



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

COMPETENCY BASED CURRICULUM

COMPUTER OPERATOR AND PROGRAMMING ASSISTANT

(FOR VISUALLY IMPAIRED)

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 3



SECTOR –IT & ITES



Directorate General of Training

COMPUTER OPERATOR AND PROGRAMMING ASSISTANT

(FOR VISUALLY IMPAIRED)

(Non-Engineering Trade)

(Revised in 2019)

Version: 1.2

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 3

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

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1. COURSE INFORMATION

During the one-year duration of Computer Operator and Programming Assistant (For Visually Impaired) trade a candidate is trained on professional skill, professional knowledge 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: -

The trainee learns about safety and environment, use of fire extinguishers. They learn about trade tools, identifies computer peripherals, internal components, basic 7DOS commands, Windows and Linux interface and its related software installation process. Trainees will work with MS Office package to create word document, practice with excel sheet and get idea to create a good power point presentation, maintain database with MS Access. They will set up and configure a network system of an organization. They will use internet to search information using browser along with official/social communication process. Trainees will create basic static webpage using HTML. At the end of this year trainees can go on industrial visit or projects specified in the syllabus.

The trainee learns scripting language i.e. JavaScript and will develop dynamic webpage and hosting technique in a registered domain. They will use VBA to create & edit various types of macros in MS Excel and to develop user form using VBA. They can maintain accounts of an organization using accounting software Tally. Trainees will learn E-commerce system and will be able to browse, select and transact using different E-commerce websites. They will identify different type of cybercrimes now days and will be able to secure information from Internet by using cyber security concept. At the end of the year trainees can go on industrial visit or projects specified in the syllabus.

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.

Computer Operator and Programming Assistant (For Visually Impaired) trade under CTS is delivered nationwide through network of ITIs. The course is of one-year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Employability Skills) imparts requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by NCVT which is recognized worldwide.

Trainees need to demonstrate broadly that they are able to:

- Read & interpret technical parameters/documentation, identify necessary materials and tools.
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional knowledge& employability skills while performing the job.

2.2 PROGRESSION PATHWAYS

- Can join industry as Craftsman and will progress further as Senior Craftsman, 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 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 one year: -

S No.	Course Element	Notional Training Hours
1	Professional Skill (Trade Practical)	1200
2	Professional Knowledge (Trade Theory)	240
3	Employability Skills	160
	Total	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 method. 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 assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/wastage as per procedure, behavioral attitude, sensitivity to 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 examination 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.	<ul style="list-style-type: none"> • Demonstration of good skills and accuracy in the field of work/ assignments. • A fairly good level of neatness and consistency to accomplish job activities. • Occasional support in completing the task/ job.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices.	<ul style="list-style-type: none"> • Good skill levels and accuracy in the field of work/ assignments. • A good level of neatness and consistency to accomplish job activities. • Little support in completing the task/job.
(c) Weightage in the range of above 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.	<ul style="list-style-type: none"> • High skill levels and accuracy in the field of work/ assignments. • A high level of neatness and consistency to accomplish job activities. Minimal or no support in completing the task/ job.

Computer Operator; operates computer and peripheral equipment to process business, scientific, engineering, or other data, according to operating instructions. Enters commands, using keyboard of computer terminal, and presses buttons and flips switches on computer and peripheral equipment, such as tape drive, printer, data communications equipment, and plotter, to integrate and operate equipment, following operating instructions and schedule. Loads peripheral equipment with selected materials, such as tapes and printer paper for operating runs, or oversees loading of peripheral equipment by Peripheral Equipment Operators. Enters commands to clear computer system and start operation, using keyboard of computer terminal. Observes peripheral equipment and error messages displayed on monitor of terminal to detect faulty output or machine stoppage. Enters commands to correct error or stoppage and resume operations. Notifies supervisor of errors or equipment stoppage. Clears equipment at end of operating run and reviews schedule to determine next assignment. Records problems which occurred, such as down time, and actions taken. May answer telephone calls to assist computer users encountering problem. May assist workers in classifying, cataloging, and maintaining tapes.

Programming Assistant; 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.

Reference NCO-2015: -

- i) 4131.0600 - Computer Operator
- ii) 3514.0300 - Programming Assistant

4. GENERAL INFORMATION

Name of the Trade	COMPUTER OPERATOR & PROGRAMMING ASSISTANT(FOR VISUALLY IMPAIRED)
Trade Code	DGT/1105
NCO – 2015	4131.0600, 3514.0300
NSQF Level	Level-3
Duration of Craftsmen Training	One Year (1600 Hours)
Entry Qualification	Passed 10 th class examination(Candidate should be Visually impaired)
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	Visually impaired
Unit Strength (No. of Student)	12 (There is no separate provision of supernumerary seats)
Space Norms	35 Sq. m
Power Norms	3.45 KW
Instructors Qualification for	
(i) Computer Operator and Programming Assistant(For Visually Impaired) Trade	<p>B.Voc/Degree in Computer Science / IT from AICTE/UGC Recognized University with one year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>Post Graduate in Computer Science /Computer Application / IT or NIELIT B Level with one year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>PGDCA from recognized University or NIELIT A Level with two years experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>Diploma (Minimum 2 years) in Computer Science / IT from recognized Board/ Institute or relevant Advanced Diploma (Vocational) from DGT with two year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/NAC passed in the trade of Computer Operator and Programming Assistant with three-year post qualification experience in the relevant field.</p> <p><u>Essential Qualification:</u> Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.</p> <p><i>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</i></p>

