td><td></td><td>400</td><td>170</td></tr></table>						Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Min. Marks	1	10111311	C PROGRAMMING	TH - I	3 hrs.	100	35	2	10111312	C ++ PROGRAMMING	TH – II	3 hrs.	100	35	3	10111321	C PROGRAMMING	PR – I	3 hrs.	100	50	4	10111322	C++ PROGRAMMING	PR - II	3 hrs.	100	50			Total			400	170
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		Total			400	170																																											

C & C + +
CURRICULUM
Theory & Practica - I - C Programming

Sr	Topic Name
1	Algorithm/ Flowcharts
	Logic Development
	Testing And Debugging
	Documentation
	C Language – An Introduction
	A Brief History Of C
	Let Us Start The First Program In C
2	Variables & Constants
	The Soul Of A Program
	Variable Name
	Data Types
	Constant
3	Formatted Input & Output
	Printer()
	Scanf ()
4	Operators And Expressions
	Arithmetic Operators:
	Relational Operators:
	Logical Operators:
	Bitwise Operators:
	Assignment Operators:
	Increment And Decrement Operators:
	Conditional Operators:
	Comma Operators:
	Other Operators:
	Arithmetic Operators:
5	Control – Conditional Statement
	Making Decisions
	Conditional Operators:
	If – Else Relational Operators
	Logical Operators
	Switch Statement
	Break
	Comparison Of Nested If- Else & Switch-Case
6	Looping
	For Loop
	While Loops
	Do While Loops
	Breaking Out
	Continue
7	Special Program – Calculator
8	Function
	Anatomy Of A Function
	Defining And Declaring
	Function Prototypes
	Scope
	Rand()

	Srand()
	Returning Multiple Values From Functions
9	Array
	Introduction
	The Special Link Between Arrays
	Using Arrays
	Operations On Arrays
	Multidimensional Arrays
	Arrays & Function
10	String Operations
	Unformatted Input & Output
	Special String Functions:
11	Important Features Of C
	Symbolic Constants (#Define)
	Global Variables
	Static Variables
	Type Casting
	Arguing With Main
	Turning Strings Into Numbers (And Back Again)
	Exit
12	Special Program – Date
13	Pointer
	Declaring Pointers
	How To Use A Pointer
	Pointers And Arrays
	Passing An Arrays With Pointers
	Dynamic Memory Allocation
	Linked List
	Pointer/Structure Notation
	The Dynamic String
	Traversing A Linked List
	Improving The List
	List Operations- Finding Nodes
	List Operations – Removing Nodes
	Pointers Strings And Null Bytes
	Function Pointer
	Callbacks
14	Structure
	Introduction
	Structure Vocabulary
	Declaring Structure Variables
	Accessing Data Fields
	More Ways To Declare Structure Variables
	Structures To And From Function
	Arrays Of Structures
15	File Input And Output In C
	Introduction
	Opening (Or Creating) A File
	Writing To Files
	Reading From Files
	The End Of File(Eof)Thingy
	Closing File

16	The E-Mail Address Book
17	Advanced Features Of C
	Macros In C
	Macros Vs Function
	Other Preprocessor Directives
	Other Condition Checking
	Union
	The Enumerated Type
18	Introduction To Graphics
	Graphics In C
	Line
	Rectangle
	Circle / Arc
	Ellipse
	line style
	Set fillstyle
	Set textstyle
	Bar

Theory & Practical - II

C ++ Programming

Sr	Topics
1	Introduction To C++
2	Variables
3	Constants
4	Input And Output
5	Conditional Processing 1
6	Conditional Processing 2
7	Looping
8	Introduction To Pointers
9	Introduction To Classes
10	Arrays And Vectors
11	Strings
12	File Input And Output
13	References
14	Functions Basics
15	Function Overloading
16	Function Templates
17	Classes, Members, Methods
18	Constructors / Destructors
19	Memory Allocation
20	Copy Constructors
21	Arrays Of Class Objects
22	Mutable Members
23	Static Members / Methods
24	This Pointer
25	Operator Overloading 1
26	Operator Overloading 2

27	Class Relationships
28	Scope And Lifespan
29	Inheritance
30	Polymorphism
31	Multiple Inheritance
32	Virtual Inheritance
33	Abstract Data Types
34	Exceptions
35	Class Templates
	Total Hrs

Reference Books

A Reference Manual (5th Edition) by Samuel P. Harbison (Author), Guy L. Steele (Author)

Let Us C by Yashavant Kanetkar (Author)

Let Us C++

by Yashavant Kanetkar (Author)

The C++ Programming Language: Special Edition (3rd Edition) by Bjarne Stroustrup (Author)

- **C++ The complete reference** by Herbert Schildt - TMH
- C++** by Balguruswami - TMH

List of Tools, Machinery, Equipments etc. (Course Code – 101113)

Sr. No.	Name Of Item	Quantity (Nos.)
1	Intel core 2 duo or higher processor, 2 GB RAM, Intel Motherboard, 500 GB Hard Disk, 17” Monitor, Keyboard, Mouse, DVD Combo Drive or latest configuration	08+01 (1 Computer for Teacher)
2	Server	01
3	24 port unmanaged switch	02
4	LAPTOP	01
5	LCD Projector	01
6	Dot matrix printer	01
7	Inkjet printer	01
8	Laser printer	01
9	Scanner	01
10	UPS 5 KVA	01
11	TURBO C or Visual Studio latest version	01
12	MS Office latest version	01
13	Antivirus latest version	As required
14	ISDN/Broad Band Internet Connection	01
15	Speaker	01
16	Computer Table	09
17	Chair	26
