



## National Institute of Electronics & Information Technology

Administrative control of Ministry of Electronics & Information Technology (MoE&IT), Government of India.

### Diploma In Computer Applications and Business Accounting Associate (CABAA)

The "Diploma" has been designed for productive human resource and making them part of the employable technical work force in the emerging Information Technology scenario and penetration of computer education to grass root level. Taking base as the Advanced Diploma/ Degree level course contents, the contents have been enriched with programming techniques, accounting package, web designing tools, Urdu, and English DTP. The contents have been designed keeping in view that there will be number of career options possible for an individual after completing the course. The possible options are: Junior programmer, EDP assistant, Web Designer, DTP Operator , Lab Demonstrator , Accountancy Operator etc.

**Certifying Bodies:** National Institute of Electronics and Information Technology (NIELIT)

**Recognised by :** Government of J&K and Government of India

**Duration :** 1 Year

#### Job Description:

1. Computer Assistant
2. Accounts Assistant
3. Junior Assistant
4. Data Entry Operator
5. Desktop Publishing
6. Web Designer

#### TOTAL MODULES

TOTAL MODULES		
1	Module 1	IT Tools And Business Systems
2	Module 2	Financial Accounting Using Tally And Personality Development
3	Module 3	Introduction To ICT Resources
4	Module 4	Internet Technology And Web Design
5	Module 5	Multilingual DTP & Graphics Designing
6	Module 6	Programming And Problem Solving Through Python Language

**Course Coordinator:** \_\_\_\_\_ **Number** \_\_\_\_\_

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## M1: IT-Tools and PC Applications

**Objective of the Course :** The objective of this course is to present overview of IT tools used in day to day use of computers and data base operations. The Course has been designed to provide knowledge on various hardware and software components of computer, operating system, various packages used for different applications, data base concepts & operations and various issues related to IT and application of IT. At the end of the course the students will be able to:-

- Acquire the foundation level knowledge required to understand computer and its operations.
- Understand the hardware and software components of the computer.
- Understand the basic concept of operating system and get knowledge about various different operating systems.
- Understand to use the packages of word processing, spread sheet and presentation in detail.
- Understand various data base concepts and operations.
- Understand the issues related to IT and IT applications.

### Detailed Syllabus

#### 1. Introduction to Computer :

- a. Introduction to Computer
- b. Input devices,
- c. Output devices,
- d. Computer Memory & storage,
- e. Application Software,
- f. Systems Software,
- g. Utility Software,
- h. Open source
- i. Proprietary Software
- j. Central Processing Unit,

#### 2. Number System :

- a. Binary number system,
- b. Binary to Decimal Conversion,
- c. Decimal to Binary Conversion,
- d. Octal number system, Octal to Decimal Conversion,
- e. Decimal to Octal Conversion,
- f. Hexadecimal number system,
- g. Hexadecimal to Decimal Conversion,
- h. Decimal to Hexadecimal Conversion

#### 3. Introduction to Operating System

- a. Operating System,
- b. Relation between System software and Application software,
- c. Operating System simple setting, using mouse and changing its properties,
- d. changing system date and time,
- e. changing display properties,
- f. Add or remove Program
- g. File and Folder management
- h. System tools – Disk cleanup,
- i. Disk defragmenter.



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## 4. MS Dos (Microsoft Disk Operating System)

- What Is Disk Operating System
- What is Command.Com, IO.sys, MSdos.sys
- Internal Command & External Command
- File Management Command : Copy Con, Type, Rename, Del, Copy, Xcopy,
- Attrib, Backup, Restore,
- Find , Sort , More, Chkdsk,
- Restore, Find, Sys, Type, Del, Data, Time, prompt.
- Directory Command: Dir, MD, RD, Tree, Path,

## 5. MS Word

- File** : Save, Save as , Open, Close, Recent, Print , Print Preview
- Home** : Cut , Copy, Paste, Format painter, Font Formatting., Paragraph Formatting, Find Replace and Goto
- Insert** : Pages : Cover Page, Blank Page, Page Breaks Insert Table, Table Formatting , Table Layout, Insert Picture , Picture Formatting, Text Wrapping Header and Footer , Page Numbering Insert – Textbox, Drop Cap, Date and Time, Symbols- Equation & Symbol
- Page Layout**: Page Themes, Page Setup- Margin, Orientation size, Column. Page Breaks - Page break, Column break. Page Background - Water Mark, Page color, Page border. Paragraph spacing, indent spacing, Justify
- Reference** : Footnote, Endnote, Caption, Comment
- Mail Merge** : Start mail merge, Excel Integration , Write and insert field, Preview result
- Review & View** : Word count, Spelling and Grammar , Comment , Document view, Show, Zoom
- File Operation and Security** : Password Security, Track Change, Convert PDF
- Advanced Tools**: Table of Contents, Indexes, Adding Comments, Tracking changes, Macros, Introduction to Google docs.