	<p>variants. <i>For differently abled Students it is Preferable that the Instructor should know the sign language.</i></p> <p style="text-align: center;">OR</p> <p><i>He/ She has to learn the sign language within six months of joining.</i></p>		
(ii) Employability Skill	<p>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)</p> <p style="text-align: center;">OR</p> <p>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills from DGT institutes.</p>		
(iii) Minimum Age for Instructor	21 Years		
List of Tools & Equipment	As per Annexure-I		
Distribution of training on Hourly basis: (Indicative only)			
Total hrs. /week	Trade Practical	Trade Theory	Employability Skills
40 Hours	30 Hours	6 Hours	4 Hours

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

5.1 LEARNING OUTCOMES (TRADE SPECIFIC)

1. Install and setup operating system and related software in a computer following safety precautions.
2. Create, format and edit document using word processing application software.
3. Create, format, edit and develop a workbook by using spreadsheet application software.
4. Create and customize slides for presentation.
5. Create and manage database file using MS Access.
6. Install, setup/configure, troubleshoot and secure computer network including Internet.
7. Develop static web pages using HTML.
8. Develop web pages using Java Script.
9. Develop simple spread sheets by embedding VBA.
10. Maintain accounts using accounting software.
11. Browse, select and transact using E commerce websites.
12. Secure information from Internet by using cyber security concept.

Note: -

- *It will be the responsibility of Training Centre to impart training in addition to curriculum like Orientation, Mobility, Activities of Daily Living, total communication, use of assistive devices, adaptations for barrier free environment like staircase, lift sign board, ramp, instruments, psychology, sociology of behaviour and technology.*
- *Visually Impaired and other such Disabilities requiring support should be provided Writer (one standard below Trade Entry Level) during examination and given 30 Minutes more than the prescribed time. Please update trainer knowledge for advance techniques and treatment. All material should be in proper quality and quantity. For practical, chart with process must be required.*

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Install and setup operating system and related software in a computer following safety precautions.	Assemble computer and configure the CMOS setup.
	Install and configure Windows OS and application software.
	Install the printer and other peripheral devices.
	Burn CD/DVD.
	Troubleshoot the PC.
	Execute DOS and LINUX commands.
	Customize Windows and LINUX OS.
2. Create, format and edit document using word processing application software.	Identify word tools in the Ribbon.
	Create a resume using various tools.
	Design and print Magazine covers using various tools.
	Demonstrate the use of shortcut keys, autocorrect and macros.
	Perform Mail merge in MS Word.
	Execute typing practice using open source typing tutor tools.
3. Create, format, edit and develop a workbook by using spreadsheet application software.	Create tables and charts and print using various functions and formulas applying conditional formatting.
	Create a table and Perform Sorting; filtering, Subtotal, validation and goal seek on a table.
	Prepare a pivot table and chart on any existing table.
4. Create and customize slides for presentation.	Edit images with Open Office Applications.
	Create Slides and run slideshows.
	Format objects, add Audio and Video.
	Use Open Office for creating presentations.
5. Create and manage database file by using MS Access.	Create simple application on Relational Database in MS Access using data validation, filters, sorting, forms, query, report and macro.
	Import, Export, Link, Backup and Retrieve database in MS Access.
6. Install, setup/configure, troubleshoot and secure computer network including	Identify different cables and connectors used in networking.
	Assign Computer Name and workgroup to a computer.
	Prepare UTP cross cable & connect computers.
	Share a printer with Network.
	Share Internet using Windows Tools.

Internet.	Check Network connectivity.
	Configure HUB & Switch.
	Configure DHCP and firewall.
	Setup Video conferencing.
	Secure Network with various tools.
	Practice Web Browsing, create email ID and send, receive mails.
	Perform text chat and video chat using social networking sites.
	Configure Outlook Express.
	Use Skype and Google+ or any other video conferencing site.
7. Develop static web pages using HTML.	Create simple static Web Pages using HTML tags.
	Create simple static Web Pages using internal styles (CSS) and external styles.
	Design static web pages using Kompozer.
8. Develop web pages using Java Script.	Design a dynamic Web Page in JavaScript using various operators.
	Design a dynamic Web Page in JavaScript using various control statements and looping structures.
	Design a dynamic Web Page in JavaScript using strings and functions.
	Design a dynamic Web Page in JavaScript using Arrays and objects.
	Design a dynamic Web Page in JavaScript using Web Forms and images.
9. Develop simple spread sheets by embedding VBA.	Create various types of macros in MS Excel.
	Develop and execute a program in VBA using various operators and data types.
	Develop and execute a program in VBA using control statements and looping structures.
	Develop and execute a program in VBA using strings and functions.
	Develop and execute a program in VBA using Arrays.
	Design a VBA User Form and develop program using various control buttons and boxes.
10. Maintain accounts using accounting software.	Create a company in Tally.
	Create opening ledgers using an existing Balance Sheet.
	Post voucher in tally in different modes.
	Perform Cost Centre & Cost Category.

	Manufacture and transfer materials in Tally.
	Show P/L A/c, Balance Sheet and other reports.
	Apply Budget.
	Post VAT & Service Tax related entry in Tally.
11. Browse, select and transact using E-commerce websites.	Place order for products from E-commerce websites for purchase.
	Upload a product in E-Commerce site for sale.
	Identify security issues in E-commerce and payment operations.
12. Secure information from Internet by using cyber security concept.	Provide firewall security for Internet connection and Network System.
	Make backup copies of important file, data and information.
	Secure your Wi-Fi networks using wireless security features.

