Advanced Module on IT

1) Repair & Maintenance of Hardware of Computer &
    Peripherals   :   (24 weeks)

2) Computer Networking   :   (24 weeks)

3) Multi Media & Web page Designing (24 weeks)

Upgradation of ITIs into Centres of Excellence-
Broad guidelines for implementation of Advanced Module of Sector
"Information Technology ".

These Centres will be providing multiskill training to meet the skill requirement of particular sector of industry with their active involvement in all aspects of training. The training will be provided in three parts as given below:

- ♦ **Training in Basic skill areas for a period of one year.**
- ♦ **Training in Advanced modules of six months duration after Broad based basic Training(BBBT)**
- ♦ **Testing & Certification both for the Broad Based Basic Training & Advanced Module Training during subsequent six months will be conducted under the aegis of NCVT .**
- ♦ **Training in specialized modules mainly by the industry (The course curricula, duration etc will be designed in consultations with the IMC/local industry). The trade testing & certification for specialized module will be done jointly by the State Government & Industry. Said   certificate will have recognition from NCVT**
- ♦ ***As per the recommendations of the EFC, Training in the shop floor should constitute alteast 25-40% of the curriculum.***

The training programme will have multi-entry and multi-exit provisions as given below:

- • trainee can opt to go to the labour market after completing broad based basic training of one year duration or after completing advanced module/s.
- • multi-entry and multi-exit provisions would enable a trainee to take admission for advanced/ additional advanced /specialized module as per his/her need .

Guidelines for Training in Advanced modules

- ▹ **A minimum of three modules would be essentially needed , so as to ensure that all the 96 trainees are accommodated in the three modules may be selected in consultation with IMC for which in two shifts .**

- ▹ **If it is felt that available modules for which the course curricula has been developed at National Level are not sufficient to cater to the needs of local industry in a particular**

state, States are free to select module as per need in consultation with industry . They may develop suitable module(s) accordingly in consultations with the industry clearly indicating tool & equipment list , instructor qualifications , space norms etc. & forward the same to DGE&T for seeking approval of NCVT.

▷ **A trainee at a time can opt only for one Advanced Module .**

▷ **Admission Criteria, Space requirement, Qualification of instructor of the various modules of** "Information Technology I**sector are attached herewith.**

Admission to Advanced Module for the graduates of ITI in related trades:

There is a provision for lateral entry for graduates of ITIs (NTC /NAC passed outs from conventional system) of the related trades subject to availability of seats in Advanced Module.   Trades of conventional system mentioned against each advanced module in the enclosed statement, could be offered admission in Advanced Module .

MODULE NO.	NAME OF THE MODULE	Admission criteria	Min Space requirement	Duration In Weeks	Qualification/ Status Of Instructor
ITAT-01	**Repair & Maintenance of Hardware of Computer & Peripherals**	Completed BBBT in Sector IT OR NTC/NAC in IT&ESM / Network Technician or any other related trade OR Diploma in IT.			
ITAT-02	**Computer Networking**	Completed BBBT in Sector IT OR NTC/NAC in IT&ESM / Mechanic Computer Hardware or any other related trade OR Diploma in IT.			
ITAT-03	Multi Media & Web page Designing	Completed BBBT in Sector IT OR NTC/NAC in IT&ESM , COPA or any other related trade OR Diploma in IT ..			

Advanced Module on

<u>Repair & Maintenance of Hardware of Computer & Peripherals</u>
<u>Duration - 24 weeks</u>

WEEK	Subject	Topic	Practical	Special Tools/Equipments / Software's
1	Introduction to Digital Electronics. Special Digital Circuits	Digital and Analog signal. Number system. Digital Gates. Basic gate structures - TTL, ECL, MOS, CMOS Comparators. A to D converters D to A converters Multiplexers/ Demultiplexers	Identifying Digital IC's and Pins. Designing Logic circuits and verifying. Design, construct and test shift registers. Designing and constructing counters. Designing and constructing Adders and Subtractors Construct and test Comparators Construct and test Multiplexes/Demultiplexers..	IC remover/pullers. Soldering Irons (10W), De soldering Pumps (Handheld). Digital Voltmeters. Digital IC LAB Boards. Logic Probes. Logic Pulsar. CRO, (Digital IC's, Solder, Hookup wires – as required) (Digital IC's, Solder, Hookup wires – as required)
2	Series and parallel data communication and standards.	Serial and Parallel Data communication. **RS 232C, RS 449, X.25, IEEE 802 and other current standards.** Packet and message switching techniques.	Testing Serial and parallel cables. Making serial cables. Making parallel cables. Crimping using crimping tools(RJ11 and RJ45)	Crimping tools for Different types/Crimping tool kit. Coaxial cable strippers (Cables and Connectors as required.)

