Maharashtra State Board of Vocational Examination, Mumbai 400 051

1	**Name of Course**	**Diploma Course in Computer Science**
2	**Course code**	**101401**
3	**Max no. of Students**	25 Students
4	**Duration**	2 year
5	**Course Type**	Full Time
6	**No. of Days per week**	6 days
7	**No. of hours per day**	7 Hrs
8	**Space require**	Theory Class Room – 200 sqft Three Practical Lab – 500 sqft each
9	**Entry qualification**	S.S.C. Pass
10	**Objective of syllabus**	To get Knowledge of Computer fundamentals, To Understanding the Software Programming concept, To aquire the software skills, To understand the Networking concepts
11	**Employment opportunities**	To work as a Computer Operator is the offices/Schools, Networking Technician for the Computer Networking industry, Programming assistant for the software consultant/industry
12	**Teachers Qualification**	1) For Vocational Subject : B.E.Computer Science/B.E. Computer Engg./ B.E. Computer Technology 2) For Non Vocational Subject : Master Degree in Concern Subject.

13 **Teaching Scheme –**

Sr.	Subject	Subject Code	Clock Hours / Week		Total
			Theory	Practical	
1	**English (Communication Skill)**	90000001	2 Hrs	1 Hrs	3 Hrs
2	**Elective – I**	--	2 Hrs	1 Hrs	3 Hrs
3	**Elective – II**	--	2 Hrs	1 Hrs	3 Hrs
4	**Computer Fundamentals & Applications**	10140001	3 Hrs	8 Hrs	11 Hrs
5	**Computer Programming elements**	10140002	3 Hrs	8 Hrs	11 Hrs
6	**Computer Networking**	10140003	3 Hrs	8 Hrs	11 Hrs
Total					**42 Hrs**

14	**Internship**	Two Month Summer Internship from 1st May to 30th June is Compulsory.

15 **Examination Scheme – Final Examination will be based on syllabus of both years.**

Paper	Subject	Subject Code	Theory			Practical			Total	
			Duration	Max	Min	Duration	Max	Min	Max	Min
1	**English (Communication Skill)**	90000001	3 Hrs	**70**	**25**	3 Hrs	**30**	**15**	**100**	**40**
2	**Elective – I**	--	3 Hrs	**70**	**25**	3 Hrs	**30**	**15**	**100**	**40**
3	**Elective – II**	--	3 Hrs	**70**	**25**	3 Hrs	**30**	**15**	**100**	**40**
4	**Computer Fundamentals & Applications**	10140001	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
5	**Computer Programming elements**	10140002	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
6	**Computer Networking**	10140003	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
								Total	**900**	**375**

16 **Teachers** – Three Teachers per batch for vocational component. For English, Elective-I & II guest faculty on clock hour basis.

17 **a) For Elective I – Student can choose any one subject**

Code	Subject Name
90000011	Applied Mathematics
90000012	Business Economics
90000013	Physical Biology (Botany & Zoology)
90000014	Entrepreneurship
90000015	Psychology

b) For Elective II – Student can choose any one subject

Code	Subject Name
90000021	Applied Sciences (Physics & Chemistry)
90000022	Computer Application
90000023	Business Mathematics

Subject Code : 10140001

Computer Fundamentals & Applications– 1st year

Theory	Practical
Detailed Syllabus : **1.0. Introduction** 1.1. Basic idea about Computer 1.2. Applications of Computer 1.3. History of Computer generation 1.4. Different phases of computer invention (Analytical Engine to Analog Computer and Digital Computer) 1.5. Computer types and their applications 1.6. Comparative table of capabilities as per the type	**Detailed Syllabus** **1.0. Computer basics** 1. Identification of Keyboard, Printer, Monitor Scanner, Webcam, Microphone, Speaker
2.0. Computer Architecture & Organization 2.1. Concept of Computer as a System 2.2. The structural block diagram of a computer 2.3. Different blocks of a Computer and their functions 2.4. Different input devices and their uses & limitations 2.5. Different output devices giving their uses & limitations 2.6. Memory: definition, types. 2.7. Primary memory and its classification with applications 2.8. Secondary memory devices 2.9. Classification giving specifications of different secondary storage media	**2.0. Practice** 1. Sample collection of various type of storage devices, specifications and charts
3.0. Data representation & organization 3.1. Data/ information, file, directory 3.2. Binary number system 3.3. Conversion of binary numbers to decimal numbers 3.4. Conversion of decimal numbers to binary numbers 3.5. Binary arithmetic (Binary addition, subtraction) 3.6. Introduction to different number system (Octal and Hexadecimal) 3.7. Data representation using Binary codes, ASCII codes 3.8. Bit, Bite……..	**1. Conversion of binary to decimal** **2. Conversion of binary to hexadecimal** **3. Conversion of binary to octal**