SYLLABUS FOR COMPUTER OPERATOR & PROGRAMMING ASSISTANT TRADE (FOR VISUALLY IMPAIRED)			
DURATION – ONE YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
Professional Skill 180Hrs; Professional Knowledge 36Hrs	Install and setup operating system and related software in a computer following safety precautions.	<p>Safe working practices</p> <ol style="list-style-type: none"> 1. Visit COPA Lab. of the institutes and locate the electrical connections with computer system setup. (6 hrs) 2. Identifying safety symbols and hazard identification. (4 hrs) 3. Practice safe methods of fire fighting in case of electrical fire. (4 hrs) 4. Use of fire extinguishers. (4 hrs) <p>Computer components</p> <ol style="list-style-type: none"> 5. Identify computer peripherals and internal components of a disassembled desktop computer. (6 hrs) 6. Assemble components of desktop computer. (6 hrs) 7. Keyboard Practices. (10 hrs) 8. Keyboard Practices typing Technique (20 hrs) 	<p>Safe working practices</p> <ul style="list-style-type: none"> • Scope of the COPA trade. • Safety rules and safety signs. • Types and working of fire extinguishers. <p>Communication skills Daily living activities</p> <p>Keyboard Familiarity</p> <ul style="list-style-type: none"> • Introduction To special keys and It's Usage • Introduction to usage of numeric Keys <p>Introduction to Computer components</p> <ul style="list-style-type: none"> • Introduction to computer system. Concepts of Hardware and Software. • Function of motherboard components and various processors. • Various Input/ Output devices in use and their features. (12 hrs.)
		<p>Using Windows Operating System</p> <ol style="list-style-type: none"> 9. Practice on Windows interface and navigating 	<p>Introduction Windows Operating System</p> <ul style="list-style-type: none"> • Introduction to operating System

		<p>windows. (8 hrs)</p> <p>10. Practice on managing files and folders using removable drives. (6 hrs)</p> <p>11. Customize the desktop settings and manage user accounts. (6hrs)</p> <p>12. View system properties and control panel details. (2hrs)</p> <p>13. Work with keyboard shortcut commands. (6hrs)</p> <p>14. Print and scan document using different commands. (2hrs)</p>	<ul style="list-style-type: none"> • Main features of Windows OS • Concept of various shortcut commands. (06 hrs.)
		<p>Computer basics and Software Installation</p> <p>15. Install necessary application software for Windows i.e. Office Package, PDF Reader, Media Player etc. (10hrs)</p> <p>16. Configure Bluetooth and wi-fi settings. (6hrs)</p> <p>17. Install Drivers for printer, scanner, webcam and DVD etc. (10hrs)</p> <p>18. Burn data, video and audio files on CD/DVD using application software. (4hrs)</p>	<p>Computer basics and Software Installation</p> <ul style="list-style-type: none"> • Introduction to the booting process. • Introduction to various types of memories and their features. • Basic Hardware and software issues and their solutions. • Usage of Application software and Antivirus. (06 hrs.)
		<p>DOS Command Line Interface & Linux Operating Systems</p> <p>19. Manage files and folders Use basic DOS commands for directory listing. (10 hrs)</p> <p>20. Using DOS commands. (6 hrs)</p> <p>21. Install Linux operating system. (6 hrs)</p> <p>22. Install necessary application</p>	<p>Introduction to DOS Command Line Interface & Linux Operating Systems</p> <ul style="list-style-type: none"> • Introduction to basic DOS Internal and External Commands. • Introduction to Open Source Software. • Introduction to Linux Operating System

		<p>software for Linux. Office Package, PDF Reader, Media Player etc. (6 hrs)</p> <p>23. Use Basic Linux commands for directory listing, file and folder management, password etc. (10 hrs)</p> <p>24. Use the Linux graphical user interface for file and folder management, exploring the system etc. (10 hrs)</p> <p>25. Customize desktop settings and manage user accounts in Linux. (6 hrs)</p> <p>26. View system properties and manage system setting in Linux. (6 hrs)</p>	<p>features, structure, files and processes.</p> <ul style="list-style-type: none"> • Basic Linux commands.(12 hrs.)
<p>Professional Skill 60Hrs;</p> <p>Professional Knowledge 12Hrs</p>	<p>Create, format and edit document using word processing application software.</p>	<p>Using Word Processing Software</p> <p>27. Open MS Word and familiarise with basic word components. (2hrs)</p> <p>28. Practice creating, saving and renaming of word documents. (2hrs)</p> <p>29. Edit document using basic formatting tools. (7hrs)</p> <p>30. Practice Inserting and formatting tables and other objects. (7hrs)</p> <p>31. Work with Page layout settings and printing documents. (5hrs)</p> <p>32. Use templates, autocorrect tools, and record and execute a macro. (5hrs)</p> <p>33. Use Mail merge tool. Use conditional Mail Merge,</p>	<p>Word Processing Software</p> <ul style="list-style-type: none"> • Introduction to the various applications in MS office. • Introduction to Word features, Office button, toolbars. • Creating, saving and formatting and printing documents using Word. • Working with objects, macro, mail merge, templates and other tools in Word. (12 hrs.)