## 6. MS Excel

- Home** Merge and center, Wrap text, Increase decimal , Decrease decimal Conditional formatting Insert column , Delete column Editing – Auto Sum , Fill, Clear **Insert** Charts Pivot Chart Object Link Sheet and Rename Sheet **Page layout** Print Area , Scaling , Page Background
- Formula**: Sum, Average, Max, Min, Mod. If, Sumif, Count if, Len, Count, Round. Left, Right, Concatenate. Time, Date, Day, Now, Today, Month, Now. Preparing marks Statement. Formula Auditing, Database Functions (DSUM, DMIN, DMAX, DCOUNT, DCOUNTA), Vlookup and Hlookup Introduction to Google Sheets.
- Data** : Sorting , Filter, Advanced Filter Data Validation, Consolidation , Goal Seek , Scenario Manager Data Table Text to Columns, Remove Duplicate Subtotal, Group and Ungroup
- Topic View** : Normal View, Page layout , Page Break, Custom View, Full Screen, Zoom Show, Ruler , Formula Bar , Heading and Gridlines,
- Topic Windows** : New Window, Arrange All, Freeze panels, Split, Hide, View Side by Side , Synchronous scrolling , Reset Window Position , Save Workspace , Switch Window.

## 7. MS Power Point

- Home** : Paste Special , New slide, Slide Layout, Section & Arrange
- Insert** : Smart Art, Action, Slide numbering, Video and Audio, Insert Object & Text , Word Art , Align-Align Centre, Right, Left, Top, Middle, Bottom
- Slide Properties** : Slide Design , Slide Transition, Background style
- Object Animation & Transition** : Animation, Advanced Animation Timing & Transition to the slide



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- e. **Slide Show & View** : From beginning, From current show Custom Show, Setup show Hide Show, Rehearse Time, Record Slide Show, Presentation View- Normal,, Slide sorter Notes page, Reading View, Master View- Side Master, Handout Master, Notes Master Color/ Ggray Scale View.

## 8. Data Base Operations:

Database, Relational Database, Creating, dropping, manipulating table structure. Data Entry Form, Reports, Practicing these concepts using Access.

## 9. Information Technology and Society

Indian IT Act, Intellectual Property Rights – issues. Application of information Technology in Railways, Airlines, Banking, Insurance, Inventory Control, Financial systems, Hotel management, Education, Video games, Telephone exchanges, Mobile phones, Information kiosks, special effects in Movies.

## Reference

1. P.K. Sinha and P. Sinha, “ Foundations of Computing” , BPB Publication, 2008
2. Sagman S, “MS Office for Windows XP”, Pearson Education, 2007.
3. ITL Educational Society, “Introduction to IT”, Pearson Education, 2009.
4. Miller M, “Absolute Beginners Guide to Computer Basics”, Pearson Education, 2009.



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## M2: Internet Technology and Web Designing

**Objective of the Course :** The aim of this course is to provide you the conceptual and technological developments in the field of Internet and web designing with the emphasis on comprehensive knowledge of Internet, its applications and the TCP/IP protocols widely deployed to provide Internet connective worldwide. The World Wide Web with its widespread usefulness has become an integral part of the Internet. Therefore, this course also puts emphasis on basic concepts of web design.

At the end of the course the students will be able to:

- Review the current topics in Web & Internet technologies.
- Describe the basic concepts for network implementation.
- Learn the basic working scheme of the Internet and World Wide Web.
- Understand fundamental tools and technologies for web design.
- Comprehend the technologies for Hypertext Mark-up Language (HTML).
- Specify design rules in constructing web pages and sites using HTML 5 and CSS .
- Effectively deal with programming issues relating to, JavaScript, Figure out the various security hazards on the Internet and need of security measures.

