Scheme & Syllabus

of

B.Sc.(Computer Maintenance)
Ist to VIth Semester

w.e.f. July 2011

(2011-2014 Batch onwards)

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Outline Of Syllabus For B.Sc. (Computer Maintenance)

(Effective from July 2011 session for 2011-14 batch onwards)

Semester	Subjects	CCE 30%	Min. Marks	Term End Marks 70%	Min Marks	Total 100%	Min. Marks
First Semester	CM-1101: System & Application Software.	15	5	85	28	100	33
	CM-1102: Computer Maintenance Lab	-	-	-	-	50	17
Second Semester	CM-1201: Programming And Data Structure Using C	15	5	85	28	100	33
	CM-1202: Computer Maintenance Lab	-	-	-	-	50	17
Third Semester	CM-2101: Computer Peripherals & Maintenance	15	5	85	28	100	33
	CM-2102: Computer Maintenance Lab	-	-	-	-	50	17
Fourth Semester	CM-2201: Computer System Architecture	15	5	85	28	100	33
	CM-2202: Computer Maintenance Lab	-	-	-	-	50	17
Fifth Semester	CM-3101: Computer Network & Security	15	5	85	28	100	33
	CM-3102: Computer Maintenance Lab	-	-	-	-	50	17
Sixth Semester	CM-3201: Linux Administration	15	5	85	28	100	33
	CM-3202: Computer Maintenance Lab	-	-	-	-	50	17

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CM-1101: SYSTEM & APPLICATION SOFTWARE

UNIT I
Computer Fundamental: Computer software & its type, the operating system, user interfacing, system software- BIOS & drive programs, protected mode, the file system, the four disk areas, Loader & linker, Compiler, assembler & Interpreter.

UNIT II
Disk Operating System (DOS): Need for DOS, Choosing disks & drives, working with files & directories, MS-DOS commands: Internal & External commands, Hard disk partition using FDISK

UNIT III
Operating System: System software packages, function of operating system, processor management, Memory management, Virtual storage, Devices management, information management, Job control language, GUI & CLI, operating system example.

UNIT IV
MS-Windows Xp: Operating system-Definition & functions, basics of Windows. Basic components of Windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

UNIT V
Application Software Documentation Using MS-Word - Creating & Editing Document, Formatting Document, Advance Features of MS-Word-Mail Merge, Tables, Printing, Styles, linking and embedding object, Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides.

Text Books:
1. "Fundamentals of Computers & Information Technology": A. Jaiswal, Dreamtech Press**.**

Reference Books:
1. Fundamentals of Information Technology Including MS-Office by Maidasani, Laxshmi Publication.
2. Comdex Computers Course Kit : Vikas Gupta, Dreamtech Press

CM-1201: PROGRAMMING AND DATA STRUCTURE USING C

UNIT I
Structure of C program, keywords, identifiers, constants, variables, data types, type conversion, Types of operators and expressions, Input and output functions in C. **Decision Statement** – IF-ELSE statement, break, continue, goto, switch() case and nested IF statement. **Loop Control Statements** – For loop, While loop , Do-while loop and nested loops. **Arrays** – Definition, Initialization, Characteristics, One, Two, Three and Multidimensional Arrays, scanf() and printf() functions, Working with Strings & Standard Functions.

UNIT II
Pointers – Introduction, features, Declaration, Arithmetic operations, pointers and Arrays, Array , of pointers, pointers to pointers, pointers and strings, Void pointers. **Functions** – Declaration, Prototype, Types of functions, call by value and reference, Function with operators, function with decision statements, function with Loop statements, Function with Arrays and Pointers, Types of Storage Classes.

UNIT III
Structure and Union – Declaration, Initialization, structure within structure Enumerated data types, Union of structure, Files – Streams and file types, file operations, File I/O, Read ,Write and Other file function. **Introduction to Data-structures:** Definition of data structures and abstract data-types. Classification of Data-structures: Linear, Non-linear, Homogeneous, Non-homogeneous, Static and Dynamic data structures, Memory (Address Calculation). **Sparse Matrix**: Definition, Memory Representation.