		<p>External Data Source. Practice Letters, Label & Envelop printing using Mail Merge (07hrs).</p> <p>34. Use Table of Context, Indexing, Hyperlink, Bookmark, Comment, equation, symbols, citation, cross-reference, footnote, translate, synonyms, thesaurus, spell check & grammar, compare etc. (5hrs)</p> <p>35. Practice Typing using open source typing tutor. (13hrs)</p> <p>36. Practice of using shortcut keys and use Open Office as word processor. (7hrs)</p>	
<p>Professional Skill 60Hrs;</p> <p>Professional Knowledge 12Hrs</p>	<p>Create, format, edit and develop a workbook by using spreadsheet application software.</p>	<p>Using Spread Sheet Application</p> <p>37. Open MS Excel and familiarise with basic application components. (2hrs)</p> <p>38. Practice creating, saving and formatting excel spread sheets. (5hrs)</p> <p>39. Use absolute and relative referencing, linking sheets, conditional formatting etc. (5hrs)</p> <p>40. Practice Excel functions of all major categories i.e. Financial, Logical, Text, date & time, Lookup, Math, Statistical etc. (8hrs)</p> <p>41. Use various data types in Excel, sorting, filtering and validating data. (8 hrs)</p>	<p>Spread Sheet Application</p> <ul style="list-style-type: none"> • Introduction to Excel features and Data Types. • Cell referencing and linking Sheets. • Introduction to various functions in all categories of Excel. • Concepts of sorting, filtering and validating data. • Analysing data using charts, data tables, pivot tables, goal seek and scenarios.(12 hrs.)

		<p>42. Create and format various static and dynamic charts. (8hrs)</p> <p>43. Practice Importing & exporting excel data. (4 hrs)</p> <p>44. Perform data analysis using “what if” tools and Pivot Table and record and execute a macro. (8hrs)</p> <p>45. Modify Excel page setup and printing and use open office as Spreadsheet application. (2hrs)</p> <p>46. Execute simple projects using Excel & Word. (10 hrs)</p>	
<p>Professional Skill 60Hrs;</p> <p>Professional Knowledge 12Hrs</p>	<p>Create and customize slides for presentation.</p>	<p>Image editing and creating Presentations</p> <p>47. Use Windows Paint or image editing software like Open Office Draw, GIMP, IrfanView or a similar tool. (8hrs)</p> <p>48. Open power point presentation and familiarise with basic application components. (6 hrs)</p> <p>49. Create Slide shows, Insert picture and theme. (6 hrs)</p> <p>50. Add new slide, format text, link with word and excel documents. (6hrs)</p> <p>51. Practice animating slide transitions and objects. (6hrs)</p> <p>52. Create slide shows by inserting audio & video and synchronise with presentation. (8hrs)</p>	<p>Image editing, Presentations</p> <ul style="list-style-type: none"> • Introduction to Open Office. • Introduction to the properties and editing of images. • Introduction to different formats of images and their uses. • Introduction to Power Point and its advantages. • Creating Slide Shows. • Fine tuning the presentation and good presentation technique. (12 hrs.)

		<p>53. Modify slide page setup and print the slides. (5hrs)</p> <p>54. Create a simple presentation project using open office. (15hrs)</p>	
<p>Professional Skill 60Hrs;</p> <p>Professional Knowledge 12Hrs</p>	<p>Create and manage database file by using MS Access.</p>	<p>Database Management with MS Access</p> <p>55. Create database and design a simple table in Access. (6 hrs)</p> <p>56. Practice enforcing integrity constraints and modify properties of tables and fields. (6 hrs)</p> <p>57. Create relationships and join tables. (6 hrs)</p> <p>58. Create and format Forms. (6 hrs)</p> <p>59. Create simple queries with various criteria and calculations. (12 hrs)</p> <p>60. Create Simple update, append, make table, delete and crosstab queries. (9 hrs)</p> <p>61. Modify form design with controls, macros and events. (6 hrs)</p> <p>62. Import and export data to and from Access and create and format various types of reports. (6 hrs)</p> <p>63. Compress and Encrypt databases. (3 hrs)</p>	<p>Database Management Systems</p> <ul style="list-style-type: none"> • Concepts of Data and Databases. • Overview of popular databases, RDBMS, OODB and NOSQL. • Rules for designing good tables. Integrity rules and constraints in a table. • Relationships in tables. • Introduction to various types of Queries and their uses. • Designing Access Reports and Forms. • Introduction to macros, designer objects controls, their properties and behavior. (12 hrs.)
<p>Professional Skill 90Hrs;</p> <p>Professional Knowledge</p>	<p>Install, setup/ configure, troubleshoot and secure computer network including</p>	<p>Configuring and using Network</p> <p>64. View Network connections. (3 hrs)</p> <p>65. Connect a computer to a network and share Devices</p>	<p>Networking Concepts</p> <ul style="list-style-type: none"> • Introduction to Computer Networks, Necessity and Advantages.

