



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்

MANONMANIAM SUNDARANAR UNIVERSITY

**SYLLABUS FOR ADVANCED DIPLOMA IN COMPUTER HARDWARE AND
NETWORK MAINTENANCE PROGRAM OFFERED THROUGH DIRECTORATE OF
VOCATIONAL EDUCATION (COMMUNITY COLLEGES AND VOCATIONAL SKILL
DEVELOPMENT CENTRES) FROM 2019 - 2020**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON
ACADEMIC AFFAIRS HELD ON WEDNESDAY
THE 22nd JANUARY 2020**

**ADVANCED DIPLOMA IN COMPUTER HARDWARE AND NETWORK
MAINTENANCE**

மேம்பட்ட கணினி வன்பொருள் மற்றும் வலைப்பின்னல் பராமரிப்பு
பட்டயம்

SCHEME OF EXAMINATION

Subject code	Title of the Course	Credits	Hours	Passing Minimum
Semester I				
C19CH11/E19CH01	Computer Fundamentals	6	90	40/100
C19CH12/E19CH02	Basics of Computer Hardware	6	90	40/100
C19CH13/E19CH03	System Assembly & Troubleshooting	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19CHP1/E19CHP1	Practical I-Computer Hardware	4	120	40/100
Semester II				
C19CH21/E19CH04	Basics of Networking	6	90	40/100
C19CH22/E19CH05	Network Protocols and Modelling	6	90	40/100
C19LS23/E19LS05	Life Skill	6	90	40/100
C19CH24/E19CH06	Advanced Networking Technologies and management	6	90	40/100
C19CHP2/E19CHP2	Practical II- System & Troubleshooting	4	120	40/100
Semester III				
C19CH31/E19CH07	Operating System	6	90	40/100
C19CH32/E19CH08	Operating System Administration	6	90	40/100
C19CH33/E19CH09	Computer Hardware & Peripherals	6	90	40/100
C19CHP3/E19CHP3	Practical III-Operating System	4	120	40/100
C19CHIP/E19CHIP	Internship	10	150	40/100
Semester IV				
C19CH41/E19CH10	Digital Electronics	6	90	40/100
C19CH42/E19CH11	Linux Administration	6	90	40/100
C19CH43/E19CH12	Computer Assembling and Installations	6	90	40/100
C19CHP4/E19CHP4	Practical IV-Computer Network	4	120	40/100
C19CHPW/E19CHPW	Project Work	10	150	40/100

Eligibility for admission: Pass in 10th Std., examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

Examination: Passing Minimum for each Course is 40%. Classification will be done on the basis percentage marks of the total marks obtained in all the Courses and as given below:

40% but less than 50%	-	Third class
50% but less than 60%	-	Second class
60% and above	-	First class

Theory Paper

Internal Marks-25

External Marks-75

Syllabus

Semester I

- Course I - Computer Fundamentals
- Course II - Basics of Computer Hardware
- Course III - System Assembly & Troubleshooting
- Course IV - Communicative English
- Course V - Practical I-Computer Hardware

Semester II

- Course VI - Basics of Networking
- Course VII - Network Protocols and Modelling
- Course VIII - Life Skill
- Course IX - Advanced Networking Technologies and Management
- Course X - Practical II-System & Troubleshooting

Semester III

- Course XI - Operating System
- Course XII - Operating System Administration
- Course XIII - Computer Hardware & Peripherals
- Course XIV - Practical III-Operating System
- Course XV - Internship

Semester IV

- Course XVI - Digital Electronics
- Course XVII- Linux Administration
- Course XVIII-Computer Assembling and Installations
- Course XIX - Practical IV-Computer Network
- Course XX - Project Work

***(Semester Pattern for Community College Only)**

Program Objectives

- Entrepreneurship Development (Compulsory for all two years diploma, one year diploma and certification courses)
- Entrepreneurship Development

SEMESTER I
Course I
(C19CH11/E19CH01)**Computer Fundamentals**

Objectives

- To understand the concepts of computer basics.
- To learn the organization and operation of a computer processor, primary and secondary memory and peripheral devices.
- To obtain knowledge on database management.

Unit I: **18 Hrs**
Introduction to Computers: Introduction – Characteristics of Computers – Evolution of Computers – Generation of Computers – Classification of Computers – Application of Computers.

