

COMPUTER SOFTWARE APPLICATION

NSQF LEVEL- 6



SECTOR- IT &ITeS

COMPETENCY BASED CURRICULUM
CRAFT INSTRUCTOR TRAINING SCHEME (CITS)



GOVERNMENT OF INDIA

Ministry of Skill Development & Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City, Kolkata – 700091

COMPUTER SOFTWARE APPLICATION

Applicable for “Computer Operator & Programming Assistant (COPA)” and
“Database System Assistant” Trade

(Non-Engineering Trade)

SECTOR – IT & ITeS

(Revised in 2019)

Version 1.1

CRAFTS INSTRUCTOR TRAINING SCHEME (CITS)

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Developed By
Government of India
Ministry of Skill Development and Entrepreneurship

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1. COURSE OVERVIEW

The Craft Instructors' Training Scheme is operational since inception of the Craftsmen Training Scheme. The first Craft Instructors' Training Institute was established in 1948. Subsequently, 6 more institutes namely, Central Training Institute for Instructors (now called as National Skill Training Institute (NSTI)), NSTI at Ludhiana, Kanpur, Howrah, Mumbai, Chennai and Hyderabad were established in 1960's by DGT. Since then the CITS course is successfully running in all the NSTIs across India as well as in DGT affiliated private institutes viz. Institutes for Training of Trainers (IToT). This is a competency-based course of one year duration. "Computer Software Application" CITS trade is applicable for Instructors of "COPA" and "Database System Assistant" trades.

The main objective of Crafts Instructor training programme is to enable Instructors explore different aspects of the techniques in pedagogy and transferring of hands-on skills so as to develop a pool of skilled manpower for industry, also leading to their career growth & benefiting society at large. Thus promoting a holistic learning experience where trainee acquires specialized knowledge, skills & develops attitude towards learning & contributing in vocational training ecosystem.

This course also enables the instructors to develop instructional skills for mentoring the trainees, engaging all trainees in learning process and managing effective utilization of resources. It emphasizes on the importance of collaborative learning & innovative ways of doing things. All trainees will be able to understand and interpret the course content in right perspective, so that they are engaged in & empowered by their learning experiences and above all, ensure quality delivery.

2. TRAINING SYSTEM

2.1 GENERAL

CITS courses are delivered in National Skill Training Institutes (NSTIs) & DGT affiliated institutes viz., Institutes for Training of Trainers (IToT). For detailed guidelines regarding admission on CITS, instructions issued by DGT from time to time are to be observed. Further complete admission details are made available on NIMI web portal <http://www.nimionlineadmission.in>. The course is of one-year duration. It consists of Trade Technology (Professional skills and Professional knowledge), Training Methodology and Engineering Technology/ Soft skills. After successful completion of the training programme, the trainees appear in All India Trade Test for Craft Instructor. The successful trainee is awarded NCIC certificate by DGT.

2.2 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.	Trade Technology	
	Professional Skill (Trade Practical)	640
	Professional Knowledge (Trade Theory)	240
2.	Soft Skills	
	Practical	100
	Theory	100
3.	Training Methodology	
	TM Practical	320
	TM Theory	200
	Total	1600

2.3 PROGRESSION PATHWAYS

- Can join as an Instructor in a vocational training Institute/ technical Institute.
- Can join as a supervisor in Industries.

2.4 ASSESSMENT & CERTIFICATION

The CITS trainee will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span and also at the end of the training program.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** to test competency of instructor with respect to assessment criteria set against each learning outcomes. The training institute has to maintain an individual trainee portfolio in line with assessment guidelines. 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 Crafts Instructor for awarding National Craft Instructor Certificate will be conducted by DGT at the end of the year as per the guideline of DGT. The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The external 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 CRITERIA

S No.	Subject	Marks	Internal Assessment	Full Marks	Pass Marks		
					Exam	Internal Assessment	
1.	Trade Technology	Trade Theory	100	40	140	40	24
		Trade Practical	200	60	260	120	36
2.	Soft Skills	Practical	50	25	75	30	15
		Theory	50	25	75	20	15
3.	Training Methodology	TM Practical	200	30	230	120	18
		TM Theory	100	20	120	40	12
Total Marks		700	200	900	370	120	

The minimum pass percent for Trade Practical, TM Practical, Soft Skill Practical Examinations and Formative assessment is 60% & for all other subjects is 40%. There will be no Grace marks.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. While assessing, the major factors to be considered are

approaches to generate solutions to specific problems by involving standard/non-standard practices.

Due consideration should also be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising of the following:

- Demonstration of Instructional Skills (Lesson Plan, Demonstration Plan)
- Record book/daily diary
- Assessment Sheet
- Progress chart
- Video Recording
- Attendance and punctuality
- Viva-voce
- Practical work done/Models
- Assignments
- Project work

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

Performance Level	Evidence
(a) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of an acceptable standard of crafts instructorship with occasional guidance and engage students by demonstrating good attributes of a trainer.	<ul style="list-style-type: none"> • Demonstration of fairly good skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A fairly good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Occasional support in imparting effective training.

