

ANNEXURE 1 - COMPUTER ENGINEERING - MODEL CURRICULUM

Qualification Title: Certificate in Computer Engineering

NSQF Level: 4

Total Hours - 2880

Subject Name and Code	Topics/Module	Theory Hours	Practical Hours	Objective of module	Outcome of module	Methodology	Tools Required
Basic Mathematics & Science (1001)	Module M1 Basic Mathematics calculations & Algebra	40	0	OB 1.1 To understand principles of basic mathematics and calculation including Fraction, Ratio & Proportions, Basic Algebra	Will be able to: MO-1.1 Perform basic mathematical calculations in Fraction, Ratio & Proportions, Basic Algebra	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M2 Mensuration and Trigonometry	40	0	OB 2.1 To understand principles of Mensuration and Trigonometry	MO-2.1 Perform basic mathematical calculations and solve sample problems related to Mensuration and Trigonometry	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M3 Basic Science	40	0	OB 3.1 To understand principles of basic Science including System of units, Unit Conversion Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	MO-3.1 Understand the concepts of basic science including : System of units, Unit Conversion MO-3.2 Define - Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M4 Basic Science	40	0	OB 4.1 To understand principles of basic Science including Heat, Pressure & Temperature and their applications. OB 4.2 To Understand the concepts of Basic electricity - AC/DC/Voltage, Current , Resistance, Ohms law	MO-4.1 Define - Heat, Pressure & Temperature and their applications MO-4.2 Explain - AC/DC/Voltage, Current , Resistance, Ohms law	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M1 Introduction to	8	0	OB 1.1 To understand different instruments used in engineering drawing	MO-1.1 List various instruments used in engineering drawing MO-1.2 State uses of various drawing instruments MO-1.3 Use various instruments to draw sample exercises	- Lecture - Demonstration	

Engineering Drawing (1002)	Engineering Drawing Practice	10	0	OB 1.2 To understand freehand sketching, lettering and dimensioning	MO-1.4 Understand the application of freehand sketching, lettering and dimensioning, Layouting and title block MO-1.5 List various dimensioning methods MO-1.6 Solve problems based on different dimensioning methods	- Lecture - Demonstration	
	Module M2 Geometrical Drawing	20	0	OB 2.1 To understand Geometric constructions and drawings of various objects and shapes	MO-2.1 Draw lines, angles, triangles, squares, polygons, threads, fasteners based on sample exercises	- Lecture - Demonstration	- Scales, Compass, Drawing board, Clips, Mini drafter, Pencils, Drawing sheets, Stencils, Instrument box
	Module M3 Orthographic Projection	20	0	OB 3.1 To draw orthographic projections of various objects	MO-3.1 State the concept of quadrants in engineering drawing MO-3.2 Differentiate first angle and third angle projection MO-3.3 Prepare orthographic projection of given sample objects	- Lecture - Demonstration	- Laptop & Projector
	Module M4 Shop floor drawing	22	0	OB 4.1 To understand and draw shop floor drawings	MO-4.1 State the importance of shop floor drawing in industry MO-4.2 Prepare isometric drawings of given sample objects MO-4.3 Prepare assembly drawing of given sample products	- Lecture	
Module M1 Introduction to Operating system		15		OB 1.1.1 To familiarise the windows, linux operating systems, Software Hardware and peripherals, desktop customization	MO-1.1 able to operate windows and linux MO-1.2 Identify hardwares and softwares MO-1.3 Learn basic commands of Linux and Windows MO 1.4 learn internal working of computer	- Lecture - Demonstration	
		20		OB 1.2 To understand the working of keyboard ,mouse and file management	MO-1.5 understand different mouse buttons and actions MO-1.6 understand various keys and their functions in the keyboard MO-1.7 understand how to create file, folders, subfolders etc	- Lecture - Demonstration	

Module M2 Office packages	35		OB-2.1 To Understand about word package	MO-2.1 understand formatting MO-2.2 Understand tables MO-2.3 Understand mailmerge and print MO-2.4 learn to create envelops,labels ,birthday card MO-2.5 Learn to protect and save	- Lecture - Demonstration	
	55		OB-2.2 To understand Excel	MO-2.6 Learn about workbook MO-2.7 Understand formatting,sort and filter MO-2.8 Understand cell reference,formulas and operators MO-2.9 Understand functions,page formatting,freeze panes,hide,unhide,protecting sheet MO-2.10 Understand Data Analysis MO-2.11 Understand Save, Print, Export and Import	- Lecture - Demonstration	
	25		OB-2.3 To understand Powerpoint	MO-2.12 Understand formatting,presentation MO-2.13 Understand Images, Tables, Multimedia & Transitions MO-2.14 Understand Running, Protect and Save		
Module M3 Internet and Cloud	8		OB 3.1 Learn about Internet	MO-3.1 Understand Web Browsers, WWW, Search Engines MO-3.2 Understand E-Mail	- Lecture - Demonstration	
	10		OB 3.2 Learn about Cloud	MO-3.3 Understand Cloud Computing MO-3.4 Understand Applications	- Lecture - Demonstration	
Module M4 Tally	27		OB 4.1 Understand fundamentals and setting up company features	MO-4.1 Understand accounting fundamentals and tally fundamentals MO-4.2 Implement company creation, selection, alter, delete and shut a company MO-4.3 Understand Group creation and related functionalities - single and multiple group MO-4.4 Understand Ledger creation and functionalities - Single and Multiple Ledger	- Lecture - Demonstration	
	20		OB-4.2 Understand Voucher creation - Receipt and Payment and Various statements of accounts	MO-4.5 Understand Purchases & sales vouchers, Contra & Journal vouchers MO-4.6 Understand Debit note and Credit note entries, Practice preparation of Budgets MO-4.7 Understand Preparation of Cash book, Bank book and Trial balance and Preparation of Profit & Loss Account and Balance sheet.	- Lecture - Demonstration	

15		OB 4.4 Creation of stock groups and stock items and Understand GST and GST filing	MO-4.8 Understand Creation of Stock categories, stock groups, stock item and units of measures, Practice setting up of cost centres and creation of godowns. MO-4.9 Understand GST and configuring GST features, Creating Masters, entering transactions, GST Report & GST Filing	- Lecture - Demonstration	
10		OB.4.5 Understand Creation of Purchase order, Sales order and Stock reports, TDS in Tally	MO-4.9 Understand Creation of Purchase order, creation of Sales order, Preparation of Stock reports. MO-4.10 Understand Basic Concepts of TDS, TDS in TALLY, Creation of Masters, Processing transactions, TDS Reports	- Lecture - Demonstration	

Computer Fundamentals and Office Automation Lab (1069)