Unit II: **18 Hrs**
Input Devices: Keyboard – Pointing Devices – Webcam – Scanners – Optical Character Recognition – Optical Mark recognition – Magnetic Ink Character Recognition – Bar Code Reader.
Output Devices: Printers – Plotters – Computer Output Microfilm – Monitors – Voice Recognition System – Projectors.

Unit III: **18 Hrs**
Primary memory: Memory Representation – Memory Hierarchy – Random Access Memory – Read only memory – Types of ROM.
Secondary Storage: Classification of Secondary Storage Devices – Storage Organization of Magnetic Disk – Storage Organization of Optical Disk – Magneto-Optical Disk – Universal Serial Bus.

Unit IV: **18 Hrs**
Database Fundamental: Data, Information and Knowledge – Database – Logical Data Concepts – Physical Data Concepts – Database Management System – Need, Benefits of DBMS, Components of DBMS, Database Administrator – DBMS Architecture – Database Models.

Unit V: **18 Hrs**
Basic of Printers: Types of printers and printing mechanism- How printer works-Inject printer- working of laser printer- Trouble shooting printers.

Reference Books:

1. Introduction to Computer Science, ITL Education Solutions Limited, 2/e, Pearson, 2011.
2. Introduction to Computers, Peter Norton, 7/e, TMH, 2013.
3. Modern All about printers, Manohar Lotia, PradeepNair, Bijal Lotia BPB Publications, 2012.

Course II
(C19CH12/E19CH02)**Basics of Computer Hardware**

Objectives

- To familiarise with various number systems and their conversions.
- To understand the various types of specialized input and output devices.
- To develop programming skills using 8085 microprocessor.

UNIT I: 18 Hrs

Number systems – Decimal, Binary, Octal, Hexadecimal – Conversions–
LOGIC GATES –Universal GATES – NAND – NOR – Karnaugh maps –
Tabulation and Simplifications–Basics of Sequential and Combinational logic
– Multiplexer and De-multiplexer basics –GRAY code – ASCII code
representation.

UNIT II: 18 Hrs

Introduction to Memories – Types of memories – Registers – Caches –
Primary and Secondary memory – Associative memory – Virtual memory–
Optical discs – Flash memory systems.

UNIT III: 18 Hrs

Basic computer hardware architecture – Functional units – Instruction
formats – types – Addressing modes - Basic I/O devices – Keyboard –
Console systems – Mouse – Printer – plotters – Scanners – Basic CPU
architecture – Introduction to workstations network computers.

UNIT IV: 18 Hrs

Standards in PC Architecture- PC/AT System Configuration–Bus
Standards – System Bus - Communication Interface – Plug and Play
Systems.

Unit V: 18 Hrs

Hardware and Software diagnostic tools – Benchmarks- Introduction to
8085 microprocessor–Internal Architecture, Pin Layout - Interfacing –
Memory – Instruction Set of 8085 - Addressing modes - Basic programming
using 8085.

References Books

- Charles H. Roth Jr. Fundamentals of Logic design – 4th edition –
Jaico publishing house, 2011.
- Carl Hamacher.V., Zvonko G. Vranesic, Safwat G.Zaky “Computer
organization” TMH, 2010.
- Gaonkar – Micro Processor Architecture programming and
application with 8085, Penram International Publishing; 6th
edition, 2013.
- Govindarajulu.B, IBM PC and Clones Hardware trouble shooting
and maintenance Tata McGraw-Hill, New Delhi, 2012.

Course III

(C19CH13/E19CH03)System Assembly & Troubleshooting

Objectives

- To learn various troubleshooting rules and understand common problems.
- To understand bus, memory troubleshooting methods.
- To install and troubleshoot printer.

Unit I:

18 Hrs

Troubleshooting General PC Problems – Introduction- General Troubleshooting rules - Common Problems & Solutions- Preventive Maintenance.

Unit II:

18 Hrs

BIOS: Typical Motherboard BIOS, BIOS Features, BIOS & Boot Sequences, BIOS Shortcoming & Compatible Issues, BIOS Troubleshooting, BIOS Upgrades.

Unit III:

18 Hrs

Hard Disk: Introduction - Disk Basics - Disk Performance & Characteristics - Drive Construction - Drive Testing & troubleshooting.

Motherboard & Buses: Introduction, Motherboard Components, Expansion Slots system Bus Functions & Features. Upgrading & Troubleshooting Motherboard, General Bus Troubleshooting.

Unit IV:

18 Hrs

Basic Memory Concepts: Introduction - Installing Memories - Upgrade Options & Strategies - Replacing Memories with Higher Capacity - Troubleshooting Memory.

