PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES (2012-13)

FACULTY OF INFORMATION TECHNOLOGY

INSTITUTE OF OPEN AND DISTANCE EDUCATION (IODE)
DR. C.V.RAMAN UNIVERSITY
KARGI ROAD, KOTA, BILASPUR, CHATTISGARH
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Faculty of Information Technology

ABOUT UNIVERSITY

Dr. C.V. Raman University was established on 3 November, 2006, in the district of Bilaspur, Chhattisgarh by the All India Society for Electronics and Computer Technology (AISECT), the Sponsoring Body. The University was named after the first Nobel Laureate of the country in the field of science – Dr. C.V. Raman, an Indian physicist whose work was influential in the growth of science in our country. The University's principal goal is to evolve a new cadre of highly skilled technical professionals with deep academic insights and a strong sense of Indian values and ethos, commemorating our forefathers who helped shape this nation.
The Sponsoring Body of the University All India Society for Electronics and Computer Technology (AISECT) is an ISO 9001:2008 certified organization, established in 1985, is today one of India's most reputed and trusted Education Groups which houses private universities, engineering colleges, professional institutions & education centres across the country. Till date, AISECT has transformed the lives of over 10 lakh students and has uplifted the lives of millions of people in the community. AISECT has been lauded for its exceptional work and has won awards from the World Bank, NASSCOM, TiE, Government of India, Government of Madhya Pradesh and several others on account of its commitment to high quality education over the last 25 years. AISECT is also a partner institution with GoI, GoMP and GoCG in their Common Service Centre Program and several other projects of state and national concern.

MAIN OBJECTIVES:

- Provide quality higher education and make provisions for research
- Create higher levels of intellectual abilities among our students
- Establish state-of-the-art facilities for education, training and examination, including online training
- Carry out teaching, research and offer comprehensive learning for a bright professional career
- Create centres of excellence for R&D to promote an environment of innovation and research
- Provide consultancy to public organizations and the Industry
- Award and maintain the standard of degrees, diplomas, certificates and other academic distinctions in accordance with the norms laid down by UGC, AICTE, BCI, MCI and other regulatory bodies.

RECOGNITIONS

- The University is recognized under Section 2(f) of the UGC Act
- Other recognitions include AICTE, NCTE, BCI and DEC
- It is the first University in the state of Chhattisgarh to be awarded an ISO:9001-2008 Certification

THE FACULTIES OF STUDIES

The University has wide range of faculties which offers the traditional as well as the new era job oriented courses. The main emphasis is on providing a wide choice of courses at different levels. The following faculties currently are in operation in the University:

- Faculty of Arts
- Faculty of Commerce

- Faculty of Science
- Faculty of Engineering
- Faculty of Information Technology
- Faculty of Education
- Faculty of Law

ACADEMIC PROGRAMMES OFFERED BY THE UNIVERSITY IN OPEN & DISTANCE LEARNING MODE

The University offers through the Institute of Open and Distance Education (IODE) both short terms and long term programmes leading to Certificates, Diploma and Degrees, which are conventional as well as innovative.. Most of these programmes have been developed after an initial survey of the demand for such Programmes in the job market. They are launched with a view to fulfil the learner's needs for:

- Certification,
- Improvement of skills,
- Acquisition of professional qualifications,
- Continuing education and professional development at work place,
- Self-enrichment,
- Diversification and updation of knowledge, and
- Empowerment.

PROMINENT FEATURES OF THE OPEN & DISTANCE EDUCATION AT CVRU

The open and distance education at the Dr. C. V. Raman University has certain unique features such as

- Individual study – flexible in terms of place, pace and duration of study.
- Use of latest information and communication technologies
- Nationwide student support service network
- Modular approach to programmes
- Cost-effective programmes
- Socially and academically relevant programmes based on student need
- Convergence of open and conventional education systems
- Take higher-education to the unreached sections of the society through the use of information technology
- Provide need and knowledge-based professional education
- Set the national standards for Distance Education

PROGRAMME DELIVERY MODE

The methodology of instruction in the distance learning mode in the University is different from that of the conventional regular courses. The system adopted for this is more learner-oriented and the learner is an active participant in the pedagogical (teaching and learning) process. Most of the instructions are imparted through distance education methodology and face-to-face mode as per the requirement.
The programme delivery methodology used in the distance learning mode follows a multimedia approach for instruction, which comprises:

- **Self Instructional Written Material:** The printed study material (written in self-instructional style) for both theory and practical components of the programmes is supplied to the learners in batches for every course.
- **Audio-Visual Material Aids:** The learning package contains audio and video CDs which have been produced/adopted by the University for better clarification and enhancement of understanding of the course material given to the learners.

A video programme is normally of 25-30 minutes duration. The video cassettes are screened at the study centres during specific sessions which are duly notified for the benefit of the learners.

- **Counseling Sessions:** Normally counseling sessions are held as per schedule drawn by the Study Centres. These are mostly held outside the regular working hours of the host institutions where the study centres are located.
- **Teleconferences:** Live teleconferencing sessions are conducted via Internet/ satellite through interactive Video Conferencing facility (available at some places) from the University studios, the schedule of which is made available at the study centres.
- **Industrial Training/Practicals/Project Work:** Some programmes have industrial training/ practical/ project component also. Practicals are held at designated institutions for which schedule is provided by the Study Centres. Attendance at practicals is compulsory. For project work, comprehensive project guide, in the form of a booklet, is provided to the student alongwith the study materials.
- The printed study material will be dispatched periodically to the enrolled students for each paper of study. These materials will be as guide for the students for effective learning. The Assignments for internal assessment shall also be dispatched along with the study material. Online modules are also available for some of the courses. These are in progress and as and when available, these will be available on the website of the students for registered candidates.
- The counseling sessions will be of 30 days duration for a course in a year. The actual schedule and place of contact program shall be announce and communicated to students in-time.

