GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

INFORMATION TECHNOLOGY

(Duration: Two Years)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 5

SECTOR – IT& ITES

Directorate General of Training

INFORMATION TECHNOLOGY

(Engineering Trade)

(Revised in 2019)

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CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 5

Developed By

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1. COURSE INFORMATION

During the two-year duration of Information Technology trade a candidate is trained on professional skill, professional knowledge, and Engineering Drawing, Workshop Calculation & Science and Employability skill related to job role. In addition to this a candidate is entrusted to undertake project work and extracurricular activities to build up confidence. The broad components covered under Professional Skill subject are as below:-

FIRST YEAR: In this year the trainee learns about safety and environment, use of fire extinguishers and various safety measures involved in the industry. He gets the idea of trade tools. Gain basic knowledge of Electrical and Electronic components related to Computer and Networking system. They learn about assembling and servicing of Desktop computer and all its hardware components. Trainees are able to install Operating system and all others application software. They also learn to set up and configuring Networking System using various network devices.

The trainee learns to work on MS office package (word, excel, power point, outlook). They learn to design graphics using Adobe Page maker, Corel draw and Adobe Photoshop. Trainees are able to create email account, chat and browse through internet and Microsoft Outlook Express. They learn to design and develop web pages using HTML. They perform create and record various formats of multimedia audio and video files using digital audio and video editor tools. Trainees are able to create customized database files using Microsoft Access and Visual Basic.

SECOND YEAR: In this year the trainee learns Installing UNIX / LINUX operating system and Adding new users, software, material components, Identification of laptop sections and connectors. Assembling and disassembling a Laptop, troubleshooting Latest Tools & Gadgets for Desktop/Laptop Repairs. They learn to install and use different types of printer, Laser printer, Scanner & MFD Scanner. Trainees are able to install and configuration Monitor, display card and driver, front panel controls and settings, Practice on Backup Drives, Maintenance and Troubleshooting of PC. They can also assemble & disassemble of Tablet / Smart Devices. Trainees are able to configure Data communication equipments, Network Protection and troubleshooting, Server Installation, managing Server Network Security, Linux Server installation and configuration, Network Security.

The trainee learns about image editing and graphic design using Adobe Illustrator and Flash, video and audio editing using Adobe Premier. They learns to create graphics animation using Adobe after Effects and 3Ds Max. They learn to design webpage using Front Page, also use HTML and PHP embedding VBScript, JavaScript and publish in a local server. Trainees are also learn to use Dreamweaver and also on practice on Open Source Tools for Web Designing and Information Security Vulnerabilities.

2. TRAINING SYSTEM

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer schemes of DGT for strengthening vocational training.

Information Technology under Craftsman Training Scheme is delivered nationwide through network of ITIs. The course is of two-year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) impart professional skills and knowledge, while Core area (Workshop Calculation & science, Engineering Drawing and Employability Skills) impart requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainees broadly need to demonstrate that they are able to:

- Read and interpret technical parameters/ documents, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge & employability skills while performing jobs.
- Document the technical parameters related to the task undertaken.

2.2 PROGRESSION PATHWAYS

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise up to the level of Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programme in different types of industries leading to a National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Can join advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of two-years: -

S No.	Course Element	Notional Training Hours	
		1st Year	2nd Year
1	Professional Skill (Trade Practical)	1000	1000
2	Professional Knowledge (Trade Theory)	280	360
3	Workshop Calculation & Science	80	80
4	Engineering Drawing	80	80
5	Employability Skills	160	80
	Total	1600	1600

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • 60-70% accuracy achieved while undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should	• Good skill levels in the use of hand tools,

produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	machine tools and workshop equipment. • 70-80% accuracy achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
(c) Weightage in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels in the use of hand tools, machine tools and workshop equipment. • Above 80% accuracy achieved while undertaking different work with those demanded by the component/job. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

3. JOB ROLE

Junior Software Developer; is one of the many entry level roles in the software industry including support and help desk, testing, user interaction design, maintenance, enhancement, development and documentation. They are responsible for assisting in performing the key activities and tasks involved in the assigned role.

Programming Assistant/Junior Software Engineer; installs, maintains and updates computer programs by making minor changes and adjustments to them under the guidance of computing professionals. Maintains and updates documents of computer programs and installations. Applies knowledge of principles and practices in the area of programming and computing in order to identify and solve problems arising in the course of their work. They may receive guidance from managers or professionals. May supervise other workers also.

Domestic IT Helpdesk Attendant; is mainly responsible for the smooth running of computer systems and ensuring users get maximum benefits from them. Individual tasks vary depending on the size and structure of the organization, but may include installing and configuring computer hardware operating systems and applications; monitoring and maintaining computer systems and networks; talking staff/clients through a series of actions, either face to face or over the telephone to help set up systems or resolve issues; troubleshooting system and network problems and diagnosing and solving hardware/software faults etc.

Web Developer; is responsible for designing and maintaining web-based applications that include static and dynamic content. This includes the design, layout and coding of a website. They may work standalone or along with application/functional developers as part of the overall solution that includes a web based component.

Media Developer-Application Development; is responsible for designing and improving the look and feel, functionality and graphics appeal of the developed application. They may work standalone or along with application/functional developers to improve the aesthetics of the application being developed.

Data Communication Analyst/Network Administrator; researches, tests, evaluates, and recommends data communications hardware and software: Identifies areas of operation which need upgraded equipment, such as modems, fibre optic cables and telephone wires. Conducts survey to determine user needs. Reads technical manuals and brochures to determine equipment which meets establishment requirements. Visits vendors to learn about available products or services. Tests and evaluates hardware and software to determine efficiency, reliability, and compatibility with existing system, using equipment such as computer terminal

and modem. Analyses test data and recommends hardware or software for purchase. Develops and writes procedures for installation, use, and solving problems of communications hardware and software. Monitors system performance. Trains users in use of equipment. Assists users to identify and solve data communication problems. May write technical specifications to send to vendors for bid. May oversee or assist in the installation of communications hardware. May perform minor equipment repairs.

Reference NCO-2015:

(i) 2512.0205 - Junior Software Developer
(ii) 3514.0300 - Programming Assistant/Junior Software Engineer
(iii) 3512.0101 - Domestic IT Helpdesk Attendant
(iv) 2513.0101 - Web Developer
(v) 2513.0302 - Media Developer-Application Development
(vi) 2523.0100 - Data Communication Analyst/Network Administrator

4. GENERAL INFORMATION

Name of the Trade	**INFORMATION TECHNOLOGY**
Trade Code	DGT/1054
NCO - 2015	2512.0205, 3514.0300, 3512.0101, 2513.0101, 2513.0302, 2523.0100
NSQF Level	Level 5
Duration of Craftsmen Training	Two Years (3200 Hours)
Entry Qualification	Passed 10th class examination with Science and Mathematics or its equivalent.
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, LV, AA, LV
Unit Strength	24 (There is no separate provision of supernumerary seats)
Space Norms	70 Sq. m
Power Norms	3.45 KW
Instructors Qualification for	
(i) Information Technology Trade	B.Voc/Degree in Engineering/ Technology in Computer Science / IT from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. **OR** Computer Science /Computer Application / IT OR NIELIT "B" Level from AICTE/UGC recognised university with one year experience in the relevant field. **OR** Bachelor in Computer Science / Computer Application / IT OR PGDCA OR NIELIT "A" Level from AICTE/UGC recognised university with Two years experience in the relevant field. **OR** 03 years Diploma from recognized Board/ Institution in Computer Science / IT from AICTE/recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. **OR** NTC/ NAC passed in the trade of IT/ICTSM with three years experience in the relevant field. **Essential Qualification:** Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.

	Note: - Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.
(ii) Workshop Calculation & Science	B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. **OR** 03 years Diploma in Engineering from AICTE / recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. OR NTC/ NAC in any one of the engineering trades with three years' experience. **<u>Essential Qualification:</u>** National Craft Instructor Certificate (NCIC) in relevant trade **OR** NCIC in RoDA or any of its variants under DGT
(iii) Engineering Drawing	B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. **OR** 03 years Diploma in Engineering from AICTE / recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. **OR** NTC/ NAC in any one of the Electrical groups (Gr-II) trades categorized under Engg. Drawing'/ D'man Mechanical / D'man Civil' with three years' experience. **<u>Essential Qualification:</u>** National Craft Instructor Certificate (NCIC) in relevant trade **OR** NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT.
(iv) Employability Skill	MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills from DGT institutes. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)

	OR Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills from DGT institutes.
(v) Minimum Age for Instructor	21 Years
List of Tools & Equipment	As per Annexure-I

Distribution of training on Hourly basis: (Indicative only)

Year	Total Hrs /week	Trade Practical	Trade Theory	Workshop Cal. & Sc.	Engg. Drawing	Employability Skills
1st	40 Hours	25 Hours	7 Hours	2 Hours	2 Hours	4 Hours
2nd	40 Hours	25 Hours	9 Hours	2 Hours	2 Hours	2 Hours

5. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 LEARNING OUTCOME (TRADE SPECIFIC)

FIRST YEAR

1. Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions.
2. Installation and practice with Operating System and all other application software.
3. Assembling and servicing of Desktop Computer with all its hardware components.
4. Setting up and configuring Networking System using various network devices.
5. Sharing and controlling resource and connection through network.
6. Perform the operations of MS Office package (word, excel, power point, outlook).
7. Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop.
8. Create email account, chat and browse through internet and Microsoft Outlook Express.
9. Design and develop web pages using HTML.
10. Create and record various formats of multimedia audio and video files using digital audio and video editor tools.
11. Create customized database files using Microsoft Access and Visual Basic.

SECOND YEAR

12. Install and practice LINUX operating system.
13. Assembling, troubleshooting all the hardware components of Laptop, Tablet/ Smart Devices.
14. Installation of Printer, Scanner and troubleshoot their faults.
15. Servicing and upgrading Desktop Computer with all its hardware components.
16. Perform Network Configuration, troubleshooting and Network Security.
17. Install and configure Windows Server and Linux server.
18. Configuration and managing Network server.
19. Image editing and graphic design using Adobe Illustrator and Flash.
20. Editing Video and Audio using Adobe Premier.
21. Creation of Graphics Animation using Adobe after Effects and 3Ds Max.
22. Designing Webpage using Front Page application.
23. Designing Webpage in HTML and PHP embedding VBScript, JavaScript.
24. Install and Configure MySQL.
25. Create and publish Web pages in Local web server.
26. Designing Website using Dreamweaver application and open source software.
27. Configure and secure network against threat, vulnerability and risk for information security.

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
FIRST YEAR	
1. Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions.	Measure DC voltage of a given battery-pack.
	Practice Domestic wiring using different components of wiring.
	Measure effective value of resistors in series, parallel and series-parallel.
	Solder a given circuit (consisting of resistors and semiconductor diodes on a lug board.
	Measure capacitance using LCR meter.
	Testing a step-down transformer and finding transformation ratio.
	Refer to Diode handbook to get a diode for a given application and rating.
	Construct and test a Full wave rectifier.
	Find a required transistor referring to Transistor data book.
	Testing amplification of different configurations using pre wired kits.
	Test harmonic oscillators using pre wired circuits.
	Construct and test relaxation oscillators using pre wired circuit.
	Construct and test a Thyristor based power supply.
	Construct and test an IC variable output Voltage regulator.
	Test Dry cells. Identify of different types and sizes of button cells. Test button cells.
	Charge batteries. Connect batteries with UPS and test.
	Verify the truth table of NOT, AND, OR, NAND and NOR gates.
	Construct a logic circuit using basic gates for a given output logic.
	Construct a 1's compliment & 2's compliment circuit and verify.
2. Installation and practice with Operating System and all other application software.	Identify the external I/O and memory devices connected to the PC.
	Disconnect the external I/O and memory devices connected to the PC.
	Practice windows operating system.
	Identify system specifications. Use device manager to check status of installed devices. Identify and record IRQ. Make a start-up/emergency diskette.

3. Assembling and servicing of Desktop Computer with all its hardware components.	Remove SMPS from cabinet, test SMPS for good working condition and refit to cabinet.
	Identify the components of a motherboard.
	Remove, identify and refit RAM, Processor.
	Assemble PC given all components. Check for working.
	Load maintenance utilities to check system performance.
4. Setting up and configuring Networking System using various network devices.	Identify different types of cables used for networking.
	Identify the protocols installed in an existing LAN setup.
	Make UTP cross cable and testing using continuity tester.
	Establish connection between two computers using a cross cable.
	Make a UTP straight patch cord and testing using continuity tester.
	Configure a router Add/ Delete entry in configuration task.
	Set IP address and subnet mask. Establish connection.
5. Sharing and controlling resource and connection through network.	Share resources in LAN.
	Fault find and troubleshoot network problems.
	Create users, allocate rights and testing. Implement security in LAN.
	Use Linux commands. Install and uninstall devices using Linux command.
6. Perform the operations of MS Office package (word, excel, power point, outlook).	Opening, edit and save/ "save as" documents.
	Add Bullets and numbering.
	Work with Microsoft Excel for creating worksheets with Graphs and Visuals.
	Work with Microsoft Powerpoint for creating multimedia presentations.
	Customize quick e-mail, calendar, and tasks.
	Create and store personal distribution lists along with contacts in your Contacts folder.
7. Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop.	Create Pamphlets.
	Work with reports.
	Create long book works.
	Work with Corel draw.
	Practice use of palettes. Draw & edit with the pencil tools.
	Practice transforming selected objects.
	Practice using the pathfinder palette.