3	Microprocessors	Evolution of Microprocessors. Architecture of 8bit,16bit Microprocessors. Microcontrollers. **Introduction to CISC and RISC processors. CISC processor, Hardware design principles of basic microcomputer systems, Memory and I/O interfacing.** Recent processors, examples of typical RISC processors.	Identifying Processor chips and handling procedure. Identifying I/O and memory chips on Microprocessor kit. Reading and loading memory locations. Assembly language programming. Interfacing to microprocessors. Microcontroller, architecture, types and applications.	8085 Microprocessor kit with at least two interface kits. 8086 Microprocessor kit with at least two interface kits. (Spare Processor, I/O and memory chips) Microcontroller kit and Interface kits.
4	Introduction to PC.	Introduction to the PC. Key Functions of a PC. Standard Input and Output devices of a PC. The System Case/Cabinet.. The Motherboard CPU/MCP Clock Memory I/O Expansion Bus	Identifying standard input/output devices of a PC. Physical handling I/O devices and ergonomics. Care to be taken while shifting PCs. Power-On and shut-down procedures. Using Dos commands.	At least four PC's of latest generation with all standard I/O and memory devices.

		Commercially available PC and Types. Popular PC Manufacturers and assemblers.		
5	Standard Ports on a PC and its specification. Device IRQ and DMA	PS2 Ports • Parallel Ports • Serial Ports • USB Ports • SCSI • Network Ports • Audio Ports • IrDA Ports • Wireless Ports • Joystick/MIDI Ports • Concept of Interface hardware. Device drivers. Interrupt Request. Direct Memory Access.	Identifying ports of a PC. Connecting and Disconnecting procedures of I/O devices to PC. Checking system configuration and specifications. Checking connectivity of devices. Identifying IRQ and DMA settings. Modifying IRQ settings. Identifying device drivers and location. Disabling/Uninstalling and enabling/installing devices.	Spare ports of all standard types.
6	Keyboards, Keyboard Interface, device driver, and setup. Mouse, Mouse Interface, device driver and setup.	Types of Keyboards. Keyboard construction and circuitry. Cleaning and maintenance of KB. Repairing keyboards. Installing and setting keyboard properties.	Install Keyboard. Set keyboard features. Cleaning keyboard. Identifying defect in keyboards. Replacing parts of keyboards. Trouble shooting defects. Installation of Mouse. Set properties of mouse. Clean Mouse.	Different types of Keyboards including wireless keyboards. Different types of Mice including wireless mouse.

		Types of Mouse. Mouse construction and circuitry. Cleaning and maintenance of Mouse. Repairing Mouse. Installing and setting Mouse properties	Identify defective Mouse. Replacing Parts of mouse. Trouble shooting defects.	
7-8	Video monitors, Interface, device driver and setup.	Types of Video Monitors. PCI and Integrated Display Interfaces. AGP Slot and Cards. Installing Video Monitor drivers. Setting Properties of Monitors. Colour management and Monitor Utilities. Radiation effect on user. Methods for reducing radiation.	Install Monitor. Use external controls for adjusting features. Set properties of Monitor. Set colour features of Monitor. Identify installation defects. Display cable connector repair/replacement. Maintenance of monitor. Measurement of radiation from monitor.	Different types of Monitors including Flat and Plasma Monitors. PCI and AGP display cards of different makes and VRAM capacity. Spare Monitor cables and connectors. Radiation measuring meter.
9-10	Printers, Printer drivers, adding printers and maintenance.	Types of Printers. Printer Interface. Installing Pinter driver. Setting Properties of Printers.	Install Printer. Setting printer properties. Repairing printer cable. Removing and replacing ribbon/toner cartridge. Running Printer tools/utility.	Dot matrix printer 80 and 132 column. Inkjet printers of at least four different makes and types. Inkjet printers of at least four different makes and types. Laser Printers of at least two different

		Printer Trouble shooting utilities and security settings.	Maintenance of printers. Refilling tape/toner.	types and makes. Heavy duty Line printer. Tape refill kit. Toner refill kit. Spare printer cables and connectors.
11	Multimedia card speakers, Microphones, Audio drivers and setup. Modems, Interface, device drivers and setup.	Types of Multimedia cards. PCI and Integrated Multimedia Interfaces. Installing Multimedia driver. Setting Properties of Multimedia devices. Sounds and Hardware settings. Game port and Game devices. Types of modems. Modem Interface. Installing modems. Setting Properties of Modems. Trouble shooting Modem	Install Multimedia card/feature. Setting Sounds and multimedia properties. Setting properties of multimedia hardware. Setting advanced playback and recording properties. Testing playback and recording features. Using third party play and record software. Trouble shooting of Ampli-speakers, Microphone and connecting cables. Installing and using gaming devices at Game port. Identification of types of modem and ports. Installation of external/Internal Modems. Installation of cable modem. Installation of ISDN, ADSL modems. Setting properties of modem	Sound cards of at least four different makes and types. Ampli-speakers of at least four different makes and types. Microphones of at least four different makes and types. Game devices of at least four different makes and types. Spare cables and connectors. Internal PCI modems at least four different makes and types. External modems of at least four different makes and types. ISDN Modem with ISDN connection. Cable modem. Wireless modem. Spares Cables and connectors.

