



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

COMPETENCY BASED CURRICULUM

COMPUTER OPERATOR AND PROGRAMMING ASSISTANT (COPA)

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4



SECTOR – IT & ITeS



Directorate General of Training

COMPUTER OPERATOR AND PROGRAMMING ASSISTANT

(Non-Engineering Trade)

(Revised in 2019)

Version: 1.2

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL - 4

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 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 professional skill, subjects are as below:-

The trainee learns about safety and environment, use of fire extinguishers. He learns about trade tools, identifies computer peripherals, internal components, basic DOS 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. 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 cyber crimes now days and will be able to secure information from Internet by using cyber security concept. At the end of the training 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” trade under CTS is one of the most popular courses 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 DGT which is recognized worldwide.

Trainee needs to demonstrate broadly that they are able to:

- Read and interpret technical parameters/ documentation, 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 knowledge & employability skills while performing the job and repair & maintenance work.
- Check the job/ assembly as per drawing for functioning identify and rectify errors in job/ assembly.
- Document the technical parameter related to the task undertaken.

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 have to maintain 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 guideline. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check** 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 team work, avoidance/reduction of scrap/wastage and disposal of scarp/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 year 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 with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.	<ul style="list-style-type: none"> <input type="checkbox"/> Demonstration of good skills and accuracy in the field of work/ assignments. <input type="checkbox"/> A fairly good level of neatness and consistency to accomplish job activities. <input type="checkbox"/> Occasional support in completing the task/ job.
(b)Weightage in the range of above75% - 90% to be allotted during assessment	
For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.	<ul style="list-style-type: none"> <input type="checkbox"/> Good skill levels and accuracy in the field of work/ assignments. <input type="checkbox"/> A good level of neatness and consistency to accomplish job activities. <input type="checkbox"/> 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.

- 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.



3. JOB ROLE

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, cataloguing, 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 AND PROGRAMMING ASSISTANT
Trade Code	DGT/1003
NCO - 2015	4131.0600, 3514.0300
NSQF Level	Level-4
Duration of Craftsmen Training	One Year (1600 Hours)
Entry Qualification	Passed 10 th class examination
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, AA, LV, HH, AUTISM, SLD
Unit Strength (No. Of Student)	24 (There is no separate provision of supernumerary seats)
Space Norms	70 Sq. m
Power Norms	3.45 KW
Instructors Qualification for	
1. Computer Operator And Programming Assistant Trade	<p>B.Voc/Degree in Computer Science/ IT from AITCE/ 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 from UGC Recognized University or NIELIT B Level with one year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>Bachelor in Computer Science / Computer Application / IT OR PGDCA from UGC recognized University or NIELIT A Level with two year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma 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 in COPA trade with three year experience in the relevant field.</p> <p>Essential Qualification: Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.</p> <p>Note: - Out of two Instructors required for the unit of 2(1+1), one</p>



	must have Degree/Diploma and other must have NTC/NAC qualifications. However both of them must possess NCIC in any of its variants.		
2. 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.		
3. 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

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 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.

**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 configuring 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.
	Typing practice using open source typing tutor tools.
3. Create, format, edit and develop a workbook by using spreadsheet application software.	Create tables, chart and print using various functions and formulas, apply 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 Internet.	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



	Check Network connectivity
	Configure HUB & Switch
	Configure DHCP and firewall
	Setup Video conferencing
	Secure Network with various tools
	Practice Web Browsing and create E Mail ID and sending receiving mails
	Perform text chat and video chat using social network 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 WebPages using internal styles (CSS) and external style.
	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.
	Performing 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.