EVALUATION SYSTEM

The system of evaluation in Open and Distance Learning System is also different from that of conventional system. CVRU has a multi-tire system of evaluation.

1. Self-assessment exercises within each unit of study.
2. Continuous evaluation mainly through assignments which are tutor-marked, practical assignments and seminar/workshops/extended contact programmes.
3. The term-end examinations.
4. Project works

The evaluation of learners depends upon various instructional activities undertaken by them. A learner has to write assignment responses compulsorily before taking term-end examination from time to time to complete an academic programme. A learner has to submit TMA responses to the Coordinator of the Study Centre concerned to which s/he is attached. A learner should keep duplicate copies of assignment responses of TMA that may be required to be produced at Student Evaluation Division on demand. Term-end examination is conducted at various examination centers spread all over the country and abroad in July and January.
For Bachelors' and Masters' degree programmes, normally the assignments carries 30% weightage.

TERM-END EXAMINATION AND PAYMENT OF EXAMINATION FEE

The University conducts Term-end Examination once in a year in the months of May/June. Students will be permitted to appear in term-end examination subject to the conditions that 1) registration for the courses, in which they wish to appear is

valid, 2) minimum time to pursue these courses is elapsed, and 3) they have also submitted the required number of assignment(s), if any, in those courses by the due date.
Students can also submit on-line examination form as per guidelines through CVRU website at *www.cvru.ac.in.*
Examination fee is required to be paid either through Demand Draft issued in Favour of *"Registrar, Dr. C. V. Raman University"* Payable at *Bilaspur(CG*) / online payment gateway as per the fee table.

COURSES OFFERED BY IODE

Programmes offered by Institute of open and distance education (UnderGraduate, Post Graduate and Select Diploma Programmes) are as follows

FACULTY OF INFORMATION TECHNOLOGY

1. Diploma in Computer Application (DCA)
2. Post Graduate Diploma in Computer Application (PGDCA)
3. Post Graduate Diploma in Computer Aidid Fashion Designing (PGDFD)
4. Post Graduate Diploma in Computer Hardware and Maintenance (PGDCHME)
5. Bachelor of Computer Application (BCA)
6. Master of Science in Information Technology (MSCIT)

FACULTY OF MANAGEMENT

1. Post Graduate Diploma in Rural Development (PGDRD)
2. Post Graduate Diploma in Business Management (PGDBM)
3. Post Graduate Diploma in Marketing Management (PGDMM)
4. Post Graduate Diploma in Financial Management (PGDFM)
5. Post Graduate Diploma in Human Resource Management (PGDHRM)
6. Post Graduate Diploma in Insurance and Risk Management (PGDIRM)
7. Bachelor of Business Administration (BBA)
8. ****** Master of Business Administration (MBA) [Proposed]

FACULTY OF COMMERCE

1. Diploma in Accountancy (DIA)
2. Bachelor of Commerce (B.Com.) [Plain/Banking/Computer Applications]
3. Bachelor of Business Administration (BBA)
4. Master of Commerce (M.Com.)

FACULTY OF ARTS

1. Bachelor of Art (BA)
2. Bachelor of Journalism and Mass Communication (BJMC)
3. Bachelor of Library & Information Sciences (B.Lib.Sc.)
4. Master of Art (English Literature) (MA EL)
5. Master of Art (Hindi Literature) (MA HL)
6. Master of Art (Political Science) (MA PS)
7. Master of Art (Sociology) (MA SOCIO)
8. Master of Art (Economics) (MA ECO)
9. Master of Art (Education) (MA EDU)
10. Master of Social Walfare (MSW)

FACULTY OF SCIENCE

1. Bachelor of Science (Maths) (BSC MATH)
2. Bachelor of Science (Bio) (BSC BIO)
3. Master of Science (Physics) (MSC PHY)

4. Master of Science (Chemistry) (MSC CHE)
5. Master of Science (Maths) (MSC MATH)

FACULTY OF VOCATIONAL EDUCATION

Information Technology

- Certificate In Computer Application (CCA)
- Certificate In Word Processing/Typewriting (CWP)
- Certificate For Data Entry Operator (CDEO)
- Certificate In Office Automation And Internet (COA)
- Certificate For Internet Kiosk Operators (CIKO)
- Advance Diploma In Computer Hardware And Networking (ADCHN)

Commerce

- Certificate In Computerized Financial Accounting (CCFA)

Engineering & Technology

- Diploma In Electrical Technician (DET)
- Certificate In Motor And Transformer Winding (CMTW)
- Certificate In Mobile And Telephone Instruments Repairing (CMTIR)
- Certificate In Photocopy Operation And Maintenance (CPOM)
- Certificate In Basic Assembling And Maintenance Of PC (CBAMP)
- Certificate In Repair And Maintenance Of Inverter, UPS And Power Supply(CRMIUP)

Education

- Diploma In Early Chidlhood Care And Education (DECCE)
- Diploma In Cutting, Tailoring And Dress Making (DCTDM)

Please do all correspondence regarding the courses admission and other details at the following address :