		connectivity.	and communication. Installation and setting up wireless modems. Connecting to the internet and setting options. Repairing modem cables and crimping. Maintenance and troubleshooting of modems.	
12	Other externally connected devices, drivers and setup.	CD writers and Installation. DVD writer. Combo -drives ZIP drives and Installation. DAT Drives and Installation.	Installing CD Players and CD writers. Burning different types of CD using Writer. Installing DVD players and DVD writers. Installing Combo drive and using. Fault finding and Repairing CD and DVD. Installing ZIP drives and using. Installing DAT drives and Using.	CD/DVD drives at least four different makes and types. CD writers at least four different makes and types. DVD players at least four different makes and types. COMBO drives at least four different makes and types. ZIP drives at least four different makes and types. DAT drives at least four different makes and types. Spare cables and connectors. Third party software utilities.
13	Internal parts of a PC, specifications and precautions for disassembly.	Cabinet types and specifications. Layout of items inside a PC. Front panel to Mother board and SMPS connections. Disassembling of	Identifying parts of a cabinet, dismantling and reassembling cabinet parts. Assembling Server and industrial chassis. Assembling front panel. Adding additional Bays for drives.	Different types of PC and Server cabinets at least four different makes and types. Different types of Industrial computer cabinets at least two types. Spare 3.5 and 5.5 mounting bays. Mini Vacuum cleaner with attachments.

		components inside PC and precautions. Cleaning the components and Cabinet.	Disassembling components from PC and servers. Cleaning cabinet and components.	Special tool kit used for PC disassembly – at least four sets.
14	SMPS, types, rating and testing.	Specifications of SMPS. AT/ATX/Athelon/ Dual Xeon power supplies/1U,2U,3U power supplies/Redundant power supplies/Book PC power supplies. **Power Supply converters / Connectors/extend ers/splitters.** Testing SMPS. SMPS Circuit and Testing. Troubleshooting SMPS. Surge Arrestors. Power Conditioners.	Identify connectors and colour code. Measure voltage and check current rating. Identifying specifications and comparison of different manufacturers. Identifying components inside SMPS. Replacing Fan, connectors. Identifying faulty components, testing and replacing in each type of computer power supplies. Testing and repairing Surge arrestors/Power conditioners.	Four different types, wattage power supplies suitable for AT/ATX/Athelon/ Dual Processor/server power supplies/1U,2U,3U power supplies/Redundant power supplies/ Book PC power supplies. Power Supply converters / Connectors/extenders/s plitters. Surge Arrestors. Power Conditioners. Spare cables and connectors.
15	Components on the motherboard and identification. Motherboard specifications.	Form Factor. BIOS CMOS and Battery. Memory slots. CHIPSET	Identifying different types of motherboard form factors and specifications. Identifying components on a motherboard.	Four computers of different makes and processor based for dismantling, demonstration and Reassembly. Mother board manuals and technical

		ISA,PCI, AGP, Raisers. Processor, types, form factor, specifications. Jumpers and connectors on motherboard.	Identifying different types of buses and raisers. Identifying Processor, form factor and specifications. Identifying jumpers on the motherboard and functions. Identifying RAM slot, type, size, expandability. Identify CMOS capacity. Lithium battery.	manuals for PCs. Spare Lithium batteries.
16	BIOS and CMOS. RAM, Types and specifications.	Function of CMOS setup. Altering and setting parameters of CMOS settings. RAM technology and evolution. Form Factor. Manufacturers. Specifications. Removing and replacing & Expanding RAM.	Identifying CMOS, size, features. Carrying out CMOS setup. Identify type of BIOS, manufacturer, version and features. Upgrading Bios features. Identify RAM form factor. Identify type of RAM and capacity. Test RAM. Identify Replacement options/equivalents. Upgrade RAM.	Mother board manuals for the PCs available in the institute. RAM modules of different form factor, capacity, speed and technology suitable for PC's available.
17	Floppy Drive, installation, maintenance and minor repair. Hard Disk drives, types, specification,	FDD types and media. Maintenance and repair of FDD. HDD technology and types.	Install FDD. Repair of FDD cable and connector. Fault finding and repair of FDD. Identifying the type of HDD. Identifying specification of	Different makes of FDD at least four different types. Floppy diskettes. Tool kit for repair and maintenance. Different types, makes and capacities of HDD in IDE/ATA and SCSI.