	Practice changing vector Graphics into Bitmap images.
8. Create email account, chat and browse through internet and Microsoft Outlook Express.	Send Email with attachment.
	Use Telnet to get connected to remote computer.
	Using features of OUTLOOK Express for sending and receiving Emails.
	Setup internet connection using ISP.
9. Design and develop web pages using HTML.	Develop Web pages using Forms (2 pages, 3 pages, Multi pages).
	Set different colors to different Headings. Change paragraph font size and color using styles.
	Register free website and upload pages.
10. Create and record various formats of multimedia audio and video files using digital audio and video editor tools.	Practice sound editing and giving special effects. Use various formats of sound files.
	Practice distorting recorded audio using Effects.
	Create different objects, using Standard Primitives and Extended Primitives.
	Practice application of Lathe Option for creating symmetrical objects.
	Practice modelling 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.
11. Create customized database files using Microsoft Access and Visual Basic.	Opening an existing and creating a new database with MS-ACCESS.
	Creating table in Data sheet and design view.
	Develop customized form for data entry.
	Generate reports for required output.
	Setting relationship between tables and queries or both.
	Create a simple application using Access and VB for a given specification.
	Database back up and retrieval in Access.
SECOND YEAR	
12. Install and practice LINUX operating system.	Installing UNIX / LINUX.
	Adding new users, software, material components.
	Making back-up copies of the index and files and index.
13. Assembling,	Assembling and disassembling a Laptop.

troubleshooting all the hardware components of Laptop, Tablet/ Smart Devices.	Upgrading RAM, HDD and other parts.
	Flashing of various brands of tablets / smart devices.
	Working with iOS, Android, Icecream sandwich, Jellybeans.
14. Installation of Printer, Scanner and troubleshoot their faults.	Installing a printer and carrying self- test.
	Replacement of toner cartridge of laser printers.
	Tracing the control board circuit and identifying defective components. Servicing of control board of laser printers.
	Scanner - Installation, configuration, using Automatic Document Feeder (ADF), OCR.
	Multifunction Printer - Installation, Replacing supplies and spares, troubleshooting.
15. Servicing and upgrading Desktop Computer with all its hardware components.	Replace the display driver card and re-install. (before practicing this skill set, the already installed driver should be removed from device manager).
	Servicing of monitors, changing fuses, adjusting colors, brightness and contrast. Setting resolution, loading drivers. Checking and replacing components on the PCB.
	Upgrade Mother board, Memory, CPU, Graphic Card, BIOS, Additional features.
	Pen Drive U3 format, USB External Drive (HDD, CD/DVD writer), Types, capacity, interface connector, write protection, Trouble Shooting, Interface.
	Running diagnostics program to identify the health and defects of a PC. Check system performance using third party utilities. Use benchmarking utilities to benchmark systems.
	Trouble shooting defects related to Mouse and its related ports loose connections, replacing cable, replacing roller and sensing elements. (COM, PS/2,USB).
	Trouble shooting defects related to RAM memory modules.
16. Perform Network Configuration, troubleshooting and Network Security.	Connecting computers with Network with Drop cable and using Wi-Fi configuration.
	IP Routing Process Verifying Configuration.
	Setting up basic protection using public keys and MAC address filters.
	Connect Power over Ethernet(PoE) in network.

	Practice on firewall technologies to secure the network perimeter.
	Wi-Fi configuration to implement security considerations.
17. Install and configure Windows Server and Linux server.	Install and configure Windows Server.
	Install and Configure Active Directory.
	Implementing Backup and Recovery.
	Install Linux Server.
	Create new user and group.
18. Configuration and managing Network server.	Installing and Configuring DNS Services.
	DHCP Server Configuration, Setting up of DHCP.
	VPN implementation.
	Managing TCP/IP Routing.
	Implement User Authentication Strategy.
	Configuring User Environment.
	Monitoring and Troubleshoot Network protocol.
	Configuring Protocol Security.
19. Image editing and graphic design using Adobe Illustrator and Flash.	Using the basic selection tools, magic Wand and the Lasso tool, selecting objects by attribute, saving and reusing selections.
	Modifying graphic styles: appearance palette settings, copying appearance.
	Transformation and Positioning: Rotating and scaling objects, reflecting and skewing objects, using the free Transform panel, Aligning objects.
	Applying Filters and Live Effects: Minding your resolution settings, Mapping artwork to 3Dobjects, using the Transform effect.
	Practice on Creating and Importing Graphics Assets, Working with different graphic.
	Practice on Creation of Animations - Working with the timeline, using key frames, blanks key frames and frames, Creating motion tweens, Creating shape tweens, creating transition effects, using animation best practices.
20. Editing Video and Audio using Adobe Premier.	Managing Clips: The Project panel, Views, The preview area, Organizing clips and bins, Duplicating and copying clips, Renaming clips, Finding clips(search function), Interpreting Footage, Unlinking and Re-linking Media, The Project Manager.

	Creating a Sequence Editing Methods, In And Out Points, Sub Clips, Source And Target Tracks, Overlay And Insert Edits, Adding Clips By Dragging, 3 And 4 Point Edits, Lift And Extract, Storyboard Editing, Multiple And Nested Sequences.
	Practice with Transitions: The Effects Panel, Understanding Transitions, Applying A Transitions, Editing A Transitions.
	Practice with Titles: Creating a title Text paths, Roll and crawl titles, Text configuration.
21. Creation of Graphics Animation using Adobe after Effects and 3Ds Max.	Practice on User interface.
	Create the arrivals Bound Effects.
	Practice on Animate 3D transformations.
	Rotoscoping, Chroma, 2D & 3D tracing, Green/ Blue screen technique/ shooting. Colour Correction.
	Practice on Transform tool basics, Pivot points, Grouping and parenting, Modelling with primitives.
	Practice on User Interface - Setting up project, Views/panels, Hotbox, Viewing Geometry, Channel Box, Layer Box, Attributes Editor, QWERTY Navigation.
	Practice on Hyper shade, Materials, Apply Materials, Making Shader Networks, Combining Ramps, Layered Textures, Intro to lights, Making Bump Maps.
22. Designing Webpage using Front Page application.	Creating Background Pictures Creating Tables - Adding and Deleting Rows, Columns, and Cells Background Colors.
	Practicing Hyperlinks - To 'Outside' /External Sites, Internal Link, Bookmark, Email Addresses, Rollover Styles, Target Frames.
	Practice on Sample Forms Page, Date and Time Stamp, Counter, Page Transitions, Changing your Password.
	Practice on - Themes, Banners, Buttons, Headings, Hyperlinks/ Bullets /HorizontalLines, Navigation Bars.
23. Designing Webpage in HTML and PHP embedding VBScript, JavaScript.	Practice on Embedding VBScript in HTML, VBScript to Display Information, Hiding VBScript from Older Browsers, Code Documentation & Formatting, Declaring Variables, Naming Variables, Variants & Subtypes, Assigning Values to Variables, Determining Variant Subtype, Data Subtype Conversion, Numeric & Literal Constants.

	The Document Object Model (DOM) -Properties, Methods, Events &Collections, Event Handlers -Top-Down & Event-Driven Programming, Mouse Events, Keyboard Events, Validation & Error Handling. Platform or Host dependence.
	Practice using Java Script in an HTML Document, Hiding Java Script from old Web Browsers.
	Basic Syntax Used in Java Script Commands, Variables - Assigning Values to Variables, Concatenating String Variables.
	Installation of Apache Web Server Practice simple PHP programs. Practicing on programming to test events.
	Practicing the Writing to the browser, Getting input from forms, Output buffering, Session handling, Regular expression, Common math, Random numbers, File upload, File download, Environment variables.
	Practice on Creating and deleting a file, Reading and writing text files, Working with directories in PHP, Checking for existence of file, Determining file size, Opening a file for writing, reading, or appending, Writing Data to the file Reading characters.
	Working with Classes And Objects -Creating an object, Object properties, Object methods, Object constructors and destructors, Class constants Class inheritance, Abstract classes and methods, Object serialization, Checking for class and method, existence, Exceptions, Iterators.
24. Install and Configure MySQL.	Installation of MySQL.
	Practice on MySQL syntac and creating database design.
	Importing and exporting formats.
	Practice on Database repair and archival.
25. Create and publish web pages in Local web server.	Create a Web page using HTML, CSS, VB Script and Java Script. By installing and configuring IIS convert your windows PC into web server.
	Install any open source web server like Apache / Wamp. Publish / Host website in the local web server.
26. Designing Website using Dreamweaver application and open source	Create Web sites with hyperlinks and graphic images.
	Use page layout tools such as tables, frames, and layouts.
	Incorporate Dreamweaver with related software such as Macromedia Fireworks and Flash.

software.	Incorporate Dreamweaver with related PHP, VBScript, JavaScript, MySQL etc.
	WYSIWYG web page editor - KompoZer, source code editor - Notepad++, plugin for Firefox - Firebug, highly stable and feature rich web development environment - Quanta Plus.
	Work with graphics application - Krita, vector graphics editor – Inkscape.
27. Configure and secure network against threat, vulnerability and risk for information security.	Demonstrate Video show on Information Security.
	Demonstrate Video show on Security Threats.
	Observe using Video show on Security Vulnerabilities.
	Demonstrate Video show on Risk Management

SYLLABUS FOR INFORMATION TECHNOLOGY TRADE			
FIRST YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional Knowledge (Trade Theory)**
Professional Skill 275 Hrs; Professional Knowledge 77 Hrs	Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions.	1. Practice of safety while lifting and shifting fragile and heavy equipments. (5 hrs) 2. Check earthing and identify the type of earthing. (5 hrs) 3. Practice electrical safety while connecting, switching-on and switching-off of heavy electrical outlet points. (5 hrs) 4. Practice first aid in case of physical injury. (5 hrs) 5. Practice first aid in case of electrical hazard. (5 hrs)	• Safety of working personal and equipment. • Safety while lifting and shifting of fragile and heavy equipments. • Safety precautions. • Earthing, need and importance of Earthing, Types of earthing, Electrical safety. • Electrical safety precautions. First aid in case of physical injury. • First aid in case of Electrical hazard (07 hrs)
		6. Identify AC & DC voltmeters/ Multi meters. (2 hrs) 7. Measure DC voltage of a given battery-pack. (2 hrs) 8. Measure mains AC voltage. (2 hrs) 9. Identify different types of wires used for interconnections (Sing lest and multi strand, twisted pair) (2 hrs) 10. Test wires and cables. (3 hrs) 11. Wiring harness. And Skin wire ends and tinning. (3 hrs) 12. Terminate wire ends with	• Electricity, Potential difference, AC &DC voltage, Current, Waveform. • Measuring devices (meter). • Conductors, Insulators and semiconductors, examples and applications. • Domestic electrical wiring – requirements. • Testing continuity of wires. Skinning and tinning of wires and cable ends. (07 hrs)

		lugs and connectors.(3 hrs) 13. Crimping practice with RJ connectors. (4 hrs) 14. Practice Domestic wiring using different components of wiring. (4 hrs)	
		15. Identify different types of resistors. (2 hrs) 16. Find value of resistors and its tolerance using colour code. (2 hrs) 17. Measure resistance-using multi meter. (2 hrs) 18. Measure effective value of resistors in series, parallel and series-parallel. (2 hrs) 19. Measure branch currents and node voltages of a series-parallel circuit (Kirchoff's law). (2 hrs) 20. Solder single strand wires on to Lug board.(2 hrs) 21. Solder single and multiple solder joints. (2 hrs) 22. Solder Resistors on to a lug board. Solder Semiconductor device on to a lug board.(2 hrs) 23. Solder a given circuit (consisting of resistors and semiconductor diodes on a lug board. (4 hrs) 24. Solder a resistor, a semiconductor device and an IC on lug board.(3 hrs) 25. Practice de-soldering of above soldered components. (2 hrs)	• Resistors, types, specifications, applications, identification using colour code, Resistors in series, parallel and series parallel. • Ohms law and its application. • KCL & KVL Solder joint. • Soldering requirement &practice, Common soldering defects. • De soldering - Precautions & practice. • Application of PCB's. Types of PCBs, specifications. List some Connectors used with PCB.(07 hrs)
		26. Capacitor – measuring the	• Capacitor, types,

		value, colour code. (3 hrs) 27. Measure capacitance using LCR meter.(3 hrs) 28. Identify of different types of inductors.(3 hrs) 29. Measure inductance using LCR meter. (3 hrs) 30. Test a step-up transformer and finding transformation ratio.(4 hrs) 31. Testing a step-down transformer and finding transformation ratio.(4 hrs) 32. Construct Electro-magnetic effect using Electric Bell, Solenoid. (5 hrs)	specification, capacitors in series and parallel – applications • Magnetism. Faradays Laws. • Inductance, Inductor-types, specifications, applications. • Measurement of inductance, Inductance in series and parallel. Inductive reactance. Self & mutual Inductance - properties, applications. • Transformer, principle, construction, types, rating and applications. • Testing a given transformer. (07 hrs)
		33. Identify different types of rectifiers and terminals. (3 hrs) 34. Refer to Diode handbook to get a diode for a given application and rating. (3 hrs) 35. Testing a given diode. (3 hrs) 36. Construct and test a Half wave rectifier. (3 hrs) 37. Construct and test a Full wave rectifier. (4 hrs) 38. Construct and test a Bridge rectifier. (4 hrs) 39. Test LED's. Use LED as output indicator in DC power supplies. (5 hrs)	• Semiconductor device. Rectifier diodes, types, specifications and applications. • Half wave rectifier, construction, working, output voltage, current rating and output ripple. Efficiency, limitations, applications. • Full wave rectifier, construction, working, output voltage, current rating and output ripple. Efficiency, limitations, applications. • Bridge rectifier, construction, working, output voltage, current rating, output ripple. Efficiency, limitations,

			applications. • LED's, types, specification and applications. Using LED as indicator lamps. (07 hrs)
		40. Identify different types and packages of transistors. (3 hrs) 41. Identify transistors leads/ terminals. (3 hrs) 42. Testing of transistors.(4 hrs) 43. Find a required transistor referring to Transistor data book. (5 hrs) 44. Testing amplification of different configurations using pre wired kits. (5 hrs) 45. Test cascaded amplifiers using pre wired kits. (5 hrs)	• Principle of working of a transistor. PNP and NPN transistors. Specification of transistors. • Identification of transistors, terminals. Referring to Data book for selecting a transistor. Biasing of transistors -types, advantages, and applications. • Types of amplifiers, working and applications. Cascaded amplifiers, types and applications. (07 hrs)
		46. Familiarization and using CRO & function generator. (10 hrs) 47. Test harmonic oscillators using pre wired circuits. (5 hrs) 48. Construct and test relaxation oscillators using pre wired circuit. (5 hrs) 49. Measure parameters of Pulses using oscilloscope. (5 hrs)	• Oscillators, types, Harmonic-LC, RC, Crystal and relaxation-UJT. • Pulse, pulse parameters, implications. Pulse circuits, multi vibrators, applications. (07 hrs)
		50. Construct and test a Thyristor based power supply. (3 hrs) 51. Testing op-amp, testing and analyzing results of an OP-Amp. (3 hrs) 52. Wire and test a Multistage IC amplifier. (3 hrs) 53. Construct and test a 3-pin	• DIAC, SCR, TRIAC-principle of working, specifications, circuits and application. • Differential amplifiers, OP-Amps, principle, characteristics, advantages, applications. List a few