The Director,
Institute of Open And Distance Education (IODE)
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Kargi Road, Kota, Bilaspur, Chattisgarh
Phone : 07753-253737, 8827920016, 8827920019 Fax : 07753-253728
E-mail: iode@cvru.ac.in

Student Support Desk :

Phone:8359050061, 8359050064

e-mail: support_iode@cvru.ac.in

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

DIPLOMA IN COMPUTER APPLICATIONS (DCA)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

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DIPLOMA IN COMPUTER APPLICATIONS (DCA)

Duration : 12 Months Eligibility : Class 12th Pass

Scheme of Examination

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical Marks		Assignments	
				Max	Min	Max	Min	Max	Min
Semester-I									
DCA1	Fundamentals of Computers and Information Technology	3	100	70	24	-	-	30	10
DCA2	Operating Systems (DOS,Windows, Linux)	3	100	50	17	20	7	30	10
DCA3	MS Office (Word, Excel, PowerPoint)	3	100	50	17	20	7	30	10
DCA4	Programming Concepts & Techniques, Programming in FoxPro	3	100	50	17	20	7	30	10
DCA5	Introduction to Financial Accounting with Tally	3	100	50	17	20	7	30	10
Total			**500**	**270**	**98**	**80**	**29**	**150**	**54**
Semester-II									
DCA6	Programming in C++	3	100	50	17	20	7	30	10
DCA7	Programming in Visual Basic.net	3	100	50	17	20	7	30	10
DCA8	Introduction to Web and Internet Technology	3	100	50	17	20	7	30	10
DCA9	Introduction to Entrepreneurship	3	100	70	24	-	-	30	10
DCA10	Project	5	100	-	-	100	33	-	-
Total			**500**	**220**	**80**	**160**	**58**	**120**	**44**

Evaluation Scheme

1. 33% in each theory, practical, project, dissertation & internal assessment
2. 36% Aggregate marks to pass

DETAILED SYLLABUS

SEMESTER I

DCA1 - FUNDAMENTALS OF COMPUTERS AND INFORMATION TECHNOLOGY

Brief history of computer, Definition of computer, characteristics of computer, applications of computer, computer v/s calculator, computer Vs human being, Types of computers Generations of computers, Basic components of a computer system - Control unit, ALU, Input/Output their functions and characteristics. instruction cycle of computer.

Personal Computer (PCs) – evolution of PCs, configurations of PCs- PC/XT, AT, 486, Pentium computers and Newer, PCs, Motherboard and its various sections, use of Expansion slots and various types of extension cards, Introduction and main capabilities & characteristics of new microprocessors--Dual core, Core 2 duo and quad core processors, Memory –primary and secondary types of memory RAM, ROM, EPROM, PROM, Cache Memory, SDRAM, DDR, DDR2 etc.

Input/Output & Storage Units-: Introduction, types, functions and working principles of various I/O devices like - Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers and its types – Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Multi

Functions Devices (MFD), Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Index Sequential and Direct Access, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW.

Software and its Need, Types of Software - System software, Application software, Utility Software, System Software - Operating System, Programming languages, Assemblers, Compilers and Interpreter, Introduction to various operating system for PCs—DOS, Windows, Linux etc.

File System basics – File Allocation Table (FAT & FAT 32), NTFS and ext3 file systems, files & directory structure and its naming rules, booting process details of DOS and Windows, DOS system files.

Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, Graphics, Browsers, E-mail clients, Report Writers etc., characteristics, Uses and examples and area of applications of each of them.

Computer Virus - working principles, Types of viruses, virus detection and prevention, viruses on network, Viruses on Windows and Linux.

Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet & its working. Various services of Internet.

Computer Applications in Business-Need and Scope, Computer Applications in daily life, Sales, Marketing, advertising, GIS, Multimedia, Computer Applications in Classes, Virtual Classrooms, Computer applications in Offices, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing. Use of computers in common public services and e-governance. Various e-governance initiatives in India.

DCA2 - OPERATING SYSTEMS

Fundaments of operating system , definition and need. Main Services of operating system , various types of operating system, (definition and characteristics), multitasking, multiprocessing , multiprogramming, real time, time sharing, parallel, network operating system, booting process, file system.

DISK OPERATING SYSTEMS (DO*S)* - Introduction, History & versions of DOS DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files.

DOS commands: Internal - DIR, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE etc.

External Commands - CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS etc

WINDOWS - Introduction to Windows, its various versions and features. Hardware requirements for various versions of Windows. Working with Windows **(XP or Windows 7)** Windows concepts, Windows Structure, Desktop, Taskbar, Start Menu, Working with files and folders, create, copy, delete, renaming and moving files and folders, working with recycle bin-restoring deleted files, emptying the recycle bin, searching files and folders .My computer, formatting floppy disks, Using CDROM Disk and Dives.

Using Windows Accessories programs- Calculator, Notepad, Paint, WordPad, Character map, Paint, Command line.

Using Media Player, Sound Recorder, Volume Control.Taking Printout from programs, Printer Properties, Add fonts to Windows (Specially adding Hindi Fonts and using them). Setting up Regional and Language settings in Windows.

Advanced features of Windows -Managing Hardware & Software – Add or remove Hardware devices to/from computer, Add/remove programs, Using Scanner, Web camera, sharing of printers.

System Tools - Backup, Clipboard Viewer, Disk Defragmenter, Drive Space, Scandisk, System Information windows update.