	interface, installation, partitioning and formatting.	Types of Interface. Installation, Partitioning, Partitioning tools, formatting. Care and maintenance of HDD. Thumb/Pen drives and installation.	HDD. Maintenance of HDD. Partitioning IDE/ATA Drives, SCSI drives. Formatting IDE/ATA drives, SCSI drives. Jumper settings. Repairing HDD cables. Installing and testing Pen drives/Thumb drives.	External Hard disk drives. Third party software utilities. Flash/Thumb/Pen drives of different makes and capacities.
18	Loading Operating system and multiple operating systems. Application packages.	Operating system and functions. Types and comparison. Installing operating systems. Multiple operating systems. Repairing OS installations. Upgrading OS. Minimum hardware requirement for loading application packages. Popular window based application packages - installation. Popular Linux based application packages	Loading windows OS. Repairing OS. Upgrading OS. Loading Multiple OS. Loading patches. Working with systems files. Loading Windows office suit. Loading Linux OS. Repairing Linux. Loading Linux application packages.	Windows 98, 2000 and XP operating systems- full and legal versions. Windows MS office package. Linux OS. Linux application packages.

		– installation.	
19	CD ROM Drives, DVD drives, Combo drives, installation and minor repairs. Maintenance and repair of ZIP drives, DAT drives, JAZ drives, Optical drives.	Principle and types. Media. Installation. Maintenance and minor repairs. Other back-up medias and devices. Working principle and capacity. Installation. Maintenance and repairs.	Repair and maintenance of CD Drives. Repair and maintenance of DVD Drives. Repair and maintenance of Combo Drives. Repair and maintenance of ZIP Drives. Repair and maintenance of DAT Drives. Repair and maintenance of external JAZ Drives. Repair and maintenance of MODs.	Micro screw driver set. Motorized screw driver. Allen key set. Lens assembly with light. Spares as required. Two different types of Magneto optical disk drives.
20	Fault finding and repair of Monitors.	Opening a monitor and identifying defect. Circuit tracing and fault finding. Trouble shooting techniques.	Repair and Maintenance of different makes and types of monitors.	Four different types, makes and sizes of monitors for dismantling, demonstration and reassembly. Spares as required.
21	Fault finding and repair of Printers	Trouble shooting Dot matrix/impact printers. Trouble shooting Inkjet/DeskJet printers. Trouble shooting LaserJet Printers. Trouble shooting	Repair and Maintenance of different types of printers.	One DMP for dismantling, demonstration and reassembly. Four Inkjet/Desk jet for dismantling, demonstration and reassembly. Four LaserJet for dismantling, demonstration and reassembly. One Line printer.

		Heavy duty line printers. Toner and refilling techniques.		
22	Fault finding and repair of Scanners, Web camera, digitizers, Joysticks, etc,	Working and parts of a scanner. Trouble shooting Scanners. Working, parts and trouble shooting Web cameras. Working, parts and trouble shooting Digitizers/Trackballs. Working, parts and trouble shooting Joysticks.	Repair and maintenance of scanners. Repair and maintenance of Web Camera. Repair and maintenance of Digitizers. Repair and maintenance of Joysticks.	Four different types and makes of Scanners for dismantling, demonstration, reassembly and trouble shooting practice. Four different types and makes of WEB Camera for dismantling, demonstration, reassembly and trouble shooting practice. Digitizers and Trackballs.
23	Laptop and Notebook computers. Palm top computers.	Difference between desktop and laptop architectures. Computer. Chipset. Internal layout of components. Special cards and accessories. Upgrading and Minor repairs.	Hands on with Laptop/notebook computers. Disassembling and reassembling procedures. Replacing processor. Replacing memory. Replacing add-in cards. Fault finding and repairing/replacing battery/mains adaptor.	Two different types of Note Book computers of different type and make along with technical manual. Spare memory, Processor, cables, connectors, power pack, battery.
24	Introduction to Networking.	LAN, MAN, WAN, Intranet, terms used. Network topology.	Identification of network cable, connectors and wall outlets.	UTP 5/5e/6 cable. RJ45 connectors and Crimping tool. At least four different types of NIC cards.

| | | Network protocols. Peer – to – peer and Client –server.

Computers Virus and Antivirus | Identification of straight and cross cables, testing and making.
Installing NIC card and setting.
Loading protocols.
Establishing a peer-to-peer connection using cross/straight cables and switch.