		Voltage regulator. (3 hrs) 54. Construct and test an IC variable output Voltage regulator. (3 hrs) 55. Trace circuit of PC SMPS. Fault finding of SMPS used in PC. (3 hrs) 56. Troubleshoot SMPS used in PC's. Trace circuit, Fault finding and troubleshoot Power supplies used in PC I/O devices. (7 hrs)	commonly used op-amps, Amplifiers in integrated circuit forms. • IC oscillators -IC 555Other types of linear IC's and applications. • Voltage regulator -zener diode, principle, application, limitations. Shunt and series regulators, applications, limitation. • IC voltage regulators-fixed/variable, specifications, testing. Multiple output regulators, package details of somecommon IC regulator. • Comparison of linear and Switch mode power supplies. • Working of SMPS. Types, specifications and applications. Circuit tracing of SMPS. • Fault finding and Troubleshooting approach of SMPS with emphasis on power supplies used in PC'sand its I/O devices. (07 hrs)
		57. Test Dry cells. Identify of different types and sizes of button cells. Test button cells. (3 hrs) 58. Check the specific gravity of electrolyte. (4 hrs) 59. Checking battery using discharge tester. Top-up secondary batteries.(4 hrs)	• Primary and secondary batteries. Dry cells, specification. Button cells, types and applications - testing. • Secondary battery types, specification, construction, Routine maintenance,

		60. Connecting secondary batteries in series/series parallel. (4 hrs) 61. Identify a dead/ defective battery in a chain of batteries.(4 hrs) 62. Charge batteries. Connect batteries with UPS and test. (6 hrs)	Electrolyte- specific gravity, charging batteries. • Maintenance free batteries. Use of batteries with UPS. Safety precautions. (07 hrs)
		63. Convert Decimal to Binary and reverse. Convert of Binary to octal and reverse. Convert of Binary to Hexadecimal and reverse. (4 hrs) 64. Identify given IC's using digital IC handbook. (4 hrs) 65. Verify the truth table of NOT, AND, OR, NAND and NOR gates. (6 hrs) 66. Construct a logic circuit using basic gates for a given output logic. (4 hrs) 67. Construct a 1's compliment &2's compliment circuit and verify. (6 hrs) 68. Construct and verify the truth table of flip-flop. (6 hrs) 69. Construct and test a serial and parallel shift register. (10 hrs) 70. Construct and test a 4-bit binary counter. (10 hrs)	• Comparing Analog and Digital signal. Application of Digital electronics. • Number system, Binary, octal and hexadecimal. • Boolean algebra, D'Morgans theorem. Simplification of logic circuit. • Identification of Digital IC's, Types of packages, applications. Basic digital gates and truth tables. • 1's & 2's compliment Flip-flop, register & counter. • Making a logic circuit for any custom requirement. (14 hrs)
Professional Skill 50 Hrs; Professional Knowledge 14 Hrs	Installation and practice with Operating System and all other application software.	71. Identify the external I/O and memory devices connected to the PC. (3 hrs) 72. Identify the controls of each of these devices including the system (CPU) unit. (5 hrs)	• Basic blocks of a digital computer. Function of each block. Personal computer organization. Introduction to various generations of PC's.

		73. Disconnect the external I/O and memory devices connected to the PC. (7 hrs) 74. Re-connect external I/O and memory devices connected to the PC. (10 hrs)	• Brief working and usage of I/O and memory devices used in a PC. (07 hrs)
		75. Practice windows operating system. (5 hrs) 76. Practice using notepad and paint. (5 hrs) 77. Identify system specifications. Use device manager to check status of installed devices. Identify and record IRQ. Make a start-up/emergency diskette. (5 hrs) 78. Uninstall, Reinstall and make settings for the following devices using Device manager: Keyboard, Mouse, Display, Multimedia, Printer, Modem, Web camera and other such external devices. (10 hrs)	• Working with computer using windows operating system. Obtaining system information. Ports on a PC and its specifications. • Hardware interface and driver. IRQ and DMA. Making startup/emergency diskette. • Installing and setting keyboard, mouse, Display, Printer, multimedia, Modem, web camera and other devices. (07 hrs)
Professional Skill 75 Hrs; Professional Knowledge 21 Hrs	Assembling and servicing of Desktop Computer with all its hardware components.	79. Remove SMPS from cabinet, test SMPS for good working condition and refit to cabinet. (2 hrs) 80. Identify the internal parts of a PC. (2 hrs) 81. Identify cable connections inside a PC. (2 hrs) 82. Identify the specifications of motherboard. (1 hr) 83. Identify the components of a motherboard. (1 hr) 84. Remove, identify and refit add-in cards. (2 hrs)	• Memory Types and uses. Computer main memory, specifications, compatibility, expandability, types, manufacturers. • SMPS used in PC, Specifications, types of connectors, testing. • Mother board, types, specifications, components on the motherboard and its functions. • BIOS, CMOS setup. FDD/

		85. Remove, identify and refit RAM, Processor. (1 hr) 86. Practice CMOS setting. (2 hrs) 87. Remove and refit FDD/HDD. (2 hrs) 88. Remove and refit CD/DVD ROM drive. (2 hrs) 89. Partition HDD, Format HDD, Load operating system. (3 hrs) 90. Load multiple Operating system (Windows & Linux). Test working. (5 hrs)	HDD, principle of working, types, capacity, manufacturers, connecting to motherboard. • Jumper setting. Partitioning, formatting. Non DOS partitions. • Loading operating system. Loading multiple OS. • Loading application packages. (07 hrs)
		91. Assemble PC given all components. Check for working. (10 hrs) 92. Identify defect (Hardware/software). Rectify defect. (5 hrs) 93. Identify possibility of upgrading a given PC to given specification. Collect and upgrade PC. Check working of upgraded PC. (10 hrs)	• CDROM drive, principle of working, types, specifications, manufacturers, connecting, jumper setting. COMBO drives. • Identifying and Troubles hooting software related problems. (07 hrs)
		94. Load maintenance utilities to check system performance. (10 hrs) 95. Test and report system performance. (15 hrs)	• Identifying and Troubles hooting hardware related problems. • Disassembling precautions and procedure. • Assembling of PC for a given requirement. • Upgrading of PC in respect of main memory, HDD, ZIP, DAT and other special devices. (07 hrs)
Professional Skill 100 Hrs; Professional	Setting up and configuring Networking System using various network	96. Identify components of a simple LAN environment. (5 hrs) 97. Identify different types of	• Serial data communication, principle, standards/ protocols and devices

Knowledge 28 Hrs	devices.	cables used for networking. (5 hrs) 98. Identify the protocols installed in an existing LAN setup. (5 hrs) 99. Draw LAN diagram. (10 hrs)	/applications. • Parallel data communication, principle, standards/protocols and devices/ applications. • Features of Networked computers. (07 hrs)
		100. Identify the NIC installed & MAC address (5 hrs) 101. Install of NIC card. (5 hrs) 102. Make UTP cross cable and testing using continuity tester. (5 hrs) 103. Establish connection between two computers using a cross cable. (10 hrs)	• Components required for networking. • Network Topologies. Comparison. • Network Protocols, applications. • Physical components planning for a small LAN. • Network operating systems and features. (07 hrs)
		104. Make a UTP straight patch cord and testing using continuity tester. (10 hrs) 105. Connect and test a straight cable using a N-port switch and computers. Establish a peer-to-peer connection. (15 hrs)	• Network cables, types, specifications, standards, application. • Peer - to peer connection. • Client server connection, comparison, applications (07 hrs)
		106. Configure a router Add/ Delete entry in configuration task. (5 hrs) 107. Create work groups. (5 hrs) 108. Set IP address and subnet mask. Establish connection. (5 hrs) 109. Use of Ping command. (5 hrs) 110. Establish sub networks using subnet mask. (5 hrs)	• What is router, its function, configuration table? • Concept of work groups and uses. • UTP Cross cable for testing connection between two computers. • UTP straight cable and connecting through N-port Switch. • Allocation of IP address and

			Subnet (07 hrs)
Professional Skill 50Hrs; Professional Knowledge 14 Hrs	Sharing and Controlling resource and connection through network.	111. Share resources in LAN. (2 hrs) 112. Fault find and troubleshoot network problems. (5 hrs) 113. Trace a network route. (3 hrs) 114. Create users, allocate rights and testing. Implement security in LAN. (15 hrs) 115. Use Linux commands. Install and uninstall devices using Linux command. (10 hrs) 116. Set-up LAN under Linux. (15 hrs)	• Cabling procedures and introduction to structured cabling. • Creating users in Widows server. Resource sharing and Security. • Sharing a single internet connection in LAN, with or without the use of Proxy. (10 hrs) • Multi user OS. Linux Operating system, OS commands. • Installing devices. Setting up LAN in Linux environment. (14hrs)
Professional Skill 100Hrs; Professional Knowledge 28Hrs	Perform the operations of MS Office package (word, excel, power point, outlook).	**Microsoft WORD** 117. Open, resize and close MS Word. (1 hr) 118. Opening, edit and save/ "save as" documents. (1 hr) 119. Use all menu bar features. (2 hrs) 120. Use all Standard tool bar features. (2 hrs) 121. Create Document, non-documents files. (2 hrs) 122. Create templates. (2 hrs) 123. Create tables. (1 hr) 124. Insert pictures and videos. (2 hrs) 125. Mail merge documents. (1 hr) 126. Creating Bookmarks. (1 hr) 127. Add Bullets and numbering. (1 hr) 128. Create Hyperlinks. (3 hrs) 129. Create broachers. (3 hrs)	**Microsoft WORD** • Text editing software's. • Introduction to MSOffice. Features and application of Microsoft word. • Concept of word processing. Menu bar features. Standard toolbar features. Editing the text, use of different tools, formatting the text. • Creating, Document, non-documents files. Creating templates. • Creating tables. • Inserting pictures and videos. • Mail merge. • Book marks. • Bullets and numbering. • Hyperlinks. Creating broachers. Creating

		130. Create bookwork. (3 hrs)	bookwork (07 hrs)
		Microsoft EXCEL 131. Work with Microsoft Excel for creating worksheets with Graphs and Visuals. (25 hrs)	**Microsoft EXCEL** • Use of Microsoft Excel features for creating worksheets with mathematical formulae and graphs. (07 hrs)
		Microsoft POWERPOINT 132. Work with Microsoft Power point in for creating multimedia presentations. (15 hrs) 133. Work with custom animation and effects. (10 hrs)	**Microsoft POWERPOINT** • Use of Microsoft Power point features for creating multimedia presentations. (07 hrs)
		Microsoft OUTLOOK 134. Customize quick e-mail, calendar, and tasks. (3 hrs) 135. Create a shortcut in the Outlook Bar to any file, folder or Web page. (3 hrs) 136. Send and receive e-mail in HTML format. (3 hrs) 137. Use 'Find' tool to quickly find messages, appointments or tasks using a Web-style search to specify the desired information. (3 hrs) 138. Set up rules and even filter out junk e-mail. (3 hrs) 139. Publish personal or team calendar as a Web page using a single command. (3 hrs) 140. Create and store personal distribution lists along with contacts in your Contacts folder. (3 hrs) 141. Manage mass mailings with Mail Merge for e-mail, fax or	**Microsoft OUTLOOK** • Customizable quick e-mail, calendar, and tasks. • Create a short cut in the Outlook Bar to any file, folder or Webpage. • Send and receive-mail in HTML format. • Find tool to quickly find messages, appointments or tasks using a Web-style search to specify the desired information. • Publish personal or team calendar as a Web page using a single command. • Create and store personal distribution lists along with contacts in your Contacts folder. • Manage mass mailings with Mail Merge for e-mail, fax or print distribution to select or all contacts based on any set

		print distribution to select or all contacts based on any set of contact fields. (4 hrs)	of contact fields. • Use the Activities tab on a contact item to dynamically track and view all activity related to a contact such as e-mail, appointments and tasks. (07 hrs)
Professional Skill 50Hrs; Professional Knowledge 14 Hrs	Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop.	**Adobe PageMaker** 142. Work with PageMaker. (5hrs) 143. Create Pamphlets. (4hrs) 144. Create broachers. (5hrs) 145. Work with reports. (3hrs) 146. Create illustrative works. (4hrs) 147. Create long book works. (4hrs)	**Adobe PageMaker** • Use of Page Maker features for creating Pamphlets, broachers, reports, illustrative works and long book works. (07 hrs)
		Corel Draw 148. Work with Corel draw. (10 hrs) 149. Create artistic characters and shapes for use with page maker. (15 hrs)	**Corel draw** • Use of features of Corel draw • Create artistic characters and shapes for use with page maker. (07 hrs)
Professional Skill 50Hrs; Professional Knowledge 14 Hrs	Create email account, chat and browse through internet and Microsoft Outlook Express.	**Internet** 150. Open web pages using URL and domain name. (1 hr) 151. Save web pages. (1 hr) 152. Store web pages as favorites. (2 hrs) 153. Use search engines to find sites offering free Email services. (2 hrs) 154. Create Email account. (1 hr) 155. Send Email. (1 hr) 156. Copy received Email. Copy/Print received mail. (1 hr) 157. Send Email with attachment. (1 hr)	**Internet** • Networking of Computers. LAN, MAN, WAN. Intranet. Interconnected computers. • LAN, MAN, WAN. • Intranet. Internet, Websites, WWW, URL. • Internet protocols, HTTP, FTP, • Client end software - Browsers. • Requirements for Internet access, browser, modem, ISP. • Getting internet count and