Communication – Setting up Dial up Networking with Windows, Internet connection with Windows, Direct Cable Connection, Setting up TCP/IP properties, Hyper Terminal, Phone Dial ,Browsing the Web with internet explorer, communication through Outlook Express, Multiple Users Features of Windows. Creating and deleting user, changing user password etc. Accessibility Features of Windows.-Sharing Information between Programs, sharing folders and drives browsing the entire network, mapping windows shared drives, Using shared printers - Understanding OLE - Embed/Link Using Cut and Paste and Embed/Link Using Insert Object - Manage Embedded/Linked Object.

LINUX - Linux introduction, Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell, Linux File system-Boot block, super block, Inode table, data blocks, Linux standard directories. Partitioning the Hard drive for Linux, Installing the Linux system, System, startup and shut-down process, init and run levels.

Essential linux commands Understanding shells, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces.

Process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units, Creating and editing files with vi, joe & vim editor

DCA3 – MS OFFICE

MS Word Basics: Introduction to MS Office; its components, Introduction to MSWord; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Saving document, Saving as different format, Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting- Using page border and watermark, Text Editing using various features ; Bullets, Numbering, Auto formatting, word count, various page view options, Printing & various print options

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with section breaks and page breaks, Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References – footnotes, endnotes, and Table of contents, Insert drawing, Mail Merge, Envelops & Mailing Labels, protect and secure documents in MS Word, Working in different languages in MS Word. Using Unicode in MS Word, Insert WordArt and other objects like shapes, clipart, charts and SamrtArts, symbol in Document. Using Macros in Word- Record, edit and run macros.

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Zooming, Column Freezing, Labels, Hiding, Splitting

etc.; Using different features with Data and Text; Use of Formulas, Calculations using various type of functions-Logical, string, date & time, maths and other types; Cell Formatting including Borders & Shading; conditional formatting, sorting data items, Working with Different Chart Types; Printing of Workbook & Worksheets with various options. Import and export excel sheets to/from various format, add headers and footers, using macros in excel sheet- Record, edit and run macros.

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects, Insert WordArt and other objects like shapes, clipart, charts and SamrtArts, symbol in PowerPoint, Designing & Presentation of a Slide Show; Master slide, Adding custom animation and effects in your presentation, Add time to your slide, Slide Sorting, Printing Presentations, Notes, Handouts with print options, Package your presentation for CD.

DCA4 - PROGRAMMING CONCEPTS & TECHNIQUES, PROGRAMMING IN FOXPRO

PROGRAMMING CONCEPTS

Introduction, Steps in program development, Problem identifications task, data analysis, input design, output identification and specifications, decision tables, algorithm, data validation.

Flowcharts, coding the program, debugging, testing, flowchart symbols, rules for making flowcharts, some examples of flowcharts, types of flowcharts, use of flowcharts, advantages and disadvantages of flowcharts.

Pseudo code – introduction, logical construction of Pseudo code, Advantages of using Pseudo code, Meta-code, Programming techniques-Top down and Bottom Up design and implementation, Modular design and Programming.

Structured Programming, Three basic modules of structured programming, Iterative logic, Modular Design and programs.

Testing and Debugging- Introduction, Testing process, debug, compiler and interpreters as debuggers, data definition languages, cohesion in modular design, Kinds of modules – sequential, selective and interactive.

FOXPRO - THE RDBMS FOR PC

FoxPro - Versions, features, requirement of Hardware and Software, FoxPro - Menu System, Working with FoxPro, Creating Database File Some common operations on data- CREATE, LIST, APPEND, CLOSE, QUIT, FoxPro - Data Types

VIEWINING AND EDITING DATA

Data Displaying and Monitoring Commands - DISPLAY, LIST, LOCATE, EDIT, CHANGE, BROWSE, REPLACE, DELETE, RECALL, PACK (All Commands with various Options)

MODIFY STRUCTURE, MEMO FIELD AND FILE UTILITIES - File utilities in FoxPro - DISPLAY DIRECTORY, COPY, DELETE, RENAME.

SORTING AND INDEXING OF DATABASE FILES

Sorting & Indexing Concept, Sort Commands - Single & Multiple Key, Advantage & Disadvantages of Sort

Indexing Vs Sorting, Single & Multiple Key, Indexing, FIND, SEEK, Rushmore Technology

PRINTING REPORTS AND LABELS

FoxPro Report - its creation, features & Utilities, Preview, Printing, Custom Report, grouping & Subgrouping.

FoxPro Label - Designing & Printing

MEMORY VARIABLES, DATE & TIME FUNCTIONS AND KEYBOARD MACROS

Memory Variables - Creation and Uses, Simple Vs Array, Saving and Restoring Memory Variables, ?/??/??? Commands, Time & Date Functions and Commands, Date Arithmetic, Converting Defining Function Keys, Keyboard Macros - Creating and Using

MATHEMATICAL COMMANDS AND FUNCTIONS

Arithmetic Operations, Mathematical Functions, Mathematical, Commands, Statistical Functions.

PROGRAMMING WITH FOXPRO

Concepts of FoxPro commands file, Modify Commands, Conditioning , Branching and Looping within Program files with Do-While Enddo, If - Endif, Scan-Endscan, For - Endfor, Docase-Endcase, Text - Endtext, Executing Commands from other command files, Macro Substitution

ERROR CONDITIONS AND PROGRAM DEBUGGING AIDS

Common Error Massages, Debugging techniques and commands

MULTIPLE DATA FILES

Concept of Multiple Database Files - Using multiple database files, Relationing the database - SET RELATION, UPDATE, APPEND FROM, COPY TO, JOIN, Relation Query by Example and SQL, CUSTOM SCREENS & USER DEFINE FUNCTIONS & OTHER TOOLS, Create Custom Screen with @, @_GET, @_EDIT, _SAY_GET_READ, Creating Box & Lines, User Define Functions, Custom Screen, Designing and their Use, FoxDoc for documentation.