(b) Weightage in the range of 75%-90% to be allotted during assessment	
<p>For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a reasonable standard of crafts instructorship with little guidance and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> • Demonstration of good skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Above average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Little support in imparting effective training.
(c) Weightage in the range of more than 90% to be allotted during assessment	
<p>For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a high standard of crafts instructorship with minimal or no support and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> • Demonstration of high skill level to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Good engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A high level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Minimal or no support in imparting effective training.

3. GENERAL INFORMATION

Name of the Trade	Computer Software Application -CITS
Trade Code	DGT/4004
NCO – 2015	4131.0600, 3514.0300, 2522.0100, 2521.0202, 2356.0100
NSQF Level	Level-6
Duration of Craft Instructor Training	One Year
Unit Strength (No. Of Student)	25
Entry Qualification	<p>Degree in Computer Science/ Information Technology or MCA/MSc (Computer Science Computer / Information Technology) / NIELIT “B” or equivalent from recognized Board/ University.</p> <p style="text-align: center;">OR</p> <p>Diploma in Computer Science/Information Technology or BCA/BSc (Computer Science/Information Technology) or equivalent from recognized Board/ University.</p> <p style="text-align: center;">OR</p> <p>National Trade Certificate in COPA or related trades.</p> <p style="text-align: center;">OR</p> <p>National Apprenticeship Certificate in COPA or related trades.</p>
Minimum Age	18 years as on first day of academic session.
Space Norms	84 sq. m
Power Norms	3.45 KW
Instructors Qualification for	
1. Computer Software Application -CITS Trade	<p>B.Voc/ Degree in Computer Science/Information Technology or MCA/MSc (Computer Science /Information Technology) or NIELIT “B” or equivalent from AICTE/ UGC recognized university / board with 2 years experience in relevant field.</p> <p style="text-align: center;">OR</p> <p>Diploma (Minimum 2 Years) in Computer Science/Information Technology or BCA/B.Sc (Computer Science/Information Technology) or equivalent from recognized university / board or relevant Advanced Diploma (Vocational) from DGT with 5 years experience in relevant field.</p> <p style="text-align: center;">OR</p> <p>NTC/ NAC passed in COPA trade with seven years experience in relevant field.</p>

	Essential Qualification: Relevant National Craft Instructor Certificate (NCIC) in COPA trade in any of the variants under DGT.					
2. Soft Skills	MBA/ BBA / Any Graduate/ Diploma in any discipline from AICTE/ UGC recognized College/ university with Three years' experience and short term ToT Course in Soft Skills from DGT institutes. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above).					
3. Training Methodology	B.Voc/ Degree in any discipline from AICTE/ UGC recognized College/ university with two years experience in training/ teaching field. OR Diploma in any discipline from recognized board / University with five years experience in training/teaching field. OR NTC/ NAC passed in any trade with seven years experience in training/ teaching field. Essential Qualification: National Craft Instructor Certificate (NCIC) in any of the variants under DGT / B.Ed /ToT from NITTTR or equivalent.					
4. Minimum Age for Instructor	21 Years					
Distribution of training on Hourly basis: (Indicative only)						
Total Hrs /week	Trade Practical	Trade Theory	Soft Skills		Training Methodology	
			Practical	Theory	Practical	Theory
40 Hours	16 Hours	6 Hours	2.5 Hours	2.5 Hours	8 Hours	5 Hours

4. JOB ROLE

Brief description of job roles:

Manual Training Teacher/Craft Instructor; instructs students in ITIs/Vocational Training Institutes in respective trades as per defined job role. Imparts theoretical instructions for the use of tools & equipment of related trades and related subjects. Demonstrate process and operations related to the trade in the workshop; supervises, assesses and evaluates students in their practical work. Ensures availability & proper functioning of equipment and tools in stores.

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.

Database Administrator; co-ordinates physical changes to computer databases; and codes, tests, and implements physical database, applying knowledge of database management system: Designs logical and physical databases or reviews description of changes to database design to understand how changes to be made affect physical database (how data is stored in terms of physical characteristics, such as location, amount of space, and access method). Establishes physical database parameters. Codes database descriptions and specifies identifiers of database to database management system or directs others in coding database descriptions. Calculates optimum values for database parameters, such as amount of computer memory to be used by database, following manuals and using calculator.

Specifies user access level for each segment of one or more data items, such as insert, replace, retrieve, or delete data. Specifies which users can access databases and what data can be accessed by user. Tests and corrects errors, and refines changes to database. Enters codes to create production database. Selects and enters codes of utility programs to monitor database performance, such as distribution of records and amount of available memory. Directs programmers and analysts to make changes to database management systems. Reviews and corrects programs. Answers user questions. Confers with co-workers to determine impact of database changes on other systems and staff cost for making changes to the database. Modifies database programs to increase processing performance, referred to as performance tuning. Workers typically specialize in one or more types of database management systems. May train users.

Junior Data Associate; is responsible for designing and implementing processes and layouts for complex, large-scale data sets used for modelling, data mining, and research purposes. Responsibilities also include designing and implementing statistical data quality procedures around new data sources.