18Hrs	Internet.	<p>I.e. Printers, files, folders and drives. (6 hrs)</p> <p>66. Work with various Network devices, connectors and cables.(6 hrs)</p> <p>67. Practice IP Addressing and Subnet masking for IPV4/ IPV6 and pinging to test networks. (6 hrs)</p> <p>68. Configure Hub and Switch. (6 hrs)</p> <p>69. Set up and configure wired and wireless LAN in a Computer Lab within at least three computers. Use patch panel & I/O Box for wired LAN and installing & configuring Internet connection in a single PC and in a LAN. (12 hrs)</p> <p>70. Set up a proxy server/ DHCP Server with firewall. (9 hrs)</p> <p>71. Set up video conferencing using open source software. (6 hrs)</p> <p>72. Use various tools (by open source /free) for network troubleshooting, maintenance and security for both Wired and Wireless (6 hrs)</p>	<ul style="list-style-type: none"> • Client Server and peer to Peer networking concepts. • Concept of Proxy Server and proxy firewall server. • Concept of DHCP Server. • Network topologies. Introduction to LAN, WAN and MAN. • Network components, viz. Modem, Hub, Switch, Router, Bridge, Gateway etc. • Network Cables, Wireless networks and Blue Tooth technology. • Concept of ISO - OSI 7 Layer Model. • Overview of various Network Protocols Viz. TCP/IP, FTP, Telnet etc. • Concept of Logical and Physical Addresses, Subnetting and Classes of Networks. (12 hrs.)
		<p>Using Internet</p> <p>73. Browse the Internet for information (use at least 3 popular browsers). (3 hrs)</p> <p>74. Create and use e-mail for communication with attachment, priority setting,</p>	<p>Internet Concepts</p> <ul style="list-style-type: none"> • Introduction to www, Concept of Internet, Web Browsers, internet servers and search engines. • Concepts of Domain

		<p>and address book. (3 hrs)</p> <p>75. Communicate with text, video chatting and social networking sites. (6 hrs)</p> <p>76. Use online dictionary, translation software, storage space, share files with e-mail links, download manager, download & upload YouTube files, goggle map & earth etc. Update windows & other software. (6 hrs)</p> <p>77. Configure Outlook, mail service in mobile phones. Use tools like Skype, Google+ etc. (6 hrs)</p> <p>78. Browser setting for Bookmark, cookies, favourites and pop ups, default website, trusted site, restricted site, content, history and advanced setup. (6 hrs)</p>	<p>Naming Systems and E mail communication.</p> <ul style="list-style-type: none"> • Introduction to video chatting tools and Social Networking concepts. (06 hrs.)
<p>Professional Skill 90Hrs;</p> <p>Professional Knowledge 18Hrs</p>	<p>Develop static web pages using HTML.</p>	<p>Designing Static Web Pages</p> <p>79. Practice with basic HTML elements (e.g. head, title, body), tag and attributes. (3 hrs)</p> <p>80. Design simple web page with text, paragraph and line break using HTML tags. (5 hrs)</p> <p>81. Format text, change background colour and insert pictures in web page. (6 hrs)</p> <p>82. Design simple web page with tables and lists. (6 hrs)</p>	<p>Web Design Concepts</p> <ul style="list-style-type: none"> • Concepts of Static and Dynamic Web pages. • Introduction to HTML and various tags in HTML. • Concepts of different controls used in Web Pages. • Concepts of CSS and applying CSS to HTML. • Introduction to open source CMS viz, Joomla, Word press etc. and Web authoring tools viz. Kompozer, Front Page

		<p>83. Use marquees, hyperlinks and mail to link in designing web pages. (6 hrs)</p> <p>84. Create frames, add style and design layout. (10 hrs)</p> <p>85. Insert text box, check box and combo box in web page. (6 hrs)</p> <p>86. Design web page using password field, submit button, reset button and radio button etc. (6 hrs)</p> <p>87. Design a web page adding flash file, audio and video files. (10 hrs)</p> <p>88. Design web page with forms and form controls using HTML tags. (8 hrs)</p> <p>89. Create web page using Cascading Style Sheet (CSS). (12 hrs)</p> <p>90. Use WYSIWYG (Kompozer) web design tools to design and edit web pages with various styles. (12 hrs)</p>	<p>etc.</p> <ul style="list-style-type: none"> • Concept of good web page designing techniques. (18 hrs.)
<p>Professional Skill 150Hrs;</p> <p>Professional Knowledge 30 Hrs</p>	<p>Develop web pages using JavaScript.</p>	<p>JavaScript& creating Web page</p> <p>91. Practice with basic elements of JavaScript. (12hrs)</p> <p>92. Embed JavaScript in HTML to display information in web pages, documentation and formatting of HTML source code. (18hrs)</p> <p>93. Use JavaScript Variables, Data types, Constants and Operators. (12hrs)</p> <p>94. Use Control statements and Loops in JavaScript. (18hrs)</p>	<p>Introduction to JavaScript</p> <ul style="list-style-type: none"> • Introduction to Programming and Scripting Languages. • Introduction to JavaScript and its application for the web. • Introduction to Web Servers and their features. • JavaScript Basics – Data types, Variables, Constants and