Loading anti virus packages and terms used.
Scanning for virus, removing/recovering virus infected files.
Internet update of anti virus softwares. | |

Sl no	Equipment	Qty
	Module on Computer Networking (24 weeks)	
	Equipment list for Repair & Maintenance of Hardware of Computer & Peripherals	
Sl no	Equipment	Qty
1	Pentium system with multimedia and Combo drives, Zip drives and DAT drives. (Latest con)	15 no
2	Operating system	For each computer
3	Dot matrix printer	4 no
4	Inkjet printer	3 no
5	Laser printer	3 no
6	Antivirus software	As required
8	Tool kit	5 no
9	Spare cards and components	Five spare sets
10	Consumable	As required
11	System maintenance software	As required
12	DMM	5 no
13	Soldering iron	2 no
14	Desoldering gun	2 no
15	Temperature controlled soldering/ desoldering station	2 no
16	Computer maintenance table	15 no
17	Lab stools/chair	20
18	Student locker	4
19	Teacher table	one
20	Teacher chair	one
21	Office Almirah	Two nos
22	Book case	one
23	Vacuum cleaner	one
24	Air blower	one
25	Cables connectors etc	As required
26	Crimping tools	2 nos
27	CD Writers	5 nos.
28	DVD writer	5 Nos.
29	External HDD	5 Nos.
30	Microprocessor Trainer kit	5 Nos.
31	Micro controller Trainer kit	5 Nos.
32	Digital Circuit Experiment board	5 Nos.
33	Multimedia Projector	1 No.
34	UPS 5 KVA	2 Nos.

wEEK	SUBJECT	Topics	Practical
1	**Personal Computer Architecture - Review**	Architecture of Digital computer. Architecture of PC. PC family. Specifications of a PC. Connecting PC peripherals. Start-up procedure. Operating system features.	Identify of Controls and ports of a PC. Connect external devices to a PC. Identify system configuration and connectivity. Using operating system features. Running application packages.
2	**Input/Output devices and Driver installation**	Device interface and Drivers. IRQ and DMA. Device interfaces and Drivers. Installing Device drivers and setting. Configuring devices and testing.	Working with Device manager. Installing, uninstalling and setting I/O devices such as Keyboard, Mouse, Display, Printer, Multimedia, Modem, NIC and others.
3	**Memory devices, Types and Interface**	Types of Memory devices. Primary Memory types and specifications. Hard Disk and specifications. Partitioning and Formatting of hard disks. Working principle of CD, DAT,ZIP and Thumb drives.	Identifying Mother board memories – Replacing/upgrading RAM. Hard disk – Partitioning and formatting. Installing CD drives, DAT drives, ZIP drives, Thumb drives.
4	**Loading of Operating system and Applications/Utilities**	Operating systems. Features of Operating systems. Loading of Operating systems. Manipulating operating system setup. Applications and Utilities loading and implications on system performance.	Installing Windows Operating system(s). Installing Linux operating system. Installing Application Packages. Installing additional Utilities.

5	**Networking Concepts**	Network features. Network Topologies. Network Protocols. Network Models. Network types. Network Components.	Identify Physical Topology of a Network. Identify the members of the network. Identify the protocols installed. Identify and check resource sharing. Identify the cables and components in the network.
6	**Servers and Configurations**	Difference between PC and Server. Usage of Server. Hardware of Server. Types of Servers – functional. Types of servers – commercial. Database management and Data base servers.	Identifying Controls and Ports on servers. Identifying the Hardware of servers. Identifying the configuration of servers. Identifying the NOS and its features. Starting and shutting down servers.
7	**Network Operating systems and features**	Difference between OS and NOS. Essential features of NOS. Types of NOS.	Identifying the Configuration. Identifying and using basic features. Using Win 2000 /2003/Linux/UNIX/Novell NOS features.

8	**Network Cables and Cabling Techniques**	Networking medias. Media specifications and standards. Types of cables used. Cable preparing procedures and precautions.	Making UTP cross cables and testing. Making straight cables and testing. Making Cable layout drawing. Installing Information outlet points.
9 and 10	**Structures cabling and standards (UTP cabling/Backbone cabling/Fiber optic cabling)**	Cabling evolution. Design process. Structured cabling systems and concepts. Designing work area. Patch panels, Wall mounts and Rack mounts. Testing and Administration. Preparation of Loose tube cable. Preparation of Base and Cover assembly. Installing optical fiber connectors on loose tube cable. Cable cleaving	Prepare cable terminations. Assemble modular outlets. Install Cross-connect system. Cable identification and cross-connect wire installation. Routing multi-pair cables. Terminating connectors. Preparing optical fiber loose tubes. Cable cleaving.
11	**Common Network protocols**	Function of a Protocol and protocol family. NetBEUI UDP/FTP/TFTP TCP/IP TCP/IP Suit	Install different common protocols one by one and test communication and features.
12	**TCP/IP services**	Dynamic Host configuration Protocol. DNS name resolution NetBIOS support /SNMP TCP/IP Utilities Upper Layer services FTP	Install and check TCP/IP utilities and services.