## Outline of Course

S. No.	Topic	Mini number of hours
1.	Introduction to Internet & Computer Network	05 Hrs
2.	TCP/IP – Internet Technology and Protocols	05 hrs
3.	Internet Network	05 hrs
4.	Services on Internet	05 hrs
5.	Hypertext Markup Language	05 hrs
6.	Hypertext Markup Language 5	05 hrs
7.	CSS	10 hrs
8.	Java Script	10 hrs
9.	PHP/MySQL	10 hrs
10.	Practical Lab	60 hrs
	<b>Total</b>	<b>120 hrs</b>

## Detailed Syllabus

### 1. Introduction to Internet & Computer Network

- Internet, Growth of Internet, Intranet and Extranet,
- Net etiquette.
- Internet Applications – Commerce on the Internet,
- Governance on the Internet,
- Impact of Internet on Society – Crime on / through the Internet.
- Local Area Network (LAN),
- Wide Area Network (WAN),
- Network Topology.
- Transmission media



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## 2. TCP/IP – Internet Technology and Protocols :

- a. Introduction to IP Address,
- b. Packet switching technology,
- c. Router
- d. MAC address.
- e. SLIP, PPP, Service options
- f. E-mail, WWW,
- g. Firewall etc.

## 3. Internet Network :

- a. Network definition, Common terminologies: LAN, WAN, MAN, PAN, Node, Host, Workstation, bandwidth, Interoperability,
- b. Network administrator, network security,
- c. Network Components: Servers, Clients,
- d. Communication Media,
- e. Types of network: Peer to Peer, Clients Server,
- f. Addressing in Internet: DNS, Domain Name and their organization,
- g. Network topologies: Bus, star and ring, Mesh, Tree, Ethernet, FDDI, ATM,

## 4. Services on Internet (Definition and Functions)

1. E-mail, Mail Box –Inbox and Outbox, SMTP Protocol, POP3 Protocol
  - a. Telnet,
  - b. FTP
  - c. Web hosting, Publishing of Website and Web Updation

## 5. HTML:

- a. Introduction,
- b. Basic Structure of HTML,
- c. Formatting Tags,
- d. HTML Links,
- e. Tables,
- f. Forms,
- g. Frames: Frameset, nested Frames,
- h. HTML Images,

## 6. HTML 5 :

- a. Introduction,
- b. HTML5 New Elements: Section, Nav, Article, Aside, Audio Tag, Video Tag, HTML5
- c. Form Validations: Require Attribute, Pattern Attribute, Autofocus Attribute, email, number type, date type, Range type,
- d. HTML embed multimedia,
- e. HTML Layout,
- f. Iframe

## 7. CSS:

- a. Introduction to CSS,
- b. Types of CSS,
- c. CSS Selectors: Universal Selector, ID selector,
- d. Tag Selector, Class Selector, Sub Selector, Attribute Selector, Group Selector,
- e. CSS Properties:



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- i. Back Ground properties,
- ii. Block Properties,
- iii. Box properties,
- iv. List properties,
- v. Border Properties,
- vi. Positioning Properties,
- f. CSS Lists
- g. CSS Tables,
- h. CSS Menu Design,
- i. CSS Image Gallery

## 8. Java Script:

- a. Introduction to Client Side Scripting Language,
- b. Variables in Java Script,
- c. operators in JS,
- d. Conditions Statements,
- e. JS Popup Boxes,
- f. JS Events,
- g. Basic Form Validations in JavaScript.

## 9. PHP/MySQL:

- a. Introduction, Basic Syntax,
- b. Operators with Logical statement
- c. Loops: Operators, If –else, if-else-if, nested if,
- d. Switch -Case, Loops(while, do-while, for, for each),
- e. Arrays , Functions, Forms ,
- f. Introduction to Database and Mysql,

## Reference Book:

1. Internet Secrets (Internet technology and web design) Publisher: Choice International By Shailendra Mishra
2. World wide web Design with HTML(First Edition-2010) Tata McGraw Hill By C Xavier
3. Web Enabled commercial application development using HTML, Javascript, DHTML and php BPB Publication. By Ivan Bayross

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## M3: Tally Prime with GST, TDS, TCS & Payroll