		<p>95. Practice with switch case, loop controls and Errors in JavaScript. (12hrs)</p> <p>96. Practice with Arrays in JavaScript page. (18hrs)</p> <p>97. Practice with functions in JavaScript web page. (12hrs)</p> <p>98. Practice with String, Math and Date functions in JavaScript. (18hrs)</p> <p>99. Use online tool or open source software to develop and edit web pages containing Titles, different font sizes and colours, frames, lists, tables, images, image map, controls, CSS, forms, hyperlinks etc., use web template to create a web page of various styles. (12hrs)</p> <p>100. Develop a simple web project using HTML, JavaScript and host it in IIS and a registered domain. (18hrs)</p>	<p>Conversion between data types.</p> <ul style="list-style-type: none"> • Arithmetic, Comparison, Logical Operators in JavaScript. Operator precedence. • Program Control Statements and loops in JavaScript. • Arrays in JavaScript – concepts, types and usage. • The String data type in JavaScript. Introduction to String, Math and Date. • Introduction to Functions in JavaScript. • Built in JavaScript functions overview. • Concepts of Pop Up boxes in JavaScript. • Introduction to the Document Object Model. • Concepts of using Animation and multimedia files in JavaScript. (30 hrs.)
<p>Professional Skill 240Hrs;</p> <p>Professional Knowledge 48 Hrs</p>	<p>Develop simple spread sheets by embedding VBA.</p>	<p>Programming with VBA</p> <p>101. Practice with basic functions of VBA Editor. (3hrs)</p> <p>102. Use form controls like buttons, Check boxes, Labels, Combo Box, Group Box, List Box, Option Button, Scroll Bar and Spin button. (12 hrs)</p>	<p>Introduction to VBA, Features and Applications.</p> <ul style="list-style-type: none"> • Introduction to VBA features and applications. • Properties, events and methods associated with the Button, Check Box, Label, Combo Box,

		<p>103. Modify object properties in VBA program. (6 hrs)</p> <p>104. Write simple programs involving Data types, Variables, Operators and Constants. (18hrs)</p> <p>105. Create Message boxes and Input boxes in VBA. (6 hrs)</p> <p>106. Work with conditional statements like if, Else-if, and Select. (12 hrs)</p> <p>107. Practice with Loop, Loop Control and Case statements in VBA. (15hrs)</p> <p>108. Create and Manipulate Arrays in VBA. (12 hrs)</p> <p>109. Practice with string variables in VBA programming. (12hrs)</p> <p>110. Write programs involving Mathematical, Conversion, Date and String Functions in VBA. (18hrs)</p> <p>111. Create Functions, Procedures, Passing Parameters and Using Returned Data. (12 hrs)</p> <p>112. Practice with built in functions in VBA programs. (12hrs)</p> <p>113. Create and edit macros. (12hrs)</p> <p>114. Write code to work with Excel in VBA forms. (12 hrs)</p> <p>115. Practice with methods and events in VBA Programming. (24 hrs)</p>	<p>Group Box, Option Button, List Box, Scroll Bar and Spin button controls.</p> <ul style="list-style-type: none"> • VBA Data types, Variables and Constants. • Operators in VBA and operator precedence. • Mathematical Expressions in VBA. • Introduction to Arrays in VBA. • Introduction to Strings in VBA. • Conditional processing in VBA, using the IF, Else-if, Select Case Statements. • Introduction to Loops in VBA. • VBA message boxes and input boxes. • Introduction to Creating functions and Procedures in VBA. • Using the built-in functions. • Introduction to Object Oriented Programming Concepts. Concepts of Classes, Objects, Properties and Methods. • The user forms and control in Excel VBA. • Introduction to Debugging Techniques. (48 hrs.)
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		<p>116. Debug, Step through code, Breakpoints, find and fix errors while debugging. (18 hrs)</p> <p>117. Develop a simple project involving MS excel and VBA. (36 hrs)</p>	
<p>Professional Skill 120Hrs;</p> <p>Professional Knowledge 24Hrs</p>	<p>Maintain accounts using accounting software.</p>	<p>Using Accounting Software</p> <p>118. Practice Basic accounting with tally interface. (12 hrs)</p> <p>119. Create Company, Account and Voucher entry in Tally. (12 hrs)</p> <p>120. Generate reports for Invoice, Bill, Profit& Loss account etc. (10 hrs)</p> <p>121. Perform Cost Centre & Cost Category management. (12 hrs)</p> <p>122. Create and manage budgeting systems. (12 hrs)</p> <p>123. Create Scenario and Variance Analysis. (8 hrs)</p> <p>124. Use Tally for Costing, Ratio Analysis, Cash flow and Funds flow statements. (12 hrs)</p> <p>125. Analyze and Manage Inventory control. (10 hrs)</p> <p>126. Perform Point of Sales and Taxation (VAT, Excise, Service Tax). (8 hrs)</p> <p>127. Perform System Administration and use other Utilities. (8 hrs)</p> <p>128. Create users, take Backup</p>	<p>Using Accounting Software</p> <ul style="list-style-type: none"> • Basics of Accounting, Golden Rules of Accounting, Voucher Entry, Ledger Posting, Final Accounts Preparation. • Cash Book. Ratio Analysis, Depreciation, Stock Management. • Analysis of VAT, Cash Flow, Fund Flow Accounting. • Introduction to Tally, features and Advantages. • Implementing accounts in Tally. • Double entry system of bookkeeping. • Budgeting Systems, Scenario management and Variance Analysis. • Costing Systems, Concepts of Ratios, Analysis of financial statements. • Inventory Basics, POS Invoicing, TDS, TCS, FBT, VAT & Service Tax.