Reference NCO-2015:-

- a) 2356.0100 – Manual Training Teacher/ Craft Instructor.
- b) 4131.0600 – Computer Operator
- c) 3514.0300 – Programming Assistant
- d) 2522.0100 – Database Administrator
- e) 2521.0202 – Junior Data Associate

5. LEARNING OUTCOMES

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

5.1 TRADE TECHNOLOGY

1. Setup LAN and configure various network devices related software in a computer.
2. Manage network application & secure network and practice on network architecture.
3. Create and manage database file using MYSQL.
4. Design and Develop web pages using Java Script.
5. Design and Develop web pages using PHP.
6. Develop spread sheets by embedding VBA.
7. Design dynamic webpage using java (AWT, APPLET).
8. Maintain accounts using accounting software.

6. COURSE CONTENT

SYLLABUS FOR COMPUTER SOFTWARE APPLICATION–CITS TRADE			
TRADE TECHNOLOGY			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Practical 96 Hrs Theory 36 Hrs	Setup LAN and configure various network devices related software in a computer. Manage network application & Secure network and practice on network architecture.	Demonstrate on 1. Straight Cabling and Cross cabling. 2. Switch Configuration. 3. LAN and WAN setup. 4. Setting TCP/IP.	Network Architecture <ul style="list-style-type: none"> • Layering & Protocols. • OSI & Internet Architecture. • Network topology • Link & Medium Access protocols, IEEE 802 standards, Performance issues • Network Adaptors. Circuit switching – packet switching. • Internetworking - bridges - Internet protocol - Addressing – Routing Protocols. • UDP - TCP- Congestion Control – Presentation aspects.
		Demonstrate on 5. Network Monitoring and Control (SNMP, V2, V3, RMON, RMON2). 6. Wireless Networking Design. 7. Implementing Voice over IP. 8. Configuring DHCP, IPV4/ IPV6.	Applications & Network Management: <ul style="list-style-type: none"> • Telnet, FTP – e-mail – DNS. • Multimedia Applications • Security, Monitoring & Control • SNMP V2 and V3, RMON, RMON2. • The wireless channel - Link level design - Channel access Network design - Standards. • Optical Networks - Cross connects – LANS • Voice Over IP – Multimedia

			<p>Networks.</p> <ul style="list-style-type: none"> • Introduction to VPN and DHCP
		<p>Demonstrate on</p> <ol style="list-style-type: none"> 9. Configuring Network Security for preventing Attacks. 10. Setting password policy 11. Sniffing on Switched Networks 12. IP Address Spoofing 13. DNS Spoofing 14. Password Cracking: Dictionary vs Brute- Force vs Hybrid methods 15. Handling Denial of Service 16. Using Tools like John the Ripper, Cain & Abel etc. 17. Configuring Firewalls 	<p>Network Security</p> <ul style="list-style-type: none"> • Attacks, Services and Mechanisms, Security Attacks, Security Services, Integrity check, Digital Signatures, Authentication. • Concept of Cryptography. • Hash Function • SSL Protocol • Intrusions and Viruses, Firewalls, Intrusion Detection. • Cyber security systems & cyber laws.
<p>Practical 96Hrs</p> <p>Theory 36Hrs</p>	<p>Create and manage database file using MYSQL.</p>	<p>Demonstrate on</p> <ol style="list-style-type: none"> 18. Installation of MySQL. 19. Troubleshooting basic installation issues. 20. Creation and use of database. 21. Designing of tables. 22. Applying data integrity rules. 23. Using the DDL, DCL and DML statements. 24. Enforcing constraints, primary key and foreign key. 25. Adding indices to Tables. 	<p>Database Concepts</p> <ul style="list-style-type: none"> • Concept of DBMS, RDBMS. • Data Models, Concept of DBA, Database Users. • ER Model & Diagram, Database Schema. • Designing Database using Normalization Rules. • Various data types Data integrity, DDL DML and DCL statements. • Enforcing Primary key and foreign key. • Adding Indices.
		<p>Demonstrate on</p> <ol style="list-style-type: none"> 26. Simple select queries. 27. Insert and delete queries Update queries. 	<p>Queries</p> <ul style="list-style-type: none"> • Concepts of Transactions • ACID Property of Transaction Constraints.
		<p>Demonstrate on</p> <ol style="list-style-type: none"> 28. Using the Number, Date and Character functions. 	<p>Joins and Functions</p> <ul style="list-style-type: none"> • Joining of tables • Sub Queries