7. TRADE SYLLABUS

SYLLABUS FOR COMPUTER OPERATOR AND PROGRAMMING ASSISTANT			
DURATION: ONE YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
Professional Skill 150 Hrs; Professional Knowledge 30 Hrs	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. (6hrs) 2. Identifying safety symbols and hazard identification. (4Hrs) 3. Practice safe methods of fire fighting in case of electrical fire. (4hrs) 4. Use of fire extinguishers. (4Hrs) <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) <p>Using Windows Operating System</p> <ol style="list-style-type: none"> 7. Practice on Windows interface and navigating windows. (7Hrs) 8. Practice on managing files and folders using removable drives. (5Hrs) 9. Customize the desktop 	<p>Safe working practices</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scope of the COPA trade. <input type="checkbox"/> Safety rules and safety signs. <input type="checkbox"/> Types and working of fire extinguishers. <p>Introduction to Computer components</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to computer system. Concepts of Hardware and Software. <input type="checkbox"/> Function of motherboard components and various processors. <input type="checkbox"/> Various Input/ Output devices in use and their features. (06 hrs) <p>Introduction Windows Operating System</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to operating System <input type="checkbox"/> Main features of Windows OS <input type="checkbox"/> Concept of various shortcut commands. (06 hrs)



		<p>settings and manage user accounts. (5Hrs)</p> <p>10. View system properties and control panel details. (5Hrs)</p> <p>11. Work with keyboard shortcut commands. (5Hrs)</p> <p>12. Print and scan document using different commands. (3 Hrs)</p>	
		<p>Computer basics and Software Installation</p> <p>13. View the BIOS settings and their modifications. (3 Hrs)</p> <p>14. Install Windows operating system. (5 Hrs)</p> <p>15. Format hard disk and create partition. (3 Hrs)</p> <p>16. Identify and rectify common hardware and software issues during OS installation. (4 Hrs)</p> <p>17. Install necessary application software for Windows i.e. Office Package, PDF Reader, Media Player etc. (5 Hrs)</p> <p>18. Configure Bluetooth and wi-fi settings. (3 Hrs)</p> <p>19. Install Drivers for printer, scanner, webcam and DVD etc. (4 Hrs)</p> <p>20. Burn data, video and audio files on CD/DVD using application software. (3 Hrs)</p>	<p>Computer basics and Software Installation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to the booting process. <input type="checkbox"/> Introduction to various types of memories and their features. <input type="checkbox"/> Basic Hardware and software issues and their solutions. <input type="checkbox"/> Usage of Application software and Antivirus. (06 hrs)
		<p>DOS Command Line Interface & Linux Operating Systems</p> <p>21. Use basic DOS commands for directory listing. (10 Hrs)</p> <p>22. Manage files and folders using DOS commands. (6 Hrs)</p>	<p>Introduction to DOS Command Line Interface & Linux Operating Systems</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to basic DOS Internal and External Commands. <input type="checkbox"/> Introduction to Open



		<p>23. Install Linux operating system. (6 Hrs)</p> <p>24. Install necessary application software for Linux i.e. Office Package, PDF Reader, Media Player etc. (6 Hrs)</p> <p>25. Use Basic Linux commands for directory listing, file and folder management, password etc. (10 Hrs)</p> <p>26. Use the Linux graphical user interface for file and folder management, exploring the system etc. (10 Hrs)</p> <p>27. Customize desktop settings and manage user accounts in Linux. (6 Hrs)</p> <p>28. View system properties and manage system setting in Linux. (6 Hrs)</p>	<p>Source Software.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to Linux Operating System features, structure, files and processes. <input type="checkbox"/> Basic Linux commands. (12 hrs)
<p>Professional Skill 90 Hrs;</p> <p>Professional Knowledge 18 Hrs</p>	<p>Create, format and edit document using word processing application software.</p>	<p>Using Word Processing Software</p> <p>29. Open MS Word and familiarise with basic word components. (3 Hrs)</p> <p>30. Practice creating, saving and renaming of word documents. (3 Hrs)</p> <p>31. Edit document using basic formatting tools. (8 Hrs)</p> <p>32. Practice Inserting and formatting tables and other objects. (12 Hrs)</p> <p>33. Work with Page layout settings and printing documents. (6 Hrs)</p> <p>34. Use templates, autocorrect tools, and record and execute a macro. (6 Hrs)</p> <p>35. Use Mail merge tool. Use</p>	<p>Word Processing Software</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to the various applications in MS office. <input type="checkbox"/> Introduction to Word features, Office button, toolbars. <input type="checkbox"/> Creating, saving and formatting and printing documents using Word. <input type="checkbox"/> Working with objects, macro, mail merge, templates and other tools in Word. (18 hrs)