Unit V:

18 Hrs

Printers: Printer Technology - How Printer Works - Attaching Printer - Installing Printer Drivers - Preventive Maintenance - Common Printer Problems & Solution – Error Code - Beep Code - Post Code - Post Reader Card.

References Book:

1. Upgrading & Repairing PCs: Muller – Prentice Hall – 10th Edition, 2010.
2. Complete PC Upgrade & Maintenance Guide: Mark Minasi–BPB Publishers–15th Edition, 2014.

Course IV
(C19CE10/E19CE10)**Communicative English**

- 1. Basic Grammar:**
 - a) Review of grammar
 - b) Remedial study of grammar
 - c) Simple sentence
 - d) Word passive voice etc.
- 2. Bubbling Vocabulary:**
 - a) Synonyms
 - b) Antonyms
 - c) One – work Institution
- 3. Reading and Understanding English**
 - a) Comprehension passage
 - b) Précis – writing
 - c) Developing a story from hints.
- 4. Writing English**
 - a) Writing Business letters.
 - b) Paragraph writing
 - c) Essay writing
 - d) Dialogue writing
- 5. Speaking English**
 - a) Expressions used under different circumstances
 - b) Phonetics

Reference :

1. V.H.Baskaran – “English Made Easy”
2. V.H.Baskaran – “English Composition Made Easy”
(Shakespeare Institute of English Studies, Chennai)
3. N.Krishnaswamy – “Teaching English Grammar”
(T.R.Publication, Chennai)
4. “Life Skill” – P.Ravi, S.Prabakar and T.Tamzil Chelvam,
M.S.University, Tirunelveli.

Course V
Practical I
(C19CHP1/E19CHP1)**Computer Hardware**

List of Experiments

1. Connecting & disconnecting computer peripherals and components & driver installation
2. Hard disk partitioning and formatting
3. OS installation like Windows , Linux
4. OS installation like FAT, NTFS
5. Internal component assembling and disassembling
6. Basic trouble shoots using beep Sound
7. Dual OS installation
8. Assigning and identifying valid IP Addresses.
9. Configure network computers using switch
Installation of Network Interface Card (NIC).

SEMESTER II
Course VI
(C19CH21/E19CH04)**Basics of Networking**

Objectives

- To understand various communication models
- To learn the concepts of protocol layers.
- To study various switching networks.

Unit I:

18 Hrs

Communication model - Data communications networking - Data transmission concepts And terminology - Protocol architecture - Protocols - OSI - TCP/IP - LAN architecture Topologies - MAC - Ethernet, Fast Ethernet-Token ring - FDDI- Wireless LANS.

Unit II:

18 Hrs

Network layer - Switching concepts - Circuit switching networks - Packet switching - Routing - Congestion control - IP - Unreliable connectionless delivery - Datagram's - Routing IP datagram's - ICMP.

Unit III:

18 Hrs

Transport layer - Reliable delivery service - Congestion control - connection establishment - Flow control - Transmission control protocol - User datagram protocol.

Unit IV:

18 Hrs

Applications - Sessions and presentation aspects - DNS - Telnet - rlogin - FTP - SMTP - WWW Basics of Firewalls.

Unit V:

18 Hrs

Frame Relay - Packet switching networks - Frame Relay networks, Asynchronous transfer mode ATM protocol Architecture - ATM Logical connection - ATM cells - ATM service categories.

Reference Books

- Computer Networks, Andrew S Tanenbaum, Publisher- PHI, New Delhi, 2010.
- B. A. Fourozan, TCP/IP Protocol Suite, Tata McGraw Hill, 2011.
- Internetworking with TCP/IP, Douglas E. Comer, Publisher- PHI, New Delhi, 2013.

Course VII
(C19CH22/E19CH05) Network Protocols and Modelling

Objectives

- To build an understanding of the fundamental concepts of computer networking.
- To introduce the student to networking concepts and protocols.
- To impart a knowledge on wireless technologies.

Unit I: 18 Hrs

Detailed Layered architecture of OSI and TCP/IP Reference Model-

Introduction to various LAN and WAN Protocols - Network Address- Overview - Type of Addresses- Need-advantages and disadvantages. IP Addresses- Class Full Addressing- Network ID- Host ID Special Addressing - Sub netting and Super netting.