	15	OB 1.1.1 To familiarise the windows, linux operating systems, Software and Hardware	MO 1.1 Will be able to operate the windows and Linux operating system MO 1.2 Will be able to identify the difference between hardware and software MO 1.3 Will be able to operate in Windows and Linux environment: desktop, menus, toolbars and icons MO 1.4 Able to execute basic DOS and Linux commands	Desktop/ Laptop with Windows & Linux Operating System	
	15	OB 1.1.2 Computer Operation and Peripherals	MO 1.5 Demonstrate the internal working of the computer during startup (booting) and shutdown MO 1.6 Identify various computer peripheral devices and accessories MO 1.7 Demonstrate the shutdown and restart the computer from the START menu	Desktop/ Laptop with Windows & Linux Operating System	

**OFFICE
AUTOMATION
ASSISTANT
Familiarisation
with Operating
System**

**1.1 Learning Windows
OS**

	15	OB 1.1.3 Desktop Customization	<p>MO 1.8 Demonstrate how to start and end programs</p> <p>MO 1.9 Run more than one program at a time (“multi-task”) and switch between them.</p> <p>MO 1.10 Demonstrate minimize, maximize, restore, move, size, and close a window</p> <p>MO 1.11 Demonstrate the personalization settings like background, colors, themes etc.</p> <p>MO 1.12 Demonstrate the usage of the taskbar and notification areas</p> <p>MO 1.13 Able to create “shortcuts” to frequently used programs</p> <p>MO 1.14 Able to make use of the Windows Help System when you need it</p> <p>MO 1.15 Able to explore the contents of your computer using “My Computer” and “Windows Explorer”</p>	Desktop/ Laptop with Windows & Linux Operating System	
	8	OB 1.1.4 Working with Mouse	<p>MO 1.16 To left-click to select an item</p> <p>MO 1.17 To double-click to open a file or start a program</p> <p>MO 1.18 To drag (move) an icon or window while holding the left button</p> <p>MO 1.19 To right-click to display a context menu to perform various tasks</p> <p>MO 1.20 Able to change mouse properties in control panel</p>	Desktop/ Laptop with Windows & Linux Operating System	

		12	OB 1.1.5 Working with Keyboard	<p>MO 1.21 Able to know the location and use of special keys: Ctrl (Control), Alt (Alternate), Del (Delete), Backspace, Esc (Escape), Arrow keys, Enter, Shift, Tab, Home, End, and Function keys.</p> <p>MO 1.22 Able to understand key combinations that are used to perform various tasks such as: Ctrl+C to copy text and the every useful “three-fingered salute” Ctrl+Alt+Del</p> <p>MO 1.23 Able to know the keyboard settings in control panel</p>	Desktop/ Laptop with Windows & Linux Operating System	
		25	OB 1.1.6 File management system	<p>MO 1.24 Create file management strategies(directory and folder)</p> <p>MO 1.25 Explore “My Documents” folder</p> <p>MO 1.26 Demonstrate save and retrieve files on the computer’s hard drive and on removable storage media</p> <p>MO 1.27 Demonstrate create, name, copy, move and delete files and folders</p> <p>MO 1.28 Familiarize to organize files and folders</p> <p>MO 1.29 Make use of the windows search tools to find misplaced files</p>	Desktop/ Laptop with Windows & Linux Operating System	
		10	OB 2.1.1 About Word	<p>MO 2.1 Able to familiarize MS Office suit.</p> <p>MO 2.2 Able to create word document using template</p>	Desktop/ Laptop with Windows Operating System & MS Office	

<p style="text-align: center;">OA-2 Microsoft Word</p>	<p style="text-align: center;">2.1 Learning Microsoft Word</p>		35	<p>OB 2.1.2 Formatting of Texts</p>	<p>MO-2.3 Demonstrate how to Copy, Cut and Paste text MO 2.4 Demonstrate the use of Format Painter MO 2.5 Demonstrate how to Find and Replace text MO 2.6 Demonstrate how to change font, font size, font style and font color MO 2.7 Demonstrate how to align and indent text MO 2.8 Demonstrate how to set line spacing and paragraph formatting MO 2.9 Demonstrate how to drop-caps MO 2.10 Demonstrate how to set multiple columns MO 2.11 Demonstrate about auto-correct MO 2.12 Demonstrate how to set bullets and numbered list</p>	<p>Desktop/ Laptop with Windows Operating System & MS Office</p>	
			35	<p>OB 2.1.3 Formatting of Page</p>	<p>MO 2.13 Able to set or remove Headers and Footers MO 2.14 Able to set or remove margins and tabs MO 2.15 Able to set or remove page numbers, page break, page size and page orientation MO 2.16 Able to insert picture, clip art, shapes, smart art, word art and symbols MO 2.17 Able to insert different types of charts MO 2.18 Able to set page borders, page color and water mark</p>	<p>Desktop/ Laptop with Windows Operating System & MS Office</p>	

	30	OB 2.1.4 Tables and Document map	MO 2.19 Able to create, edit and format tables MO 2.20 Able to convert a table MO 2.21 Able to sort a table MO 2.22 Able to navigate long document with the document map	Desktop/ Laptop with Windows Operating System & MS Office	
	30	OB 2.1.5 Mail merge and Print	MO 2.23 Able to Mail merge a document MO 2.24 Able to learn how to preview and print documents	Desktop/ Laptop with Windows Operating System & MS Office	
	20	OB 2.1.6 Envelopes, Labels and Birthday cards	MO 2.25 Able to create Envelopes and Labels MO 2.26 Able to create birthday cards	Desktop/ Laptop with Windows Operating System & MS Office	
	15	OB 2.1.7 Protecting and Saving	MO 2.27 Able to add protection to a document MO 2.28 Able to Save documents in different formats and versions. MO 2.29 Able to save the the document in PDF format	Desktop/ Laptop with Windows Operating System & MS Office	
	10	OB 3.1.1 About Excel	MO 3.1 Able to familiarize Excel MO 3.2 Able to familiarize about basic application componets in excel window.	Desktop/ Laptop with Windows Operating System & MS Office	
	15	OB 3.1.2 Workbook	MO 3.3 Able to create, open and view a workbook MO 3.4 Able to move to different rows, columns and locations using keyboard and mouse MO 3.5 Able to familiarize the addressing of rows, columns and cells	Desktop/ Laptop with Windows Operating System & MS Office	