		<p>conditional Mail Merge, External Data Source. Practice Letters, Label & Envelop printing using Mail Merge. (10 Hrs)</p> <p>36. Use Table of Context, Indexing,Hyperlink, Bookmark, Comment, equation, symbols, citation, cross-reference, footnote, translate, synonyms, thesaurus, spell check & grammar, compare etc. (6 Hrs)</p> <p>37. Practice Typing using open source typing tutor. (24 Hrs)</p> <p>38. Practice of using shortcut keys and use Open Office as word processor. (12 Hrs)</p>	
<p>Professional Skill 90 Hrs;</p> <p>Professional Knowledge 18 Hrs</p>	<p>Create, format, edit and develop a workbook by using spreadsheet application software.</p>	<p>Using Spread Sheet Application</p> <p>39. Open MS Excel and familiarise with basic application components. (4 Hrs)</p> <p>40. Practice creating, saving and formatting excel spread sheets. (9 Hrs)</p> <p>41. Use absolute and relative referencing, linking sheets, conditional formatting etc. (9 Hrs)</p> <p>42. Practice Excel functions of all major categories i.e. Financial, Logical, Text, date & time, Lookup, Math, Statistical etc. (12 Hrs)</p> <p>43. 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"> <input type="checkbox"/> Introduction to Excel features and Data Types. <input type="checkbox"/> Cell referencing and linking Sheets. <input type="checkbox"/> Introduction to various functions in all categories of Excel. <input type="checkbox"/> Concepts of sorting, filtering and validating data. <input type="checkbox"/> Analyzing data using charts, data tables, pivot tables, goal seek and scenarios. <p>(18 hrs)</p>



		<p>44. Create and format various static and dynamic charts. (10 Hrs)</p> <p>45. Practice Importing & exporting excel data. (4 Hrs)</p> <p>46. Perform data analysis using “what if” tools and Pivot Table and record and execute a macro. (10 Hrs)</p> <p>47. Modify Excel page setup and printing and use open office as Spreadsheet application. (4 Hrs)</p> <p>48. Execute simple projects using Excel & Word. (20 Hrs)</p>	
<p>Professional Skill 60 Hrs;</p> <p>Professional Knowledge 12 Hrs</p>	<p>Create and customize slides for presentation.</p>	<p>Image editing and creating Presentations</p> <p>49. Use Windows Paint or image editing software like Open Office Draw, GIMP, Irfan View or a similar tool. (6 Hrs)</p> <p>50. Perform Image editing using open source applications. (12 Hrs)</p> <p>51. Open power point presentation and familiarise with basic application components. (6 Hrs)</p> <p>52. Create Slide shows, Insert picture and theme. (6 Hrs)</p> <p>53. Add new slide, format text, link with word and excel documents. (5 Hrs)</p> <p>54. Practice animating slide transitions and objects. (4 Hrs)</p> <p>55. Create slide shows by inserting audio & video and</p>	<p>Image editing, Presentations</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to Open Office. <input type="checkbox"/> Introduction to the properties and editing of images. <input type="checkbox"/> Introduction to different formats of images and their uses. <input type="checkbox"/> Introduction to Power Point and its advantages. <input type="checkbox"/> Creating Slide Shows. <input type="checkbox"/> Fine tuning the presentation and good presentation technique. (12 hrs)