UNIT-IV
Stack: Definition, Array implementation of stack (static stack) : Operations PUSH, POP, TRAVERSE. Applications of stack : Infix, Prefix , Postfix representation and conversion using stack, Postfix expression evaluation using stack, uses of stack. **Pointers**: Introduction, Pointers to structures, malloc, calloc functions. Dynamic memory. **Linked list :** Singly and Doubly Linear linked lists, Singly and doubly circular linked list : Definitions, operations INSERT , DELETE, TRAVERSE on all these list.

UNIT V
Queue: Definition, array implementation of queue (static queue) : Operations INSERT, DELETE, TRAVERSE. Applications of queue : Network Printer, Simulation of an Airport, Comparisons of array, stack and queue data structures. Introduction to Circular queue, Double ended queue. Implementations of Stack and Queue using linked list, sorted linked list

Text Books
1. E. Balaguruswamy, "Programming In C ", TMH Publications

Reference Books
1. Data Structures (Schaume's Outlines) By Lipschutz TMH Publications.
2. Data Structures and Program Design in C Robert H. Kruse, Bruce P. Leung PHI Publications.
3. Gottfried, Schaums Outline Series, " Programming With C ", TMH Publications.

SEMESTER – III
CM-2101: COMPUTER PERIPHERALS & MAINTENANCE

UNIT I:
Hardware Basics: Basic terms, concepts, and functions of system modules (System board, firmware, storage devices, monitor, boot process, ports). CMOS and BIOS, Overview of system components, Knowing mother board of PC, Identifying types of motherboard, Understanding BUS architecture. Switch Mode Power Supply: Circuit diagrams and pin assignments, working of SMPS Input and load requirements, connecting a PC and peripherals to power supply. Power Supply Maintenance: Cautions about opening power supply, over voltage and over current protection.

UNIT II:
Monitors: Display basics, Display adapter cards, VGA and super VGA, failure, trouble shooting and elimination, color monitors basic color theory, faults in color section. Monitor adjustments, size, brightness, focus etc., **Keyboards:** Study of keyboards, Interconnection to PC, Common faults and diagnostics, Parallel port, serial port, Joy stick, light pen. **Mouse**: Types and installation of mouse **Printers:** Types of printers (DMP, INKJET, LASER), Construction & Working of DMP, INKJET, LASER Printers, Connecting printers to computers.

UNIT III:
Memories: Reading memory error messages, adding RAM, Tips on installing memory chips, Static and handling precautions. **Disk structure**: Cylinders, heads, platters, tracks and sectors, structure of a disk. **Cluster Performance**: Access time, seek time, latency period, data transfer rates, and interleave factors, hard disk controllers. Types of interface controller and drives. **Hard disk software installation**: Physical formatting, partitioning, high level formatting, Hard disk installation

UNIT IV:
Scanner: Working Principle and its types. CD-ROM drive:- CD drives mechanism installation of CD drive. Drive technologies: - CD-ROM: SCSI\CD-R, CD-RW, DVD-ROM. Working Principals, IDE controller card. **Modem:**, Fault Finding, Repairing, modem Circuit Diagram, Repairing MODEM.

UNIT V:
Troubleshooting Procedures and Preventative Maintenance:
Identifying Troubleshooting Tools, Hardware tools, Diagnostic software, The Art of Troubleshooting, Troubleshooting basics, troubleshooting by visual Inspection, Preventative Maintenance, Using Preventative Maintenance Tools, Materials and equipment, Software utilities, Maintaining Environmental Controls, Ventilation and airflow, Humidity and liquids, Dirt and dust EMI, Power, UPS, and suppressors, Completing Maintenance Tasks, Case and components, Power supplies.