Unit II: 18 Hrs

ARP/RARP: Resolution - Packet format mapping and encapsulation - Internet protocol Virtual network- Connectionless – unreliable- Packet Delivery System. Datagram format- Datagram size- Network MTU and fragmentation- Time stamp option- IP Routing algorithm-IP Checksum- ICMP and IGMP - Introduction and message format.

Unit III: 18 Hrs

UDP: Introduction to User Data gram Protocol- Format of UDP Message- Pseudo Header-Multiplexing & Demultiplexing- TCP- Introduction to Transmission Control Protocol- Ports-Collections and Endpoints- TCP Segment Format- Checksum Computation - Establishing a TCP Connection.

Unit IV: 18 Hrs

Vector Distance & link state routing protocol - Routing Information Protocol -Open SPF Protocol - Gateway to Gateway Protocol - Hardware Broadcast - Hardware Multicast IP Multicast and Address Mapping - IP Multicast to Ethernet Multicast.

Unit V: 18 Hrs

Basics: hardware and Software Requirement for wireless network - Types of wireless network - Wireless technologies - Wireless networking standards - Application of wireless network.

Reference Books

1. Hardware and networking by Vikas Gupta Publisher: Dream tech press, 2012
2. Introduction to Networking by Richard McMohan Publisher Tata Mcgraw Hills Ltd, India, 2014.

Course VIII
(C19LS23/E19LS05) Life Skill

I Life Coping or adjustment

- (a) External and internal influence in one's life
- (b) Process of coping or adjustment
- (c) Coping with physical change and sexuality
- (d) Coping with stress, shyness, fear, anger for live and criticism.

II Attitude

- (a) Attitude
- (b) Self acceptance, self – esteem and self actualization
- (c) Positive thinking

III Problem Solving

- (a) Goal Setting
- (b) Decision Making
- (c) Time Management and stress Management.

IV Computers

- (a) Introduction to Computers
- (b) M.S.Office
- (c) Power Point

V Internet

- (a) Introduction to internet
- (b) E – mail
- (c) Browsing

References:

- 1) Life Skill Programme courses I & II by Dr. Xavier Alphona MCRDCE Publications. R.K.Mutt Road, Chennai – 28
- 2) ஆளுமை பண்பு வளர்த்தல் மற்றும் தகவல் தொடர்பு by M.Selvaraj Community College, Palayamkottai
- 3) “Life Skill” –P.Ravi, S.Prabahar & T.Tamil Chelvam, M.S. University, Tirunelveli

Course IX
(C19CH24/E19CH06)**Advanced Networking Technologies and Management**

Objectives

- To learn the concepts of Computer Network models and servers.
- To familiarise with network operating system and topologies.
- To learn network service management and administration.

Unit I: **18 Hrs**

Introduction to Computer Networks - Fundamentals of Network Communication - Network terms - network models - Network Servers.

Unit II: **18 Hrs**

Network Hardware Essentials - Network repeaters and hubs - Network Switches - Wireless Access points - Network Interface Cards - Routers.

Unit III: **18 Hrs**

Network Topologies and Technologies - Network Topologies – Bus - Star-Ring - Point -to-point - Ethernet networks and Standards – WIFI - Token Ring Networks - Wireless Access Point - Advanced features of NIC.

Unit IV: **18 Hrs**

Network Operating System Fundamentals - Operating system fundamentals- Network Operating System-Role of Client and Server Operating System - Centralized User Account and computer management - Server and Network Fault Tolerance - Operating System Virtualization - Installing an OS.

Unit V: **18 Hrs**

Server Management and Administration - Managing User and Group Accounts - Storage and file System Management, Working with Shared files and Printers, Monitoring system Reliability and performance, Backup and Fault tolerance.

Reference Books:

1. Gregory Tomsho, “Guide to Networking Essentials 6e”, Cengage Learning, 2010.
2. Michael Parmer, “ Hands On Networking Essentials”, Cengage Learning, 2013.
3. Paul Browning, CISCO CCNA simplified, Cisco Press, 2011.