3.1 Basic Formatting

	45	OB 3.1.3 Formatting	<p>MO 3.6 Able to insert, copy and delete rows and columns</p> <p>MO 3.7 Able to format a cell</p> <p>MO 3.8 Able to insert, copy, delete, move and hide worksheets</p> <p>MO 3.9 Able to merge and unmerge cells, turn on/off word wrap</p> <p>MO 3.10 Able to fill cells with values and formulas</p> <p>MO 3.11 Able to find the Auto-Sum of cells</p> <p>MO 3.12 Able to do conditional formatting of cells</p> <p>MO 3.13 Able to format the cells with alignment, borders and shading</p> <p>MO 3.14 Able to find and replace cell contents</p>	Desktop/ Laptop with Windows Operating System & MS Office	
	25	OB 3.2.1 Sort and Filter	<p>MO 3.15 Able to sort the workbook with single and multiple columns</p> <p>MO 3.16 Able to turn on/off filter</p> <p>MO 3.17 Able to filter with single and multiple columns</p> <p>MO 3.18 Able to do custom filter with single and multiple columns</p>	Desktop/ Laptop with Windows Operating System & MS Office	
	20	OB 3.2.2 Cell Reference	<p>MO 3.19 Able to identify the concept of cell reference</p> <p>MO 3.20 Able to identify Relative reference, Absolute reference and Mixed reference</p>	Desktop/ Laptop with Windows Operating System & MS Office	

OA-3 Microsoft
Excel

3.2
Functions and formulas

	40	OB 3.2.3 Formulas and Operators	MO 3.21 Able to work with different types of formulas in cell contents MO 3.22 Able to use AND, OR and NOT operators in formulas MO 3.23 Able to use formulas with IF condition MO 3.24 Able to use formulas with nested IF conditions	Desktop/ Laptop with Windows Operating System & MS Office	
	45	OB 3.2.4 Functions	MO 3.25 Able to know how to insert a function MO 3.26 Able to use Text, Logical, Mathematical, Financial, Statistical, Financial and Date & Time Functions MO 3.27 Able to use Lookup and Reference	Desktop/ Laptop with Windows Operating System & MS Office	
	45	OB 3.2.5 Page Formatting	MO 3.28 Able to set or remove Headers and Footers MO 3.29 Able to set or remove margins MO 3.30 Able to set or remove page numbers, page break, page size, page orientation and print titles MO 3.31 Able to insert picture, clip art, shapes, smart art, word art and symbols MO 3.32 Able to create different types of charts MO 3.33 Learn to insert and work with pivot table MO 3.34 Able to set page borders, page color and water mark	Desktop/ Laptop with Windows Operating System & MS Office	
	20	OB 3.2.6 Freeze, Split and Hide & Protect	MO 3.35 Able to freeze panes, freeze top row and freeze first column MO 3.36 Able to split worksheet, hide and unhide sheet MO 3.37 Able to protect a worksheet and workbook MO 3.38 Able to share a workbook for multiple users along network	Desktop/ Laptop with Windows Operating System & MS Office	

		15	OB 3.2.7 Data Analysis	MO 3.39 Learn to import data to worksheet MO 3.40 Learn to validate data MO 3.41 Learn to remove duplicate rows from worksheet MO 3.42 Learn to convert text into different columns. MO 3.43 Learn to do What-If-Analysis	Desktop/ Laptop with Windows Operating System & MS Office	
		10	OB 3.2.8 Save, Print, Export and Import	MO 3.44 Able to Save documents in different formats and versions. MO 3.45 Able to save the the document in PDF format MO 3.46 Learn to export and import data to different formats	Desktop/ Laptop with Windows Operating System & MS Office	
		5	OB 4.1.1 About Presentation	MO 4.1 Able to familiarize the Power point environment	Desktop/ Laptop with Windows Operating System & MS Office	
		15	OB 4.1.2 Formatting	MO-4.2 Able to Copy, Cut and Paste text MO 4.3 Able to identify the use of Format Painter MO 4.4 Able to do Find and Replace text MO 4.5 Able to change font, font size, font style and font color	Desktop/ Laptop with Windows Operating System & MS Office	
		20	OB 4.1.3 Presentation	MO 4.6 Able to create new presentation MO 4.7 Able to edit the presentation MO 4.8 Able to add new slides to presentation MO 4.9 Able to format the presentation	Desktop/ Laptop with Windows Operating System & MS Office	

OA-4 Microsoft Power Point	4.1 Learning Microsoft Powepoint		30	OB 4.1.4 Images, Tables, Multimedia & Transitions	MO 4.10 Able to insert images, shapes and symbols to presentation MO 4.11 Able to insert, edit and modify tables to presentation MO 4.12 Able to insert, edit and modify different types of Charts to presentation MO 4.13 Able to insert sound and video to presentation MO 4.14 Able to insert and edit animations and transitions to presentation	Desktop/ Laptop with Windows Operating System & MS Office	
			20	OB 4.1.5 Running, Protect and Save	MO 4.15 Able to run a presentation MO 4.16 Able to display a speaker-lead and self-running presentation MO 4.17 Able to present a Presentation using Text with animation, Presentation using images, media file MO 4.18 Able to create a self running presentation MO 4.19 Able to protect and save presentations in different versions	Desktop/ Laptop with Windows Operating System & MS Office	
			12	OB 5.1.1 Web Browsers, WWW, Search Engines	MO 5.1 Able to use different types of web browsers MO 5.2 Able to access various web sites MO 5.3 Able to use search engines MO 5.4 Able to use web conferencing tools like google meet, zoom, webex ,E-Commerce etc.	Desktop/ Laptop with Windows / Linux Operating System	

OA-5 Internet & Cloud Computing	5.1 Internet		10	OB 5.1.2 E-Mail	MO 5.5 Able to know various E-Mail service providers like gmail, yahoo, etc MO 5.6 Able to create E-Mail Id MO 5.7 Able to create, save, send, receive and delete E-Mails MO 5.8 Able to reply, forward and send multiple copies of an E-Mail MO 5.9 Able to add attachments to E-Mail	Desktop/ Laptop with Windows / Linux Operating System	
	5.2 Cloud Computing		5	OB 5.2.1 Cloud computing	MO 5.10 Able to identify various service providers of Cloud computing	Desktop/ Laptop with Windows / Linux Operating System	
			16	OB 5.2.2 Applications of Cloud computing	MO 5.11 Able to use Drive, calendar, Google Forms, Photos etc	Desktop/ Laptop with Windows / Linux Operating System	
	6.1 Fundamentals of Tally		10	OB 6.1.1 Understanding Tally fundamentals	MO 6.1 Able to demonstrate the the basic concepts of TALLY	Desktop/ Laptop with Windows Operating System & Tally Software	
			15	OB 6.1.2 Familiarize Tally packages - Screen - Menus - Functions	MO 6.2 Able to know Tally packages and Menus, Functions options	Desktop/ Laptop with Windows Operating System & Tally Software	
	6.2 Practice Setting up Company features.		12	OB 6.2.1 Implement company creation, selection, alter, delete and shut a company	MO 6.3 Able to implement company creation MO 6.4 Able to identify selection alter - delete and shut a company.	Desktop/ Laptop with Windows Operating System & Tally Software	
			15	OB 6.2.2 Group creation and related functionalities - single and multiple group	MO 6.5 Able to do group creation - Single group MO 6.7 Able to do Alter/ Delete a Single group MO 6.8 Able to do group creation - Multiple group MO 6.9 Able to do Alter/ Delete a Multiple group	Desktop/ Laptop with Windows Operating System & Tally Software	
			20	OB 6.2.3 Ledger creation and functionalities - Single and Multiple Ledger	MO 6.10 Able to do Ledger creation - Single ledger MO 6.11 Able to do Alter/ Delete a Single ledger MO 6.12 Able to do Ledger creation - Multiple ledger	Desktop/ Laptop with Windows Operating System & Tally Software	