		Alternate Network Protocols	
13	**Other Network Protocols**	Introduction to IPX/SPX AppleTalk Introduction to Apple Open Transport Introduction to IPv6	Install and check working of different network protocols.
14	**Principle Functions & uses of Network Components. (Hubs/Switches/Bridges/Routers/Gateways)**	Used of Different network components. Hubs. Bridges. Switches. Routers. Gateways. Protocols.	Identify physical connection of different networking components. Check working of Network components.
15	**Power Requirement Network**	Type of power requirement in a Network. Type of power points. Power cabling plan for UPS and Non UPS supplies. Wiring diagram. Calculating power requirement of a network.	Identify power supply of network. Calculate power requirement. Plan segment and switching arrangement. Make wiring diagram. Identify rating and number of Ups required. Plan power point positions and layout
16	**Planning a simple LAN**	Need analysis. Building wiring plan. Cabling plan. Choosing a Server specification. Choosing Topology. Choosing protocols.	Carryout need analysis and identify model. Decide on topology. Prepare network cabling plan. Prepare layout diagram Choose server hardware and NOS.

17	**Configuring Windows. Administering Windows Server (basics)**	Methods, procedure and precautions for Installing windows 2000/2003 server and client software. User accounts. Working with groups. Working with shares. Backup types, media and methods .Data/Disaster Recovery	Install windows 2000/2003 server and configure clients. Add/modify/delete user accounts. Create groups/group memberships. Create shares. Map drives. Set-up network printer. Carryout Daily / weekly Backup and recovery.
18	**Windows server services**	DHCP DNS RAS and RRAS IIS Cluster services Terminal Services	Configuring and testing windows server services.
19	**Wireless Networking.** **Network Security.**	Concept. Types. Components. Access points types (HAP,SAP) Advantages of Wireless networking. Setting up Wireless networks. LAN to LAN Wireless. Roaming Need of Network Security. Methods of securing network.	Installing Wireless LAN cards. Setting up and configuring Access point. Setting up LAN to LAN wireless network. Testing Communication. Setting up network security.
20	**Linux OS**	Comparison of Windows and Linux. Linux Operating system. Installing Linux client.	Working with Linux OS

21	**Installing Linux Server and Testing**	Installing Linux server. Creating users and rights. Resource sharing.	Installing Linux NOS. Configuring. Creating users and shares.
22	**Configuring Novell Server (basics) and Testing**	Installing Novell Netware server. Configuring server. Creating users and rights. Resource sharing. Using Novell utilities.	Installing Novell Netware. Configuring. Creating users and shares. Using utilities.
23	**Upgrading Server Components**	Upgrading RAM. Adding Hard disk Adding Back-up Drives. Installing utilities. Installing applications.	Add SCSI HDD. Add RAM Add DAT, ZIP drives. Install third party utilities. Monitor system performance.
24	**Network WAN Infrastructure**	Introduction to WAN. WAN environment and features. WAN Transmission Technologies. WAN connectivity devices. Voice over data service.	Set up a simulated WAN. Test Features. Check routing features. VISIT to an established WAN setup.

Sl no	Equipment list for Computer networking	Qty
	Advanced Module on Computer Networking	
1	Pentium system (Latest conf)	15 no
2	Client Operating system	Windows for each system.
3	Dot matrix printer	2 no
4	Inkjet printer	2 no
5	Laser printer	2 no
6	Antivirus software	As required
8	Tool kit	5 no
9	Spare cards and components	Two spare sets
10	Consumable	As required
11	System maintenance software	As required
12	DMM	5 no
13	Soldering iron	2 no
14	Desoldering gun	2 no
15	Temperature controlled soldering/ desoldering station	2 no
16	Lab table	7 no
17	Lab stools/chair	20
18	Student locker	4
19	Teacher table	one
20	Teacher chair	one
21	Office Almirah	Two nos
22	Book case	one
23	Vacuum cleaner	one
24	Air blower	one
25	Cables connectors etc	As required
28	Servers	3 nos
29	Networking os	Windows/linux/netware
30	*Switch	4
31	*Router	2
32	Modem	2
33	Rack	2
34	Patch cards	As required
35	Scanner	1 no
36	Multimedia kits spare	3 no
37	Internet connectivity (Cable/ISDN)	1 no
38	Crimping tools for network cable	2 nos
39	Consumable cables, connectors and wall mounts	As required.
40	Multimedia Projector	1 No.
41	UPS 5 KVA	2 Nos.
42	Software * Necessary Training may be given in Industry	As required

Advanced Module on "Multi Media & Web page Designing"   Duration - 24 WEEKS

WEEK	TOPIC	THEORY	PRACTICAL	SOFTWARE
1	1. Introduction to Computers.	Introduction to computers, peripherals and operating systems. Advantages of computers. Relationship between computer hardware and software. Memory storage, input and output devices.	Inter connection of I/O Devices to PC Hands on with Windows Operating System. Checking Hardware configuration of PC.	