		<p>29. Joins, Group by, Having, Sub query.</p> <p>30. Indexing and Optimizing Query.</p>	<ul style="list-style-type: none"> • Functions used in query like sum, average, max, min, count etc. • Indexing and Query Optimization.
		<p>Demonstrate on</p> <p>31. Creating and using stored procedures.</p> <p>32. Creating and executing mysql table level triggers.</p> <p>33. Creating cursors in mysql.</p> <p>34. Using cursors in mysql.</p> <p>35. Implementing mysql security.</p> <p>36. Simple application on Database using SP, Triggers, Cursors and Indexing.</p>	<p>Stored Procedures, Triggers and Cursors</p> <ul style="list-style-type: none"> • Introduction to Stored Procedures. • Introduction to Triggers and Cursor. • Creating Trigger • Creating Cursor • Using Cursor
<p>Practical 64Hrs</p> <p>Theory 24Hrs</p>	<p>Design and Develop web pages using Java Script.</p>	<p>Demonstrate on</p> <p>37. Using the Java Script Syntax.</p> <p>38. Using Variables, Operators and Writing Expressions</p> <p>39. Programming with Control Flow statements</p> <p>40. Creating and using Objects in JavaScript</p> <p>41. Creating and using Functions</p> <p>42. Using Java Script with Forms</p>	<p>Introduction to Java Script</p> <ul style="list-style-type: none"> • Introduction to JavaScript. • Java Script Syntax, Variables, Operators and Expression. • Control Flow. • Functions • Concept of Object oriented Development. • Concept of DOM. • Forms and JavaScript.
		<p>Demonstrate on</p> <p>43. Creating Cookies with JavaScript</p> <p>44. Creating CSS</p> <p>45. Error Handling in JavaScript</p> <p>46. Implementing an AJAX application</p>	<p>Java Script and dynamic web pages</p> <ul style="list-style-type: none"> • Concept of Cookies • Cascaded Style Sheets • Error Handling in JavaScript • Concept of AJAX
<p>Practical 144Hrs</p> <p>Theory</p>	<p>Design and Develop web pages using PHP.</p>	<p>Demonstrate on</p> <p>47. Installing a web XAMP/ WAMP server on your PC then Installing PHP</p> <p>48. Creating files to test the</p>	<p>Hypertext Preprocessor</p> <ul style="list-style-type: none"> • Introduction to PHP and PHP configuration file • Basic PHP Syntax -Variables,

54Hrs		<p>use of PHP variables and data types</p> <p>49. Creating files to use Built in functions</p> <p>50. Creating Dynamic Pages</p> <p>51. Using Flow Control statements</p> <p>52. Creating Loops in PHP</p> <p>53. Creating and using arrays</p>	<p>Data Types, Super Global Variables, PHP Functions, PHP Operators.</p> <ul style="list-style-type: none"> • Creating Dynamic pages with PHP • Creating Dynamic Pages • Flow Control and Loops. • Arrays in PHP
		<p>Demonstrate on</p> <p>54. Creating PHP & HTML Forms.</p> <p>55. Using String Manipulating Functions.</p> <p>56. Enabling and Disabling Magic Quotes.</p> <p>57. Using the include statement in PHP.</p> <p>58. Working with user functions.</p> <p>59. Designing and processing forms.</p>	<p>PHP Forms</p> <ul style="list-style-type: none"> • PHP and HTML Forms • String Manipulating Functions • Magic Quotes • Including Files • User Functions in PHP • Form processing • PHP MySql.
		<p>Demonstrate on</p> <p>60. Connecting to MySql server with PHP.</p> <p>61. Querying a Database.</p> <p>62. Create a basic user authentication system using PHP and MySQL.</p> <p>63. Using regular expressions.</p> <p>64. Create and retrieve cookies.</p> <p>65. Starting and storing PHP sessions.</p> <p>66. Sending Mail with PHP.</p> <p>67. Creating, reading, uploading and editing files in PHP.</p>	<p>PHP Database connection, mail and file management</p> <ul style="list-style-type: none"> • PHP connection to MySql • PHP querying databases • Using PHP regular expressions • PHP Cookies • PHP Sessions • PHP mail() function and sending mail • PHP File operations
<p>Practical 80Hrs Theory</p>	<p>Develop spread sheets by embedding VBA.</p>	<p>Demonstrate writing code to</p> <p>68. Use VBA Data types, Variables, Operators and Constants.</p>	<p>Introduction to VBA, Features and Applications.</p> <ul style="list-style-type: none"> • Introduction to VBA features and applications.

<p>30Hrs</p>		<p>69. Work with string variables in VBA.</p> <p>70. Create and manipulate arrays in VBA.</p> <p>71. Use the mathematical, conversion, date and string functions in VBA.</p> <p>72. Work with conditional statements like If, Else if, Select ... Case statements in VBA.</p> <p>73. Use the control structures for looping in VBA.</p> <p>74. Create Message boxes and Input boxes in VBA.</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 Strings in VBA. • Introduction to Arrays 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.
		<p>Demonstrate writing code to</p> <p>75. Create functions and procedures.</p> <p>76. Pass parameters and use returned data</p> <p>77. Use VBA built in Functions in Programmes</p> <p>78. Create and edit macros</p> <p>79. Debugging</p>	<p>Functions and methods</p> <ul style="list-style-type: none"> • Introduction to functions and procedures in VBA. • Using the built in functions. • Creating and editing macros. • Debugging Techniques.
		<p>80. Create forms with basic controls.</p> <p>81. Modify the properties of the form and controls at design time.</p> <p>82. Create controls and modify their properties at runtime.</p> <p>83. Write programs with methods and events.</p> <p>84. Use Active controls.</p> <p>85. Design a simple project involving MS Excel and VBA.</p> <p>86. Developer tool box in MS Excel.</p>	<p>Forms, controls and events driven programming</p> <ul style="list-style-type: none"> • Introduction to Object Oriented Programming Concepts. Concepts of Classes, Objects, Properties and Methods. • The user forms and control in Excel VBA. • Properties, events and methods associated with the Button, Check Box, Label, Combo Box, Group Box, Option Button, List Box, Scroll Bar and Spin button controls.