OA-7 English	6.3 Voucher creation - Receipt and Payment		20	OB 6.3.1 Purchases & sales vouchers, Contra & Journal vouchers	MO 6.13 Able to understand Voucher Creation- Receipt and Payment MO 6.14 Able to create Purchases and Sales vouchers MO 6.15 Able to create Contra and Journal vouchers	Desktop/ Laptop with Windows Operating System & Tally Software	
			20	OB 6.3.2 Debit note and Credit note entries, Practice preparation of Budgets	MO 6.16 Able to create Debit note and Credit note entries MO 6.17 Able to Practice preparation of Budgets	Desktop/ Laptop with Windows Operating System & Tally Software	
	6.4 Various statements of accounts		30	OB 6.4.1 Preparation of Cash book, Bank book and Trial balance.	MO 6.18 Able to Practice preparation of Cash book MO 6.19 Able to Practice preparation of Bank book MO 6.20 Able to Practice preparation of Trial balance	Desktop/ Laptop with Windows Operating System & Tally Software	
			20	OB 6.4.2 Preparation of Profit & Loss Account and Balance sheet.	MO 6.21 Able to Practice preparation Profit & Loss account MO 6.22 Able to Practice preparation of Balance Sheet	Desktop/ Laptop with Windows Operating System & Tally Software	
	6.5 Creation of stock groups and stock items		15	OB 6.5.1 Creation of Stock categories, stock groups, stock item and units of measures.	MO 6.23 Able to implement the creation of stock groups and stock items	Desktop/ Laptop with Windows Operating System & Tally Software	
			15	OB 6.5.2 Practice setting up of cost centres and creation of godowns.	MO 6.24 Able to know setting up of cost centers and creation of godowns	Desktop/ Laptop with Windows Operating System & Tally Software	
	6.6 Understand GST and GST filing		20	OB 6.6.1 Understand GST and configuring GST features, Creating Masters, entering transactions, GST Report & GST Filing	MO 6.25 Able to configure GST features MO 6.26 Able to create master, entering transactions MO 6.27 Able to implement GST reports & GST filing	Desktop/ Laptop with Windows Operating System & Tally Software	
	6.7 Creation of Purchase order, Sales order and Stock reports		20	OB 6.7.1 Creation of Purchase order, creation of Sales order, Preparation of Stock reports.	MO 6.28 Able to implement calculations with order processing and stock reports	Desktop/ Laptop with Windows Operating System & Tally Software	

				<p>OB 6.8.1 Basic Concepts of TDS, TDS in TALLY, Creation of Masters, Processing transactions, TDS Reports</p>	<p>MO 6.29 Able to make orders, billings with GST, and understand TDS. MO 6.30 Able to get enhanced the accounting skills using computers. MO 6.31 Able to restore and backup data</p>	<p>Desktop/ Laptop with Windows Operating System & Tally Software</p>	
				<p>OB 1.1 To understand communication and self management skills</p> <p>OB 1.2 To understand English Literacy - functional English, reading & writing</p>	<p>MO-1.1 Demonstrate knowledge of various methods of communication - verbal, non-verbal-visual; Greetings & self introduction, Asking & responding to question, formal & informal communication MO-1.2 Demonstration of writing sentences and paragraphs on topics related to the subject, discussions on current happenings</p>	<p>- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews</p>	<p>- Laptop & Projector</p>
				<p>OB 2.1 To understand Behavioral skills - Personal strength analysis, social responsibility, role modeling</p>	<p>MO-2.1 Identify specific do's and don'ts for avoiding common body language mistakes MO-2.2 Execute time management and planning skills, Skills to crack interviews MO-2.3 Demonstration of impressive appearance and groomed personality, ability to self- explore MO-2.4 Display professionalism at the institute and workplace</p>	<p>- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews</p>	<p>- Laptop & Projector</p>

Employability Skills & Entrepreneurship (2001)	Module M3 Information Technology	20	40	OB 3.1 To understand Information and communication technology skills OB 3.2 To be familiar with internet and its applications	MO-3.1 Understand the basics of computers, Operating system, MS-Word, MS-Excel software's MO-3.2 Create simple documents like - resume, letter writing, job application etc., MO-3.3 Printing document, Familiar with usage of shortcuts, Creating and Editing of Text, Formatting the Text. MO-3.4 Use Web browsers and search engines, Creating & using e-mail id for communication	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
	Module M4 Entrepreneurship	25	5	OB 4.1 To understand Entrepreneurial skills	MO-4.1 Describe the significance of entrepreneurial values and attitude. MO-4.2 Demonstrate the knowledge of attitudinal changes required to become an entrepreneur MO-4.3 Explain the ways to set up an enterprise and different aspects involved viz., legal, compliances, Marketing aspect, Budgeting, etc	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
				1.1 History and classification of computers	OB 1.1.1 To understand a brief history of computing and computing systems	MO-1.1 Will be able to recall the history of computing and systems	-Lecture - Use of smart class rooms
				OB 1.1.2 To know the classification of computer systems based on types : analog and digital types	MO-1.2 Will be able to distinguish between analog and digital data	-Lecture - Use of smart class rooms	
				OB 1.1.3 To understand the characteristics of analog and digital computers.	MO-1.3 List the characteristics of analog and digital computers	-Lecture - Use of smart class rooms	
				OB 1.1.4 To know the classification of computer systems based on generations : First to Fifth generations	MO-1.4 Will be able to list first to present generation of computer systems with their technology and examples	-Lecture - Use of smart class rooms	