Computer fundamentals & Applications– 2nd year

Theory	Practical
Detailed Syllabus : **1.0. Introduction to Softwares** 1.1. Basic idea about Softwares 1.2. Types/ Classification of Softwares 1.3. Functions of System Softwares 1.4. Use of Application Softwares 1.5. Applications of Programming Softwares	**Detailed Syllabus** **1.Study of application software** **2.Study of System software**
4.0. Computer Hardware & Software 4.1. Definition of Hardware & Software 4.2. Functions of hardware devices 4.3. Types Softwares and their applications 4.4. Introduction to Operating system 4.5. Study of MS DOS environment and DOS commands 4.6. Study of MS Windows environment & Windows default icons 4.7. Windows explorer 4.8. Creating files & folders in Windows O.S. 4.9. Introduction to Unix	**1. Study of various dos command** **2. Study of various type of printers** **3. Study of dos, windows, windows xp.** **4. Creation of directory, folders, files**
2.0. Windows Accessories 2.1. Study of different features of Windows Accessories 2.2. Note Pad 2.3. Paint Brush 2.4. Word Pad	**2.0. Practice** **2.1 Create any document in notepad** **2.2 Draw different shapes in paint**
3.0. Software Installation 3.1. Installation procedure of different Softwares 3.2. Installation of Antivirus Softwares 3.3. Installation of Windows Operating System	**1.Installation of antivirus** **2.Installation of Windows xp**
4.0. Installation of Hardware devices 4.1. Installation of Drivers 4.2. Installation of Printer 4.3. Installation of NIC 4.4. Installation of Modem 4.5. Running Setup programs	**4.0.** **1.Installation of printer** **2. Installation of NIC card** **3. Installation of Modem**

Reference Books:

1. Computer fundamentals by P K Sinha
2. PC Software For Windows 98 Made Simple by Taxali
3. MS DOS Operating system user manual
4. Windows Operating system user manual

Subject Code : 10140002

Computer Programming Elements – 1st year

Theory	Practical
1.0. Computer Languages 1.1. General Introduction 1.2. Computer Languages 1.2.1. Definition of a Program 1.2.1. Data, Instruction/command 1.2.2. Source codes, Object codes 1.2.3. Machine code languages 1.2.4. Assembly code languages 1.2.5. High level languages 1.3. Interpreter, Compiler	1.0. Study of different interpreter 2.0. Classifying the interpreters and compilers
2.0. Basic Programming 2.1. Algorithm 2.2. Flow charts & Data flow diagrams 2.3. Different DFD symbols 2.4. Use & application of DFD 2.5. Constants, Variables & expressions 2.6. Operators: Arithmetic, Logical, Relational in general 2.7. Application of different operators with examples	1.0. Drawing flow charts for simple programs/problems 2.0. Simple DFDs for various problem solving 3.0. Expression building for different problems
3.0. Introduction to QBasic 3.1. Understand the concept of QBASIC programming 3.2. Getting started with QBASIC 3.3. Input Commands 3.4. Loop commands 3.5 .IF….ELSE…THEN 3.6. Planning a simple program 3.7. Different programs using logical and loop statement	**1.0.** At least 10 programs using I/O commands 2.0. At least 5 programs using each loop statements. 3.0. At least 5 programs using IF, IF … Else… THEN statements.

Computer Programming Elements – 2nd year

Theory	Practical
1.0. Data structure 1.1. Data 1.2.Domain 1.3.Data Object 1.4.Data Representation	
2.0 Stack 2.1 push 2.2 pop 2.3 Reverse of string 2.4 LIFO method	Implement operations on stack. Reverse of string using stack.
3.0. Queue 3.1. FIFO method 3.2. Front Rear 3.3 Doubly ended queue 3.4 Examples	**Implement operations on queue.** **Insertion & display elements in queue.** **Deletion & display elements in queue**
4.0 Linked list 4.1 single linked list 4.2 Circular linked list 4.3 Doubly linked list 4.4 First ptr, Next ptr, Prev ptr	**Display single linked list.** **Find out middle elements in list.** **Find out last elements in list.**
5.0 Searching 5.1 Linear search 5.2 Binary search	Searching the elements using linear search. Searching the elements using binary search.
6.0 Sorting 6.1 Bubble sort 6.2 Insertion sort 6.3 Selection sort 6.4 Merge sort 6.5 Radix sort 6.6.Quick sort	Sort the elements using bubble sort. Sort the elements using Radix sort. Sort the elements using Insertion sort. Sort the elements using Selection sort. Sort the elements using Merge sort. Sort the elements using Quick sort.