		158. Open/Download attachments. (2 hrs) 159. Set-up for Chat. (1 hr) 160. Practice chatting. (1 hr) 161. Practice chatting with Video. (1 hr) 162. Join Newsgroup. (2 hrs) 163. Getting connected using FTP. (2 hrs) 164. Downloading software's. (2hrs) 165. Upgrading Browser versions. (2 hrs) 166. Use Telnet to get connected to remote computer. (2 hrs)	settings. • Types of browsers, basic principle, features. Setting of browser features, security levels. • Getting connected to a website- site name & its URL, Domain name server. Saving websites, favorites, printing web pages/sites. • Meaning and use of Search engines. Searching tips. Webmail account, Email, providers- free and paid. Creating free Email ID, sending and receiving Email. Sending and receiving attachments using Email. • Chatting over Web. News groups. • Down loading of software's – FTP • Getting connected to a distant computer and Telnet. (07 hrs)
		MS Outlook Express 167. Using features of OUTLOOK Express for sending and receiving Emails. (3 hrs) 168. Setting multi plea counts in outlook express to send/receive mails. (3 hrs) 169. Maintaining Address book. (10 hrs) **Connecting to Internet** 170. Installing modem in computer. And Installing Web Browsers. (5 hrs) 171. Setup internet connection	**MS Outlook Express** • Setting-up outlook express for sending and receiving mails using multiple ID's. • Features provided by Outlook express. (07 hrs)

		using ISP. (2 hrs) 172. Setup browser settings. (2 hrs)	
Professional Skill 25 Hrs; Professional Knowledge 07 Hrs	Design and develop web pages using HTML.	**HTML** 173. Working with HTML tags. (1 hr) 174. Working with Fonts, colors. (1 hr) 175. Working with Hyper text Links. (1 hr) 176. Develop Unordered Lists. (1 hr) 177. Develop Ordered Lists. (1 hr) 178. Develop Definition Lists. (1 hr) 179. Practice with different types of Marquee effects. (1 hr) 180. Develop HTML Pages using Tables. (1 hr) 181. Develop User registration forms. (1 hr) 182. Develop Web pages using Forms(2 pages, 3pages, Multi pages). (1 hr) 183. Open pages in parent windows. Use Embed tag to insert Media. (1 hr) 184. Insert flash file safe mode. (1 hr) 185. Auto plays Videos and Audio files. (1 hr) 186. Play Audio and Video files from specific time. (1 hr) 187. Hide controls on web page. (1 hr) 188. Set different colors to different Headings. Change paragraph font size and color using styles. (1 hr)	**HTML** • Source code of Web pages, meaning of HTML, its features and advantages. • Programming using HTML. Using Scripts for active web pages. • Use of Java scripts.(Simple scripts only) • Use of VB script for interactive pages.(Simple scripts only) • Picture formats, animated files and its usage in web pages. • Web page design using Front page. • Procedure for Hosting of web sites.(07hrs)

		189. Print "Hello World" on web page using Jscript. (1 hr) 190. Validate Password given by the user. (1 hr) 191. Validate User input date. (2 hrs) 192. Validate E-Mail Address. (2 hrs) 193. Register free website and upload pages. (2 hrs) 194. Setting up the work area. (1 hr)	
Professional Skill 50 Hrs; Professional Knowledge 14 Hrs	Create Graphic design and work with Adobe Page maker, Corel draw and Adobe Photoshop.	**Adobe Photoshop** 195. Practice use of Photoshop tools. (2hrs) 196. Practice use of palettes. Draw &edit with the pencil tools. (2hrs) 197. Smoothen the path with smooth tool. Draw with the Paint tool. (3hrs) 198. Draw curve segments. Use reshape tool. (3hrs) 199. Draw & edit brushed paths. Practice managing brushes. (3hrs) 200. Create brushes. Create a pattern brush. Practice using the brush libraries. (3hrs) 201. Use rulers, guides & grids. (3hrs) 202. Practice use of selection tools. (2hrs) 203. Practice moving, copying and deleting objects. (2hrs) 204. Practice grouping &ungrouping objects. (2hrs) 205. Practice transforming selected objects. (3hrs)	**Adobe Photoshop** • Different composition of colors. The colors of the visual spectrum. Evidence of color theory implementation from existing graphics found in print media. • Picture formats, Color use and implementation on the web. • Introduction to some of the most common graphics and image file formats, and its restrictions to particular hardware/operating system platforms. • Image formats and incorporation of compression technique for large storage size of Image files. • Creating Vector Graphics. Using tools for publishing artwork on the Web & in print. • Exploring new creative options and producinghigh

		206. Practice distorting with free transform tool. (3hrs) 207. Practice Punking & Bloating. Create blends. (3hrs) 208. Practice using the pathfinder palette. (3hrs) 209. Practice working with clipping masks. (3hrs) 210. Practice changing vector Graphics into Bitmap images. (5 hrs) 211. Practice linking objects to URLS for Internet packages. (5 hrs)	quality images for print &web. • Creating exceptional imagery with easier access to file. Streamlined web design. • Photo re-touching, colorful image collages, (14hrs)
Professional Skill 75 Hrs; Professional Knowledge 21 Hrs	Create and record various formats of multimedia audio and video files using digital audio and video editor tools.	**MULTIMEDIA -Audio** 212. Practice sound Recording in different channels - Mono-stereo. (5 hrs) 213. Practice sound editing and giving special effects. Use various formats of sound files. (5 hrs) 214. Carryout conversion of analog audio to digital audio. (5 hrs) 215. Practice Frequency management. (5 hrs) 216. Practice distorting recorded audio using Effects. (5 hrs)	**MULTIMEDIA -Audio** • 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. (07 hrs)
		Multimedia -Video 217. Get acquainted with the arrangement of different Tool Bars, Panels, Tools and View Ports. (4 hrs) 218. Draw and visualize simple objects in terms of Top View, Front View and Side View. Create simple objects. (4 hrs) 219. Practice Moving, Rotating	**Multimedia -Video** • Introduction to the concept of 3D.Orthographic and Perspective views. • Creating basic objects in 3D. • Introduction to command panel. Working with "Properties" of 3Dobjects. • Editing 3D objects using

		and Scaling objects. (6 hrs) 220. Practice changing dimensions of objects using modifiers. (6hrs) 221. Create different objects, using Standard Primitives and Extended Primitives. (6 hrs) 222. Make shapes render able and create splines, Practice manipulation of the shape of the model using Compound Objects. (6 hrs) 223. Practice application of Lathe Option for creating symmetrical objects. (6 hrs) 224. Apply animation to the models created so far. (6 hrs) 225. Practice modelling 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. (6 hrs)	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 Modelling. (14 hrs)
Professional Skill 100 Hrs; Professional Knowledge 28 Hrs	Create customized database files using Microsoft Access and Visual Basic.	226. Opening an existing and creating a new database with MS-ACCESS. (15 hrs) 227. Identifying the objects supported MS-ACCESS (10 hrs) 228. Creating table in Data sheet and design view. (5 hrs) 229. Enter data and edit data. (10 hrs) 230. Data validation and verification in Access. (10 hrs)	• Database concepts -data, object and properties: Definition. • Elements of database in Access: table, form, query, report. • Creating tables in Datasheet and design view, setting field properties. • Editing data in table (14 hrs)

		231. Develop customized form for data entry. (07 hrs) 232. Develop queries. (03hrs) 233. Generate reports for required output. (02 hrs) 234. Generate customized reports. (07 hrs) 235. Setting relationship between tables. (03 hrs) 236. Setting relationship between tables and queries or both. (03 hrs)	• Developing customized form for data entry and editing. • Data validation and verification. • Developing and generate queries. • Developing and generating reports. • Relational Database systems. Its advantages and applications Using Multiple table, data entry, and generating reports (07 hrs)
		237. Practice use of Visual basic with MS Access as front end. (10 hrs) 238. Create a simple application using Access and VB for a given specification. (08 hrs) 239. Database back up and retrieval in Access. (07 hrs)	• Concept of Front end for database. • Software's used as Front-end. • Use of Visual basic as front end with access. • Development cycle. • Steps for developing simple software using Access and VB for a given application. • Database back up and retrieval. (07 hrs)

Industrial Visit/ Project Work

Broad Areas:

a) Graphics designing project using Adobe PageMaker and Corel Draw.
b) Image editing project using Adobe Photoshop.
c) Create a simple web site using HTML of at least 5 web pages which will include Images, tables, charts, lists and hyperlink on any topic like Student Information System, Book Store, and organizations etc.
d) Create a customized database using MS Access for an organization.

SYLLABUS FOR INFORMATION TECHNOLOGY TRADE			
SECOND YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional Knowledge (Trade Theory)**
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Install and practice LINUX operating system.	**Linux operating system** 240. Installing UNIX / LINUX. (05hrs) 241. Preparing functional system UNIX/LINUX. (08hrs) 242. Adding new users, software, material components. (04hrs) 243. Making back-up copies of the index and files and index. (08hrs)	**Linux operating system** • Basic Linux commands. • Linux file system, The Shell, Users and file permissions, vi editor, X window system, • Filter commands, Processes, Shell Scripting.(09hrs)
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Assembling, troubleshooting all the hardware components of Laptop, Tablet/ Smart Devices.	**Laptop PCs** 244. Identification of laptop sections and connectors. (2 hrs) 245. Assembling and disassembling a Laptop. (2 hrs) 246. Checking of various parts of a laptop. (2 hrs) 247. Checking of batteries and adaptors. (2 hrs) 248. Replacing different parts of laptops. (2 hrs) 249. Upgrading RAM, HDD and other parts. (2 hrs) 250. Testing, fault finding and troubleshooting techniques. (2 hrs) 251. POST codes and their meaning, fixing of problems based on codes. (2 hrs) 252. Enabling support for	**Laptop PCs** • Introduction of laptop and comparison of various Laptops. • Block diagram of laptop & description of all its sections. • Study of parts of a laptop. • Input system: Touchpad, Trackball, Track point, Docking station, Upgrade memory, hard disk, replacing battery, Configure wireless internet in a laptop, • Latest Tools & Gadgets for Desktop/Laptop Repairs.(09hrs)

		SATA technology. Installation of OS using SATA technology drivers. (2 hrs) 253. Laptop troubleshooting. (3hrs) 254. Latest Tools & Gadgets For Desktop/Laptop Repairs (4hrs)	
Professional Skill 75 Hrs; Professional Knowledge 27 Hrs	Installation of Printer, Scanner and troubleshoot their faults.	**Printers & Plotters** 255. Testing front panel controls. Interface pins, cables, measurement of voltages and waveforms. (1 hr) 256. Installing a printer and carrying self- test. (2 hrs) 257. Replacement of toner cartridge of laser printers. (2 hrs) 258. Refilling toner cartridge of laser printers. (2 hrs) 259. Drum cleaning and replacement in of laser printers. (2 hrs) 260. Testing and servicing Printer power supply of laser printers. (1 hr) 261. Changing mechanical parts of laser printers. (2 hrs) 262. Tracing the control board circuit and identifying defective components. Servicing of control board of laser printers. (2 hrs) 263. Replacement of ink cartridge of desk jet/inkjet printers. (2 hrs) 264. Refilling ink cartridge of desk jet/inkjet printers. (2	**Printers & Plotters** • Types of printers, Laser printer, Ink jet printer, line printer. • Block diagram and function of each unit head assembly, carriage, and paper feed mechanism. • Front panel controls and interfaces. Pin details of interface port. • Installation of a printer driver. And self test. • Working principle of LASER printer. • Toner cartridge, types, replacing toner cartridges • Refilling toner cartridges, equipment available for refilling and procedure. • Printer drum, function, cleaning and replacing procedure. • Power supply in laser printers, circuit, defects, servicing. • Mechanical parts and sensors on laser printer, function, replacement

		hrs) 265. Drum cleaning and replacement in desk jet/inkjet printers. (2 hrs) 266. Testing and servicing Printer power supply of desk jet/inkjet printers. (2 hrs) 267. Changing mechanical parts of desk jet/inkjet printers. (4 hrs) 268. Tracing the control board and identifying defective components. Servicing of control board of desk jet/inkjet printers. (6 hrs) 269. Connecting and using high speed line printers. (6hrs) 270. Replacing spares of line printers. (6 hrs) 271. Self test procedures in printers. Use of diagnostics software for serving printers. (6 hrs)	procedure. • Control board(s) in laser printer, circuit diagram, defects and servicing procedure. • Working principle of INK JET/Desk jet printers. Type of ink used and replacement of ink cartridge. • Refilling of ink, equipment available, quality of refilled cartridges. • Printer drum, function, cleaning and replacing procedure. • Power supply in inkjet printers, circuit, defects, servicing. • Mechanical parts and sensors on inkjet printer function. • Working principle of Plotter and its common faults.(18 hrs)
		Scanner & MFD 272. Scanner - Installation, configuration, using Automatic Document Feeder(ADF), OCR. (3hrs) 273. Barcode Scanner - Installation and configuration. (3 hrs) 274. Network Scanner - Installation and configuration. (3 hrs) 275. Troubleshooting of Scanner. (3 hrs)	**Scanner & MFD** • Working principles of Scanner, Barcode Scanner, Network Scanner. • Working principles of Multifunction Printer, Passbook printer, High Speed Printer, Line Printer, Network Printer. • Print Server.(09 hrs)