Module M1 Digital Computer Fundamentals & Operating system

	2		OB 1.1.5 To know the classification of computer systems based on their speed and computing power : PC, Mini, Mainframe, Super	MO-1.5 Will be able to understand computers based on their speed and computing power	-Lecture - Use of smart class rooms
	4		OB 1.2.1 To understand number systems.	MO-1.6 define number system and base or radix of number system	-Lecture - Use of smart class rooms
1.2 Introduction to number systems	4		OB 1.2.2 To understand the decimal, binary and hexadecimal number systems.	MO-1.7 Understand decimal, binary and hexadecimal number systems	-Lecture - Use of smart class rooms
	4		OB 1.2.3 To understand the conversion between number systems	MO-1.8 Convert a number from one number system to another	-Lecture - Use of smart class rooms
	4		OB 1.2.4 To analyze various coding schemes	MO-1.9 Know about the different coding schemes like BCD, ASCII, EBCDIC, Unicode etc.	- Lecture - Use of smart class rooms - Demonstration
	4		OB 1.2.5 To understand complements of binary numbers and signed binary representations in memory	MO-1.10 Will be able to explain the various representations of signed numbers : signed-magnitude, signed 1's complement and signed 2's complement	- Lecture - Use of smart class rooms
		6		OB 1.3.1 To understand the basic logic gates and their truth tables	MO-1.11 List the name and function of basic logic gates MO-1.12 Demonstrate the functionality of basic logic gates using truth tables
Logic Gates					

1.3 Loj	6		OB 1.3.2 To understand the universal logic gates and their truth tables	MO-1.13 List the name and function of universal logic gates MO-1.14 Demonstrate the functionality of basic logic gates using truth tables	- Lecture - Demonstration - Use of smart class rooms
	4		OB 1.4.1 To understand the basic concepts of Operating System	MO-1.15 State operating system terms and concepts MO-1.16 State minimum system requirements MO-1.17 Explain the Windows interface, its contents and updating methods. MO-1.18 State the method of creating restore points MO-1.19 Explain file management features	- Lecture - Demonstration - Use of smart class rooms
				MO-1.20 State various file system types MO-1.21 Explain file allocation table and partition MO-1.22 Explain hard formatting and soft formatting	- Lecture - Demonstration - Use of smart class rooms
2.1 Familiarization of Computer	4		OB 2.1.1 To identify the major parts of a desktop computer	MO-2.1 List the names of major parts of a PC MO-2.2 Identify the cabinet, Monitor, Keyboard, Mouse, Printer, scanner and other common peripherals	- Lecture - Demonstration - Use of smart class rooms

2.2 Motherboard Components	4		OB 2.2.1 To identify components of motherboard	MO-2.3 List the components of motherboard MO-2.4 Working of motherboard MO-2.5 Explain motherboard form factor	- Lecture - Demonstration - Use of smart class rooms
	4		OB 2.2.2 To understand the processor	MO-2.6 List the characteristics of processor MO-2.7 State the purpose of processor	- Lecture - Demonstration - Use of smart class rooms
	4		OB 2.2.3 To understand the memory	MO-2.8 List the characteristics of memory MO-2.9 State the purpose of memory MO-2.10 List different types of memory MO-2.11 Explain memory packaging	- Lecture - Demonstration - Use of smart class rooms
2.3 Storage Devices	6		OB 2.3.1 To understand storage devices	MO-2.12 State the purpose and characteristics of storage devices MO-2.13 Explain about hard disk drives, solid-state drives, floppy disk drive, optical storage and other removable storage MO-2.14 Install, remove and configure storage devices	- Lecture - Demonstration - Use of smart class rooms
2.4 Power Supplies	6		OB 2.4.1 To understand power supplies	MO-2.15 State the purpose and characteristics of power supplies MO-2.16 Explain about various power connectors MO-2.17 Know how to replace power supplies	- Lecture - Demonstration - Use of smart class rooms

2.5 Expansion Cards and Peripherals	8		OB 2.5.1 To understand the expansion cards	MO-2.18 Explain the procedure of installing and configuring video card MO-2.19 Explain the procedure of installing and configuring multimedia card MO-2.20 Explain the procedure of installing and configuring IO card MO-2.21 Explain the procedure of installing and configuring NIC card and modem MO-2.22 Explain the characteristics of connectors and cables	- Lecture - Demonstration - Use of smart class rooms
	6		OB 2.5.2 To understand various Input Devices	MO-2.24 Explain the installation procedure of common input devices – mouse, keyboard, barcode reader, multimedia devices, biometric devices, scanner etc.	- Lecture - Demonstration - Use of smart class rooms
	2		OB 2.5.3 To understand various Output Devices	MO-2.25 Explain the installation procedure of common output devices – display devices, printers and speakers.	- Lecture - Demonstration - Use of smart class rooms
2.6 Display Devices	2		OB 2.6.1 To understand display devices	MO-2.26 Explain about display types and their settings. MO-2.27 Explain video standards and technologies	- Lecture - Demonstration - Use of smart class rooms

Module M2 KNOW THE DESKTOP AND LAPTOP PC	2.7 Laptop Architecture	4		OB 2.7.1 To understand Laptop architecture	MO-2.28 Compare desktop and laptop MO-2.29 Explain about laptop motherboards and processors MO-2.30 Explain about laptop memory and storage MO-2.31 Explain about laptop input devices MO-2.32 Explain about laptop expansion buses and ports MO-2.33 Explain about docking stations MO-2.34 Explain about laptop power supplies MO-2.35 Explain about laptop displays MO-2.36 Explain about laptop cable locks	- Lecture - Demonstration - Use of smart class rooms	
		3.1 Introduction to Computer networks	3		OB 3.1.1 To understand basics of computer network	MO-3.1 Explain the relevance of computer networks MO-3.2 List the applications of computer network	- Lecture - Use of smart class rooms
			2		OB 3.1.2 To understand advantages of computer networks	MO-3.3 List the features of Computer network MO-3.4 State the importance of networking	- Lecture - Use of smart class rooms
			4		OB 3.1.3 To understand Peer to Peer networks and Client Server Networks	MO-3.5 Explain the features of Peer to Peer networks and its application MO-3.6 Explain the features of Client-Server networks and its application	- Lecture - Use of smart class rooms