	2. Color Management	Different composition of colors.
		
		The colors of the visual spectrum.
		
		Evidence of color theory implementation from existing graphics found in print media.
		
		Color use and implementation on the web.
			Introduction to colors –
			                    Primary and Secondary in both
			                    RGB & CMYK schemes/modes.
			Importance of each primary and secondary color.
			Proper Application of colors.
			Analyze colors applied in different print media.
			
			Visualize look and feel of a print or a web to apply colors.	

	3. Graphics/Image Data Structures	Introduction to some of the most common graphics and image file formats, and its restrictions to particular hardware/operating system platforms. Platform independent formats. Image formats and incorporation of compression technique for large storage size of Image files.	Know the difference between Vector Graphics and Raster Graphics. Know the difference between Screen Graphics and Pixel Graphics. Understand the following formats :- .ai,, .pdf, .eps, .svg, .svgz, .psd, .bmp, .gif, .jpg, .pcx, .pct, .png, .raw, .sct, .tga, .tiff, .vst.	

| 2 & 3 | Vector Graphic Illustrations | Creating Vector Graphics.

Using tools for publishing artwork on the Web & in print. | Setting up the work area.

Using the tools. Using palettes.

Drawing & editing with the pencil tools.

Smoothing the path with smooth tool.

Drawing with the Paint tool.

Drawing curve segments.

Using the reshape tool.

Drawing & editing brushed paths.

Managing brushes.

Creating brushes.

Creating a pattern brush.

Using the brush libraries.

Using rulers, guides & grids.

Using the selection tools.

Moving, copying and deleting objects.

Grouping & ungrouping objects.

Transforming selected objects.

Distorting with free transform tool.

Punking & Bloating. Creating blends.

Using the pathfinder palette.

Working with clipping masks.

Changing vector Graphics into Bitmap images.

Linking objects to URLS for Internet packages. | Adobe Illustrator |

| 4, 5 & 6 | Professional Image Editing | In depth Image editing.

Exploring new creative options and producing high quality images for print & web.

Creating exceptional imagery with easier access to file.

streamlined web design.

Photo re-touching, colorful image collages, artistic backgrounds.

Creation of the optimized images with roll over effects and image mapping.

Special effects on images using Layer masking and Vector masking. | Working with Images in Photoshop.

Working with Palettes, i.e., layers palette, navigator palette, info palette, color palette, Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette.

Working with Layers.

Photo editing.

Image adjustment options – Labels, Auto labels, Auto contrasts, Curves, Color balance, Brightness / Contrast, Posterize , Variations.

Preparing the file and work area.

Creating different shapes.

Creating three Dimensional effects using Layers.

Working with the magic wand tool and lasso tool.

Creating images using Symbol Sprayer Tool.

Edit the images using options of Warp Tool.

Using Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool.

Editing Selections.

Creating images and giving special effects using Filters.

Using Layer Styles.

Produce an image by mixing two or more different images using Layer Masking & Vector Masking. | Adobe Photoshop |

| 9&11 | Creating & Managing Websites. | Creating professional websites.

Working in a single environment to quickly create, build and manage websites.

Learn to use usual layout tools with enhanced functionality and the visual design approach.

Experience the rapid web application development process.

Utilize extensive code editing support.

Implementing Database connectivity using different ODBC Drivers. | Planning your site & site structure.

Site navigation,

using Template and Library.

Exploring Dream Weaver, Working with different tools & panels.

Launcher and Additional Panel Groups.

Creating and editing HTML documents. Setting Page properties.

Adding Text and formatting, changing the color of texts, aligning Text and elements.

Creating list, working with images, resizing images.

Working with Tables, setting Table properties, resizing tables and cells, nesting tables.

Linking and navigation.

Creating an e-mail link. Associating remote server with a local site. Putting files on a remote server.

Getting files from a remote server. | Macromedia Dream Weaver & Macromedia Ultradev. |

12to15	Developing Animated Web Content & Applications.	Creating internet content and applications. Video, multimedia and application development features. Creating user interfaces, online advertising, e-learning solutions and enterprise application front ends. Creating 2D animated cartoons and interactive presentations. Add sound clips and embed video into applications and websites.	About Flash and General overview – Stage and Work area of Flash, using guides, grid & rulers. Using frames and key frames, Working with time line. Using layers – to create a layer, to create a layer folder, to show or hide a layer or folder, to view the contents of the layer as outlines, to change the layer height in the timeline, to change the order of the layers or folders. Using Guide layers. Drawing in Flash – to raw with a pencil tool, to paint with a brush tool, to draw with pen tool. Using colors in Flash, to use a gradient fill. Importing Artwork, Video and Audio. Different file formats in Video & Audio. Flash Compatible Audio & Video file formats	Macromedia Flash 5 or Macromedia Flash MX Or Macromedia Flash 2004 Professional
15	Media Rich Website Development.	Create media rich web sites, include audio, video, animations on web site, extensive format and standards support, seamless integration. Create, optimize, and export interactive graphics in a single, web-centric environment.	Editing Websites and animations on websites. Interaction with graphics	Macromedia Fireworks

| 16 | Professional Digital Audio Editing | Sound recording basics, various formats of sound files, converting analog audio to digital audio.