		276. Multifunction Printer - Installation, Replacing supplies and spares, troubleshooting. (3 hrs) 277. Passbook Printer - Installation, calibration, configuration & troubleshooting. Replacement of Supplies and maintenance. (3 hrs) 278. Network Printer - Installation and configuration, troubleshooting. (3 hrs) 279. How to update the flash of Motherboard, printer, scanner and modem etc. (4 hrs)	
Professional Skill 100 Hrs; Professional Knowledge 36 Hrs	Servicing and upgrading Desktop Computer with all its hardware components.	**Monitor, Display card and Driver** 280. Identify the type of monitor connected to PC specifications, front panel controls and settings. (2 hrs) 281. Identify the specifications of the display driver card installed in the PC. (2 hrs) 282. Remove the display driver card and identify the main components and connectors on the display driver card. (2 hrs) 283. Replace the display driver card and re-install. (Before practicing this skill set, the already installed driver should be removed from device manager). (2 hrs) 284. Change the exiting display	**Monitor, Display card and Driver** • Types of monitor, Monochrome • And colour, CGA, EGA, VGA, SVGA, Digital and Analogue, interlaced none interlaced. • Specifications and comparison • Of Monitors. Front panel controls, brightness, contrast, horizontal and vertical height settings. • Display cards, bus standards, types CGA, EGA VGA, SVGA, AGP, memory and drivers. • Main components and connectors on display cards, display controller IC,

		card with a different card given and install. (2 hrs) 285. Servicing of monitors, changing fuses, adjusting colors, brightness and contrast. Setting resolution, loading drivers. Checking and replacing components on the PCB. (3 hrs) 286. Checking and adjusting LCD Monitors. (3 hrs) 287. Install, configure and operate LCD projector. (4 hrs) 288. Install and Configure Touch Pad. (5 hrs)	RAM chips and dual port feature principle of working and use of display memory. • Installing display drivers, setting features. Information required before changing the display driver card and precautions to be taken while installing a display driver card. • LCD and TFT Monitors. Understanding the difference between flat screens and CRT display systems • Understanding the displays memory and its effect on quality and performance. • Working principle of LCD Projector, its specification, configuration and common faults. • Working Principle of Touch Pad.(09 hrs)
		Upgrading of System 289. Upgrade Mother board, Memory, CPU, Graphic Card, BIOS, Additional features. (05 hrs) 290. Updating of System Software & Application Software (Requirement & How to update). (07 hrs) **Practice on Backup Drives** 291. Pen Drive U3 format, USB External Drive (HDD, CD/DVD writer), Types,	**Upgrading of System** • Understand the limitation of a PC and scope for upgrading. • Understand technical specifications for PC upgrading. **Practice on Backup Drives** • Introduction to removable storage devices, Bulk data storage devices-

		capacity, interface connector, write protection, Trouble Shooting, Interface. (05 hrs) 292. Installation, casing for external drive. (08 hrs)	magnetic, optical, magneto optical drives, WORM drives. • Minor repairs and maintenance of CDROM drives. • Important parts and functions of DVD ROM drive. • Minor repair works on a DVD ROM drive. • Minor repair works on a CD/DVD WRITER. • Technology, working principle, capacity, media of Magneto- Optical Disk (MOD) drives. Applications. • Important parts and functions of MOD drive. Minor repair works on MOD. • Latest trends in backup devices/media.(09 hrs)
		Maintenance and Troubleshooting of PC 293. Running diagnostics program to identify the health and defects of a PC. Check system performance using third party utilities. Use benchmarking utilities to benchmark systems. (4 hrs) 294. Identify the defect in PC from the audible and observable symptoms such as beep sounds, post	**Maintenance and Troubleshooting of PC** • Safety precautions in handling PC, sub assemblies and components, • Important points to be considered while purchasing and replacing components. • Concept of Preventive and corrective maintenance. • Tools required, Active & Passive Maintenance,

		messages. hanged keyboard, erratic display etc., and corrective action. (4 hrs) 295. Tracing the circuit of a Keyboard. (4 hrs) 296. Trouble shooting defects related to Keyboard and its related ports, ports loose connections, replacing cable, replacing keys (DIN, PS/2, USB). (4 hrs) 297. Trouble shooting defects related to Mouse and its related ports loose connections, replacing cable, replacing roller and sensing elements. (COM, PS/2, USB). (4 hrs) 298. Study of interface cable connector, replacing of subassemblies of Light pen, scanner, digitizer. (4 hrs) 299. Trouble shooting defects related to HDD, (practice of replacing motor, head, PCB among faulty drives) cable and connector. (4 hrs) 300. Trouble shooting defects related to CD ROM Drive, Attempting for replacement and adjustments) cable and connector. (4 hrs) 301. Trouble shooting defects related Ports to Jumper setting. (4 hrs) 302. Trouble shooting defects related to Processor. (4 hrs)	Maintenance scheduling. Need of diagnostics program. Features, limitations. Examples of commonly used diagnostic programs. • Probable defects in PC. Localizing faults through its observable visual or audio symptoms and possible methods for rectification/servicing. Understanding serviceability of component. Economy in repair/replacement. • Block diagram of a KB, function of controller, LED driver Sample circuit. • Defects related to Keyboard and its related ports (DIN,PS/2,USB) Discontinuity in cable, and bad keys. Servicing procedure. • Defects related to Mouse and its related ports (COM, PS/2, USB) and servicing procedure. • Working principle, electro mechanical circuits of Light pen scanner and digitizer. • Defects and symptoms related to HDD and its cable, connector and servicing procedure. • Defects related to CD ROM Drive jamming of

		303. Trouble shooting defects related to RAM memory modules. (4 hrs) 304. Trouble shooting defects related BIOS. (2 hrs) 305. Trouble shooting defects related to CMOS setup. (2 hrs) 306. Trouble shooting defects related to Battery. (2 hrs)	mechanical assembly malfunction of control circuit. and its cable, connector and servicing procedure. • Defects related to Ports jumper setting on motherboard and servicing procedure. • Defects related to processor, its socket, cooling and servicing procedure • Defects related to RAM memory module connector and servicing procedure. • Defects related to BIOS, upgrading and servicing procedure. Defects related to CMOS, COMS setup and servicing procedure. Defects related to battery and servicing procedure.(18 hrs)
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Assembling, troubleshooting all the hardware components of Laptop, Tablet/ Smart Devices.	**Tablet / Smart Devices** 307. Assembling & disassembling of different types of tablets / Smart Devices. (2 hrs) 308. Testing of various parts with multimeter. (2 hrs) 309. Replacing of faulty parts. (2 hrs) 310. Fault finding &troubleshooting. (2 hrs) 311. Practice Advanced troubleshooting techniques. (2 hrs) 312. Flashing of various brands	**Tablet / Smart Devices** • Motherboard Introduction. • Study of parts of a tablet PC / smart devices. • Testing of various parts with multimeter. • Steps of repairing various hardware problems. • Advanced troubleshooting techniques. • Introduction of various software faults. • Flashing of various brands

		of tablets / smart devices. (2 hrs) 313. Upgrading operating systems. (2 hrs) 314. Formatting of virus affected devices. (2 hrs) 315. Unlocking of handsets through codes and software. (2 hrs) 316. Troubleshooting settings faults. (2 hrs) 317. Working with iOS, Android, Ice-cream sandwich, Jellybeans. (3 hrs) 318. Installation of PhoneGap framework. (2 hrs)	of tablets / smart devices. • Upgrading operating systems. • Locking &unlocking of handsets. • Concept of iOS, Android, Ice-cream sandwich, jellybeans. • Concept of PhoneGap.(09hrs)
Professional Skill 50 Hrs; Professional Knowledge 18 Hrs	Perform Network Configuration, troubleshooting and Network Security.	**Configuration of Data communication equipments** 319. Connecting computers with Network with Drop cable and using WiFi configuration. (5 hrs) 320. Basic Programmable switch Configuration. (5 hrs) 321. Spanning Tree Protocol (STP). (5 hrs) 322. Command Line Interface. (5 hrs) 323. IP Routing Process Verifying Configuration. (5 hrs)	**Configuration of Data communication equipments** • Network Components - Modems, Firewall, Hubs, Bridges, Routers, Gateways, Repeaters, Transceivers, Switches, Access point, etc. - their types, functions, advantages and applications. • IP Routing in Network RIP, IGRP(09 hrs)
		Network Protection and troubleshooting 324. Setting up basic protection using public keys and MAC address filters. (6 hrs) 325. Integrate wired with wireless network. (6 hrs) 326. Connect Power over Ethernet (PoE) in network.	**Network Protection and troubleshooting** • Collaborating using wired and wireless networks. • Protecting a Network. • Network performance study and enhancement. (09 hrs)

		(6 hrs) 327. Troubleshooting wired and wireless network. (7 hrs)	
Professional Skill 50 Hrs; Professional Knowledge 18 Hrs	Install and configure Windows Server and Linux server.	**Server Installation, Configuration& Backup** 328. Identify Server Hardware. (5 hrs) 329. Install and configure Windows Server. (5 hrs) 330. Install and Configure Active Directory. (5 hrs) 331. Implementing AD Services. (5 hrs) 332. Configuration of broadband modem and sharing internet connection. (5 hrs) 333. Configure a server as web server. (10 hrs) 334. Configuring Mailbox Servers. (5 hrs) 335. Implementing Backup and Recovery. (10 hrs)	**Server Installation, Configuration & Backup** • Server concepts, Server Hardware, Installation steps, configuration of server. Concept of Active Directory. ADS • Overview, ADS Database, Active Directory Namespace, Logical & Physical Elements of AD. • Introduction to Web Server • Introduction to Messaging Services • Concept of Backup and Recovery of Server.(18hrs)
Professional Skill 100 Hrs; Professional Knowledge 36 Hrs	Configuration and managing Network server.	**Install & configure DNS** 336. Installing and Configuring DNS Services. (3 hrs) 337. Setup Name resolution - Host names, NetBIOS names. (3 hrs) 338. Installing DNS Server. (3 hrs) 339. Configuring DNS Zones, DNS Clients, Delegating Zones. (3 hrs) 340. Testing DNS with nslookup, dnscmd and dnslint. (3 hrs) 341. Installing and Configuring DHCP Services. (5 hrs) 342. DHCP Server Configuration, Setting up of DHCP. (5 hrs)	**Install & configure DNS** • Concept of DNS. • Name resolution - Host names, NetBIOS names. • DNS Overview. • DHCP Overview. • DHCP Clients and Leases.(09 hrs)

		Routing and Remote Access 343. Configuring RRAS. (3 hrs) 344. VPN implementation. (5 hrs) 345. Configuring Remote Access Authentication Protocol. (5 hrs) 346. Configuring RRAS Policies. (4 hrs) 347. Configuring IAS. (3 hrs) 348. Managing TCP/IP Routing. (5 hrs)	**Routing and Remote Access** • Remote Access Overview VPN Concepts. • Remote Access Authentication Protocol • RRAS Policies • IAS • TCP/IP Routing(09 hrs)
		Planning and Implementing User and Group Strategies 349. Adding Account. (3 hrs) 350. Implement AGDLP Process. (3 hrs) 351. Implement User Authentication Strategy. (4 hrs) 352. Planning and Implementing OU Structure. (4 hrs) 353. Planning and Maintaining Group Policies. (4 hrs) 354. Configuring User Environment. (3 hrs) 355. Configuring Computer Security. (4 hrs)	**Planning and Implementing User and Group Strategies** • Concept of User and Group. • Planning Security Group Strategy • AGDLP Process • Planning User Authentication Strategy • Planning OU Structure • Planning a Group Policy Strategy • Deploying Software Through GPO(09 hrs)
		Managing Server Network & Infrastructure 356. Security Baseline Settings and Templates. (2 hrs) 357. Configuring Audit Policy. (2 hrs) 358. Monitoring and Troubleshoot Network protocol. (3 hrs) 359. Configuring Protocol Security. (3 hrs)	**Managing Server Network & Infrastructure** • Security Baseline and Templates • Audit Policy • Understanding IPSec • Protocol Security • Planning security for Wireless Network • Managing Network Traffic

		360. Planning security for Wireless Network. (3 hrs) 361. Monitor Network Traffic. (3 hrs) 362. Troubleshoot Internet Connectivity. (3 hrs) 363. Troubleshoot Server Services. (3 hrs) 364. Use Linux Network Tools to check / maintain / Manage Network. (3 hrs)	• Types of Problems of Internet Connectivity • Types and working of Server Services.(09 hrs)
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Install and configure Windows Server and Linux server.	**Linux Server installation and configuration** 365. Install Linux Server. (3 hrs) 366. Create new user and group. (3 hrs) 367. Create public and data directory. (3 hrs) 368. Create an lmlhosts file. (3 hrs) 369. Check host file. (3 hrs) 370. Secure and run SWAT. (3 hrs) 371. Filter ports. (3 hrs) *372.* Telnet installation and configuration. (4 hrs)	**Linux Server installation and configuration** • Configuration Plan • Public and data directory • Host file • SWAT • Password Authentication • Telnet(09hrs)
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Perform Network Configuration, troubleshooting and Network Security.	**Network Security** 373. Practice on firewall technologies to secure the network perimeter. (5 hrs) 374. Practice LAN security considerations and implement endpoint and Layer 2 security features. (10 hrs) 375. Wi-Fi configuration to implement security considerations. (10 hrs)	**Network Security** • Modern Network Security Threats and the basics of securing a network. • Secure Administrative Access, LAN security considerations. • Network Security Devices. • Cryptography. • Wi-Fi security considerations.(09hrs)
Professional	Image editing and	**Raster & Vector Graphics**	**Raster & Vector Graphics**