DCA5 - INTRODUCTION TO FINANCIAL ACCOUNTING WITH TALLY

Basic Concepts of Accounting, Financial Statements, Financial Statement Analysis, Cost Centre, Basic concepts of Inventory Tally Configuration & INI setup, Data Directory & Folders configuration, Single & Multiple User, Tally Screen Components, Mouse / Keyboard Conventions & Key, Combinations, Switching between screen areas, Quitting Tally. Maintaining Company Data, Basic Company Details, Create/ Alter/ Select/ Load/ Close a Company, Chart of Accounts, Company Features, Configuration.

Create, Alter & Display Groups and Ledgers, All accounting voucher types and transactions, Create and Alter new Voucher type, Item and Account Invoice transactions, Excise Invoice, Export Invoice, Transactions using Bill-wise details Create, Alter & Display Cost Centre and Cost Categories, Cost centre & Cost Category allocation in voucher entry, Creating Cost centre Class, Invoice entry in a Class situation, Create, Alter & Delete Foreign Currencies, Voucher entry using foreign currency, Bank Reconciliation, Interest calculations using simple & advance parameters, Interest calculations on outstanding balances & on invoices, Use of voucher class, adjustment of interest, Creation of voucher class, Invoice entry in a class situation.

Create, Alter & Delete Budgets for groups, ledgers & cost centres, Defining credit limit & credit period, Display Budgets & variances, Create, Alter & Delete a scenario. Enabling Job Costing in Tally, Master creation & configuration for Job costing, Creation of Voucher type & Voucher class for Stock Transactions, Creation of Transfer journal for transfer of stock between godowns, Consumption journal Transactions, payment

Voucher, Godown summary Report, Job Work Analysis, Material consumption summary. Reports like balance sheet, Profit & Loss account, Ratio analysis, Trial Balance. Accounts books like cash/bank book, All ledgers, Group summary & vouchers, Sales, purchase & journal registers, Cost centre & category summary, Cost centre breakup, ledger & group breakup, outstanding receivables & payables, interest receivable & payable, Statistics, Cash & Fund flow, Day book, List of Accounts, Reversing journals, optional vouchers, post-dated vouchers.

Create, Alter & Display Stock Groups and Stock Items, Stock item behaviour using costing and market valuation method, other behaviour like treating all sales as new manufacture, treating all purchases as consumed, treating all rejections inward as scrap, ignoring negative balances, Treating difference due to physical counting, Create, Alter & Display Stock categories, Create, Alter, Display simple & compound units of measures, Stock items

using alternate units, Defining standard cost & selling price, Defining Rate of duty, Defining MRP, Create, Alter & Display Godowns, Allocation of items to the Godowns, All inventory voucher types and transactions, Inventory details in accounting vouchers, Defining re-order level, Transactions using tracking numbers, Use of batch-wise details in voucher, Additional cost details in vouchers, Creating Bill of material, Cost estimation, Creating Price list & defining Price levels, invoice using Price list, Zero valued entries, Transactions in case of Different actual & billed quantities. Reports like Stock summary, Inventory books like Stock item, Group summary, Stock transfers, Physical stock register, Movement analysis, Stock group & item analysis, stock category analysis, Ageing analysis, Sales order & Purchase order book, Statement of inventory related to Godowns, categories, stock query, Reorder status, Purchase & Sales order summary, Purchase & Sales bill pending, Exception reports like negative stock & ledger, overdue receivables & payables, memorandum vouchers, optional vouchers, post-dated vouchers, reversing journals.

Cheque Printing, Common printing options, Different printing formats, Multi-Account printing, Dynamic- Report specific options. Creating Group company, Use of Tally vault, Using Security control & defining different security levels, Use of Tally Audit. Back-up & Restore, Splitting company data, Export & import of Data, ODBC compliance, use of E-mail, Internet publishing, Upload, web browser & online help, Re-write data.

SEMESTER II

DCA6 - PROGRAMMING IN C++

Object-Oriented Programming Paradigm, Basic Concepts of Object- Oriented Programming, Benefits of OOPs, Object-Oriented Languages, Applications of OOP, C++ Statements, Class, Structure of C++ Program ,Turbo C++ IDE Creating the Source File, Compiling, Linking and executing.

Tokens, Expressions And Control Structures :- Introduction, Tokens, Keywords, Identifiers, Basic Data types, User Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Conditional statements, various loops in C++, Arrays, string processing in C++, Scope Resolution Operator, Member Dereferencing Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, Operator Precedence, Control Structures.

Classes And Objects :- Specifying a Class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Function, Arrays within a Class, Memory Allocation for Objects, Static Data Member, Static Member Functions, Arrays of Objects, Object as Function Arguments.

Constructors And Destructors :- Introduction, Constructors, Parameterized Constructors, Multiple Constructors with Default Arguments, Dynamic Initialisation of Objects, Copy Constructors, Dynamic Constructors, Destructor.

Functions In C++ :- The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Argument, Const. Arguments, Function Overloading, Friend and Virtual Function

Operator Overloading And Type Conversions :- Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators Using Friends, Manipulation of strings using Operators, Rules for Overloading Operators, Type conversions.