**Objective of the Course** The objective of the course is to train individuals in the Computerized Accounting using Tally and pursue the career in this sector. With the fast-moving technological world and in IT era, all sorts of tasks are being automated which were performed manually earlier irrespective of domain e.g. healthcare, documentation, shopping, employee management, shopping almost everything. To meet the pace of the growing world, the accounting system have also been computerized and automated as one single entry manages both accounting and inventory needs. Tally is the most popular accounting packages used across our country and needs a lot of trained manpower to meet the requirements. After successful completion of the course, a candidate is exposed to large employment opportunities. An accounting package like Tally is highly useful for rendering accounting related tasks in offices. Hence a candidate after pursuing this course can directly enter an organization as a/an-, Accounts Executive, Accounting Assistant, Professional Accountants

### Outline of the Course

S. No.	Topic	Minimum number of hours
1.	Basic of Accounting	05 hrs
2.	Fundamentals of Tally.	05 hrs
3.	Accounting Masters	05 hrs
4.	Inventory Masters	05 hrs
5.	Accounting Transaction Vouchers	10 hrs
6.	Inventory Transaction Voucher	10 hrs
7.	Advance Accounting	10 hrs
8.	Advance Inventory	10 hrs
9.	TDS(Tax Deducted At Source)	05 hrs
10.	TCS (Tax Collect At Source)	05 hrs
11.	GST (Goods and Service Tax)	10 hrs
12.	Techno Logical Advantages	10 hrs
13.	Payroll Accounting	10 hrs
14.	Generating Reports	05 hrs
15.	Live Practical Practice	15 hrs
	<b>Total</b>	<b>120 hrs</b>

### Detailed Syllabus

#### 1. Basic of Accounting

- Introduction
- Types of Accounts
- Accounting Principles or concepts
- Mode of Accounting
- Rules of Accounting
- Double-entry system of bookkeeping





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## 2. Fundamentals of Tally.

- a. Company Features
- b. Configuration
- c. Getting functions with Tally.ERP9
- d. Creation / setting up of Company

## 3. Accounting Masters

- a. Chart of Groups
- b. Multiple Groups
- c. Ledgers
- d. Multiple Ledgers

## 4. Inventory Masters

- a. Stock Groups
- b. Multiple Stock
- c. Stock Categories
- d. Multiple Stock Category
- e. Units of Measure
- f. Stock Items

## 5. Accounting Transaction Vouchers

- a. Journal.
- b. Payment,
- c. Receipt,
- d. Contra,
- e. Sales.
- f. Purchase
- g. Debit Note,
- h. Credit Note.

## 6. Inventory Transaction Voucher

- a. Stock Journal
- b. Physical Stock Voucher,
- c. Manufacturing Journal,
- d. Purchase Order,
- e. Sales Order,
- f. Goods Receipt Note,
- g. Delivery Note,
- h. Rejection Outwards,
- i. Rejection Inwards,

## 7. Advance Accounting

- a. Bill-wise details
- b. Cost centers and Cost Categories
- c. Budget and controls



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## 8. Advance Inventory

- a. Order Processing
- b. Batch-wise detail
- c. Bill of Materials
- d. Different Actual and Billed Quantities
- e. Price Lists
- f. Zero-Valued Entries
- g. POS

## 9. TDS(Tax Deducted At Source)

- a. Understanding TDS
- b. Creating TDS Masters
- c. Practical Examples
- d. TDS Payment

## 10. TCS (Tax Collect At Source)

- a. Understanding TDS
- b. Creating TDS Masters
- c. Practical Examples
- d. TDS Payment

## 11. GST (Goods and Service Tax)

- About Goods and Services Tax (GST)
- Activating Tally in GST
- Setting Up GST (Company Level, Ledger Level or Inventory Level)
- GST Taxes & Invoices
- Understanding SGST, CGST & IGST
- Creating GST Masters in Tally
- Updating GST Number for Suppliers
- Practical on Intra-State Purchase Entry in GST (SGST + CGST)
- Practical on Inter-State Purchase Entry in GST (IGST)
- GST Purchase Entry for Unregistered Dealer in Tally
- Practical on Intra-State Sales Entry in GST (SGST + CGST)
- Practical on Inter-State Sales Entry in GST (IGST)
- Printing GST Sales Invoice from Tally ERP9 Software
- Preparing of Excel Report Using Tally ERP 9.0