Skill 100 Hrs; Professional Knowledge 36 Hrs	graphic design using Adobe Illustrator and Flash.	376. Fundamental techniques of drawing in pencil, charcoal and ink. Emphasis is on realistic representation and visual observation. (2 hrs) 377. Advanced drawing giving emphasis on design and composition and experimental techniques in different media: creating area text, applying basic character settings, paragraph settings, creating text threads, creating text on a path, converting text to outlines. (3 hrs) 378. Using the basic selection tools, magic Wand and the Lasso tool, selecting objects by attribute, saving and reusing selections. (2 hrs) 379. Appearances-Targeting objects attributes: adding multiple attributes, applying live effects, expanding appearances, creating graphic styles. (3 hrs) 380. Modifying graphic styles: appearance palette settings, copying appearance. (2 hrs) 381. Working with Groups and Layers: defining and editing groups, working with Layers, Layers and object hierarchy, creating template layers, object, group, and layer attributes. (3 hrs) 382. Advanced Drawing and Editing Path: creating Live	• Traditional Design concepts • Traditional and digital applications of color, concept and composition. • Making Selections • Understanding Appearances • Working with Groups and Layers • Advanced Drawing and Path Editing • Working with Color • Object Transformation and Positioning • Use of Brushes • Use of Masks • Use of Symbols • Application of Filters and Live Effects • Advanced Text Editing • Designing for the Web • Creation of Blends • Working with Images • Performing Specialized Tasks Saving and printing • Working with Other programs(18 hrs)

		Paint groups, detecting gaps in Live Paint groups, path editing with Live Paint, using Offset Path, dividing an object into a grid, cleaning up errant paths. (4 hrs) 383. Working with Color: defining swatches, creating swatch groups and libraries, working with gradients, patterns, using the Color Guide, experimenting with color, finding colors with kuler, modifying color in artwork. (2 hrs) 384. Transformation and Positioning: Rotating and scaling objects, reflecting and skewing objects, using the free Transform panel, Aligning objects. (2 hrs) 385. Distributing objects-Using Brushes: Creating a calligraphic brush, creating a scatter brush, creating an art brush, creating a pattern brush. (3 hrs) 386. Working with Masks: Understanding clipping masks, using layer clipping masks, creating opacity masks. (3 hrs) 387. Using Symbols: Defining and editing symbols, using the symbolism toolset. (2 hrs) 388. Applying Filters and Live Effects: Minding your resolution settings, Mapping artwork to 3Dobjects, using	

		the Transform effect. (3 hrs) 389. Using the pathfinder effects: Using the Stylize effect, Scribble effect, Warp effect. (2 hrs) 390. Advanced Text Editing: taking advantage of Open type fonts, using the Glyphs panel, wrapping text around objects, checking spelling, using the change cash function, Setting tabs and leaders, managing fonts, dealing with legacy text. (3 hrs) 391. Web Designing using pixel preview, specifying web slicing, Optimizing web graphics, creating simple animations. (2 hrs) 392. Creating a basic Blends, using a blend to create an airbrush Effect, using a blend to create an animation, using a blend to evenly distribute. (2 hrs) 393. Working with Images: Placing images, using the Links panel, The Edit Original workflow, Live Trace, Rasterizing artwork, Object mosaic creating graphs, creating a lens flare, using gradient Mesh, Envelope Warps, Liquefy distortion tools, saving your Graphics Editing Tool Document, Printing your Graphics Editing Tool Document,	

		Using the Crop Area tools, setting up page tiling. (4 hrs) 394. Adding XMP metadata Exporting programs: Exporting files for use in QuarkXPress, In Design, Word /excel /PowerPoint, image Editing Tool, Authoring Tool, Special effects Tool, Effects (Ps-Ai), Preferences. (3 hrs)	
		Introduction to Flash 395. Practice on Tool Features, User interface, Image Editing Tool and Graphics, Editing Tool integration, Authoring Tool Video Technology, UI components. (5 hrs) 396. Practice on Creating and Importing Graphics Assets, Working with different graphic. (7 hrs) 397. Practice on formats - Importing bitmap graphics, working with layers and layer folder. (7 hrs) 398. Use the drawing tools, Using object and merge drawing, Working with the colour panels, Creating and using Graphic symbols, using the Library panel. (8 hrs) 399. Practice on Text Effectively-Text tool, Adding and formatting static text, Changing font rendering methods, Adding input text fields, Embedding fonts in input text fields, Using for	**Introduction to Flash** • About Flash and General over view - 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 colours in Flash, to use a gradient fill. Importing Artwork, Video and Audio. Different file formats in Video & Audio. Flash Compatible Audio &

		best practices. (7 hrs) 400. Practice on Creation of Animations - Working with the timeline, using key frames, blanks key frames and frames, Creating motion tweens, Creating shape tweens, creating transition effects, using animation best practices. (8 hrs) 401. Practice on Basic Action Script - Using Script Assist, Adding actions to a frame, Creating and using Button symbols. (8 hrs)	Video file formats(18 hrs)
Professional Skill 50 Hrs; Professional Knowledge 18 Hrs	Editing Video and Audio using Adobe Premier.	**Video Editing: Tools to be Used Adobe Premier** 402. Practice to change Project settings, Preference settings, Asset Management, Sequences & Clips, Offline On-line Clips. (4hrs) 403. Managing Clips: The Project panel, Views, The preview area, Organizing clips and bins, Duplicating and copying clips, Renaming clips, Finding clips(search function), Interpreting Footage, Unlinking and Re-linking Media, The Project Manager. (5hrs) 404. Working with Monitor Panels: Viewing Clips, Playback Controls, Audio Clips, Cuing Clips, Time Ruler Controls, Safe Zones, Display Mode, Wave form and Vector scope Options, The	• Introduction to Adobe Premier Project • Creating a Sequence • Editing in the Timeline • Refining the sequence • Transitions • Audio • Tiles • Effects • Output(18hrs)

		Reference Monitor, Ganging source and Program Monitor. (4hrs) 405. Creating a Sequence Editing Methods, In And Out Points, Sub Clips, Source And Target Tracks, Overlay And Insert Edits, Adding Clips By Dragging, 3 And 4 Point Edits, Lift And Extract, Storyboard Editing, Multiple And Nested Sequences. (5hrs) 406. Editing in the Timeline: The Time Ruler, Adding, Deleting and Renaming Tracks, Markers, Selecting, Splitting Clips, Speed, Duration and Reverse, Multicam Editing, Synchronizing Clips, Replace Clips. (5hrs) 407. Refining the sequence: Snapping, Trimming Methods, Trimming Clips, Ripple, Roll, Slip and Slide Edits, the Trim Panel, Split Edits (L and J Cuts). (4hrs) 408. Practice with Transitions: The Effects Panel, Understanding Transitions, Applying A Transitions, Editing A Transitions. (5hrs) 409. Working with Audio: The audio mixer, recording with the audio mixer, fading panning and balancing Effects, Corrective measures and Routing tracks. (5hrs) 410. Practice with Titles: Creating	

		a title Text paths, Roll and crawl titles, Text configuration. (4hrs) 411. Working with Effects: Effect Types, Effect Properties, The Effects Control Panel, Key framing, Motion Effects, Opacity and Volume, Lighting Effects, Time warp (pixel motion Blending), Special effect Tool and Premiere. (5hrs) 412. Making Output: Creating DVDs, Blu-Ray, SWF, MP4 and FLV Files, Media Encoder for DVD Makers using Clip Notes. (4hrs)	
Professional Skill 100 Hrs; Professional Knowledge 36 Hrs	Creation of Graphics Animation using Adobe After Effects and 3Ds Max.	**Applying Adobe After Effects** 413. Practice on User interface. (3 hrs) 414. Creating and using compositions. (3 hrs) 415. Practice on Key framing and using time line. (4 hrs) 416. Practice on Looping animation. (3 hrs) 417. Practice on Editing motion path. (4 hrs) 418. Create the arrivals Bound Effects. (3 hrs) 419. Simulation between Authoring Tool & Special effects Tool. (3 hrs) 420. Apply filter effects and mask to components. (3 hrs) 421. Practice on Animate 3D transformations. (6 hrs) 422. Include a common loop	**Introduction to Adobe After Effects** • Special effect Techniques • Introduction to User interface • Concepts of compositions, Key framing, Looping animation, motion path • Introduction to Bound Effects, Authoring Tool & Special effects Tool, filter effects and mask to components • 3D Animation transformations, use of common loop sound, simple scripting in special effect Tool • Rotoscoping, Chroma, 2D & 3D tracing, Green/Blue screen technique/shooting.

		sound. (5 hrs) 423. Practice on simple scripting in special effect Tool. (5 hrs) 424. Rotoscoping, Chroma, 2D & 3D tracing, Green/Blue screen technique/shooting. Colour Correction. (8 hrs)	Colour Correction(18 hrs)
		Working with 3Ds MAX 425. Practice on creating projects and Scenes. (4 hrs) 426. Practice on Transform tool basics, Pivot points, Grouping and parenting, modelling with primitives. (4 hrs) 427. Practice on User Interface - Setting up project, Views/panels, Hotbox, Viewing Geometry, Channel Box, Layer Box, Attributes Editor, And QWERTY Navigation. (5 hrs) 428. Working with the camera, over view of MEL, Outliner/ Hyper graph, Grouping /parenting Shelf Marking Menus. (6 hrs) 429. Practice on Modelling – Curve Tools /snapping, Revolving, History, Duplicating, Working with NURBS, Detaching surfaces, Grouping /Duplicating. (7 hrs) 430. Working with polygons, Sub-divisional surfaces, Split polygon Tool, Lofting, Extruding. (5 hrs)	**Introduction to 3Ds Max** • Fundamentals & concepts of Animation • 3D Animation Techniques • User Interface • Modelling • Lighting /Rending • Character Setup & Animation • Dynamics(18 hrs)

		431. Practice on MODELLING, POLYGON TOOLS, with PROXY, NORMALS, Lighting /Rendering. (5 hrs) 432. Practice on Hyper shade, Materials, Apply Materials, Making Shader Networks, Combining Ramps, Layered Textures, Intro to lights, Making Bump Maps. (7 hrs) 433. Working with Shadows, UV Mapping, Specular Maps, Paints FX, Render View, Camera Settings, Render Globals, TOON SHADER. (7 hrs)	
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Designing Webpage using Front Page application.	**Introduction to Front Page** 434. Creating Background Pictures Creating Tables - Adding and Deleting Rows, Columns, and Cells Background Colors. (3 hrs) 435. Practicing Picture Manipulation -Transparent, Alt Representation Text Tags, Rotating, Thumbnails, Picture Gallery. (3 hrs) 436. Practicing Hyperlinks - To 'Outside'/External Sites, Internal Link, Bookmark, Email Addresses, Rollover Styles, Target Frames. (3 hrs) 437. Practice on Marquees Practice on Forms - Search Page, Inserting a Form, One Line Text Box, Option Button, Check Box, TextArea, Drop Down Box,	**Introduction to Front Page** • Background Pictures, Tables - Adding and Deleting Rows, Columns, and Cells Background Colors, • Picture Manipulation - Transparent, Alt Representation Text Tags, Rotating, Thumbnails, Picture Gallery • Hyperlinks - To 'Outside'/ External Sites, Internal Link, Bookmark, Email Addresses, Rollover Styles, Target Frames • Marquees, Forms - Search Page, Inserting a Form, One Line Text Box, Option Button, Check Box, TextArea, Drop Down Box, Confirmation Pages,

		Confirmation Pages. (3 hrs) 438. Practice on Sample Forms Page, Date and Time Stamp, Counter, Page Transitions, Changing your Password. (3 hrs) 439. Practice on - Themes, Banners, Buttons, Headings, Hyperlinks/ Bullets/Horizontal Lines, Navigation Bars. (3 hrs) 440. Practice on creating Frames, Shared Borders. (3 hrs) 441. Practice on Scheduling a Web Page or Picture to Appear. (4 hrs)	• Sample Forms Page, Date and Time Stamp, Counter, Page Transitions, Changing your Password • Themes, Banners, Buttons, Headings, Hyperlinks/ Bullets/ Horizontal Lines, Navigation Bars, • Frames, Shared Borders, Scheduling a Web Page or Picture to Appear(09hrs)
Professional Skill 100 Hrs; Professional Knowledge 36 Hrs	Designing Webpage in HTML and PHP embedding VBScript, JavaScript.	**VBScript and Java Script** ***VBScript***- 442. Practice on Embedding VBScript in HTML, VBScript to Display Information, Hiding VBScript from Older Browsers, Code Documentation & Formatting, Declaring Variables, Naming Variables, Variants & Subtypes, Assigning Values to Variables, Determining Variant Subtype, Data Subtype Conversion, Numeric & Literal Constants. (4 hrs) 443. One-Dimensional Arrays, Multi-Dimensional Arrays, VBScript Operators, Arithmetic Operator Precedence, Comparison Operators, Logic Operators,	**Programming Language Basics** - • Introduction to computer programming language, Generations of Programming Languages, Procedural & non-procedural programming Language, Structured & Object Oriented Programming Language, Algorithm, Flowchart. Introduction to Scripting Language, difference between programming and scripting languages, working principle of Scripting language. • ***VbScrpt***- Embedding VBScript in HTML , VBScript to Display Information, Hiding VBScript from Older

		String Concatenation, Procedures, Subroutine Procedures, Scope of Variables, Function Procedures, Randomize & RND. (4 hrs) 444. Control Statements, Four Control Structures, Using Loops, Topic title, Strings, Formatting Numbers, Message & Input Boxes, Dates & Times, Splitting Up Dates & Times, Page Updates. (4 hrs) 445. The Document Object Model(DOM) -Properties, Methods, Events & Collections, Event Handlers - Top-Down & Event-Driven Programming, Mouse Events, Keyboard Events, Validation & Error Handling. Platform or Host dependence. (4 hrs) ***JAVA Script***– 446. Practice using Java Script in an HTML Document, Hiding Java Script from old Web Browsers. (3 hrs) 447. Basic Syntax Used in Java Script Commands, Variables - Assigning Values to Variables, Concatenating String Variables. (3 hrs) 448. **Functions-** Creating & Calling Functions, Sending Parameters to a Function, Receiving Parameters out of a function, Variable scope &	Browsers, Code Documentation & Formatting, Variables, subtypes & Constants, Arrays, VBScript Operators, VBScript Procedures, Program Control & Structure, Strings & Numbers, Message & Input Boxes, Dates & Times, Explorer 5.x DOM, Event Handlers - Top-Down vs. Event-Driven Programming, Mouse Events, Keyboard Events, Validation & Error Handling. VBScript & the Web - Platform or Host dependence. • ***JAVA Script***- Introduction to Java Script, Where does Java Script Fit in? Comparing Java Script to VBScript, Comparing Java Script to Java, The Purpose of Java Script, Prerequisites, Using Java Script in an HTML Document, Hiding Java Script from old Web Browsers. • Basic Syntax Used in Java Script Commands, Variables, Functions, Flow Control Structures, Operators, String Processing, Objects, History Object, Date Object, Using Objects like