Inheritance : Extending Classes :- Introduction, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance.

Pointers, Virtual Functions And Polymorphism :- Compile time Polymorphism, run time polymorphism, Pointers to Objects, This Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.

DCA7 – INTRODUCTION TO PROGRAMMING IN VISUAL BASIC.NET

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming - Methods and events.

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement, Msgbox & Inputbox.

Working with Forms : Loading, showing and hiding forms, controlling One form within another.

GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menues : ContextMenu, access & shorcut keys.

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public Private, Projected. Overloading, My Base & My class keywords. Overview of OLE, Accessing the WIN32 API from VB.NET. COM technology, advantages of COM+, COM & .NET, Create User control, register User Control, access com components in .net application.

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

DCA8 - INTRODUCTION TO INTERNET & WEB TECHNOLOGY

Internet - Evolution, Protocols, Interface Concepts, Internet Vs Intranet, Growth of Internet, ISP, Connectivity - Dial-up, Leased line, VSAT etc., URLs, Domain names, Portals, Application.

Word Wide Web (WWW) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols

Browsers – features, services offered by browsers, browsers evaluation, extensions and plug-ins for browsers, some important plug-ins introduction like – flash, java, silverlight, etc. features of some major browsers – IE, Firefox, and Google Chrome.

E-mail- Process, obtaining an e-mail address, types of email services – Web based and POP3. Understanding e-mail address, SMTP and MIME protocols, Using web based and pop3 e-mail – creating a message, sending a message, CC, BCC, replay, forward, reply to all, attach a document, add signature to mail, spam mails handling, junk mails, etc. email clients software – installation and configuration. Configuring and Using Outlook Express.

File Transfer using FTP – FTP Process fundamentals, How to use FTP using browsers, FTP using client software like – Cute FTP, WS FTP, File Zilla etc. File formats and Transfer types, Anonymous and non- anonymous FTP.

E-Mail - Concepts, POP and WEB Based E-mail ,merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free Email services. Internet Protocols - Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation, Massage Board, Internet chatting - Voice chat, text chat.

Web publishing - Concepts, Domain name Registration, Space on Host Server for Web site, HTML, Design tools, HTML editors , Image editors, Issues in Web site creations & Maintenance, FTP software for upload web site.

HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Basic Tags of HTML - HTML Tag, TITLE Tag, BODY Tag, Formatting of Text – Headers, Formatting Tags, PRE Tag, FONT Tag, Size, Color and other attributes, Special Characters, Working with Images, META Tag, Links - Anchor tag, Lists - Unordered Lists, Ordered Lists, Definition Lists, Tables - TABLE, TR and TD Tags, Cell Spacing and Cell Padding, Colspan and Rowspan, Frames- Frameset, FRAME Tag, NOFRAMES Tag, Forms - FORM and INPUT Tag, Text Box, Radio Button, Checkbox, SELECT Tag and Pull Down Lists, Hidden, Submit and Reset, Some Special Tags – COLGROUP, THREAD, TBODY, TFOOT, _blank, _self, _parent, _top, IFRAME, LABEL, Attribute for <SELECT>, TEXTAREA

Introduction to WYSIWYG Design tools for HTML, Overview of MS FrontPage/ Macromedia Dreamweaver/ MS Expression Web and other popular HTML editors, designing web sites using MS FrontPage/MS Expression Web.

Interface basics, Create your first page, View your page in browser, Insert hyperlinks , insert image, text alignment and formatting, Insert Images, bookmarks, setting up background, images and colors, Creating tables, table properties, cell properties, background pictures and colors, create list, bullets and headlines, Introduction to CSS, using CSS.

Javascript Overview, Javascript vs. VBScript, Javascript vs. Java, Javascript versions, Script element,syntax & conventions. Variables, Expressions, Branching & Looping statements, Functions, Arrays Objects, Events & Document Object Model – onClick, onMouseOver, onSubmit, onFocus, onChange, onBlur. onLoad, onUnload. Alerts, Prompts & Confirms, Getting data with forms.

E - Commerce An introductions, Concepts, Advantages and disadvantages, Some popular E-commerce sites of World and India – Amazon, e-bay, rediff, irctc etc. (at least 10 from World and 10 from India) Technology in E-Commerce, Internet & E-business, Applications, Feasibility & various constraints. E-transition challenges for Indian corporate. Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems.

DCA9 - INTRODUCTION TO ENTREPRENEURSHIP

Introduction to Entrepreneurship – Introduction and concept of Entrepreneurship

Theory of Entrepreneurship – Entrepreneurship in developing countries, Entrepreneurship stimulation, Entrepreneurship and economic growth, Entrepreneurship and Economic system, various theories of Entrepreneurship

Growth of Entrepreneurship – Role of Entrepreneurship, Growth of Entrepreneurs, Prospects for Entrepreneurship

Nature and Importance of Entrepreneurship – Entrepreneurship Qualities, Entrepreneurship Functions, Entrepreneurship Vs Entrepreneurs, Opportunity matrix, Entrepreneurship Decision, Role of Entrepreneurship, Growth of Entrepreneurship

Classification and types of Entrepreneurship – Business Entrepreneurs, Types of Entrepreneurship, Entrepreneurship and Motivation, Growth and Entrepreneurship

Nature and scope of management – Scope of Management, Meaning of Management, Characteristics of Management, Objectives of Management, Management as a profession, Organization and Management, Branches of Management, Importance of Management, managerial Skills

Planning – Concepts, processes and types – Importance of Planning, Characteristics of Planning, a Good Plan, Advantages of Planning.