Text Book:

1. K.R Venugopal 'Mastering C++', Tata Mcgrawlhill1997

References:

1. B.Stroustroup 'C++ Programming Language' (3rd Edition). Addison Wesley, 1997

2. B.chandra Narosa 'A Treatise On Object Oriented programming using C++'-

Publications, 1998

3. Herbert Schildt, "The Complete Reference CN", Tata McGraw-Hili, 2001.

Subject Code - 10140003

Computer Networking – 1st year

Theory	Practical
Detailed Syllabus : **1.0. Introduction to Computer Architecture** 1.1. Over view of Computer Architecture 1.2. Different Elements/parts of a Computer system 1.3. Study of Power Supply & its types 1.4. Different type of Processors with their specifications 1.5. Study of different drivers, controller systems 1.6. Assembling of a Computer system.	1. Study of different Input/Output devices 2. Study of different processors
2.0. Introduction to Computer Networking 2.1. Introduction 2.2. Over view & History of Computer Networks 2.3. Features of Computer Networks 2.4. Merits & Demerits of Computer Network	1. Study of over view of Network
3.0. Network theory: 3.1. Types of networks (LAN, MAN, WAN) 3.2. Network Topologies 3.3. Networking Components in detail (Server, Node, NIC, Bridge, Hub, Router, Switch, Cables, Connectors ……etc)	1. Study of different network devices
4.0. Computer Networking Architecture 4.1. Introduction to Networking Architecture 4.2. Concept of Peer to Peer networking 4.3. Explanation of diagram with functions of each element 4.4. Merits and demerits of P2P Networking 4.5. Limitations of P2P Networking 4.6. Client/Server based Networking 4.7. Detailed study of Client/Server based networking with diagram 4.8. Merits and demerits of Client/Server based networking model.	1. Study of different network configurations
5.0. Sharing of data across Network 5.1. Introduction to Access methods 5.2. Types of Access methods 5.3. Concept of BDAM, BSAM, QSAM, BPAM, ISAM, VSAM & OAM.	1. Study of different access methods

Computer Networking – 2nd year

Theory	Practical
Detailed Syllabus : **1.0 OSI Model** 1.1. Over view of OSI Model 1.2. Physical layer 1.3. Network layer 1.4. session layer 1.5. Application layer 1.6. presentation layer 1.7 Transport layer 1.8 Data link layer	Study of Network installations
2.0. TCP/IP Model 2.1. Study of TCP/IP model 2.2. Merits and demerits of TCP/IP model 2.3. Factors behind its popularity	Configuration of TCP/ip
3.0. Cables **3.1. Coaxial** **3.2. Fiber optic** **3.3. Twisted pair**	**Study of different Cables and their parameters/specifications**
4.0. Connector **BNC Connector** **D Type** **Jack connector** **XLR**	**Study of BNC connectors and specifications**
5.0. Data communication & networking 5.1. Half duplex 5.2. Full duplex 5.3. Synchronous 5.4. Asynchronous	**Study of Duplex systems**
6.0. Network Configuration 6.1. Installation of a simple p2p Network 6.2. Installation/Initialization of a Switch/Router /Hub 6.3. Cabling of Network 6.4. TCP/IP configuration	**Installation of switch** **Installation of hub** **Installation of router**
7.0. Client/Server architecture 7.1. Study of Client/Server architecture 7.2. Merits and demerits of Client/Server Network 7.3. Limitations 7.4. Configuration of Servers 7.4.1. File server 7.4.2. Print server 7.4.3. Web server 7.5. Network Administrator, Duties of Administrator, File access methods, File sharing restrictions	**Installation of IIS**

Text Book:

1. W.Stallings "Data and Co puter Co unications", 7th Edition, Prentice Hall, 2004

References:

1. Forouzan , "Data Communication ¾°î˜†- etworking ," 3rd Edition, McGraw Hill, 2003

2. A.S.Tannenbaum,"Computer etworks ",4th edition Printice Hall of India

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