		Lifetime, Functions Called by Events. (3 hrs) 449. **Flow Control Structures -** If Structure, If Else Structure, For Loop, While Loop, For/in Structure. (3 hrs) 450. **Operators** - Unary Operators, Numeric Operators, Logical Operators. (3 hrs) 451. **String Processing -** Length, Converting to all Upper or Lower Case, Index of, Last Index of, Char At, Substr. (3 hrs) 452. **Objects -**Creating an Object, Adding Functions to an Object, Multiple Instances of an Object type. (4 hrs) 453. **History Object -** Accessing the History Object, Creating Buttons, History. Go Method. (4 hrs) 454. **Date Object -**Creating a Date Object, Setting the Date & Time by a Single String, Separating Variables with Commas, Displaying the Date & Time, Time Zones, Extracting the Date, Extracting the Hrs, Set Date Method, Set Time, Non-Data Object Functions. (4 hrs) 455. **Using Objects like Arrays -** Creating an Array, For Loop, **Events -**Time Status, Buttons. (4 hrs)	Arrays, Events.(18 hrs)
		PHP (Hyper Text Pre Processor) 456. Installation of Apache	**PHP (Hyper Text Pre Processor)**

		Web Server Practice simple PHP programs. Practicing on programming to test events. (5 hrs) 457. Practice on if statement Using the else clause with if statement, switch statement Using the? operator, while statement, do while statement, for statement, Breaking out of loops, Nesting loops. (5 hrs) 458. Functions and returning value from function, user defined functions, dynamic functions, variable scope, accessing variable with the global statement, Function calls with the static statement, setting default values for arguments, Passing arguments to a function by value, Passing arguments to a function by reference, Testing for function existence. (6 hrs) 459. Practicing the Writing to the browser, Getting input from forms, Output buffering, Session handling, Regular expression, Common math, Random numbers, File upload, File download, Environment variables. (6 hrs) 460. Practice on E-mail in PHP, anatomy of a cookie, Setting a cookie with PHP, Deleting a cookie, Creating session cookie, Working with the query string, Creating query	• Introduction to PHP, its features and advantages. • Basic PHP Syntax, tags, Data types, Constants and Variables, Operators and expressions. • PHP Conditional Events, Flow control and looping in PHP • Functions in PHP • Arrays and Strings in PHP • Super Global Variables in PHP. Form handling and validations(18 hrs)

		string, Starting a session, Working with session, variables, Destroying session, Passing session IDs, Encoding and decoding session variables. (6 hrs) 461. Practice on Creating and deleting a file, Reading and writing text files, Working with directories in PHP, Checking for existence of file, Determining file size, Opening a file for writing, reading, or appending, Writing Data to the file Reading characters. (6 hrs) 462. **Working With Forms -** Super global variables The server array A script to acquire user input, Importing user input Accessing user input , Combine HTML and PHP code., sing hidden fields, Redirecting the user, File upload and scripts. (5 hrs) 463. **Working With Regular Expressions -** The basic regular expressions, PCRE, Matching patterns, Finding matches, Replace patterns, Modifiers, Breakup Strings. (5 hrs) 464. **Working with Classes And Objects -** Creating an object, Object properties, Object methods, Object constructors and destructors, Class constants Class inheritance, Abstract classes	

		and methods, Object serialization, checking for class and method, existence, Exceptions, Iterators. (6 hrs)	
Professional Skill 50 Hrs; Professional Knowledge 18 Hrs	Install and Configure MySQL.	**My SQL** 465. Installation of MySQL. (4 hrs) 466. Configuration of MySql. (4 hrs) 467. Server Client architecture. (4 hrs) 468. Practice on Table Creation Rules. (4 hrs) 469. Practice on MySQL syntac and creating database design. (5 hrs) 470. Practice on data migration. (4 hrs) 471. Importing and exporting formats. (5 hrs) 472. Practice on data tunneling. (5 hrs) 473. Practice on Database repair and archival. (5 hrs) 474. Practice on cross database syntax equivalents.(5 hrs) 475. Preparation of Database Project in any Industry/organization. (5 hrs)	**My SQL** • The SQL Create Command • Table Creation Rules • Dropping a Table • The SQL-INSERT Command • Inserting NULL • Viewing data (SQL-SELECT) • Updating Data in a table (The SQL-UPDATE command) • Deleting rows of data (The SQL-DELETE command) • Viewing the structure of an already existing table (SQL-DESCRIBE command): MySQL Scripting.(18hrs)
Professional Skill 25 Hrs; Professional Knowledge 09 Hrs	Create and publish Web pages in Local web server.	**Web Page Design and Publishing in a local server / local web server** 476. Create a Web page using HTML, CSS, VB Script and Java Script. By installing and configuring IIS convert your windows PC into web server.	**Web Page Design and Publishing** • Design issues, URL, Home Page, Web Browser, Network Server, IIS, Web Server, Publishing / hosting website in a network server / web server. Web

		(08hrs) 477. Install any open source web server like Apache / Wamp. Publish / Host website in the local web server. (07hrs) 478. **Blog Creation -** Create a blog in free blogging service like blogspot.com, www.blogger.com, wordpress etc., add themes. Maintaining Blog.(10hrs)	Auditing, VPN Account, Remote updating. • **Blog Creation** Define Blog, History, Blog Taxonomy, What to Blog about? How to Blog - Self hosted or free blogging service, Difference between a blog and a website.(09hrs)
Professional Skill 50 Hrs; Professional Knowledge 18 Hrs	Designing Website using Dreamweaver application and open source software. Configure and secure network against threat, vulnerability and risk for information security.	**Dreamweaver** 479. Create Web sites with hyperlinks and graphic images.(4 hrs) 480. Use page layout tools such as tables, frames, and layouts.(4 hrs) 481. Utilize Cascading Style Sheets (CSS), HTML, rollovers, behaviors, and forms.(4 hrs) 482. Incorporate Dreamweaver with related software such as Macromedia Fireworks and Flash.(4 hrs) 483. Incorporate Dreamweaver with related PHP, VBScript, JavaScript, My SQL etc. (4 hrs) 484. Manage Web sites with directories and different types of computer files.(5 hrs)	**Overview of Information Security** • Understanding Information Security - Need of the Information security, Basics of IS (CIA), History and evolution of IS, Dimensions of Information Security, Intranet/Internet, Information Security and Cyber Security relationship • Why Care About Security? - Challenges to Information Security, Benefits of Information of Security, Understanding techniques to enforce IS in an organization, Identifying tools to enforce Information Security, Identifying frameworks to enforce Information Security • Overview of Information Security Threats Types of threats - DDoS, Malicious

			codes, Espionage, etc Identification of Threats - Probing of threats, Scanning of threats, Modus Operandi, Sources of Threats, • External threats, Internal threats, Best Practices or Guidelines used to Identify Threats -Conduct regular education and awareness trainings for employees and third parties, Best Practices or Guidelines used in mitigation of threats, Deploying up to date technology. • Maintaining Systems and Procedures, Educating Users, Conducting regular education and awareness trainings for employees and third parties • Collaborate with peers and experts through different forums to understand contemporary issues and solutions.(09 hrs)
		Open Source Tools for Web Designing 485. Practice on open source tools for web designing and its related work like: Text Editor - Aptana Studio. (3 hrs) 486. WYSIWYG web page editor – KompoZer, source code editor - Notepad++, plugin	**Information Security Vulnerabilities** • Why do Information Security Vulnerabilities exists - Types of Technical Vulnerabilities, Types of Native Vulnerabilities, Understanding Security Vulnerabilities, Flaws in Software or Protocol

		for Firefox - Firebug, highly stable and feature rich web development environment - Quanta Plus. (3 hrs) 487. Cross platform text editor – j Edit, versatile graphics manipulation package-GIMP, cross operating system diagram creation application –Dia. (3 hrs) 488. Work with graphics application - Krita, vector graphics editor –Inkscape. (3 hrs) 489. Install & work with ftp application –File Zilla, SFTP client and FTP client – Win SCP. (2 hrs) **Overview of Information Security** 490. Demonstrate Video show on Information Security. (2 hrs) **Overview of Security threats** 491. Demonstrate Video show on Security Threats, Mock test on security threats. (2 hrs) **Information Security Vulnerabilities** 492. Observe using Video show on Security Vulnerabilities. (3 hrs) **Risk Management** 493. Demonstrate Video show on Risk Management Mock test on Risk Management the Vulnerabilities, Identify security vulnerabilities on a regular basis using requisite tools and processes. How to	Designs, Weaknesses in How Protocols and Software Are Implemented, Weaknesses in System and Network Configurations, Weaknesses in Web or Cloud applications, Weaknesses in Online e-transactions, Browser Security and Role of cookies and pop-ups, Security holes in Browser, Web Applications, OS, and Smart phones, Identifying role of Social sites and media in cyber security and vulnerability • Understanding Vulnerability Assessment Tools and Techniques , Techniques to Exploit Vulnerabilities, • Techniques to Fix security Vulnerabilities **Risk Management** • What is Risk?, Relationship between Threat, Vulnerability, and Risk What Is the Value of an Asset? What Is a Threat Source/Agent? Examples of Some Vulnerabilities that are Not Always Obvious • What Is a Control?, What Is Risk Likelihood and consequences? What Is Impact?, Control

		fix the security gaps and holes, Identifying liabilities of service providers, software vendors, Software authors, system owners, and third parties, Best Practices and Guidelines to mitigate. (4 hrs)	Effectiveness • Risk Management, Purpose of Risk Management, Risk Assessment (Phases), Why Is Risk Assessment Difficult?, Types of Risk Assessment, Different Approaches to Risk Analysis, Best Practices and Guidelines in Assessing and Calculating Risks • Develop and implement policies and procedures to mitigate risks arising from ICT supply chain and outsourcing. • Best Practices and Guidelines in Mitigating Risk.(09 hrs)
Industrial Visit /Project Work **Broad Areas:** a) Graphics designing project using Adobe Illustrator and Flash. b) Create a multimedia project using Adobe after Effects and 3Ds Max. c) Preparation of Database Project in any Industry /organization using My SQL. d) Create a Website using Dreamweaver and host it in a local server.			

SYLLABUS FOR CORE SKILLS
1. Workshop Calculation & Science (Common for two year course) (80 hrs + 80 hrs)
2. Engineering Drawing (Common for Group-II (Electrical, Electronics & IT Trade Group)) (80 hrs + 80 hrs)
3. Employability Skills (Common for all CTS trades) (160 hrs + 80 hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in

LIST OF TOOLS & EQUIPMENT			
INFORMATION TECHNOLOGY (For batch of 24 trainees)			
S No.	**Name of the Tools and Equipment**	**Specification**	**Quantity**
A. TRAINEES TOOL KIT			
1.	Basic Analogue Electronics Trainer		5 Nos.
2.	SMPS Trainer		4 Nos.
3.	Insulated Screw Driver (different types)		25(24+1) Nos.
4.	Knife double bladed electrician		25 (24+1) Nos.
5.	Insulated handle thin connector screw driver		25 (24+1) Nos.
6.	Line tester		25 (24+1) Nos.
7.	Heavy duty screw driver		25 (24+1) Nos.
8.	Combination plier		25 (24+1) Nos.
9.	Long nose plier		25 (24+1) Nos.
10.	Tweezer		25 (24+1) Nos.
11.	Phillips type screw driver set		25 (24+1) Nos.
12.	Wire stripper		25 (24+1) Nos.
13.	Soldering iron	20/25watts	25 (24+1) Nos.
14.	Desoldering pump		25 (24+1) Nos.
15.	Digital Multimeter-hand held		25 (24+1) Nos.
16.	Temperature controlled soldering/ desoldering station		7 Nos.
17.	SMD soldering/desoldering station		7 Nos.
18.	Wire gauge set		7 Nos.
19.	Permanent magnet bar		12 Nos.
20.	Solenoid with core		12 Nos.
21.	Electric bell		12 Nos.
22.	Battery storage lead acid	6V & 12 V	7 each
23.	Maintenance Free Battery		5 Nos.
24.	Hydrometer		8 Nos.
25.	Battery charger		5 Nos.
26.	Rheostat variable values		8 Nos.
27.	Variable resistance /potentiometer		7 Nos.

28.	DC& AC ammeter (table model for lab experiments)	0-50 mA	7 Nos.
29.	DC & AC ammeter (table model for lab experiments)	0-500 mA	7 Nos.
30.	DC & AC ammeter (table model for lab experiments)	0-1mA	7 Nos.
31.	DC & AC ammeter (table model for lab experiments)	0-1 A	7 Nos.
32.	Analog Multimeter		7 Nos.
33.	LCR meter		7 Nos.
34.	Dual Trace Oscilloscope	20 MHz	5 Nos.
35.	Function Generator		5 Nos.
36.	Pulse Generator		5 Nos.
37.	Bread board for connecting various components i.e. diode, resistances, capacitors etc of different dimensions		48 Nos.
38.	Lug boards for circuit wiring		48 Nos.
39.	Regulated DC Power Supply	0-30 V, 2 Amp	25 (24+1) Nos.
40.	SMPS of PC		12 Nos.
41.	PC Pentium IV or latest configuration (for testing with SMPS)		5 Nos.
42.	UPS		As required
43.	Printer laser (B& W)		1 No.
44.	Transformer	0-12 V, 6-0-6 V, 1 Amp	05 each
45.	Rubber gloves		12 Nos.
46.	PCB, solder flux etc& electronic components		As required
47.	Wires, cables Plug sockets switches of various types and other consumables		As required
48.	Resistors, Capacitors, Inductors, Diodes, Transistors, Thyristors, ICs etc.		As required
49.	Spare Transformers and power devices required for servicing SMPS		As required
50.	Various types of Button Cells		As required
51.	Connecting screwdriver 100 mm		25 (24+1) Nos.
52.	Neon tester.	500 V	25 (24+1) Nos.
53.	Screw driver set	(set of 5)	25 (24+1) Nos.
54.	Insulated combination pliers	150 mm	25 (24+1) Nos.