## 12. Techno Logical Advantages

- a. Tally vault
- b. Security controls
- c. Tally Audit
- d. Backup and restore
- e. Split company data
- f. Import and export of data
- g. Create a Company Logo



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## 13. Payroll Accounting

- a. Employee Creation
- b. Salary Define
- c. Employee Attendance Register
- d. Pay Heads Creation
- e. Salary Report

## 14. Generating Reports

- a. Financial Statements
- b. Trading Account
- c. Profit & Loss Account
- d. Balance Sheet
- e. Accounts Books and Reports
- f. Inventory Books and Reports
- g. Exception Reports

### Reference Book:

1. Am Ahmad Financial Accounting Using Tally
2. Tally Accounting
3. AK Nandani



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## M4.1 Introduction to ICT Resources Or Objective of the Course

This course has been designed to provide an introduction to Computer Hardware and Networking troubleshooting & maintenance. The student will be able to troubleshoot problems of PC and replace the defected parts of the computer. Students will understand the basic networking concepts and they will be able to establish and manage small networks.

At the end of the course students will be able to:

- Assemble and disassemble a PC
- Effectively use miscellaneous utilities such as: Compression, CD writing, Antivirus etc
- Establish and configure a small LAN
- Perform simple network administration operation

### Outline of Course

S. No.	Topic	Minimum number of hours
1.	PC Assembly and Operation	15 hrs
2.	Miscellaneous Utilities	15 hrs
3.	Networking Concepts	15 hrs
4.	Network Administration	15 hrs
5.	Practical/Tutorials	60 hrs

### Detailed Syllabus

#### 1. PC Assembly and Operation

Assembly and Disassembly of PC and its various Parts, Startup Process (Booting), BIOS Setup, CMOS Setup and meaning of its various setting, Installation of Windows XP operating System, Installation of Other Software Packages such as Ms Office etc. Operation of Printer, Installation of printer driver, Backup and Restore Operations Troubleshooting PC Problems.

#### 2. Utilities

Compression Utilities: WinZip, PKZIP, Concept of compression, Defragmenting Hard, disk using defrag, Scan Disk for checking disk space, lost files and recovery, Formatting Hard disk, Floppy Disk, Setting System Date and Time, Antivirus Package CD Writing Software – Nero etc.

#### 3. Networking Concepts

What is Networking, Local Area Networking (LANs), Metropolitan Area Network , (MAN), Wide Area Network (WAN), Networking Topologies, Transmission media & method of communication, Cabling: straight through and cross over, Study of components like switches, bridges, routers, Wifi router etc., communication Protocols, TCP/IP, IP addressing, MAC address, Subnetting.

#### 4. Network Administration

Installing and configuring the network using Windows NT based System, Administration of Windows NT based network, Creation of user and groups, File Sharing, Printer Sharing.

### RECOMMENDED BOOKS MAIN READING

1. Scott and Mueller, "Upgrading and Repairing PCs", Techmedia, New Delhi
2. Troubleshooting, Maintenance and Repairing PCs, Fifth Edition, by Stephen J. Bigelow, Tata McGraw-Hill Publishing Company Limited, New Delhi.
3. PC Upgrade and Maintenance Guide, 15th Edition, by Marks Minasi, BPB Publications



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4. Basic of Networking. "NIIT ", Prentice, Hall of India Private Limited.



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## M4.2: Concepts of Emerging Trends In IT Detailed Syllabus

### Cyber Security

- What is Cyber Security,
- CIA triad,
- AAA Concept,
- Malwares and Anti viruses,
- System Security, Network Security, Web application Security,
- Mobile and wireless Security,
- Cyber Crime and Cyber Frauds, Dos and Don'ts Associated with Cybercrimes and frauds, /various streams associated with Cyber Security, Cyber Laws, Plagiarism, Copyright and Intellectual Property Rights.

### Internet of Things (IOT)

- What is IOT,
- Evolution of IOT, and Ecosystem of IOT,
- Sensors in IOT,
- Applications of IOT,
- Advantages and Disadvantages of IOT,
- Industrial IOT, Smart Cities and Smart Homes.

### Digital Payments

Digital India concept, Digidhan Mission of India, Digital payment methods: Banking Cards, Unstructured Supplementary Service Data (USSD), Adhaar enabled payments System (AEPS), Unified Payments Interface (UPI), BANK Pre paid cards, Point of Sale terminals (POS), Internet Banking, Mobile Banking, Micro ATMs, Securing Digital Payments.