Course X
Practical II
(C19CHP2/E19CHP2)System & Troubleshooting

List of Experiments

1. Switch Board Wiring and Testing
2. Soldering and De-Soldering Practice
3. Component Testing and Symbols
4. Voltage Measurement of Different Circuits
5. Testing and Measurement of SMPS
6. Half wave, Full wave & Bridge rectifiers
7. Assembling of a Computer
8. Installation of different Operating Systems
9. Installation of different device drivers
10. Installation of different Application Software
11. Biometric Security Device Installation and Configuration
12. To Run All Dos Command (Internal and External Dos Command)
13. Assembling and Disassembling Of a Computer System
14. Troubleshooting and Repair Operating System: Windows XP, Windows 7
15. Installation and Troubleshooting of Printer (Dot-Matrix and Laser Printer)
16. Installation and Troubleshooting of Scanner (Photo & Bar Code Scanner)
17. To Repair and Troubleshooting of SMPS, Monitor, Printer and Motherboard

SEMESTER III
Course XI
(C19CH31/E19CH07) Operating Systems

Objectives

- To understand the concepts of operating systems
- To learn various scheduling algorithms
- To obtain a knowledge on file management concepts

Unit I:

18 Hrs

Introduction: An Introduction to Operating System & its Services, Various Types of Operating Systems, Operating System Structure - Concepts of: Process – Files – System Calls– Interrupt – Shell.

Unit II:

18 Hrs

Process Management: An Introduction to process - Process State & Transition - Process Control Block - Process Context - Context Switch.

Process Scheduling: Pre-emptive & Non-Pre-emptive Algorithms- FCFS- Shortest Job First-Priority Scheduling: Round Robin Scheduling- Performance Criteria of Scheduling Algorithm Overview of Inter - process Communication - Critical Section – Semaphore.

Unit III:

18 Hrs

Memory Management - Partitioned Memory Management (Static & Dynamic) - Concept of Fragmentation & Compaction - Paging & Demand Paging - Page Replacement Algorithms.

Unit IV:

18 Hrs

Deadlock - Introduction to Deadlock - Necessary Condition for Deadlock - Method for Handling Deadlock- Brief Overview of Deadlock Prevention - Deadlock Avoidance – Deadlock Detection & Recovery.

Unit V:

18 Hrs

File Management -File Concepts – Types of Files – File Attributes – File Operations Access Methods: Sequential access – Random access, Hierarchical Directory System

Reference Books:

1. Operating System Design & Implementation / Andrew S Tanenbaum / Prentice Hall of India, 2014.
2. Operating System Principles – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 8th edition, Wiley-India, 2012.
3. Modern Operating System, Tanenbaum, Third Edition, PHI Publication, 2013.

Course XII

(C19CH32/E19CH08) Operating System Administration

Objectives

- To obtain a knowledge on installing various software's
- To get an idea to configure wired and wireless networks.
- To understand firewalls.

Unit I:

18 Hrs

Operating System: Types and Functions. DOS – Introduction, Versions, DOS Commands, Internal, External, Root Directory. Windows – Introduction- Control Panel settings. Installation of server- implementation of DNS server- File System.

Unit II:

18 Hrs

Various types of Software Installation – MS-Office 2007 - Office 2010 - Photoshop 7 - PageMaker 6.5 - Corel-Draw X3 - Auto-CAD - Tally 7.0 and ERP - Acrobat Reader X - Java-Visual Studio - C & C++ - Multimedia software's-Internet Browsers.

Unit III:

18 Hrs

Device Installation - Graphics Card - Sound Card - LAN Card - Wireless LAN Card - SCSI Card - External Drive - Flash Cards - Web Camera - CCTV Camera - Mobile Devices - Pen Drive - Fire wire Cards - Modem - Plotter .

Unit IV:

18 Hrs

Network Administration - Installing and Configuring Wire & Wireless Network - Network Troubleshooting - Installing Manageable Switches – Routers - Wi-Fi Device – Printer - CCTV Camera - IP Camera and Other Network Devices - Storage Solution – TAP Drive.

Unit V:

18 Hrs

WANs and Remote Connectivity - Public networks - Remote connectivity for server and clients - Indoor and Outdoor Wireless – WLAN - WIFI and WIMAX - PCI Wireless Card-USB Wireless Card - Wireless Access Point - Security of networks - Firewalls Hardware and Software - VPN.

Reference Books:

1. Windows 2003 and 2008 Server by BPB Publication, 2012.
2. Windows XP Professional and Windows 7 Edition by BPB Publication, 2011.

Course XIII
(C19CH33/E19CH09) Computer Hardware & Peripherals

Objectives

- To obtain an overview of microprocessor systems
- To understand PC architecture.
- To learn various network components.

Unit I:

18 Hrs

Microprocessor System - Introduction of System overview - Introduction to Processors-Memory Interfacing - Interfacing I/O Devices - Interfacing Data Converters- Display Interface - Serial I/O and Data Communication - Higher level Processors.