			<ul style="list-style-type: none"> • Events and Event driven programming concepts. • Overview of ActiveX Data objects.
<p>Practical 96Hrs</p> <p>Theory 36 Hrs</p>	<p>Design dynamic webpage using java (AWT, APPLET).</p>	<p>87. Installing JAVA.</p> <p>88. Setting the Class path.</p> <p>89. Writing and Executing a simple JAVA Program to display “Hello”.</p> <p>Demonstrate writing JAVA programs to :</p> <p>90. Use various data types in JAVA.</p> <p>91. Use various operators in JAVA.</p> <p>92. Create and use Local, Instance and Class variables.</p> <p>93. Read text from the keyboard using scanner class read text from the keyboard using console class.</p>	<p>Object Oriented Programming and JAVA Language</p> <ul style="list-style-type: none"> • Object Oriented Programming with Core Java • Java Programming features • JVM, Byte codes and Class path • Java Program Development • Compilation and Execution of JAVA programs • Basic JAVA language elements – keywords, comments, data types and variables. • JAVA Arithmetic, Assignment, Relational, Logical, Increment / Decrement operators and expressions. • JAVA String Operators • JAVA Input and Output streams, System in, System out. • Input using Scanner class and Console class methods
		<p>Demonstrate writing JAVA programs to :</p> <p>94. Use the if and if ... else statements.</p> <p>95. Use the Switch statement.</p> <p>96. Use the Do ... While and while – do loops.</p> <p>97. Use the For Loop.</p> <p>98. Use the Break and Continue Keywords.</p> <p>99. Use the JAVA Numbers Class methods.</p>	<p>JAVA Program Flow Control</p> <ul style="list-style-type: none"> • Decision making and flow control using if...then, if then else, nested if, switch case and the conditional ternary operators in JAVA. • Loop control flow using while – do, do – while loops, for loop, using the break, continue statements. • Terminating the JAVA program.

		<p>100. Use the JAVA Character Class methods.</p> <p>101. Use the JAVA String Class methods.</p> <p>102. Create and use arrays.</p>	<ul style="list-style-type: none"> • JAVA Number, Character and String Classes. • Arrays in JAVA.
		<p>Demonstrate writing JAVA programs to :</p> <p>103. Create and use simple classes, objects and methods in JAVA.</p> <p>104. Pass data and Objects to Methods.</p> <p>105. Return data and Objects from Methods.</p> <p>106. use constructors in JAVA</p> <p>107. Create and use Overloaded methods in JAVA.</p> <p>108. Override methods in JAVA.</p> <p>109. Create and use Super class, Sub class in JAVA.</p>	<p>JAVA Classes, Overloading and Inheritance</p> <ul style="list-style-type: none"> • JAVA Objects, Classes and Methods. • Passing data and objects as parameters to methods. • Method Overloading. • Constructors and Overloaded constructors. • Inheritance in JAVA. • Method Overriding in JAVA.
		<p>Demonstrate writing JAVA programs to :</p> <p>110. Create and run a thread.</p> <p>111. Create a thread by extending Thread class.</p> <p>112. Create thread by implementing Runnable interface.</p> <p>113. Use major thread methods.</p> <p>114. Test multithreading with and without synchronization.</p> <p>115. Handle common exceptions.</p> <p>116. Use multiple try – catch blocks.</p> <p>117. Use the “throw” and “finally” keywords handle user defined exceptions.</p>	<p>Multithreading and Exception Handling in JAVA</p> <ul style="list-style-type: none"> • Thread concept and life cycle of thread. • Extending thread class and using thread methods • Thread priority and runnable Interface • Multithreading and Synchronization • Exception Handling concepts and hierarchy • Exception types and methods • Concepts of “ try, catch and throw and finally” in exceptions. • User defined exceptions
		<p>118. Create and use virtual methods.</p> <p>119. Create abstract classes and</p>	<p>Abstract Classes and Interfaces in JAVA</p> <ul style="list-style-type: none"> • Concept of Virtual methods.