		<p>synchronise with presentation. (6 Hrs)</p> <p>56. Modify slide page setup and print the slides. (3 Hrs)</p> <p>57. Create a simple presentation project using open office. (12 Hrs)</p>	
<p>Professional Skill 60 Hrs;</p> <p>Professional Knowledge 12 Hrs</p>	<p>Create and manage database file by using MS Access.</p>	<p>Database Management with MS Access</p> <p>58. Create database and design a simple tables in Access. (6 Hrs)</p> <p>59. Practice enforcing integrity constraints and modify properties of tables and fields. (6 Hrs)</p> <p>60. Create relationships and join tables. (6 Hrs)</p> <p>61. Create and format Forms. (6 Hrs)</p> <p>62. Create simple queries with various criteria and calculations. (12 Hrs)</p> <p>63. Create Simple update, append, make table, delete and crosstab queries. (9 Hrs)</p> <p>64. Modify form design with (12 hrs) controls, macros and events. (6 Hrs)</p> <p>65. Import and export data to and from Access and create and format various types of reports. (6 Hrs)</p> <p>66. Compress and Encrypt databases. (3 Hrs)</p>	<p>Database Management Systems</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concepts of Data and Databases. <input type="checkbox"/> Overview of popular databases, RDBMS, OODB and NOSQL. <input type="checkbox"/> Rules for designing good tables. Integrity rules and constraints in a table. <input type="checkbox"/> Relationships in tables. <input type="checkbox"/> Introduction to various types of Queries and their uses. <input type="checkbox"/> Designing Access Reports and Forms. <input type="checkbox"/> Introduction to macros, designer objects controls, their properties and behaviour.
<p>Professional Skill 90 Hrs;</p> <p>Professional</p>	<p>Install, setup/ configure, troubleshoot and secure computer</p>	<p>Configuring and using Network</p> <p>67. View Network connections. (3 Hrs)</p>	<p>Networking Concepts</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to Computer Networks, Necessity and



<p>Knowledge 18 Hrs</p>	<p>network including Internet.</p>	<p>68. Connect a computer to a network and share Devices i.e. Printers, files, folders and drives. (6 Hrs)</p> <p>69. Work with various Network devices, connectors and cables. Create straight and cross cable and punch a UTP cable in the patch socket and test the connectivity. (6 Hrs)</p> <p>70. Practice IP Addressing and Subnet masking for IPV4/ IPV6 and pinging to test networks. (6 Hrs)</p> <p>71. Configure Hub and Switch. (6 Hrs)</p> <p>72. 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>73. Set up a proxy server/ DHCP Server with firewall. (9 Hrs)</p> <p>74. Set up video conferencing using open source software. (6 Hrs)</p> <p>75. Use various tools (by open source /free) for network troubleshooting, maintenance and security for both Wired and Wireless(6 Hrs)</p>	<p>Advantages.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Client Server and peer to Peer networking concepts. <input type="checkbox"/> Concept of Proxy Server and proxy firewall server. <input type="checkbox"/> Concept of DHCP Server. <input type="checkbox"/> Network topologies. Introduction to LAN, WAN and MAN. <input type="checkbox"/> Network components, viz. Modem, Hub, Switch, Router, Bridge, Gateway etc. <input type="checkbox"/> Network Cables, Wireless networks and Blue Tooth technology. <input type="checkbox"/> Concept of ISO -OSI7 Layer Model. <input type="checkbox"/> Overview of various Network protocols Viz. TCP/IP, FTP, Telnet etc. <input type="checkbox"/> Concept of Logical and Physical Addresses, Subnetting and Classes of Networks.
		<p>Using Internet</p> <p>76. Browse the Internet for information (use at least 3</p>	<p>Internet Concepts</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to www, Concept of Internet, Web