Unit II:

18 Hrs

Introduction to PC Architecture - Study of PC-AT/ATX System – Pentium – Core - Core 2 Duo- I3- I5- I7 Processor - Basics of Processor and CPU – Motherboards - Chipset and Controllers - BIOS and the Boot Process - Computer Memory.

Unit III:

18 Hrs

Internal Components - IDE and SATA Devices - Hard Disk Drive and CD/DVDs Drives - SCSI Devices, Floppy Disk - Zip Drive- Backup Drive- Expansion Cards - LAN Cards - IDE Card - VGA and SVGA Cards, Sound Card - Interface Cards - I/O cards- Video Cards - USB Card- Fire -Wire Cards - Internal Ports - Cables and Connector Types.

Unit IV:

18 Hrs

External Components - Monitors:- CRT- LCD and LED Displays- Printers:- Dot-Matrix Printer- Inkjet Printer - Laser Printer Scanner - Photo Scanner - Documents Scanner - Bar Code Scanner – Keyboards – Mouse - External Modem - Ports and Connectors – Batteries - Power supply - Pen Drives - SCSI interface Devices - Laptop Computers - Digital Advance storage technology.

Unit V:

18 Hrs

Network Components - Introduction of Network Cable – UTP- STP- Fiber Optics- Hub-Unmanageable Switch - Manageable Switch – Router - Modem - PCI Wireless Card - USB Wireless Device - Print Server - USB Network Sharer - Backup Device - Server Hardware.

Reference Books:

1. Microprocessor Architecture Programming and Application with the 8085 Ramesh Gaonkar Penram International Publication, 2013.
2. Electronics and Radio Engineering M.L. Gupta Dhanpat rai & Sons, New Delhi, 2011
3. PC AND CLONES Hardware, Troubleshooting and Maintenance, B. Govinda rajalu, Tata Mc-Graw-Hill Publication, 2014.

Course XIV
Practical III
(C19CHP3/E19CHP3)Operating System

List of Experiments

1. Tacking Data Backup and System Formatting and OS Installation
2. Installation of Different Device and Drivers PCI, PCI-E, AGP
3. Installation of Ms Office 2003, Ms-Office 2007 and Ms-Office 2010
4. Installation of On Board and PCI Device Driver
5. Installation of Web Camera and CCTV Camera Drivers and Software
6. Installation of Application Software: Photoshop 7.0, Page Maker 6.5, Corel Draw 12
7. Installation of CD-DVD Burning Software like: Nero 7.0 & Power ISO 4.0
8. Installation of Tally 7.2 and Tally ERP 9.0 and Tack Data Backup
9. Installation Dual Operating System like: Windows XP and Windows 7
10. Installing and Configuring Windows 2003 and 2008 Server.

Course XV
(C19CHIP/E19CHIP)Internship

- The student of this course are required to undertake a internship training individually on a specific topic during the 3rd semester and submit a certificate and progress report at the end of the semester but before but the commencement of the end semester examination.
- The objective of the internship is to understand day to day activities of the organization in which the internship is undertaken and intensive training should be provided in all the departments of the organization.
- The students can get trained in a nearby hardware and networking organization where they can get familiarised with installing os and configuring devices backup devices and booting sequences.

Semester IV
Course XVI
(C19CH41/E19CH10) Digital Electronics

Objectives

- To acquire the basic knowledge of digital logic levels and application of knowledge
- To understand the symbols and truth tables of digital logics
- To prepare students to perform the analysis and design of various digital electronic circuits.

Unit I: **18 Hrs**

Digital Electronics Introduction - Basic difference between analog and digital Signal - Application and advantages of digital signal processing.

Unit II: **18 Hrs**

Number System: Decimal - Binary - Why Binary numbers – Binary - Decimal and Hexadecimal number system - Conversion from decimal and hexadecimal to Binary and vice versa - BCD numbers - ASCII code - Basic Concept of parity.

Unit III: **18 Hrs**

Definition symbols and truth tables –NOT- AND-OR- NAND– NOR- EXOR Gates - combinational logic circuits - Diode Logic- Transistor –Inverter- TTL Logic.

Unit IV: **18 Hrs**

Brief idea of flip - flops and their operations - RS Latches - Level Clocking - D – Catch - JK Flip- Flops - JK Master – Slave Flip- Flops.

Unit V: **18 Hrs**

Buffer Register - Shift Register – Synchronous Counters - Ring Counters - ROMs, PROMs and EPROM's – ROMs - Small TTL Memories.