Concepts of an Organization – Organization Concepts, organization theory, formal and informal organization, significance of organization, the organization process, analysis of

organization, nature of organization, organization as an art, group dynamics, organization development.

Motivation – Introduction, Meaning, Kinds of Motivation, MC Gregor's Theory X and Theory Y, Coordination, Need Hierarchy theory of Motivation, Motivational Techniques, Financial and Non-financial Incentives.

Leadership – Introduction, Characteristics of leadership, great man theory of leadership, role of leadership, leadership styles, techniques of leadership, functions of leadership, qualities of leadership, process of leadership, develop voluntary cooperation.

Communication – Introduction, Features of communication, Need, Communication Process, communication Process models, Gestural or non verbal communication, Models of Grapevine, Communication Networks, Barriers of Communication, Effective communication, Improve written communication.

Accounting in an small enterprise – Need, How accounts maintained?, Objectives of accounting, Ledger, Trial Balance, Final accounts Balance sheet etc.

Entrepreneurship development institutions -

AISECT model of Entrepreneurship

How to setup and AISECT Centre

Training for self employment

DCA10 – PROJECT REPORT

All the candidates of DCA are required to submit a project-report based on the work done by him/her during the project period. A detiled Viva shall be conducted by an external examiner based on the project report. Students are advised to see the detailed project related guidelines on the website of CVRU. (www.cvru.ac.in) under Project Guidelines for student section.

COUNSELING AND STUDY STRUCTURE

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counselling and Study Structure (hours)				Project
					Face to Face Counselling	Self study	Practical	Assignments	
Semester I									
1	DCA1	Fundamental of Computers & Information Technology	3	90	12	51	-	27	-
2	DCA2	Operating System (DOS, Windows, Linux)	3	90	12	33	18	27	-
3	DCA3	MS-Office (Word, Excel, PowerPoint)	3	90	12	33	18	27	-
4	DCA4	Programming Concepts & Techniques and Programming in FoxPro	3	90	12	33	18	27	-
5	DCA5	Introduction to Financial Accounting with Tally	3	90	12	33	18	27	-
Semester II									
6	DCA6	Programming in C++	3	90	12	33	18	27	-
7	DCA7	Programming in Visual Basic .Net	3	90	12	33	18	27	-
8	DCA8	Introduction to Web and Internet Technology	3	90	12	33	18	27	-
9	DCA9	Introduction to Entrepreneurship	3	90	12	51	-	27	-
10	DCA10	Project	5	150	-	-	-	-	150

STUDY MODULES AND BOOKS INFORMATION

Course Code	Name of the Course	Books / Module to be used
Semester-I		
DCA1	Fundamentals of Computers and Information Technology	Fundamentals of Computers & Information Technology S01/S02,AISECT,AISECT,[E] Fundamentals of Computers & Information Technology S01,S02 H,AISECT,AISECT,[H]
DCA2	Operating Systems (DOS,Windows, Linux)	Disk Operating System + S18 - MS-Windows + S-26 Linux, AISECT,AISECT,[E] Disk Operating System, MS-Windows, Linux S18,S26 H,AISECT,AISECT,[H]
DCA3	MS Office (Word, Excel, PowerPoint)	MS-Word+ S20 - MS-Excel + S25 - MS-Power Point S18,S19,S20,S25,AISECT,AISECT,[E] MS-Word, MS-Excel, MS-Power Point S18,S19,S20,S25 H,AISECT,AISECT,[H]
DCA4	Programming Concepts &	Programming Concepts and + S07 – FoxPro

	Techniques, Programming in FoxPro	S05,S07,AISECT,AISECT,[E] Programming Concepts and, FoxPro S05,S07 H,AISECT,AISECT,[H]
DCA5	Introduction to Financial Accounting with Tally	Introduction to Financial Accounting S51,AISECT,AISECT,[E] Introduction to Financial Accounting S51 H,AISECT,AISECT,[H]
Semester-II		
DCA6	Programming in C++	OOPS and C++ S30,AISECT,AISECT,[E] OOOPS and C++ S30 H,AISECT,AISECT,[H]
DCA7	Programming in Visual Basic.net	AISECT Module VB.Net [E] AISECT Module VB.Net [H]
DCA8	Introduction to Web and Internet Technology	Internet, HTML, Front Page S27,S37,S40,AISECT,AISECT,[E] Internet, HTML, Front Page S27,S37,S40 H,AISECT,AISECT,[H]
DCA9	Introduction to Entrepreneurship	Introduction to Entrepreneurship S56,AISECT,AISECT,[E] Introduction to Entrepreneurship S56 H,AISECT,AISECT,[H]
DCA10	Project	

DATE SCHEDULE & INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	**Assignment No.**	**Due Date**
First Semester	DCA (1) DCA (2) DCA (3) DCA (4) DCA (5)	• April 30 (for January Session) • October 31 (for July session)
Second Semester	DCA (6) DCA (7) DCA (8) DCA (9)	• October 31 (for July Session) • April 30 (for January session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION (PGDCA)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

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POST GRADUATE DIPLOMA IN COMPUTER APPLICATION (PGDCA)

