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.	**Safe working practices** 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) **Computer components** 5. Identify computer peripherals and internal components of a disassembled desktop computer. (6 Hrs) 6. Assemble components of desktop computer. (6 Hrs)	**Safe working practices** • Scope of the COPA trade. • Safety rules and safety signs. • Types and working of fire extinguishers. **Introduction to Computer components** • 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. (06 hrs)
		Using Windows Operating System 7. Practice on Windows interface and navigating windows. (7Hrs) 8. Practice on managing files and folders using removable drives. (5Hrs) 9. Customize the desktop	**Introduction Windows Operating System** • Introduction to operating System • Main features of Windows OS • Concept of various shortcut commands. (06 hrs)

		settings and manage user accounts. (5Hrs) 10. View system properties and control panel details. (5Hrs) 11. Work with keyboard shortcut commands. (5Hrs) 12. Print and scan document using different commands. (3 Hrs)	
		Computer basics and Software Installation 13. View the BIOS settings and their modifications. (3 Hrs) 14. Install Windows operating system. (5 Hrs) 15. Format hard disk and create partition. (3 Hrs) 16. Identify and rectify common hardware and software issues during OS installation. (4 Hrs) 17. Install necessary application software for Windows i.e. Office Package, PDF Reader, Media Player etc. (5 Hrs) 18. Configure Bluetooth and wi-fi settings. (3 Hrs) 19. Install Drivers for printer, scanner, webcam and DVD etc. (4 Hrs) 20. Burn data, video and audio files on CD/DVD using application software. (3 Hrs)	**Computer basics and Software Installation** • 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)
		DOS Command Line Interface & Linux Operating Systems 21. Use basic DOS commands for directory listing. (10 Hrs) 22. Manage files and folders using DOS commands. (6 Hrs)	**Introduction to DOS Command Line Interface & Linux Operating Systems** • Introduction to basic DOS Internal and External Commands. • Introduction to Open

		23. Install Linux operating system. (6 Hrs) 24. Install necessary application software for Linux i.e. Office Package, PDF Reader, Media Player etc. (6 Hrs) 25. Use Basic Linux commands for directory listing, file and folder management, password etc. (10 Hrs) 26. Use the Linux graphical user interface for file and folder management, exploring the system etc. (10 Hrs) 27. Customize desktop settings and manage user accounts in Linux. (6 Hrs) 28. View system properties and manage system setting in Linux. (6 Hrs)	Source Software. • Introduction to Linux Operating System features, structure, files and processes. • Basic Linux commands. (12 hrs)
Professional Skill 90 Hrs; Professional Knowledge 18 Hrs	Create, format and edit document using word processing application software.	**Using Word Processing Software** 29. Open MS Word and familiarise with basic word components. (3 Hrs) 30. Practice creating, saving and renaming of word documents. (3 Hrs) 31. Edit document using basic formatting tools. (8 Hrs) 32. Practice Inserting and formatting tables and other objects. (12 Hrs) 33. Work with Page layout settings and printing documents. (6 Hrs) 34. Use templates, autocorrect tools, and record and execute a macro. (6 Hrs) 35. Use Mail merge tool. Use	**Word Processing Software** • 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. (18 hrs)

		conditional Mail Merge, External Data Source. Practice Letters, Label & Envelop printing using Mail Merge. (10 Hrs) 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) 37. Practice Typing using open source typing tutor. (24 Hrs) 38. Practice of using shortcut keys and use Open Office as word processor. (12 Hrs)	
Professional Skill 90 Hrs; Professional Knowledge 18 Hrs	Create, format, edit and develop a workbook by using spreadsheet application software.	**Using Spread Sheet Application** 39. Open MS Excel and familiarise with basic application components. (4 Hrs) 40. Practice creating, saving and formatting excel spread sheets. (9 Hrs) 41. Use absolute and relative referencing, linking sheets, conditional formatting etc. (9 Hrs) 42. Practice Excel functions of all major categories i.e. Financial, Logical, Text, date & time, Lookup, Math, Statistical etc. (12 Hrs) 43. Use various data types in Excel, sorting, filtering and validating data. (8 Hrs)	**Spread Sheet Application** • 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. • Analyzing data using charts, data tables, pivot tables, goal seek and scenarios. (18 hrs)