55.	Insulated side cutting pliers	150 mm	25 (24+1) Nos.
56.	Long nose pliers	150 mm	25 (24+1) Nos.
57.	Soldering iron	25 W. 240 V.	25 (24+1) Nos.
58.	Electrician knife		25 (24+1) Nos.
59.	Tweezers 100mm		25 (24+1) Nos.
60.	Soldering Iron Changeable bits	15 W	25 (24+1) Nos.
61.	Crimping tool (pliers)		2 Nos.
62.	Magneto spanner set		2 Nos.
63.	Screw driver	150mm	5 Nos.
64.	Steel rule	150mm	2 Nos.
65.	Scriber straight	150mm	2 Nos.
66.	Soldering Iron	240W	1 Nos.
67.	Allen key set	(set of 9)	2 Nos.
68.	Tubular box spanner	(set of 6nos)	1 No.
69.	Magnifying lenses	75mm	3 Nos.
70.	Continuity tester		7 Nos.
71.	Soldering iron	10W	7 Nos.
72.	Cold chisel	20mm	1 No.
73.	Scissors	200mm	1 No.
74.	Handsaw	450mm	1 No.
B. WORKSHOP FURNITURE			
75.	Instructor table & chair		01 each
76.	Suitable Table Teak Wood fitted with Back Panel complete with different types of meters/switches, AC/DC supplies etc. required for testing of electronic circuits. Insulation mats to cover below the table.		As required
77.	Stool cum chair		20 Nos.
78.	Computer Table, Printer Table, Stools		As required
79.	Green Glass Board		1 No.
80.	Metal Rack		As required
81.	Locker with 10 drawers (standard size) for 20 trainees		2 Nos.
82.	Storage Almirah		As required
83.	Book shelf (Glass panel)		1 No.
84.	Fire fighting equipment, first aid box		As required

	etc.		
85.	Computer Maintenance Tables of Suitable sizes		As required
86.	Screwdriver Set of	min. 5 bits (Combination of star & minus) + 1 ext. rod	1 Set
87.	Crimping Tool for BNC and RJ-45 connectors		1 No. Each
88.	Punching Tool		1 No.
C. HARDWARE			
89.	Desktop Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	25 (13 nos. connected in LAN, 12 for Assy & Maint. Practice)
90.	Desktop Computer (Server)	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. Cache Memory: - Minimum 3 MB or better. RAM:-8 GB DDR-III or Higher. Hard Disk Drive: 500GB or Higher, 7200 rpm (minimum) or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet (10/100/1000) - Wi-Fi, USB Mouse, USB Keyboard and Monitor (Min. 17 Inch), Standard Ports and connectors. DVD Writer, Speakers And Mic. Licensed Windows Operating System / OEM Pack (Preloaded), Antivirus / Total Security	1 No.
91.	ISDN/Broad Band Internet Connection		1 No.
92.	Dual Trace Oscilloscope	20 MHz	2 Nos.
93.	Digital trainer kit		4 Nos.

94.	Logic Probes/Logic Pulser		4 Nos.
95.	Digital IC tester		4 Nos.
96.	Function Generator		4 Nos.
97.	Pulse Generator		4 Nos.
98.	Digital ICs		As required
99.	DC regulated power supply	5 volts and 12 volts	12 Nos.
100.	Digital Multimeter		12 Nos.
101.	Analog Multimeter		8 Nos.
102.	Digital LCR Meter		3 Nos.
103.	Bread Boards for circuit wiring and testing		20 Nos.
104.	Meggar	500V	2 Nos.
105.	Ammeter	(0-10 mA), (0-50mA), (0-100mA) (table model)	02 each
106.	Voltmeter	(0-1V), (0-10V), (0-30V) (table model)	02 each
107.	Different types and makes of Motherboards		10 Nos.
108.	CD Writers		4 Nos.
109.	DVD writer		4 Nos.
110.	External HDD		12 Nos.
111.	Floppy Disk Drive		12 Nos.
112.	CD ROM Drive		12 Nos.
113.	Display card		12 Nos.
114.	Ethernet card		12 Nos.
115.	Computer monitor of different types	15"/17"	4 Nos.
116.	Cabinet with SMPS		12 Nos.
117.	Keyboard and mouse		12 each
118.	Thumb drive	latest specification	12 Nos.
119.	Internal PCI modems of at least four different makes and types		1 each
120.	External modems of at least two different makes and types		1 each
121.	COMBO drives at least four different makes and types		1 each
122.	Dot matrix printer		2 Nos.
123.	Inkjet printer		2 Nos.
124.	Laser printer	B & W	2 Nos.

125.	Scanner		1 No.
126.	UPS		Asrequired
127.	Soldering iron		25 (24+1) Nos.
128.	De-soldering pump/gun		25 (24+1) Nos.
129.	Temperature controlled soldering/ desoldering station		4 Nos.
130.	Computer Tool kit for students		25 (24+1) Nos.
131.	Screw Driver Set - Star/Flat of different sizes		4 each
132.	Long Nose Plier		12 Nos.
133.	Combination Plier		5 Nos.
134.	Tweezer		25 (24+1) Nos.
135.	Wire Stripper		10 Nos.
136.	IC Puller		25 (24+1) Nos.
137.	Vacuum Cleaner		1 No.
138.	Hand blower		1 No.
139.	Hand Brush		As required
140.	Silicon grease		As required
141.	Heat sink agent		As required
142.	RAM	512 MB	As required
143.	CPU different types		As required
144.	HUB/Switch	8/16 port	4 Nos.
145.	ISDN Line (for Internet)/Cable broadband connection		1 No.
146.	Network Interface Card		12 Nos.
147.	Modem (Internal & External)		1 each
148.	Switch		1 No.
149.	Router		1 No.
150.	Crimping tools for network cable		4 Nos.
151.	UTP cable		As required
152.	RJ 45 connectors		As required
153.	Outlet points / Wall outlets		As required
154.	Vacuum cleaner		1 No.
155.	Laptop, Notebook		01 each
156.	Intel Mobile Desktop based PC with LCD monitor	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network	01 no

		Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	
157.	Tablet		04 Nos.
158.	Printers: Laserjet, deskjet, passbook, mfd		01 each
159.	Network Printer		01 No.
160.	online UPS		As required
161.	LAN Cards, Wi-fi LAN Cards		06 Nos. each.
162.	LCD/DLP Projector		01 No.
163.	Power Meter		02 Nos.
164.	Crimping Tools		06 Nos.
165.	Computer Toolkits		06 Nos.
166.	Computer Spares:		As required
167.	Motherboards (of different make)		4 Nos.
168.	Cabinets		4 Nos.
169.	Processors (of different make)		4 Nos.
170.	Hard Disk different types	500 GB or better	4 Nos.
171.	Optical Drives		4 Nos.
172.	LCD/LED/TFT Monitors		2 Nos.
173.	Pen Drives		4 Nos.
174.	External Hard disk		2 Nos.
175.	External DVD Writer		2 Nos.
176.	Keyboards		4 Nos.
177.	Mouse		4 Nos.
178.	Anti static pads		4 Nos.
179.	SMPS		4 Nos.
180.	Digital Multimeters		12Nos.
181.	Blu-Ray drive and player		2 Nos.
182.	External Hard Disk		2 Nos.
183.	Digital Camera		2 Nos.
184.	HD Display		2 Nos.
185.	Network storage		2 Nos.
186.	Card Reader		2 Nos.
187.	Game video card		2 Nos.
188.	Web Cam		2 Nos.

189.	Surround sound speakers		2 Nos.
190.	Different types of memory cards		2 Nos. each
191.	Laptop kits		12Nos.
192.	Laptop spares: Cabinet with display, memory, hard disk, battery pack, keyboard membrane, chargers		As required
193.	SMPS Trainer kit		2 Nos.
194.	UPS Trainer kit		As required
195.	Power electronics Trainer kit		2 Nos.
196.	Post error debugging card		4 Nos.
197.	SMPS Tester		4 Nos.
198.	PCI slot Testing tool		4 Nos.
199.	Wireless Network Adapter		6 Nos.
200.	Wireless Access Point		4 Nos.
201.	Router		4 Nos.
202.	Managed Layer 2 Ethernet Switch	8/16/24 port	2 Nos.
203.	Managed Layer 3 Ethernet Switch	8/16/24 port	2 Nos.
204.	Network Training System		2 Nos.
205.	LAN Protocol Simulation and Analyser Software		2 Nos.
206.	Network and Internet security trainer		2 Nos.
207.	LAN cable tester		2 Nos.
208.	Network cables - UTP		As required
209.	Network Cables - coaxial, flat, ribbon		As required
210.	LAN Cards, wi-fi LAN Card		05 Nos. each
211.	Connectors for cables		As required
212.	Power Meter		2 Nos.
213.	Media Convertor		4 each
214.	UTP jack panel	8/16/24 port	2 Nos.
215.	SC Couplers		12Nos.
216.	SC Pigtails		12Nos.
217.	Fluke Meter		2 Nos.
218.	Crimping Tools		6 Nos.
219.	Switch with POE ports		2 Nos.
220.	POE adapters		2 Nos.
221.	Network Camera (Outdoor / Indoor)		2 No. each
222.	Fibre Optics cable with LC connector		As required
223.	LC connector module		As required.

224.	Workstation for multimedia	i700 (i7) PROCESSOR or Quad core or Higher, 8 GB RAM, 1 Terabyte HDD, 22" TFT Monitor101 DVD OR BLU-RAY WRITER, KEYBORD/INTERNET, USB Optical Mouse, USB Keyboard with latest license of OS	2 Nos.
225.	Colour Laser Printer		1 No.
226.	Optical Scanner (Desk Top Type)		1 No.
227.	Web Cam (Digital Camera)		1 No.
228.	DVD or Blu-ray writer		2 Nos.
229.	UPS for NODES and server		As required.
230.	Room temperature thermometer		1 No.
231.	Digital Still SLR Camera		1 No.
232.	Digital Video Camera		1 No.
D. SOFTWARE (Licensed Version)			
233.	Microsoft Window	latest version	01 + 10 licenses
234.	MS Office	latest version	01 + 10 licenses
235.	Anti virus	latest version	11 Nos.
236.	Network troubleshooting utilities	latest version	4 Nos.
237.	Linux Server	latest version	1 No.
238.	Adobe PageMaker	latest version	11 licenses
239.	Corel Draw	latest version	11 licenses
240.	Adobe Photoshop	latest version	11 licenses
241.	Adobe Premiere	latest version	11 licenses
242.	Sound Forge	latest version	11 licenses
243.	3D STUDIO Max	latest version	11 licenses
244.	Visual Basic	latest version	11 licenses
245.	Network Management Software	latest version	01 No.
246.	Data recovery software	latest version	2 Nos.
247.	LINUX Server Operating System (Samba / Su-se)	latest version	01 No.
248.	Open source Pc Utility / Tweak Software	latest version	As available
249.	Adobe Photoshop (academic edition with 10 user license)	latest version	1 No.
250.	3D STUDIO Max (academic edition with 10 user license)	latest version	1 No.

251.	Adobe Flash (academic edition with 10 user license)	latest version	1 No.
252.	Adobe Dreamweaver (academic edition with 10 user license)	latest version	1 No.
253.	Adobe premier Suite (academic edition with 10 user license)	latest version	1 No.
254.	Front Page Editor (Academic edition with 10 user license)	latest version	1 No.

Note: -

1. *All the tools and equipment are to be procured as per BIS specification.*

ANNEXURE - II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

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4	K. Ganesan Vice President -Global Head Talent Acquisition Group TCS House, Raveline street Fort, Mumbai - 400 001	TCS, TCS House, Raveline street, Fort, Mumbai - 400 001	Member
5	Avinsh Vashishta, Chairman & GU Managing Director	Accenture Services Pvt. Ltd., 71, Cunningham Road, Bangalore – 560052	Member
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14	Prof. Ashis.K. Pani, Professor, XLRI Jamshedpur	XLRI Jamshedpur	Member
15	Shri S.K. Prasad	National Institute of Open Schooling, Noida	Member
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20	Dr Vijayarajeswaran, Managing Director	VI Micro Systems Pvt. Ltd, Chennai	Member
21	Pramod Tripathi, SEO	National Institute of Open Schooling, Noida	Member
22	Shri Naresh Chandra, Jt.	DGT, New Delhi	Mentor

	Director, DGT, HQ		
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24	Shri Sundar Rajan, DPA Gr. B	NIMI, Chennai	Representative of NIMI
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26	V. Babu, DDT	DGT, New Delhi	Member
27	K. Singh, DDT	ATI, Ludhiana	Member
28	Annapurna, TO	ATI Hyderabad	Member
29	S.K. Acharya, VI (DTP)	NVTI, NOIDA	Member
30	B.Biswas, TO	RDAT Kolkata	Member
31	Sanjay Kr. Gupta, VI –COPA	RVTI Vadodara	Member
32	Kunal Shanti Priya, VI	ITI, Daltonganj, Jharkhand	Member
33	Anwar Muhammed, VI	RVTI, Trivendrum	Member
34	Sunil. M.K. TO	CTI, Chennai	Member
35	Narmada, VI	RVTI, Bangalore	Member
36	Rohit Sama, ATO	ITI Shantinagar,Hyderabad	Member
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38	P. Parthiban, Assistant Training Officer (ITESM)	Govt ITI(W),Salem, TN	Member
39	S. Raja, ADT	DET, Telangana	Member
40	Mohd. Akram,	ITI, Shanthi Nagar, Hyderabad	Member
41	Geeta Sikhen , VI	RVTI, Panipat	Member

ABBREVIATIONS

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities


कौशलं बलम्