### Digital Marketing

Concept of Digital Marketing, Evolution of Digital Marketing, Benefits of Digital marketing, Traditional versus Digital marketing differences, Types of Digital Marketing, how to create a digital advertising plan, different digital advertising platforms, Social media marketing, Email marketing, Website analytics for digital marketing

### Block Chain

Blockchain benefits and challenges, Blockchain components and applications, Blocks, transactions, distributed ledger, Mining Bitcoin on blockchain, Ethereum, Solidity : Language for contracts, dApps, Types of Blockchain : Private, Public, Consortium, Introduction to Hyperledger and its projects and applications.

### Cloud Computing

Introduction to Cloud Computing, Architecture of Cloud Computing, Cloud Computing and its types, Cloud Computing service models, Cloud computing examples in day to day life Google keep, Google calendar and Google sheet, advantages and disadvantages of Cloud computing, concept of virtualization, types of virtualization, usage of Oracle VM virtual box for creating virtual machines.

**Study Material: Contact Center Manager**



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## M5: Multilingual DTP

**Objective of the Course :** We are in the world where the showcasing is a very important as well as getting essential. We may have seen various advertisements in newspaper, holding boards, glow sign, handouts even in TV and cinemas also. Everyone wants to promote their services or products in an effective manner. Not only the promotion of products and services, sometimes information in form of booklets, handbooks, prospectus etc. are also needed for better understanding and delivery of services. A person with good knowledge of designing such articles is very much in demands especially by the advertising and publishing industry.

The objective of the course is to provide the participants understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools. This course offers a range of topics of immediate relevance to industry and makes the participants exactly suitable for DTP Industry.

### Expected Job Roles:

1. Photo editor
2. Graphic designer
3. DTP Operator
4. Logo Designer
5. Pattern Maker
6. Stationary Designer

### Outline of Course

S. No.	Topic	Minimum number of hours
6.	Introduction to Multimedia	15 hrs
7.	Urdu Software (InPage)	15 hrs
8.	CorelDraw	15 hrs
9.	Photoshop and Flash	15 hrs
10.	Practical	60 Hrs
	<b>Total</b>	<b>120 Hrs</b>

### Detailed Syllabus

#### 1. Multimedia & its Application:

Multimedia- What is Multimedia, Text, Graphics, Animation, Audio, Images, Video; Multimedia Application in Education, Entertainment, Marketing. Names of common multimedia file formats,

**2. Urdu Software (InPage) and Urdu, Hindi DTP :** Introduction, Uses, Collect for output, Import & Export, Lock Guide, Preferences (Application, Document, Typographic, Story Editor), Style Sheets, Define Colors, Index Entry, Edit Links, File, Edit, View, Format, Insert Symbols, Utilities, Urdu software, How to run Urdu software, Urdu software interface, Text box, Picture box, Graphic box, Line, Guides, Text chain, Formatting Text, Master Page, Ribbon, Printing, How to make attractive headlines, how to layout a book, Urdu English Dictionary Layout, Ghazal layout, CorelDraw with Urdu software, Use of mathematical equation, Arabic/Persian with Urdu, Web menu, Symbol menu, Window menu, Help menu, How to make internet file, Additional features, short-cut keys, Keyboard preference.

**3. CorelDraw :** Introduction to CorelDraw, Uses of CorelDraw, Fundamental tools, Creating Artistic text, Working with shapes, Controlling the CorelDraw 9 Environment, Setting up Page Layout, Defining Outlines, Mixing Up Fills, Drawing and Editing FreeHand Curves, Bezier Curves, Working with Shapes and Curves, Special effects & Bitmaps, Working with Bitmaps Images, Lenses and PowerClips, Blends and Contours, Working with Perspective, Designing with Paragraph Text, Managing Layers and Pages, Importing and Exporting Objects, Printing, From CorelDraw to the World Wide Web, Driving in to PhotoPaint, Painting text, Painting Bitmap, Working with objects, Working with masks.