		<p>methods.</p> <p>120. Create interfaces in JAVA.</p> <p>121. Override methods in JAVA.</p> <p>122. Create and implement an interface.</p> <p>123. Extend interfaces in JAVA.</p> <p>124. Create and use a package in JAVA.</p>	<ul style="list-style-type: none"> • Concept of Abstract classes and methods • Features of Abstract Classes • JAVA Interfaces and their advantages • Method Overriding in JAVA • Polymorphism in JAVA • Creating , implementing and extending interfaces • Creating and using Packages in JAVA.
		<p>Demonstrate writing JAVA programs to :</p> <p>125. Create a simple container using Frame class and extending another Frame class.</p> <p>126. Create a container with a few controls.</p> <p>127. Create a container with controls with action listeners and event handlers.</p> <p>128. Create a GUI to draw different plane shapes over a predefined area.</p>	<p>Abstract Windowing Tool Kit</p> <ul style="list-style-type: none"> • Introduction to user interface and AWT components and containers • Introduction to AWT UI controls, hierarchy and their features • Introduction to event handling • Introduction to event handling classes • Introduction to event listener interfaces • Introduction to AWT Layouts
<p>Practical 64Hrs</p> <p>Theory 24Hrs</p>	<p>Maintain accounts using accounting software.</p>	<p>129. Demonstrate types of accounts.</p> <p>130. Making journal transactions.</p> <p>131. Perform double entry bookkeeping.</p> <p>132. Create a ledger.</p> <p>133. Create a Journal.</p> <p>134. View different reports like Balance Sheet, P&L A/c, Day Books.</p>	<p>Accounting principles</p> <ul style="list-style-type: none"> • Concepts and importance of accounting and book keeping. • Introduction to the common accounting terms: business, capital, price, value, debit, credit, income, expenditure, profit, loss. • Accounting heads, accounting equation and types of accounts. • Rules and principles of debit and credit.

			<ul style="list-style-type: none"> • Double entry bookkeeping and balance sheet. • Introduction to Journals, Voucher Entry, Ledger Posting, Final Accounts Preparation. • Cash Book. Ratio Analysis, Depreciation, Stock Management. • Introduction to VAT, GST Cash Flow, Fund Flow Accounting.
		<p>135. Familiarization with the Tally interface.</p> <p>136. Company creation, Account Creation, Voucher Entry in Tally.</p> <p>137. Report Generation (Creating statements like Invoice, Bill, Profit & Loss account etc.)</p> <p>138. Performing Cost Centre & Cost Category management.</p>	<p>Introduction to Smart Accounting</p> <ul style="list-style-type: none"> • Introduction to Tally, features and Advantages. • Implementing accounts in Tally. • Double entry system of bookkeeping using Tally
		<p>139. Managing Budgeting Systems.</p> <p>140. Scenario management and Variance Analysis.</p> <p>141. Using Tally for Costing, Ratio Analysis, Cash Flow, Funds Flow Statements.</p> <p>142. Analyzing and Managing Inventory.</p> <p>143. Performing Point of Sales and Taxation. Performing Systems Administration and using other Utilities, User creation, Backup & Restore of Company.</p> <p>144. Using the Multilingual Functionality.</p>	<p>Using Accounting Software</p> <ul style="list-style-type: none"> • 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 Processing in Tally GST. • Tally Interface in Different Languages.

SYLLABUS FOR CORE SKILLS

1. Soft Skills (Common for all Non-Engineering CITS trades) (100 Hrs + 100Hrs)
2. Training Methodology (Common for all trades) (320Hrs + 200Hrs)

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

7. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
TRADE TECHNOLOGY	
1. Setup LAN and configure various network devices related software in a computer.	Crimp Cross and straight Cable using Rj45.
	Install and configure Server-Client Network and all related protocol services.
	Configure network devices.
	Configure DHCP(ipv4,ipv6)
2. Manage network application & secure network and practice on network architecture.	Managing Server Network Security.
	Manage server using various cryptography concept.
	Network security and monitoring.
	Setting password policy.
	Configure Firewall (Hardware and Software).
3. Create and manage database file using MYSQL.	Create a database of any School, College or Company using DDL,DML AND DCL.
	Relate two tables using ER model & Diagram.
	Relate two table using Primary Key & Foreign Key.
	Evaluating Database and Application architectures with the help of ACID Transaction.
	Combine rows from two or more tables, based on a related column between them using JOIN.
	Reuse the code over and over again using stored procedure.
	Insert a row into a specified table or when certain table columns are being updated using SQL Trigger.
	Structuring a relational database using normalization.
	Use Constraints in database.
	Create a SQL query using INDEX Statement.
	Create cursor in processing row by row.
4. Design and Develop web pages using Java Script.	Design a dynamic webpage using various operators in java scripts.
	Design a dynamic webpage in java scripts using various control statement and looping structure.
	Design a dynamic webpage using function in java script.
	Design a dynamic webpage using forms validations in java scripts.
	Create cookies for client side system.
	Design a dynamic webpage using CSS.
	Handle compile time, runtime and logical errors while writing