Digital audio editors that include powerful audio processing tools, effects for recording and manipulating audio.

Edit files nondestructively down to the sample level with extreme speed and accuracy. | Sound Recording in different channels – Mono-stereo.

Sound editing and giving special effects.

Using various formats of sound files.

Conversion of analog audio to digital audio.

Frequency management.

Distorting recorded audio using Effects. | Sound Forge |

| 17 to 24 | 3D modeling and animation. | Introduction to the concept of 3D.

Orthographic and Perspective views.

Creating basic objects in 3D.

Introduction to command panel.

Working with "Properties" of 3D objects.

Editing 3D objects using modifiers.

Elements of View Port controller.

Creating objects with Standard Primitives and Extended Primitives.

Creating objects using "Shapes" panel.

Re-shaping of objects using Compound Objects like Boolean, Terrain and Loft.

Creating symmetrical objects using Lathe option.

Simple Animation of basic objects.

Introduction to Particle Systems.

Low Polygon Modeling.

Creating complex objects using NURBS (Non-Uniform Rational B-Splines)

Introduction to Dynamic Objects. | Interface with 3DS max 5/6. Getting acquainted with the arrangement of different Tool Bars, Panels, Tools and View Ports.

Visualizing and drawing simple objects in terms of Top View, Front View and Side View.

Create simple objects.

Moving, Rotating and Scaling objects.

Change dimensions of objects using modifiers.

Importance of the View Port Controller in creating, editing and viewing the object.

Creating different objects using Standard Primitives and Extended Primitives.

Making shapes renderable and creating splines.

Manipulate the shape of the model using Compound Objects.

Application of Lathe Option for creating symmetrical objects.

Apply animation to the models created so far.

Modeling of real world objects through LPM using Editable Mesh and Editable Poly.

Convert a model to an editable mesh and working with Extrude and Bevel options. | 3DS max 5

or

3DS max 6 |

		i.e. Damper and Springs.	Create complex objects using NURBS.	
		Working with Lights and Camera.	Create objects using Damper and Springs.	
		Path animation using Motion Command.	Applying lights to the objects – Omni Light, Target Light and Free Light.	
		Uses of Atmospheric Apparatus.		
			Create a scene by placing a camera to the object.	
		Introduction to the Space Warps and different elements of it.		
			Create simple movies using Motion Command and movie controller.	
		Materials and different categories.		
			Create scenes using Atmospheric Apparatus.	
		Assigning Materials to the objects.		
			Create animated scenes using the elements of Space Warps.	
		Customizing Materials.		
		Rendering scenes and creating .avi files.	Turn on the material editor and see the options available.	
		Applying Environment Maps and sounds to the scenes and rendered movies.	Selecting the material from the editor and assigning to the object.	
		Introduction to Inverse Kinematics, working with bones.	Create user defined materials using slots.	
		Importance of Utilities.	Create a movie i.e. avi file by rendering the scene.	
			Work with environment maps and applying sounds to the movies.	
			Create scenes(non-renderable) using bones.	
			Work with utilities.	

Equipment list for <u>Advanced Module on "Multi Media & Web page Designing"</u>

Sl no	Equipment	Qty
1	Pentium system (Latest con) with mm kits with TV tuner/capture cards.	15 no
2	Operating system	For each computer.
4	Inkjet printer 132 col	1 no
5	Laser printer	2 no
6	Antivirus software	As required
7	Maintenance Tool kit	1 no
8	Consumable	As required
9	Computer tables	15 no
10	Lab stools/chair	20
11	Student locker	For 20 students
12	Teacher table	one
13	Teacher chair	one
14	Office Almirah	Two nos
15	Book case	one
16	Vacuum cleaner	one
17	Air blower	one
18	Cables connectors etc	As required
19	Internet connectivity(Broadband Cable/ISDN)	one
20	Digital still camera	2 no
21	Digital Video camera	2 no
22	Analogue Video camera	1 no
23	C compiler	As required
24	C++ Compiler	As required
25	Front page	do
26	Multimedia software--	
27	Adobe MM suite	As required
28	Maromedia Dreamveaver	"
29	Macromedia Ultradev	"
30	Macromedia flash	"
31	Macromedia firework	"
32	Soundforge	"
33	3D max	"
34	Consumable memory media	As required
35	DVD player	2 Nos.
36	Microphones	2 Nos.
37	Multimedia Projector	1 No.
38	UPS 5 KVA	2 Nos.