		<p>popular browsers). (3 Hrs)</p> <p>77. Create and use e-mail for communication with attachment, priority setting, address book. (3 Hrs)</p> <p>78. Communicate with text, video chatting and social networking sites. (6 Hrs)</p> <p>79. Use online dictionary, translation software, storage space, share files with e-mail links, download manager, download & upload YouTube files, google map & earth etc. Update windows & other software. (6 Hrs)</p> <p>80. Configure Outlook, mail service in mobile phones. Use tools like Skype, Google+ etc. (6 Hrs)</p> <p>81. Browser setting for Bookmark, cookies, favourites and pop ups, default website, trusted site, restricted site, content, history and advanced setup. (6 Hrs)</p>	<p>Browsers, internet servers and search engines.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concepts of Domain naming Systems and E mail communication. <input type="checkbox"/> Introduction to video chatting tools and Social Networking concepts. (06 hrs)
<p>Professional Skill 90 Hrs;</p> <p>Professional Knowledge 18 Hrs</p>	<p>Develop static web pages using HTML.</p>	<p>Designing Static Web Pages</p> <p>82. Practice with basic HTML elements (e.g. head, title, body), tag and attributes. (3 Hrs)</p> <p>83. Design simple web page with text, paragraph and line break using HTML tags. (5 Hrs)</p> <p>84. Format text, change background colour and insert pictures in web page.</p>	<p>Web Design Concepts</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concepts of Static and Dynamic Web pages. <input type="checkbox"/> Introduction to HTML and various tags in HTML. <input type="checkbox"/> Concepts of different controls used in Web Pages. <input type="checkbox"/> Concepts of CSS and applying CSS to HTML. <input type="checkbox"/> Introduction to open



		<p>(6 Hrs)</p> <p>85. Design simple web page with tables and lists. (6 Hrs)</p> <p>86. Use marquees, hyperlinks and mailto link in designing web pages. (6 Hrs)</p> <p>87. Create frames, add style and design layout. (10 Hrs)</p> <p>88. Insert text box, check box and combo box in web page. (6 Hrs)</p> <p>89. Design web page using password field, submit button, reset button and radio button etc. (6 Hrs)</p> <p>90. Design a web page adding flash file, audio and video files. (10 Hrs)</p> <p>91. Design web page with forms and form controls using HTML tags. (8 Hrs)</p> <p>92. Create web page using Cascading Style Sheet (CSS). (12 Hrs)</p> <p>93. Use WYSIWYG (Kompozer) web design tools to design and edit web pages with various styles. (12 Hrs)</p>	<p>source CMS viz, Joomla, Word press etc. and Web authoring tools viz. Kompozer, Front Page etc.</p> <p><input type="checkbox"/> Concept of good web page designing techniques. (18 hrs)</p>
<p>Professional Skill 210 Hrs;</p> <p>Professional Knowledge 42 Hrs</p>	<p>Develop web pages using JavaScript.</p>	<p>JavaScript & creating Web page</p> <p>94. Practice with basic elements of JavaScript. (12 Hrs)</p> <p>95. Embed JavaScript in HTML to display information in web pages, documentation and formatting of HTML source code. (18 Hrs)</p> <p>96. Use JavaScript Variables, Data types, Constants and</p>	<p>Introduction to JavaScript</p> <p><input type="checkbox"/> Introduction to Programming and Scripting Languages.</p> <p><input type="checkbox"/> Introduction to JavaScript and its application for the web.</p> <p><input type="checkbox"/> Introduction to Web Servers and their features.</p> <p><input type="checkbox"/> JavaScript Basics – Data types, Variables,</p>