		44. Create and format various static and dynamic charts. (10 Hrs)	
		45. Practice Importing & exporting excel data. (4 Hrs)	
		46. Perform data analysis using "what if" tools and Pivot Table and record and execute a macro. (10 Hrs)	
		47. Modify Excel page setup and printing and use open office as Spreadsheet application. (4 Hrs)	
		48. Execute simple projects using Excel & Word. (20 Hrs)	
Professional Skill 60 Hrs; Professional Knowledge 12 Hrs	Create and customize slides for presentation.	**Image editing and creating Presentations** 49. Use Windows Paint or image editing software like Open Office Draw, GIMP, Irfan View or a similar tool. (6 Hrs) 50. Perform Image editing using open source applications. (12 Hrs) 51. Open power point presentation and familiarise with basic application components. (6 Hrs) 52. Create Slide shows, Insert picture and theme. (6 Hrs) 53. Add new slide, format text, link with word and excel documents. (5 Hrs) 54. Practice animating slide transitions and objects. (4 Hrs) 55. Create slide shows by inserting audio & video and	**Image editing, Presentations** • 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)

		synchronise with presentation. (6 Hrs) 56. Modify slide page setup and print the slides. (3 Hrs) 57. Create a simple presentation project using open office. (12 Hrs)	
Professional Skill 60 Hrs; Professional Knowledge 12 Hrs	Create and manage database file by using MS Access.	**Database Management with MS Access** 58. Create database and design a simple tables in Access. (6 Hrs) 59. Practice enforcing integrity constraints and modify properties of tables and fields. (6 Hrs) 60. Create relationships and join tables. (6 Hrs) 61. Create and format Forms. (6 Hrs) 62. Create simple queries with various criteria and calculations. (12 Hrs) 63. Create Simple update, append, make table, delete and crosstab queries. (9 Hrs) 64. Modify form design with controls, macros and events. (6 Hrs) 65. Import and export data to and from Access and create and format various types of reports. (6 Hrs) 66. Compress and Encrypt databases. (3 Hrs)	**Database Management Systems** • 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 behaviour. (12 hrs)
Professional Skill 90 Hrs; Professional	Install, setup/ configure, troubleshoot and secure computer	**Configuring and using Network** 67. View Network connections. (3 Hrs)	**Networking Concepts** • Introduction to Computer Networks, Necessity and

| Knowledge 18 Hrs | network including Internet. | 68. Connect a computer to a network and share Devices i.e. Printers, files, folders and drives. (6 Hrs)
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)
70. Practice IP Addressing and Subnet masking for IPV4/ IPV6 and pinging to test networks. (6 Hrs)
71. Configure Hub and Switch. (6 Hrs)
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)
73. Set up a proxy server/ DHCP Server with firewall. (9 Hrs)
74. Set up video conferencing using open source software. (6 Hrs)
75. Use various tools (by open source /free) for network troubleshooting, maintenance and security for both Wired and Wireless(6 Hrs) | Advantages.
• 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) |
| | | **Using Internet**
76. Browse the Internet for information (use at least 3 | **Internet Concepts**
• Introduction to www, Concept of Internet, Web |

		popular browsers). (3 Hrs) 77. Create and use e-mail for communication with attachment, priority setting, address book. (3 Hrs) 78. Communicate with text, video chatting and social networking sites. (6 Hrs) 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) 80. Configure Outlook, mail service in mobile phones. Use tools like Skype, Google+ etc. (6 Hrs) 81. Browser setting for Bookmark, cookies, favourites and pop ups, default website, trusted site, restricted site, content, history and advanced setup. (6 Hrs)	Browsers, internet servers and search engines. • Concepts of Domain naming Systems and E mail communication. • Introduction to video chatting tools and Social Networking concepts. (06 hrs)
Professional Skill 90 Hrs; Professional Knowledge 18 Hrs	Develop static web pages using HTML.	**Designing Static Web Pages** 82. Practice with basic HTML elements (e.g. head, title, body), tag and attributes. (3 Hrs) 83. Design simple web page with text, paragraph and line break using HTML tags. (5 Hrs) 84. Format text, change background colour and insert pictures in web page.	**Web Design Concepts** • 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

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

		Operators. (18 Hrs)	Constants and Conversion between data types.
		97. Use Control statements and Loops in JavaScript. (18 Hrs)	• Arithmetic, Comparison, Logical Operators in JavaScript. Operator precedence.
		98. Practice with switch case, loop controls and Errors in JavaScript. (18 Hrs)	
		99. Practice with Arrays in JavaScript page. (12 Hrs)	• Program Control Statements and loops in JavaScript.
		100. Practice with functions in JavaScript web page. (18 Hrs)	• Arrays in JavaScript – concepts, types and usage.
		101. Practice with String, Math and Date functions in JavaScript. (24 Hrs)	• The String data type in JavaScript. Introduction to String, Math and Date.
		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)	• 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 Java Script. (42 hrs)
		103. Develop a simple web project using HTML, JavaScript and host it in IIS and a registered domain. (36 Hrs)	
Professional Skill 210 Hrs; Professional Knowledge 42 Hrs	Develop simple spread sheets by embedding VBA.	**Programming with VBA** 104. Practice with basic functions of VBA Editor.(3 Hrs)	**Introduction to VBA, Features and Applications.** • Introduction to VBA features and applications.
		105. Use form controls like buttons, Check boxes, Labels, Combo Box, Group Box, List Box, Option Button, Scroll Bar and	• Properties, events and methods associated with the Button, Check Box, Label, Combo Box, Group