	programs in java scripts.
	Create dynamic webpage using AJAX.
5. Design and Develop web pages using PHP.	<p>Create a simple PHP program to declare variable and data types.</p> <p>Use Built in functions and predefined functions in PHP.</p> <p>Use conditional statements if, if else, nested if and Switch using PHP.</p> <p>Apply looping statements for loop, While loop, Do While Loop and for Each loop using PHP.</p> <p>Create a PHP program of Array to store the Data using Objects.</p> <p>Design a Form using HTML and validate it using PHP.</p> <p>Work on String manipulating functions in PHP.</p> <p>Design and Process a form and connect to MySQL Database.</p> <p>Retrieve data from database using PHP program.</p> <p>Create a Basic Authentication system using PHP and MySQL.</p> <p>Check whether Email is valid using regular expressions.</p> <p>Perform a Starting and Storing of PHP Sessions.</p>
6. Develop spread sheets by embedding VBA.	<p>Create a control form on VBA (like label, textbox, combo box etc.).</p> <p>Create simple program involving VBA data types, variable, operator and constant.</p> <p>Apply conditional statements like if, else-if and select.</p> <p>Manipulate array in VBA.</p> <p>Execute programs involving Math metical, conversion, date and string function in VBA.</p> <p>Create function, procedure, passing parameter and using return data.</p> <p>Apply macro with excel in VBA form.</p> <p>Check debug, step through code, breakpoint, find and fix error while debugging.</p> <p>Develop a simple project involving using function, if-else statement, loop.</p>
7. Design dynamic webpage using java (AWT, APPLET)	<p>Design webpage and application using object oriented programming concepts like inheritance, polymorphisms etc. using java.</p> <p>Design application in java by using data types operator and variables.</p> <p>Develop application using scanner and console class.</p> <p>Design webpage and application using conditional statement and oops.</p>

	Develop application using Number, Character and String class.
	Design and develop application by using arrays and methods.
	Develop and design dynamic webpage using multithreading.
	Design dynamic webpage using AWT and APPLETS.
8. Maintain accounts using accounting software.	Interface basic accounting with tally.
	Create company account, ledger, journal and voucher entry in tally.
	Generate report for invoice bill profit and loss account.
	Perform cost centre & cost category management.
	Create manage budgeting system.
	Use tally for costing ratio and analysis, cash flow and fund flow.
	Perform point of sales and taxation (VAT, Excise etc.)
	Create users, take backup & Restore of Company.
	Use multilingual functionality in Tally.

8. INFRASTRUCTURE

LIST OF TOOLS AND EQUIPMENT FOR COMPUTER SOFTWARE APPLICATION- CITS			
S No.	Name of the Tool &Equipment	Specification	Quantity
A. TRAINEES TOOL KIT			
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.	26Nos. (25 for lab and one for classroom)
2.	Laptop	Latest Ci5 Processor, 4GB RAM,1TB HardDisk,Win8 Preloaded Licensed OS,2GB Graphics Card, DVD Writer, Standard Ports And Connectors.	01 No.
3.	Wi-Fi Router	24Port Switch With Wireless Connectivity option	01 No.
4.	Structured cabling (to enable working with Wired Networks too for Practicals)		As required
5.	Internet or Intranet Connectivity		As required
6.	Laser Printer Monochrome A4 Size		01 No.
7.	Network Monochrome Laser Printer A4 Size		01 No.
8.	Optical Scanner	(Flatbed A4)	01 No.
9.	DVD or Blu-Ray Writer		02 Nos.
10.	LCD / LED (Or Latest) Projector with matte (antiglare) screen		02 Nos. (One each for classroom and lab)
11.	UPS		As required
12.	Cable crimping tool		02 Nos.

13.	Standalone Hard Disks	500 GB or Higher	02 Nos.
14.	Network Rack		01 No.
15.	Standard Screw Driver Set		02 Nos.
16.	LAN Setup		As required
B. SOFTWARE PER UNIT			
17.	MySql Open Source		12 Users
18.	PHP Open Source		12 Users
19.	Browser Open Source		12 Users
20.	Web Server	Apache Server /Any HTTP Web server / XAMPP or any other similar server Open Source	12 Users
21.	WYSIWYG Web Designer or Dreamweaver or any Open source tools like Kompozer, FrontPage express / Word press or similar tools along with FTP tools for ex. Filezilla etc.		12 Users
22.	MS OFFICE 2010 or Latest Version		12 Users
23.	Antivirus software - licensed		12 Users
C. CONSUMABLES			
24.	White Board Markers		As required
25.	Duster Cloth	(2'by 2')	As required
26.	Cleaning Liquid	500ml	As required
27.	Xerox Paper	(A4)	As required
28.	Full Scape Paper(White)		2 reams
29.	Cartridges for printer		As required
30.	RJ45 Jacks		200 Pcs
31.	Optical Mouse(USB/PS2)		As required
32.	Key Board (USB/PS2)		As required
33.	SMPS		As required
34.	CMOS Batteries		As required
35.	3Pin Power Chord		As required
36.	Cat6/5/5e cable		100 meters
37.	Stapler Small		2 Pcs
38.	Stapler Big		1 Pc
39.	AAA battery for remote		As required
40.	AA battery for clock		As required
41.	Pen Drives	8 GB	2Nos
42.	CDs		50Nos
43.	DVDs		50 Nos.