		<p>Operators. (18 Hrs)</p> <p>97. Use Control statements and Loops in JavaScript. (18 Hrs)</p> <p>98. Practice with switch case, loop controls and Errors in JavaScript. (18 Hrs)</p> <p>99. Practice with Arrays in JavaScript page. (12 Hrs)</p> <p>100. Practice with functions in JavaScript web page. (18 Hrs)</p> <p>101. Practice with String, Math and Date functions in JavaScript. (24 Hrs)</p> <p>102. 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. (36 Hrs)</p> <p>103. Develop a simple web project using HTML, JavaScript and host it in IIS and a registered domain. (36 Hrs)</p>	<p>Constants and Conversion between data types.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Arithmetic, Comparison, Logical Operators in JavaScript. Operator precedence. <input type="checkbox"/> Program Control Statements and loops in JavaScript. <input type="checkbox"/> Arrays in JavaScript – concepts, types and usage. <input type="checkbox"/> The String data type in JavaScript. Introduction to String, Math and Date. <input type="checkbox"/> Introduction to Functions in JavaScript. <input type="checkbox"/> Built in JavaScript functions overview. <input type="checkbox"/> Concepts of Pop Up boxes in JavaScript. <input type="checkbox"/> Introduction to the Document Object Model. <input type="checkbox"/> Concepts of using Animation and multimedia files in JavaScript. (42 hrs)
<p>Professional Skill 210 Hrs;</p> <p>Professional Knowledge 42 Hrs</p>	<p>Develop simple spread sheets by embedding VBA.</p>	<p>Programming with VBA</p> <p>104. Practice with basic functions of VBA Editor.(3 Hrs)</p> <p>105. Use form controls like buttons, Check boxes, Labels, Combo Box, Group Box, List Box, Option Button, Scroll Bar and</p>	<p>Introduction to VBA, Features and Applications.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to VBA features and applications. <input type="checkbox"/> Properties, events and methods associated with the Button, Check Box, Label, Combo Box, Group



		<p>Spin button. (10 Hrs)</p> <p>106. Modify object properties in VBA program. (6 Hrs)</p> <p>107. Write simple programs involving VBA Data types, Variables, Operators and Constants. (16 Hrs)</p> <p>108. Create Message boxes and Input boxes in VBA. (6 Hrs)</p> <p>109. Work with conditional statements like if, Else-if, and Select. (10 Hrs)</p> <p>110. Practice with Loop, Loop Control and Case statements in VBA. (13 Hrs)</p> <p>111. Create and Manipulate Arrays in VBA. (10 Hrs)</p> <p>112. Practice with string variables in VBA programming. (10 Hrs)</p> <p>113. Write programs involving Mathematical, Conversion, Date and String Functions in VBA. (16 Hrs)</p> <p>114. Create Functions, Procedures, Passing Parameters and Using Returned Data. (12 Hrs)</p> <p>115. Practice with built in functions in VBA programs. (12 Hrs)</p> <p>116. Create and edit macros. (12 Hrs)</p> <p>117. Write code to work with Excel in VBA forms. (12 Hrs)</p> <p>118. Practice with methods</p>	<p>Box, Option Button, List Box, Scroll Bar and Spin button controls.</p> <ul style="list-style-type: none"> <input type="checkbox"/> VBA Data types, Variables and Constants. <input type="checkbox"/> Operators in VBA and operator precedence. <input type="checkbox"/> Mathematical Expressions in VBA. <input type="checkbox"/> Introduction to Arrays in VBA. <input type="checkbox"/> Introduction to Strings in VBA. <input type="checkbox"/> Conditional processing in VBA, using the IF, Else-if, Select Case Statements. <input type="checkbox"/> Introduction to Loops in VBA. <input type="checkbox"/> VBA message boxes and input boxes. <input type="checkbox"/> Introduction to Creating functions and Procedures in VBA. <input type="checkbox"/> Using the built in functions. <input type="checkbox"/> Introduction to Object Oriented Programming Concepts. Concepts of Classes, Objects, Properties and Methods. <input type="checkbox"/> The user forms and control in Excel VBA. <input type="checkbox"/> Introduction to Debugging Techniques. (42 hrs)
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		<p>and events in VBA Programming. (20 Hrs)</p> <p>119. Debug, Step through code, Breakpoints, find and fix errors while debugging. (18 Hrs)</p> <p>120. Develop a simple project involving MS excel and VBA. (26 Hrs)</p>	
<p>Professional Skill 90 Hrs;</p> <p>Professional Knowledge 18 Hrs</p>	<p>Maintain accounts using accounting software.</p>	<p>Using Accounting Software</p> <p>121. Practice Basic accounting with tally interface. (08 Hrs)</p> <p>122. Create Company, Account and Voucher entry in Tally. (08 Hrs)</p> <p>123. Generate reports for Invoice, Bill, Profit & Loss account etc. (08 Hrs)</p> <p>124. Perform Cost Centre & Cost Category management. (10 Hrs)</p> <p>125. Create and manage budgeting systems. (08 Hrs)</p> <p>126. Create Scenario and Variance Analysis. (6 Hrs)</p> <p>127. Use Tally for Costing, Ratio Analysis, Cash flow and Funds flow statements. (08 Hrs)</p> <p>128. Analyze and Manage Inventory control. (10 Hrs)</p> <p>129. Perform Point of Sales and Taxation (VAT, Excise, Service Tax). (6 Hrs)</p> <p>130. Perform System Administration and use other Utilities. (6 Hrs)</p> <p>131. Create users, take Backup</p>	<p>Using Accounting Software</p> <ul style="list-style-type: none"> <input type="checkbox"/> Basics of Accounting, Golden Rules of Accounting, Voucher Entry, Ledger Posting, Final Accounts Preparation. <input type="checkbox"/> Cash Book. Ratio Analysis, Depreciation, Stock Management. <input type="checkbox"/> Analysis of VAT, Cash Flow, Fund Flow Accounting. <input type="checkbox"/> Introduction to Tally, features and Advantages. <input type="checkbox"/> Implementing accounts in Tally. <input type="checkbox"/> Double entry system of book keeping. <input type="checkbox"/> Budgeting Systems, Scenario management and Variance Analysis. <input type="checkbox"/> Costing Systems, Concepts of Ratios, Analysis of financial statements. <input type="checkbox"/> Inventory Basics, POS Invoicing, TDS, TCS, FBT, VAT & Service Tax. <input type="checkbox"/> Tally Interface in