Reference Books:

1. G.K. Kharate, Digital Electronics, Oxford university Press, 2012.
2. M.Morris Mono, Digital Logic and Computer design, Prentice Hall of India, 2011.
3. Donald D.Givone – Digital Principles and Design, Tata mcccraue Hall,2012
4. V.Rajaraman & T.Radhakrishnan, Digital Logic and Computer Organization, Prentice Hall of India Private LTD, 2013.

Course XVII
(C19CH42/E19CH11)Linux Administration

Objectives

1. To install LINUX in server and workstation configurations.
2. To implement basic LINUX local area network (LAN) and TCP/IP networking services.
3. To demonstrate the advanced LINUX commands and utilities for system administration.
4. To learn LINUX web server and Security fundamentals.

Unit I:

18 Hrs

Introduction and installation of Linux - History of Linux - Linux distributions - Features of Linux- advantages of Linux - Installation of Red Hat and SUSE Linux and Fedora Edition - System requirements - Disk partition - Mount points - Installation method - creating the boot disk.

Unit II:

18 Hrs

Working with Linux GNOME and KDE - User Management - Mounting,-X-windows Desktop environment - Using Gnome and KDE Desktop environment- Linux commands-Linux file system – directories - Text Editors - Linux Shell - Feature of Shell.

Unit III:

18 Hrs

Networking with Linux - Installing and setting up a Network card - Setting TCP/IP parameters with Linux - Testing the network - Utilities of Linux- TAR Program - Send Mail - Send mail Configuration – Pine – Browsers - NFS and Samba Configuration - Network Printing and Interoperability with windows.

Unit IV:

18 Hrs

Linux Services and Network Security - Administering user accounts and groups - command line tool - Network Services – Proxies – Firewalls - NIS and Host Security - Diskless Terminal.

Unit V:

18 Hrs

Web Server - Overview of Clustering - File systems - IP address - DNS and Internet - Security fundamentals - system security - choosing user ID's for services - Network security - IT laws and security.

Reference Books:

- Linux System Administration Solve Real-life Linux Problems Quickly By Tom Adelstein, Bill Lubanovic , O'Reilly Media, 2014.
- Linux Embedded Development By Alexandru Vaduva, Alex Gonzalez, Chris Simmonds Packt Publishing 2016.

Course XVIII

(C19CH43/E19CH12) **Computer Assembling and Installations**

Objectives

1. To understand the fundamentals of PC assembly.
2. To perform installation of operating system, and upgrade a computer system.
3. To diagnose and troubleshoot computer systems, hardware, software and other peripheral equipments.

Unit-I

18 Hrs

Computer Assembling :- Introduction – Overview of Parts of PC – Cabinet – Motherboards – Video Cards – Sound Cards – Modems – Hard Drive – Zip Drive – CD ROM Drive – Network Card – Interfaces – CPU – Main Memory – Power Supply

Setting up the Motherboard :- Installing CPU – Setting the Clock Speed – Installing the Memory

Installing Video Card :- Testing – Plug in the Video Card – Providing Power to the Motherboard – Testing

Installing Floppy Drives - Installing Hard Disk Drives – Installing the CD ROM Drive – Installing Key Board and Mouse- Installing Sound Card :- Installing Modem

Installing the Motherboard :- Installing the Power Supply – Attaching Add-on cards – Installing the Drives – Testing – Parallel and Serial Port Connection – Front Panel Indicators and Speakers – Troubleshooting

Unit-II

18 Hrs

A walkthrough of installing Windows: Windows XP/ 7 / 8- Backup/Restore your Windows partition with the bootable image disk - Duplicating a partition - A multiboot system: the Windows boot manager vs. an alternative boot manager- Setting up a multiboot/dualboot system- Dual Boot Ubuntu and Windows- Windows XP registry tweaks Types

PC Upgrading :- Introduction – Upgrade Essentials – Performance Upgrade – Capacity Upgrades – Features Upgrades – Repair Upgrades

Preventive Maintenance :- Introduction – Need – Tools – Materials – Procedures – Active Hardware Maintenance – Active Software Maintenance – Passive Maintenance Procedures – Heat and Temperature Control – Dust and Pollution control – Ventilation Control – EMI – Electrostatic Discharge Control – Humidity and Corrosion Control – Shock and Vibration Control – Preventive Maintenance Schedule