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4. **Photoshop:** Introduction to Photoshop, Uses, Fundamental tools, Image Manipulation, Designing Images for web pages, Using Image ready, Scanner & Printer, File, Edit, Image, Layer, Elect, Filter, View, Window, Advance Tools::Healing , smudge, blur, sharpen,dodge, clone tool ,red eye correction tool and Blending modes Flash: Creating a Flash Document, Reviewing the Interface, Using the Primitive Tools, Creating Key frames, Tweening

## References

1. Tay Vaughan, "Multimedia making it works", Tata McGraw-Hill, 2008.
2. Rajneesh Aggarwal & B. B Tiwari, "Multimedia Systems", Excel Publication, New Delhi, 2007.
3. Li & Drew, "Fundamentals of Multimedia" , Pearson Education, 2009..

**Note:** The aim of the syllabus is to provide orientation as regard to uses of DTP Applications . Practical Assignments may be handled using tools, such as Corel , Dreamweaver, Inpage Photoshop etc.

## M6: Programming and Problem Solving Through Python Language

**Objective of the Course :** The objectives of this course are to make the student understand programming language, programming, concepts of Loops, reading a set of Data, stepwise refinement, Functions, Control structure, Arrays. After completion of this course the student is expected to analyze the real life problem and write a program in 'Python' language to solve the problem. The main emphasis of the course will be on problem solving aspect i.e. developing proper algorithms After completion of the course the student will be able to : Develop efficient algorithms for solving a problem. , Use the various constructs of a programming language viz. conditional, iteration and recursion. , Implement the algorithms in "Python" language. ,Use simple data structures like arrays, Handling File in "C".

### Outline of Module

S. No.	Topic	Minimum number of hours
1.	Introduction to Programming	05 hrs
2.	Algorithms and Flowcharts	05 hrs
3.	Programming with Python	10 hrs
4.	Python constructs	10 hrs
5.	Array	05 hrs
6.	Sting Handling and Sequence Data types	05 hrs
7.	Functions	05 hrs
8.	File Processing	10 hrs
9.	Introduction to NumPy	05 hrs
10.	Practical Lab	60 hrs
	<b>Total</b>	<b>120 Hrs</b>

### Detailed Syllabus

1. **Introduction to Programming** : The basic Model of computation, algorithms, flowcharts, Programming Languages, compilation, testing & debugging and documentation.
2. **Algorithms and Flowcharts** : Flow Chart Symbols, Basic algorithms/flowcharts for sequential processing, decision-based processing and iterative processing. Examples like Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reverse digits of an integer, GCD





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(Greatest Common Divisor) of two numbers, Test whether a number is prime, factorial computation, Fibonacci sequence, Reverse order of elements of an array, Find largest number in an array, etc

- 3. Programming with Python:** Python Introduction: Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets)
- 4. Python constructs :** Assignment statement, expressions, Arithmetic, Relational, Logical, Bitwise operators and their precedence, Conditional statements: if, if-else, if-elif-else; simple programs, Notion of iterative computation and control flow –range function, while Statement, for loop, break statement, Continue Statement, Pass statement, else, assert.



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5. **String Handling and Sequence Data types** : String Handling: Strings (Slicing, Indexing, Concatenation, other operations on Strings), Accepting input from Console, printing statements, Simple 'Python' programs. Sequence Data Types: Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence data type), concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.
6. **Functions**: Top-down approach of problem solving, Modular programming and functions, Function parameters, Local variables, the Return statement, Default argument values, keyword arguments, VarArgs parameters. Library function : e.g. input(), eval(), print() String Functions: e.g. count(), find(), rfind(), capitalize(), title(), lower(), upper(), swapcase(), islower(), isupper(), istitle(), replace(), strip() Numeric Functions: e.g. eval(), max(), min(), pow(), Date & Time Functions, Recursion. Packages and Modules: Scope of objects and Names, LEGB Rule Module Basics, Module Files as namespaces, Import Model, Reloading Modules.
7. **Introduction to NumPy** : Array Processing Package, Array types, Array slicing, Computation on NumPy Arrays – Universal functions, Aggregations: Min, Max, etc., N-Dimensional arrays, Broadcasting, Fancy indexing, sorting arrays

## Reference Books/Study Material

1. Python Programming- A modular Approach (with Graphics, database, Mobile and Web Applications by Sheetal Taneja and Naveen Kumar, Pearson.
2. Python Network Programming Cookbook by Pradeeban Kathiravelu, Dr. M. O. Faruque Sarkar, PACKT.
3. Head First Python by Paul Berry, O'Reilly