		<p>& Restore of Company. (6 Hrs)</p> <p>132. Use Multilingual Functionality in Tally. (6 Hrs)</p>	<p>Different Languages. (18 hrs)</p>
<p>Professional Skill 30 Hrs;</p> <p>Professional Knowledge 06 Hrs</p>	<p>Browse, select and transact using E-commerce websites</p>	<p>E Commerce</p> <p>133. Browse E-commerce websites viz. ebay, Amazon, flipkart, OLX, quikr etc. and prepare comparative statement of the main features of these sites. (8 Hrs)</p> <p>134. Upload products for selling in E-Commerce Sites and make online purchase from E-Commerce sites.(14 Hrs)</p> <p>135. Manage security issues in E-Commerce and payment operations. (8 Hrs)</p>	<p>E Commerce Concepts</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to E-Commerce and advantages. <input type="checkbox"/> Building business on the net. <input type="checkbox"/> Payment and Order Processing, Authorization, Chargeback and other payment methods. <input type="checkbox"/> Security issues and payment gateways. (06 hrs)
<p>Professional Skill 30 Hrs;</p> <p>Professional Knowledge 06 Hrs</p>	<p>Secure information from Internet by using cyber security concept.</p>	<p>Cyber Security:</p> <p>136. Protect information, computers and networks from viruses, spyware and other malicious code. (3 Hrs)</p> <p>137. Provide firewall security for Internet connection and Network System. (6 Hrs)</p> <p>138. Protect the computer against various internet threats. (3 Hrs)</p> <p>139. Make backup copies of important file, data and information. (3 Hrs)</p> <p>140. Secure your Wi-Fi networks using password,</p>	<p>Cyber Security:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Overview of Information Security, SSL, HTTPS, Security threats, information Security vulnerability and Risk management. <input type="checkbox"/> Introduction to Directory Services, Access Control, Security, Privacy protection, Audit and Security. <input type="checkbox"/> Introduction to IT Act and penalties for cyber crimes. (06 hrs)



		<p>WEP, WPA-PSK, WPA2-PSK, SSID, MAC address filtering. Create individual user accounts for each member. (9 Hrs)</p> <p>141. Limit member access to data and information, and restrict authority to install unnecessary downloads. (6 Hrs)</p>	
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Industrial Visit/Project work

Broad Area:

- 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) (160 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