MODULE M3 Fundamentals of Computer Networks

3.2 Network Topologies	6		OB 3.2.1 To understand various network topologies	MO-3.7 List various network topologies MO-3.8 Explain Star, Ring, Bus, Tree, Mesh and Hybrid topologies	- Lecture - Use of smart class rooms
3.3 Classification of networks	4		OB 3.3.1 To understand types of Networks	MO-3.9 List the features of LAN, MAN, WAN MO-3.10 Explain the applications of LAN, MAN, WAN	- Lecture - Use of smart class rooms
	4		OB 3.3.2 To understand fundamentals of other types of networks	MO-3.11 Explain features of Ethernet MO-3.12 Explain features of Bluetooth MO-3.13 Explain features of Mobile Network MO-3.14 Explain features of Wifi	- Lecture - Use of smart class rooms
	6		OB 3.3.3 To understand Internet and Intranet	MO-3.15 Differentiate between Internet and Intranet MO-3.16 To list and use different search engines and web browsers MO-3.17 To create email id, create, send and receive mails using different mail servers	- Lecture - Use of smart class rooms
	4		OB 3.4.1 To understand fundamentals of network infrastrucure	MO-3.18 To identify the Network Infrastructure, service level & network support requirements	- Lecture - Demonstration - Practical Exercise

3.4 Basics of Network infrastructure	4	OB 3.4.2 To understand different network devices	MO-6.2 Identify various Network device like : (a) Switch (Normal and Managed), (b) Router(Normal and wireless), (c) Rack, Patch Panel, i/o box, (d) Access Point etc. MO-6.3 State applications of switches, routers, bridges, devices & interfaces	- Lecture - Demonstration - Practical Exercise
	6	OB 3.4.3 To Configure of Data communication equipments.	MO-6.4 To Connect computers with Network with Drop cable and using WiFi configuration MO-6.5 Explain Programmable switch Configuration MO-6.6 Explain Spanning Tree Protocol (STP), Command Line Interface, IP Routing Process, Verifying Configuration	- Lecture - Demonstration - Practical Exercise
	6	OB 3.4.4 To understand IP Addressing & TCP/I	MO-6.7 State IP Addressing technique(IP4/IP6) and Subnetting and Supernetting the network. MO-6.8 To install and Configure TCP/IP Protocol. MO-6.9 Demonstrate TCP/IP Utilities : PING, IPCONFIG, HOSTNAME, ROUTE, TRACERT etc.	- Lecture - Demonstration - Use of smart class rooms - Practical Exercise
	6	OB 3.4.5 To understand Other Network Protocols	MO-6.10 To explain various protocols such as SMTP, TELNET, FTP, HTTP, SNMP, LDAP. MO-6.11 To cnfigure DHCP.(Dynamic Host Configuration Protocol)	- Lecture - Demonstration - Use of smart class rooms

4.1 Network Protection	6		OB 4.1.1 To understand setting up basic protection	MO-4.1 To set up basic protection using public keys and MAC address filters. MO-4.2 To Troubleshoot wired and wireless network MO 4.3 To explain firewall technologies to secure the network perimeter MO 4.4 To explain LAN security considerations and implement endpoint and Layer 2 security features	- Lecture - Use of smart class rooms
4.2 Control & monitoring of network devices	6		OB 4.2.1 To understand the basic collaboration tools	MO-4.5 To set up NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP MO-4.6 To Setup IP camera for basic surveillance scenario logging and monitoring of devices / locations. MO 4.7 To use Linux Network Tools to check / maintain / Manage Network	- Lecture - Use of smart class rooms - Demonstration
4.3 Firewall	4		OB 4.3.2 To understand the relevance of firewall	MO-4.8 State the purpose of firewall MO-4.9 State installation procedure for firewall MO-4.10 List different firewalls available MO-4.11 State the characteristics of firewall	- Lecture - Demonstration

MODULE M4 Network Security

4.4 LAN Security	4		OB 4.4.1 To understand various LAN security issues	MO-4.12 Explain security challenges in LAN networks MO-4.13 Explain various solutions for LAN security issues	- Lecture - Use of smart class rooms
4.5 Cryptography	4		OB 4.5.1 To understand different cryptographic techniques	MO-4.14 State the importance of cryptography MO-4.15 Explain various encryption techniques	- Lecture - Demonstration - Use of smart class rooms
4.6 Wifi Security	4		OB 4.6.1 To understand various Wifi security issues	MO-4.16 Explain security challenges in Wifi networks MO-4.17 Explain various solutions for Wifi security issues	- Lecture - Demonstration - Use of smart class rooms
4.7 Preventive Maintenance	6		OB 4.7.1 To understand various methods for preventive methods	MO-4.18 Monitor network infrastructure services using network management tools MO-4.19 Apply diagnostic tools & techniques to identify network service level issues & causes MO-4.20 Produce network reports as per customer requirement MO-4.21 Carry out inspection of Network devices based on maintenance schedule MO-4.22 Carry out planned hardware & software upgradations MO-4.23 Obtain sign-off from the customer as per required documentation MO-4.24 Support in creation of operating policies & procedures	- Lecture - Demonstration - Use of smart class rooms

<p style="text-align: center;">4.8 Corrective Maintenance & Troubleshooting of computer networks</p>	<p style="text-align: center;">6</p>		<p>OB 4.8.1 To understand various techniques for corrective maintenance and troubleshooting</p>	<p>MO-4.25 Monitor and administer a computer network using various Network Management Systems (NMSs) MO-4.26 Handling the fault notifications MO-4.27 Apply structured approach to Network troubleshooting MO-4.28 Rectification and testing effectiveness of the troubleshooting MO-4.29 Recording all network events by maintaining a network issues log MO-4.30 Register & file the remediation work carried out to resolve network issues MO-4.31 Ensure traffic gets diverted to backup link if primary link goes down</p>	<p>- Lecture - Demonstration - Use of smart class rooms</p>
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		4.9 Maintain a Healthy, Safe and Secure Working Environment	6	OB 4.9.1 To understand how to maintain a healthy, safe and secure working environment	<p>MO-4.32 To ensure that work is carried out in accordance to the level of competence and legal requirements</p> <p>MO-4.33 To ensure that sites are assessed for health and safety risk as per company's guidelines prior to commencement of work</p> <p>MO-4.34 To ensure environmental conditions and hazards like Earth Potential Rise (EPR) are considered while carrying out the work</p> <p>MO-4.35 To identify and correct any hazards that you can deal with safely, competently and within the limits of your authority</p> <p>MO-4.36 To report any hazards that you are not competent to deal with</p>	<p>- Lecture</p> <p>- Demonstration</p> <p>- Use of smart class rooms</p>
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Computer Hardware and Networking Lab (2069)