		Restore of Company. (8 hrs) 129. Use Multilingual Functionality in Tally. (8hrs)	<ul style="list-style-type: none"> Tally Interface in Different Languages.(24 hrs.)
Professional Skill 60Hrs; Professional Knowledge 12Hrs	Browse, select and transact using E-commerce websites	E Commerce 130. Browse E-commerce websites viz. eBay, Amazon, flipkart, OLX, quikr etc. and prepare comparative statement of the main features of these sites. (16 hrs) 131. Upload products for selling in E-Commerce Sites and make online purchase from E Commerce sites.(28 hrs) 132. Manage security issues in E-Commerce and payment operations. (16hrs)	E Commerce Concepts <ul style="list-style-type: none"> Introduction to E-Commerce and advantages. Building business on the net. Payment and Order Processing, Authorization, Chargeback and other payment methods. Security issues and payment gateways. (12 hrs.)
Professional Skill 30Hrs; Professional Knowledge 06Hrs	Secure information from Internet by using cyber security concept.	Cyber Security: 133. Protect information, computers and networks from viruses, spyware and other malicious code. (3 hrs) 134. Provide firewall security for Internet connection and Network System. (6 hrs) 135. Protect the computer against various internet threats. (3 hrs) 136. Make backup copies of important file, data and information. (3 hrs) 137. Secure your Wi-Fi	Cyber Security: <ul style="list-style-type: none"> Overview of Information Security, SSL, HTTPS, Security threats, information Security vulnerability and Risk management. Introduction to Directory Services, Access Control, Security, Privacy protection, Audit and Security. Introduction to IT Act and penalties for cybercrimes. (06 hrs.)

		<p>networks using password, WEP, WPA-PSK, WPA2-PSK, SSID, MAC address filtering. Create individual user accounts for each member. (9 hrs)</p> <p>138. Limit member access to data and information and restrict authority to install unnecessary downloads. (6hrs)</p>	
<p>Industrial Visit/Project work</p> <p>Broad Area:</p> <ul style="list-style-type: none"> a) Create and host a web site of at least 6 web pages using JavaScript containing interactive objects, functions etc. b) Create a project with Excel & VBA on Payroll Systems. c) Create a company in Tally and post vouchers in it for a financial period. Vouchers should contain purchase, sales with VAT, contra, payment, receipts, cost centre cost category etc.) 			

SYLLABUS FOR CORE SKILLS

1. Employability Skills(Common for all CTS trades) (160Hrs)

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			
COMPUTER OPERATOR & PROGRAMMING ASSISTANT (For Visually Impaired) (For batch of 12 candidates)			
S No.	Name of the Tools and Equipment	Specification	Quantity
A. Trainees Tools/ Equipment			
1.	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.	06Nos.
2.	Laptop	4 th Gen Ci5 or higher Processor, 4GB RAM, 1TB Hard Disk, Win8/latest Preloaded Licensed OS, 2GB Graphics Card, DVD Writer, Standard Ports and Connectors.	01 No.
3.	Wi-Fi Router	With Wireless Connectivity	01 No.
4.	Switch	24 Port	01 No.
5.	Structured cabling in Lab	to enable working with Wired Networks for Practical	As required
6.	Internet Connectivity	Broadband connection with min. 2 MBPS speed	As required
7.	Registered Domain	at least 100 MB Web Space	As required
8.	Laser Printer	Color A4 Size	01 No.
9.	Network Laser Printer	Monochrome A4 Size	01 No.
10.	Optical Scanner	Flatbed A4	01 No.
11.	Digital Web Cam	High Resolution (3.1 MP or higher)	04 Nos.
12.	DVD or Blu-Ray Writer	24X or higher external (USB)	02 Nos.
13.	LCD Projector	3000 lumens or higher	01 No.
14.	Projector Screen	matte(antiglare) screen	01 No.
15.	Online UPS		As required
16.	Crimping Tool	RJ-45	06 Nos.

17.	Network Rack	4U for 24 ports	01 No.
18.	Digital Multimeters	3.5-digit handheld type.	04 Nos.
19.	Screw Driver Set	Standard	04 Sets
20.	Mini Dongle for Bluetooth devices Connection	USB	04 Nos.
21.	Headphone & mic. set	Wired	06 Nos.
22.	Sound System	2:1	01 No.
23.	External Hard Disk	1 TB	02 Nos.
24.	Patch Panel	24 Port	02 Nos.
25.	LAN Tester	UTP cat5 cable tester (RJ 45)	06 Nos.
26.	Punching Tool	for punching RJ 45 socket with cat 5 cable	06 Nos.
B. Software			
27.	MS Office	Latest version available at the time of procurement	06 Licenses
28.	Antivirus for – clients / workstations in profile	validity of an year or more which should be renewed upon expiry	06 Licenses
29.	Open Office or equivalent	Latest version	Open source software
30.	GIMP / Irfan View Image editor or equivalent	Latest version	Open source software
31.	LINUX OS	Latest version	Open source software
32.	Web Authoring tool	WYSIWYG Web Authoring tool- Dreamweaver or Open Source tools like Kompozer, FrontPage or similar tools along with FTP tools for ex. File Zilla etc.	Proprietary /Open source software
33.	Tally	ERP 9 or Latest	06 Licenses
34.	E Commerce Simulation Software	Latest version	Open source software
35.	Web Server	HTTP Web server / XAMPP or any other similar server	Open source software
C. List Of Other Items/ Furniture			
36.	Vacuum cleaner	Hand Held	01 No.
37.	Pigeon hole cabinet	20 compartments	01 No.