Text Book:
1. CompTIA A+ Certification All-in-One Desk Reference for Dummies by Glen Clarke
Reference Books:
1. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B. Govindarajalu, Tata McGraw Hill
2. Pc Upgrade & Repair Bible , Wiley India.
3. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales,
4. PC Upgrade & Repair Black Book by Ron Gilster.

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UNIT I
Basic Computer Design and Micro operations: Principles of Computer Design, Classification of Computer architecture design, Register Transfer and Micro-operations, Register transfer language, Bus and memory transfer, arithmetic micro-operations, Logic micro-operations and shift micro-operation without hardware implementation, Instruction codes, Computer registers, Computer instructions, Timing and control, Instruction cycle, Input-output and interrupt, Design of basic computer, Design of Accumulator logic.

UNIT II
Micro-Programmed Control and Hard-Wired Control CPU: Control Memory, Address Sequence and Structure of Control Unit, Hardwired control, Micro program, Micro instruction, Micro Program sequencer.
Central Processing Unit: Introduction, general register organization, Stack organization-register stack and memory stack, Instruction formats, Different address types instruction, Addressing modes, Data transfer and data manipulation instructions, Program control. RISC and CISC Characteristics.

UNIT III
Input-Output Organization: Input-Output Interface: I/O bus and interface module, I/O versus Memory Bus, Isolated and memory mapped I/O, Synchronous and Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt: Daisy chaining and parallel priority Interrupt, Priority Encoder, Interrupt Cycle. Direct Memory Access (DMA), Input-Output Processor (IOP), CPU and IOP communication.

UNIT IV
Memory Organization: Memory Hierarchy, RAM, ROM, Memory connection to CPU, Mapping, Auxiliary Memory, Associative Memory, Cache Memory and Mapping Techniques, Virtual Memory: Memory space and Address Space, Memory Page Table and Page Replacement, Memory Management Hardware.

UNIT V
Multiprocessor and Vector Processing: Parallel processing, Pipelining, Arithmetic and Instruction pipeline, Vector processing array processor overview, Characteristics of Multiprocessor, Interconnection structure: Time shared common bus, Multiport Memory, Crossbar Switch, Multistage switching network, Hypercube Interconnection.

Text Book:
1.Computer System Architecture, by M.M. Mano, 3rd Edition, Prentice-Hall of India, 2002.

Reference Books:
1. Computer Organization and Architecture: William Stallings, 6th edition, Pearson Education, 2002.
2. Structured Computer Organization: A.S.Tannenbaum, Prentice- Hall of India, 1999
3. Problem Book: Computer Architecture, TMH, Schaum Series Adaptation, 2010

SEMESTER – V

CM-3101: COMPUTER NETWORK & SECURITY

UNIT I
Understanding network : Introduction: Computer Network, Goals and Applications, Reference models – OSI and TCP/IP. LAN, MAN and WAN and topologies, LAN components – File server, Workstations, Network Adapter Cards. Connection Oriented and Connection less services, Switching Techniques – Circuit Switching, Packet Switching. Knowing network types, peer to peer and client server network, comparison between peer to peer and client server, LAN Network features- file sharing, printer sharing, application services, remote access, Gateways, network security, network hardware components overview- servers, hubs, routers, switches, cables.

UNIT II
Understanding networking protocols- Multiple access protocols: CSMA Protocols; Collision-Free Protocols, Ethernet, Token Bus, Token Ring. FDDI, Understanding TCP and UDP, TCP and UDP ports, IP packets and IP addressing, IP subnets, subnet masks, Domain Name System (DNS), Dynamic host control protocol (DHCP), Hypertext Transfer Control Protocol (HTTP), File Transfer Protocol (FTP), Netnews transfer protocol (NNTP), Telnet, Simple Mail Transfer protocol (SMTP), Comparing Important proprietary protocols-NOVELL's IPX/SPX, NetBIOS/NetBEUI protocols, TELNET, VOIP, AppleTalk,.