1.1 Familiarization of Computer		12	OB 1.1.1 To identify the major parts of a desktop computer	MO-1.1 Identify major parts of a PC like cabinet, Monitor, Keyboard, Mouse, Printer, scanner and other common peripherals		- Laptop/Desktop computer
		12	OB 1.1.2 To identify the positions of connectors, switches and indicators on a PC	MO-1.2 Identify the connectors, switches and indicators on the front panel MO-1.3 Identify the connectors, switches and indicators on the back panel		- Laptop/Desktop computer
		12	OB 1.1.3 To demonstrate how to connect various peripherals with a desktop PC	MO-1.4 Identify the connection ports of each peripheral unit, connect and demonstrate the system booting		- Laptop/Desktop computer
		12	OB 1.1.4 To configure system BIOS setup program	MO-1.5 Configure the BIOS setup and trouble shoot typical problems using BIOS program		- Laptop/Desktop computer

Module-1
Know the Desktop PC

1.2 Motherboard Components	12	OB 1.2.1 To identify components of motherboard	MO-1.6 familiarize the components of motherboard MO-1.7 familiarize the working of motherboard MO-1.8 identify motherboard form factor	- Laptop/Desktop computer
	12	OB 1.2.2 To familiarize the processor	MO-1.11 List the characteristics of processor MO-1.12 State the purpose of processor	- Laptop/Desktop computer
	12	OB 1.2.3 To identify the memory	MO-1.13 Identify different types of memory MO-1.14 identify different memory packaging	- Laptop/Desktop computer
	12	OB 1.2.4 To identify the cooling system	MO-1.15 identify and fix CPU cooling, chipset cooling and hard drive cooling	- Laptop/Desktop computer
1.3 Storage Devices	16	OB 1.3.1 To install storage devices	MO-1.16 Install, remove and configure storage devices like hard disk drives, solid-state drives, floppy disk drive, optical storage and other removable storage	- Laptop/Desktop computer
1.4 Power Supplies	20	OB 1.4.1 To identify power supplies	MO-1.17 Identify various power supplies, power connectors MO-1.18 Install power supplies	- Laptop/Desktop computer
1.5 Expansion Cards and Peripherals	20	OB 1.5.1 To identify the expansion cards	MO-1.19 Install and configure video card MO-1.20 Install the procedure of install and configure multimedia card MO-1.21 Install the procedure of install and configure I/O card MO-1.22 Install and configure NIC card and modem MO-1.23 identify connectors and cables	- Laptop/Desktop computer
	20	OB 1.5.2 To identify various Input Devices	MO-1.24 identify and install common input devices – mouse, keyboard, barcode reader, multimedia devices, biometric devices, scanner etc.	- Laptop/Desktop computer
	20	OB 1.5.3 To identify various Output Devices	MO-1.25 Identify and install common output devices – display devices, printers and speakers.	- Laptop/Desktop computer

	1.6 Display Devices		16	OB 1.6.1 To identify display devices	MO-1.26 Identify display types and their settings.		- Laptop/Desktop computer
Module-2 Know the Laptop	2.1 Laptop Architecture		32	OB 2.1.1 To demonstrate Laptop architecture	MO-2.1 Compare features of desktop and laptop MO-2.2 identify laptop motherboards and processors MO-2.3 identify laptop memory and storage MO-2.4 identify laptop input devices MO-2.5 Identify laptop expansion buses and ports MO-2.6 identify docking stations MO-2.7 identify laptop power supplies MO-2.8 identify laptop displays		- Laptop/Desktop computer
	2.2 Laptop Assembling		32	OB 2.2.1 To demonstrate laptop disassembly and reassembly	MO-2.9 Disassemble laptops MO-2.10 Identify laptop components MO-2.11 Reassemble laptops		- Laptop/Desktop computer
Module-3 Operating System Management	3.1 Operating System Basics		16	OB 3.1.1 To familiarize Operating System	MO-3.1 familiarize Windows interface, its contents and updating methods. MO-3.2 familiarize file management features		- Laptop/Desktop computer
	3.2 Interacting with Operating System		20	OB 3.2.1 To familiarize the different means for interacting with the operating system	MO-3.3 familiarize control panel and its functions MO-3.4 Identify the use of command prompt MO-3.5 familiarize Windows registry and its use		- Laptop/Desktop computer
	3.3 Administrative Tools		24	OB 3.3.1 To familiarize the various administrative tools available in Windows	MO-3.6 Familiarize Windows task manager, MMC, services and performance monitor MO-3.7 familiarize Windows task scheduler, system configuration tools and power management		- Laptop/Desktop computer

3.4 Disk Management		24	OB 3.4.1 To familiarize how to make the disks ready to store files	MO-3.7 identify various file system types MO-3.8 Familiarize file allocation table and partition MO-3.9 familiarize hard formatting and soft formatting		- Laptop/Desktop computer
		24	OB 3.4.2 To familiarize how to backup and restore	MO-3.10 familiarize backing up files and directories MO-3.11 familiarize backing up and restoring files and directories		- Laptop/Desktop computer
4.1 Operating System		24	OB 4.1.1 To demonstrate how to troubleshoot the operating system	MO-4.1 Identify common symptoms such as BSOD, failure to boot, improper shutdown, spontaneous shutdown/restart, device fails to start, missing DLL, missing files and OS, invalid boot disk etc.. MO-4.2 Identify OS tools to troubleshoot such as recovery console, SFC, repair disk, MSCONFIG, DEFRAG, REGEDIT, safe mode, command prompt, automated system recovery and the process of troubleshooting.		- Laptop/Desktop computer
4.2 Security issues		24	OB 4.2.1 To demonstrate how to troubleshoot Security issues	MO-4.3 Identify the presence of malware from common symptoms such as pop-ups, browser redirection, security alerts, slow performance, internet connectivity issues, pc lock-ups, software update failures, rogue antivirus, spam, renamed and disappearing files etc. MO-4.4 Identify various tools such as antivirus, anti-malware, anti-spyware, system restore and best practices of malware removal.		- Laptop/Desktop computer

Module-4 Trouble Shooting	4.3 Hardware issues			MO-4.5 Identify the hardware symptoms and causes such as Excessive Heat, Noise, Odors and Smoke, Status Light Indicators, Alerts, Visible Damage MO-4.6 Identify possible errors by recognizing POST routine beeps MO-4.7 Identify BIOS issues MO-4.8 Identify I/O Port and Cable Problems MO-4.9 Identify Memory Issues MO-4.10 Identify Power Supply and Cooling Problems MO-4.11 Explain the procedure for recovering the system		- Laptop/Desktop computer
		24	OB 4.3.1 To demonstrate trouble shooting motherboards, CPU, RAM and power problems	MO-4.12 Identify Hard Disk System Problems MO-4.13 Identify CD-ROM/DVD Issues MO-4.14 Identify Other Removable Disk Drive Problems MO-4.15 Identify I/O Port and Cable Problems MO-4.16 Demonstrate the procedure for troubleshooting storage device problems		- Laptop/Desktop computer
		16	OB 4.3.3 To demonstrate troubleshooting Video Issues	MO-4.17 Identify the common video issues such as No image on the screen, Booting into VGA mode, Monitor that keeps shutting down, Dead pixels or artifacts, Incorrect colors, Dim or flickering images, Distorted images MO-4.18 Demonstrate the procedure for troubleshooting video problems		- Laptop/Desktop computer