38.	Chair and table for the instructor	with armrest mounted on castor wheels, adjustable height/Standard	01 each (for class room & laboratory)
39.	Dual Desk / Chair and Tables	Standard	6 / 12 Nos.
40.	Computer table	laminated top 150X650X750 mm with sliding tray for key board and one shelf of storage	06 Nos.
41.	Operators chair	without arms mounted on castor wheels, adjustable height	12 Nos.
42.	Printer table	650X500X750 mm can be varied as per local specifications	03 Nos.
43.	Air conditioner		As required
44.	Storage cabinet	60X700X450mm	01No.
45.	White Board	minimum 4X6 feet	01 No.
46.	Steel Almirah	2.5 m x 1.20 m x 0.5 m	01 No.
47.	Fire Extinguisher CO2	2 KG	02 Nos.
48.	Fire Buckets	Standard size	02 Nos.
D. Raw Materials			
49.	White Board Marker	Assorted color	As required
50.	Duster Cloth	2'/2'	As required
51.	Cleaning Liquid	500 ml	As required
52.	Photo Copy Paper	A4	As required
53.	Full Scape Paper	White	02 reams
54.	Cartridges for printer	Color/monochrome as per model of the printer	As required
55.	I/O Box with socket	RJ 45	As required
56.	RJ 45 connector	For connecting utp cat 5 cable	200 Pcs.
57.	Optical Mouse	USB/PS2	As required
58.	Key Board	USB/PS2	As required
59.	SMPS	12V DC	As required
60.	CMOS Batteries	3.0 V	As required
61.	Power Chord	3 Pin	As required
62.	Cable	Cat 5/5e	100 meter
63.	Stapler	Small	02 pcs.
64.	Stapler	Big	01 pc.

65.	Battery for remote	AAA	As required
66.	Battery for clock	AA	As required
67.	Pen drive	8 GB	02 Nos.
68.	CDs	52x or higher	50 Nos.
69.	DVDs	4.7GB or higher	50 Nos.
70.	Wall Clock	Analog	01 pcs.
71.	Battery for LAN tester	9 V	As required
72.	Power Adapter	For Hub, Switch, Router	As required

E. List of Latest Hardware for the Blind and Low Vision:

73.	Computers Access <ul style="list-style-type: none"> • JAWS Talking Software for computers - Also Supports Hindi and other vernacular languages • NVDA Talking Software for computers - Also Supports Hindi and other vernacular languages • Type Ability Talking Keyboard Learning Software • Talking Typing Software for young learners • MAGic Screen Magnification Software • MAGic Large Print Keyboard 		As required
74.	Talking Portable Notetaker		As required
75.	Standalone text readers		As required
76.	Instant text readers/ magnifiers - computer supported		As required
77.	Computer supported ocr scanning & reading software		As required
78.	DAISY Talking Book Recorders, Players & Software		As required
79.	Educational Aids & Devices <ul style="list-style-type: none"> • ANGEL PRO Low Cost Talking All In One - Daisy Reader/ E-Book Reader/ MP3 Player/ Radio/ Voice Recorder • Talking Dictionary 		As required

	<ul style="list-style-type: none"> • Talking Scientific Calculator 		
80.	Mathematics Educational Software		As required
81.	INDEX V4 Braille Printers/ Embossers & Braille Presses		As required
82.	Tactile Graphics Production <ul style="list-style-type: none"> • PIAF Tactile Image Maker • Special Non Tearable Tactile Graphic Paper 		As required
83.	Vision Screener Software		As required
84.	Embedded Charts		As required
85.	Flow Charts & Templates for visually impaired		As required

Note: -

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

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.

List of Expert member attended to finalize the course curriculum of Computer Operator & Programming Assistant (For Visually Impaired)			
S No.	Name & Designation Sh./ Mr./ Ms.	Organization	Remarks
1.	Dr. Bhushan Punani, Executive Secretary	Blind Peoples Association, Ahmedabad	Chairman
2.	L.K. Mukherjee, DDT	CSTARI, Kolkata	Coordinator
3.	S.A. Pandav, Regional Dy. Director	RDAT, Vadodara	Member
4.	Kr. H. D. Purohit, Supervisor Instructor	Mahila ITI Thaltej	Member
5.	Viral G Ramavi, Supervisor Instructor	ITI Kubernagar	Member
6.	Yogesh C Parkhey, Dy. Director (R) J/C	NCSC-DA Ahmedabad	Member
7.	V.K. Tripathi, V.I. F/N	NCSC-DA Ahmedabad	Member
8.	DrDharti H. Gajjar, Assistant Professor	Gujarat University	Member
9.	Jagruti Uderysim (C.I)	I.T.I Vastrapur	Member
10.	Ranochhul Soni, Co-ordinator Tech for the Blind	Blind People's Association	Member
11.	D. P. Gurjar, S.I, AAA	ITI Tarsali, Vadodara	Member
12.	J.V Patel, GSDM Consultant	RDD, Vadodara	Member
13.	Priyanka Parmar, GSDM Consultant	RDD, Vadodara	Member
14.	Manubhai Chaudhary, Principal	Secondary School For the Blind	Member
15.	Vinodbhai Rathore, Principal	A.T.C.B Blind School	Member

16.	Yatin Trivedi, SI	ITI Thaltej	Member
17.	Nelson Christian, SI Web Design	ITI Maninagar	Member
18.	Anand Chauhan, Professor	NSIT, Jetalpur	Member
19.	Abhishek Purohit, Director	Flowdriven Technologies Pvt.	Member
20.	Ankita Patel	ITI Vastrapur	Member
21.	Vihar Patel, Network Engineer	CMS Infotech	Member
22.	Vijay Kumar Shah	Silver touch Technologies Division	Member
23.	Nainesh Purohit, CTO	Hospisoft Pvt Ltd.	Member
24.	P.K. Bairagi, TO	CSTARI, Kolkata	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