44.	Wall Clock		1Pc
D. FURNITURE AND ACCESSORIES			
45.	Hand Held Vacuum cleaner		01 No
46.	Pigeon hole cabinet: 25 compartments		01 No
47.	Chair and table for the instructor		01 each-for Class room & lab
48.	Dual Desk or Chair and Tables for Trainees for Class Room		25 NO
49.	Computer table laminated top	150 X 650 X 750 mm (or similar size) with sliding tray for key board and one shelf for storage for the lab	14 Nos. (13 for lab and 1 for classroom)
50.	Operators chair (mounted on castor wheels, Adjustable height) for the lab		25 Nos.
51.	Printer table	650 X 500 X 750 mm can be varied as per local specifications	03 Nos.
52.	Split type Air conditioners		As required
53.	Storage cabinet	60 X 700 X 450 mm	01 Nos.
54.	White Board		02 nos. 01 each-for Class room & lab
55.	Steel Almirah		01 No.

Note:

Provision must be made for:

- 1. Domain name registration and its renewal from time to time for hosting and testing the websites created by the trainees as part of the syllabus.*
- 2. Licensed Antivirus software - Renewal or new procurement, as the situation demands, from time to time upon expiry of validity period.*

ANNEXURE – I

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts 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.

S No.	Name & Designation Sh./Mr./Ms.	Organization	Remarks
Mentor Council			
1.	Dr. Sanjeev Kumar Gupta, Head, Technical Wing	National Institute of Electronics and Information Technology, Electronics Niketan, 6, CGO Complex New Delhi 110 003	Chairman
2.	Rajeev Menon, Sr. Director	Cognizant Technology Solutions India Pvt. Ltd. 12th & 13th Floor, "A" wing, Kensington Building, Hiranandani Business Park, Powai, Mumbai - 400 076	Member
3.	Srikantan Moorthy, SVP & Head - Education & Research	Infosys Electronics City, Hosur Road Bangalore 560 100	Member
4.	Deepak Jain, Senior VP & Global Head- Work Force Planning	WIPRO, Doddakannelli Sarjapur Road, Bangalore - 560 035	Member
5.	K. Ganesan, Vice President -Human Resources	Tata Consultancy Services Ltd.,200FtThoraipakkam-Pallavaram Ring Road,Thoraipakkam,Chennai-600 096,Tamil Nadu	Member
6.	Saurabh Joshi, G.M.	Accenture Services Pvt. Ltd. 7th floor, Tower C, building no. 8,DLF Cybercity Phase II, Gurgaon-122002	Member
7.	Ravi Shankar B.	Mind Tree Ltd, Global Village RCVE Post, Mysore Road, Bangalore 59	Member
8.	Umesh Gupta, CEO	Open Software Technology(India) Ltd.,512,PhaseV,Udyog Vihar, Gurgaon- 122016	Member
9.	Prof. S.C. De Sarkar	Indian Institute of Technology Bhubaneswar Bhubaneswar-751 013	Member
10.	Dr. Arti Kashyup, Associate Professor	Indian Institute of Technology Mandi, PWD Rest House, Near Bus Stand Mandi - 175 001, Himachal Pradesh	Member
11.	Dr. B. Mahanty, Professor	Indian Institute of Technology Kharagpur Kharagpur ,India - 721302	Member

12.	Dr. Narayanaswamy N S, Associate Professor	D/o Computer Science and Engg Indian Institute of Technology Madras, IIT P.O., Chennai -600 036	Member
13.	Prof. Ashis.k. Pani, Professor	XLRI Jameshepur, Road Number 1, Circuit House Area, Sonari, Jameshepur, Jharkhand-831011	Member
14.	S.K. Prasad, System Analyst	National Institute of open Schooling A-24-25, Institutional Area, Sector- 62, NOIDA -201309	Member
15.	Pramod Tripathi, Senior Executive Officer	National Institute of open Schooling A-24-25, Institutional Area, Sector- 62, NOIDA -201309	Member
16.	Koushalya Barik, AssistantDirector(Academic)	National Institute of Open Schooling, A-24-25, Institutioal Area, Sector-62 NOIDA-201309	Member
CORE GROUP			
17.	Naresh Chandra, JDT	DGET, New Delhi	Mentor
18.	Dr. M. Jayprakasan, Dy. Director of Training	ATI Chennai	Leader
19.	B.K. Singha, Dy. Director of Training	CSTRI, Kolkata	Member
20.	N. Sundararajan, DPA Gr.B	NIMI, Chennai	Member
21.	ValluruBabu, Dy. Director of Training	DGET, New Delhi	Member
22.	A.K.V. Annapurna, Training Officer	ATI ,Hyderabad	Member
23.	Sk. Altaf Hossain, Training Officer	ATI, Howrah	Member
24.	B. Biswas, Vocational Instructor	RVTI, Kolkata	Member
25.	Sanjay Kr. Gupta, Vocational Instructor	RVTI , Vadodara	Member
26.	S.K. Acharya, Vocational Instructor	NVTI ,Noida	Member
27.	P. Narmada, Vocational Instructor	RVTI, Bangalore	Member
28.	Anvar Muhmed, Vocational Instructor	RVTI, Trivandrum	Member
29.	P.T. Noushad, Assistant Training Officer,	ITI (W), Coimbatore	Member
30.	Kunal Shanti Priya, Vocational Instructor	ITI, Daltonganj, Redma, Daltonganj - 822101	Member