Module-5 Establishment of Network Infrastructure	4.4 Laptops and printers		24	OB 4.4.1 To demonstrate how to troubleshoot laptops and printers	MO-4.19 Identify the Common Laptop Issues such as Power Issues, Video Difficulties, Input Problems MO-4.20 Identify common Printer Problems such as Low Print Quality, Printout Jams inside the Printer, Paper-Feeding Problems, Power Problems, Color Output Problems, Nothing Prints, All-Black Pages, Repetitive Small Marks or Defects, Vertical White/Black Lines on the Page, Image Smudging etc. MO-4.21 Demonstrate the procedure for troubleshooting Laptops MO-4.22 Demonstrate the procedure for troubleshooting Printers		- Laptop/Desktop computer
	5.1 Basics of Network Infrastructure		24	OB 5.1.1 To identify various network infrastructure	MO-5.1 To identify the Network Infrastructure, service level & network support requirements		- Laptop/Desktop computer
			24	OB 5.1.2 To identify different network devices	MO-5.2 Identify various Network device like : (a) Switch (Normal and Managed), (b) Router(Normal and wireless), (c) Rack, Patch Panel, i/o box, (d) Access Point etc.		- Laptop/Desktop computer
5.2 Network Configuration		24	OB 5.2.1 To perform Crimping,Punching and cabling	MO-5.3 To perform crimping with straight and cross CAT 6 cables. MO-5.4 to perform punching practice in IO Box and patch panel. MO-5.5 To demonstrate cabling using Fibre Optic cable and connectors MO 5.6 To demonstrate cabling in a lab with HUB/Switch and IO Boxes and patch panel. Fitting Switch Rack.		- Laptop/Desktop computer	

		32	OB 5.2.2 To Configure of Data communication equipments.	MO-5.7 To Connect computers with Network with Drop cable and using WiFi configuration MO-5.8 To demonstrate Programmable switch Configuration	- Laptop/Desktop computer
		32	OB 5.2.3 To demonstrate IP Addressing & TCP/IP protocol	MO-5.9 Demonstrate IP Addressing technique(IP4/IP6) and Subnetting and Supernetting the network. MO-5.10 To install and Configure TCP/IP Protocol. MO-5.11 Demonstrate TCP/IP Utilities : PING, IPCONFIG, HOSTNAME, ROUTE, TRACERT etc.	- Laptop/Desktop computer
		32	OB 5.2.4 To demonstrate Other Network Protocols	MO-5.12 To demonstrate various protocols such as SMTP, TELNET, FTP, HTTP, SNMP, LDAP. MO-5.13 To configure DHCP.(Dynamic Host Configuration Protocol)	- Laptop/Desktop computer
Module-6 Sharing and controlling resources and Internet connection through the network.	6.1 Sharing Resource & Internet connection	24	OB 6.1.1 To demonstrate resource sharing	MO-6.1 To demonstrate Sharing Resource and Advance Sharing Setting.	- Laptop/Desktop computer
		32	OB 6.1.2 To perform sharing of internet connection	MO-6.2 To configure internet connection to the PC using wireless technology MO 6.3 Configure internet connection using L2 and L3 switch. MO-6.4 To Share the internet connection (wire and wireless) in the local network and access it from other machine in LAN. MO-6.5 To Install Proxy Server and configure it.	- Laptop/Desktop computer
	6.2 Network Protection	32	OB 6.2.1 To demonstrate setting up basic protection	MO-6.6 To set up basic protection using public keys and MAC address filters. MO-6.7 To Troubleshoot wired and wireless network.	- Laptop/Desktop computer

	6.3 Control & monitoring of network devices		32	OB 6.3.1 To configure the basic collaboration tools	MO-6.7 To set up NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP MO-6.8 To Setup IP camera for basic surveillance scenario logging and monitoring of devices / locations. MO 6.9 To use Linux Network Tools to check / maintain / Manage Network		- Laptop/Desktop computer
Module-7 Network Security	7.1 Firewall		32	OB 7.1.1 To demonstrate the installation of firewall	MO-7.1 Demonstrate the installation procedure for firewall MO-7.2 Identify different firewalls		- Laptop/Desktop computer
	7.2 Wifi Security		32	OB 7.2.1 To demonstrate various Wifi security issues	MO-7.3 Identify security issues in Wifi networks MO-7.4 Identify solutions for Wifi security issues		- Laptop/Desktop computer
Module-8	8.1 Preventive Maintenance		32	OB 8.1.1 To identify various methods for preventive methods	MO-8.1 Monitor network infrastructure services using network management tools MO-8.2 Apply diagnostic tools & techniques to identify network service level issues & causes		- Laptop/Desktop computer
	8.2 Corrective Maintenance & Troubleshooting of computer networks		32	OB 8.2.1 To understand various techniques for corrective maintenance and troubleshooting	MO-8.3 Monitor and administer a computer network using various Network Management Systems (NMSs) MO-8.4 Handling the fault notifications MO-8.5 Apply structured approach to Network troubleshooting MO-8.6 Rectification and testing effectiveness of the troubleshooting MO-8.7 Register & file the remediation work carried out to resolve network issues MO-8.8 Ensure traffic gets diverted to backup link if primary link goes down.		- Laptop/Desktop computer

Maintainance, Trouble Shooting & Safety	8.3 Maintain a Healthy, Safe and Secure Working Environment		32	OB 8.3.1 To understand how to maintain a healthy, safe and secure working environment	MO-5.15 To ensure that work is carried out in accordance to the level of competence and legal requirements MO-5.16 To ensure that sites are assessed for health and safety risk as per company's guidelines prior to commencement of work MO-5.17 To ensure environmental conditions and hazards like Earth Potential Rise (EPR) are considered while carrying out the work MO-5.18 To identify and correct any hazards that you can deal with safely, competently and within the limits of your authority MO 5.19 To report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected PC6. follow your organization's emergency procedures promptly, calmly, and efficiently MO 5.20 To identify and recommend opportunities for improving health, safety, and security to the designated person		- Laptop/Desktop computer
Project Work (2008)	1.Students Project Work	0	160	OB 1.1 To be familiar with industrial environment and production process	Employ skills acquired to solve problems of social significance or to simplifying day to day tasks.	- Demonstration - Industrial Visit	