		Spin button. (10 Hrs)	Box, Option Button, List Box, Scroll Bar and Spin button controls.
		106. Modify object properties in VBA program. (6 Hrs)	
		107. Write simple programs involving VBA Data types, Variables, Operators and Constants. (16 Hrs)	• VBA Data types, Variables and Constants.
		108. Create Message boxes and Input boxes in VBA. (6 Hrs)	• Operators in VBA and operator precedence.
		109. Work with conditional statements like if, Else-if, and Select. (10 Hrs)	• Mathematical Expressions in VBA.
		110. Practice with Loop, Loop Control and Case statements in VBA. (13 Hrs)	• Introduction to Arrays in VBA.
		111. Create and Manipulate Arrays in VBA. (10 Hrs)	• Introduction to Strings in VBA.
		112. Practice with string variables in VBA programming. (10 Hrs)	• Conditional processing in VBA, using the IF, Else-if, Select Case Statements.
		113. Write programs involving Mathematical, Conversion, Date and String Functions in VBA. (16 Hrs)	• Introduction to Loops in VBA.
		114. Create Functions, Procedures, Passing Parameters and Using Returned Data. (12 Hrs)	• VBA message boxes and input boxes.
		115. Practice with built in functions in VBA programs. (12 Hrs)	• Introduction to Creating functions and Procedures in VBA.
		116. Create and edit macros. (12 Hrs)	• Using the built in functions.
		117. Write code to work with Excel in VBA forms. (12 Hrs)	• Introduction to Object Oriented Programming Concepts. Concepts of Classes, Objects, Properties and Methods.
		118. Practice with methods	• The user forms and control in Excel VBA.
			• Introduction to Debugging Techniques. (42 hrs)

		and events in VBA Programming. (20 Hrs) 119. Debug, Step through code, Breakpoints, find and fix errors while debugging. (18 Hrs) 120. Develop a simple project involving MS excel and VBA. (26 Hrs)	
Professional Skill 90 Hrs; Professional Knowledge 18 Hrs	Maintain accounts using accounting software.	**Using Accounting Software** 121. Practice Basic accounting with tally interface. (08 Hrs) 122. Create Company, Account and Voucher entry in Tally. (08 Hrs) 123. Generate reports for Invoice, Bill, Profit & Loss account etc. (08 Hrs) 124. Perform Cost Centre & Cost Category management. (10 Hrs) 125. Create and manage budgeting systems. (08 Hrs) 126. Create Scenario and Variance Analysis. (6 Hrs) 127. Use Tally for Costing, Ratio Analysis, Cash flow and Funds flow statements. (08 Hrs) 128. Analyze and Manage Inventory control. (10 Hrs) 129. Perform Point of Sales and Taxation (VAT, Excise, Service Tax). (6 Hrs) 130. Perform System Administration and use other Utilities. (6 Hrs) 131. Create users, take Backup	**Using Accounting Software** • 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 book keeping. • 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. • Tally Interface in

		& Restore of Company. (6 Hrs) 132. Use Multilingual Functionality in Tally. (6 Hrs)	Different Languages. (18 hrs)
Professional Skill 30 Hrs; Professional Knowledge 06 Hrs	Browse, select and transact using E-commerce websites	**E Commerce** 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) 134. Upload products for selling in E-Commerce Sites and make online purchase from E Commerce sites.(14 Hrs) 135. Manage security issues in E-Commerce and payment operations. (8 Hrs)	**E Commerce Concepts** • 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. (06 hrs)
Professional Skill 30 Hrs; Professional Knowledge 06 Hrs	Secure information from Internet by using cyber security concept.	**Cyber Security:** 136. Protect information, computers and networks from viruses, spyware and other malicious code. (3 Hrs) 137. Provide firewall security for Internet connection and Network System. (6 Hrs) 138. Protect the computer against various internet threats. (3 Hrs) 139. Make backup copies of important file, data and information. (3 Hrs) 140. Secure your Wi-Fi networks using password,	**Cyber Security:** • 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 cyber crimes. (06 hrs)

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

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.