UNIT III
Internet addresses: Universal identifiers, three primary classes of IP addresses, Addresses specify network connections, Network and Broadcast addresses, Limited Broadcast, Weakness to internet addressing, Dotted decimal notation, Loopback address, Internets addressing authority, Network byte order. Mapping of network addresses to physical address, Mapping Internet addresses to physical addresses (ARP), Determining an Internet Address at Startup (RARP).

UNIT IV
Data Delivery: Addressing, Routing and multiplexing, The IP address, Internet routing architecture, The routing Table, Protocols, ports and Sockets, The Host tables, Configuring server, Bootstrap and Autoconfiguration (BOOTP, DHCP), Configuring DNS name service, Troubleshooting TCP/IP- Approaching a Problem, Diagnostics tools, Testing basic connectivity, Troubleshooting Network Access, Checking routing, checking name service, Simple Network Management Protocol.

UNIT V
Network Security: Managing User and computer accounts, Enabling and disabling users, Rights and permissions to user accounts, event logs, Network security- security planning, User authentication, application security, access control, encryption, Firewalls-The details of firewall architecture, accessing services through firewall.

Text Book:
1. TCP/IP Network Administration, By Craig Hunt, O'RE
2. Behrouz A. Forouzan, "Data communication and Networking", Tata McGraw-Hill, 2004.

Reference Books:
1. Internetworking with TCP/IP Volume 1, Douglas E. Comer, P
2. SAMS teach yourself TCP/IP, Joe Casad,
3. TCP/IP For Dummies, By Candace Leiden, Marshall Wilensky

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CM-3201: LINUX ADMINISTRATION

UNIT I :
Basic Architecture of Unix/Linux system, features of Kernel and Shell. Unix File system - Boot block, super block, Inode table, data blocks, How Unix/Linux kernel access files, Unix/Linux standard file system. Structure of file system, Essential Linux commands - Commands for files and directories creating and viewing files using cat, cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces, chmod with its options, cal, date,who, tty, lp,stty. Filters and pipes : head, tail , wc, pr, cut, paste, sort, uniqe, grep, egrep, fgrep ,tee.

UNIT II:
The process : shell process, parent and children ,process status, system process, multiple jobs in background and foreground, changing process priority with nice, premature termination of process, Mathematical commands- bc, expr, factor, units. Creating and editing files with VI editor with their command options, Operators, text deletion, text movement, changing text, yanking text, filtering text, the ex mode, moving text from one file to another. Communication: The bulletin board –news, write, mesg, talk, mail, elm, pine, finger, vacation and connecting to remote machine.

UNIT III:
Administration: Add and remove Users, Modify User Configuration, creating groups and delete groups, Mounting and Unmounting file systems The Multi-User system, Common shell Usage. Connecting to Remote systems telnet, the tar command, Starting and stopping services, print spools and Queues, gzip, gunzip command, setting system name. **Configuration & installing Xfree86:** Installing Xfree86 manually, installing Xfree86 using script, Set up Remote access.

UNIT IV:
System Maintenance: Device Nodes, Making disk Partitions, Making a file system Backup and Restore.
LAN with Linux: Choosing NIC, selecting boot protocol, static IP and DHCP, testing network, manual network configuration, configuring samba. Basic Network Services, Configure Network Services, configure internet Services, Check and Size Swap space, Manage printing, boot loader Lilo, grub, The Basic Configuration Files, Configuration of Access Rights. Install and Uninstall Modules

UNIT V:
Connecting Linux to internet: PPP, PPP connection, point to point network, server client network, Linux File server, Linux print server, Linux. **Web Server**: Web server, Linux web server, installing Apache, configuring apache, managing web server, Mail serve, Firewall testing and troubleshooting, netstart command, ping, trace route commands, FTP.

TEXT BOOK:
1. Red Hat Enterprise Linux & Fedora Edition: The Complete Reference by Richard Peterson
2. Using Linux – David Bandel and napier – Pearson Education
Reference Books:
1   Professional Linux Kernel Architecture by Wolfgang Mauerer.
2   The Linux Networking Architecture by Klaus Wehrle.