Unit-III

18 Hrs

Operating System Installation

BIOS :- Introduction – Features – Developers – Identification – Interrupts – Disk Services – Serial Port Services – Video Services – Printer Screen Services – Flash Memory – BIOS Upgrade – Troubleshooting

CMOS setup :- Introduction – Standard CMOS Setup – Advanced CMOS Setup – Advanced Chipset Setup – Power Management Setup – PNP/PCI Setup – Peripheral Setup – Auto Detect IDE Device – CPU Frequency / Voltage Control – CPU PNP Setup – Password Settings – Auto Configuration – Exit Options – BIOS Optimization – Maintenance – Troubleshooting

Power On Self Test (POST)

Software Installation: Types of software System software-OS. Application software-like MS office -Properties of files and folders- Executing application programs- Applications under windows accessories- Windows Help- Finding files, folders, computers- Control panel- Installed devices and properties.

Unit-IV

18 Hrs

Partitioning and Formatting :- Introduction – Low Level Formatting – IDE Drives – SCSI Drives – Partitioning - Options – Efficient Partitions – Clusters – FAT 16 – FAT 32 – NTFS – FDISK – Steps for Partitioning – Logical Drives – Primary Partition – Extended Partition – Partitioning Large Drives – Backing up Partition Information – Bad Sectors – Scan Disk – Third Party Partitioning and Formatting Tools – Troubleshooting

Unit-V

18 Hrs

Troubleshooting :- Introduction – Types of PC Faults – Solid Faults – Intermittent Faults – Developing Strategy – Diagnostic and Repair Tools – Diagnostic Software Tools – Diagnostic Hardware Tools – Advanced Testing Tools – Hand Tools for Service Engineers – Disassembling PC

References

1. G.P.Sangia, PC Hardware for Beginners: 1 (X-Team), Shroff Publishers and Distributors Pvt. Ltd; 1 edition, 2007.
2. Chris Rhodes, Windows Installation and Update Troubleshooting 1st ed. Edition.

Course IX
(C19CHP4/E19CHP4)**Practical IV-Computer Network**

List of Experiments

1. Installing and Configuring Windows 2003 and 2008 Server
2. Cable Crimping using Different Colour Codes (Straight and Cross Cable)
3. Installation and configuring Peer to Peer and Server-Client Network.
4. Installation and Configuring Active Directory Services.
5. Installation and Configuring DNS & DHCP Services
6. Installation and Configuring FTP, HTTP Services
7. Backup and Restoration for ADS, DHCP and User Data
8. FAT and NTFS Sharing Permission
9. Configuring & Implementing Unmanageable Network Switch
10. Configuring & Implementing Manageable Network Switch
11. Configuring a Local Security Policies & Domain Security Policies
12. Configuring Gateway Service for Internet Connectivity
13. Configuring ADSL+2 Router for Internet Connectivity
 - a. Installation and Configuring Wire Network
14. Installation and Configuring Wireless Network

Course XX
(C19CHPW/E19CHPW)**Project Work**

- The students of this course are required to undertake a project individually on a specific topic during the 4th semester and submit a report at the end of the semester but before the commencement of the end semester examination.
- The objective of the project work is to understand the problems faced by the organization and offer specific suggestions to solve those problems.
- The students can undertake a project with specific problems related to computer hardware and networking and find solutions to overcome them

The project report may contain the following.

1. Certificate by the Guide
2. Certificate of originality of work
3. Acknowledgement, if any
4. Introduction
5. Objective
6. Project Category
7. Project Activity
8. Tools/Environment used
9. Program Structure/logic
10. Coding
11. Validation checks
12. Table structure if any
13. List of Report Queries
14. Sample Report Layout
15. References.

Entrepreneurship Development

Objectives

- To understand the nature of business development in the context of existing organizations and of new business start-ups.

Components

1. Qualities of a good entrepreneur, Difference between small scale & large scale business, Market survey, Method of marketing, Publicity and advertisement, Marketing mix.
2. Identification and selection of projects by a public survey and market study.
3. Assessment of the fire safety of own home.
4. Assessment of fire safety of our institute.
5. Assessment of electrical safety of various electrical equipments.
6. Drill of rescue of victim of electrical hazard.
7. Demonstration of CPR training (a trained Compounder/nurse or doctor should impart training)
8. Self employment formation, Feasibility, Legal formalities i.e., Shop act, Estimation & costing, Investment procedure - Loan procurement -Banking processes.
9. Role of various schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non-financing support agencies to familiarize with the policies / programmes, procedure & the available scheme.