Duration : 12 Months Eligibility : Graduation in any Discipline

Scheme of Examination

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical Marks		Assignments	
				Max	Min	Max	Min	Max	Min
Semester-I									
PGDCA1	Fundamentals of Computers and Information Technology	3	100	70	26	-	-	30	11
PGDCA2	Operating System & MS Office	5	100	50	18	20	8	30	11
PGDCA3	Programming Concepts & Techniques, Programming in FoxPro	3	100	50	18	20	8	30	11
PGDCA4	Introduction to Financial Accounting with Tally	2	100	50	18	20	8	30	11
PGDCA5	OOPS & Programming in C++	3	100	50	18	20	8	30	11
Total			**500**	**270**	**108**	**80**	**32**	**150**	**60**
Semester-II									
PGDCA6	System Analysis & Design	3	100	50	18	20	8	30	11
PGDCA7	RDBMS & SQL	3	100	50	18	20	8	30	11
PGDCA8	Programming in Visual Basic.Net	3	100	50	18	20	8	30	11
PGDCA9	Introduction to Internet and Web Technology	3	100	50	18	20	8	30	11
PGDCA10	Project	4	100	-	-	100	36	-	-
Total			**500**	**200**	**80**	**180**	**72**	**120**	**48**

Evaluation Scheme

1. 36% in each theory, practical, project, dissertation & internal assessment
2. 40% Aggregate marks to pass

DETAILED SYLLABUS

SEMESTER - I

PGDCA1 - FUNDAMENTALS OF COMPUTERS AND INFORMATION TECHNOLOGY

Brief history of computer, Definition of computer, characteristics of computer, applications of computer, computer v/s calculator, computer Vs human being, Types of computers Generations of computers, Basic components of a computer system - Control unit, ALU, Input/Output their functions and characteristics. instruction cycle of computer.

Personal Computer (PCs) – evolution of PCs, configurations of PCs- PC/XT, AT, 486, Pentium computers and Newer, PCs, Motherboard and its various sections, use of Expansion slots and various types of extension cards, Introduction and main capabilities & characteristics of new microprocessors--Dual core, Core 2 duo and quad core processors, Memory –primary and secondary types of memory RAM, ROM, EPROM, PROM, Cache Memory, SDRAM, DDR, DDR2 etc.

Input/Output & Storage Units-: Introduction, types, functions and working principles of various I/O devices like - Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers and its types – Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Multi

Functions Devices (MFD), Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Index Sequential and Direct Access, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW.

Software and its Need, Types of Software - System software, Application software, Utility Software, System Software - Operating System, Programming languages, Assemblers, Compilers and Interpreter, Introduction to various operating system for PCs—DOS, Windows, Linux etc.

File System basics – File Allocation Table (FAT & FAT 32), NTFS and ext3 file systems, files & directory structure and its naming rules, booting process details of DOS and Windows, DOS system files.

Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, Graphics, Browsers, E-mail clients, Report Writers etc., characteristics, Uses and examples and area of applications of each of them.

Computer Virus - working principles, Types of viruses, virus detection and prevention, viruses on network, Viruses on Windows and Linux.

Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet & its working. Various services of Internet.

Computer Applications in Business-Need and Scope, Computer Applications in daily life, Sales, Marketing, advertising, GIS, Multimedia, Computer Applications in Classes, Virtual Classrooms, Computer applications in Offices, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing. Use of computers in common public services and e-governance. Various e-governance initiatives in India.

PGDCA2 - OPERATING SYSTEMS & MS OFFICE

Fundaments of operating system , definition and need. Main Services of operating system , various types of operating system, (definition and characteristics), multitasking, multiprocessing , multiprogramming, real time, time sharing, parallel, network operating system, booting process, file system.

DISK OPERATING SYSTEMS (DO*S)* - Introduction, History & versions of DOS DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files.

DOS commands: Internal - DIR, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE etc.

External Commands - CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS etc

WINDOWS - Introduction to Windows, its various versions and features. Hardware requirements for various versions of Windows. Working with Windows **(XP or Windows 7)** Windows concepts, Windows Structure, Desktop, Taskbar, Start Menu, Working with files and folders, create, copy, delete, renaming and moving files and folders, working with recycle bin-restoring deleted files, emptying the recycle bin, searching files and folders .My computer, formatting floppy disks, Using CDROM Disk and Dives.

Using Windows Accessories programs- Calculator, Notepad, Paint, WordPad, Character map, Paint, Command line.

Using Media Player, Sound Recorder, Volume Control.Taking Printout from programs, Printer Properties, Add fonts to Windows (Specially adding Hindi Fonts and using them). Setting up Regional and Language settings in Windows.

Advanced features of Windows -Managing Hardware & Software – Add or remove Hardware devices to/from computer, Add/remove programs, Using Scanner, Web camera, sharing of printers.

System Tools - Backup, Clipboard Viewer, Disk Defragmenter, Drive Space, Scandisk, System Information windows update.

Communication – Setting up Dial up Networking with Windows, Internet connection with Windows, Direct Cable Connection, Setting up TCP/IP properties, Hyper Terminal, Phone Dial ,Browsing the Web with internet explorer, communication through Outlook Express, Multiple Users Features of Windows. Creating and deleting user, changing user password etc. Accessibility Features of Windows.-Sharing Information between Programs, sharing folders and drives browsing the entire network, mapping windows shared drives, Using shared printers - Understanding OLE - Embed/Link Using Cut and Paste and Embed/Link Using Insert Object - Manage Embedded/Linked Object.

LINUX - Linux introduction, Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell, Linux File system-Boot block, super block, Inode table, data blocks, Linux standard directories. Partitioning the Hard drive for Linux, Installing the Linux system, System, startup and shut-down process, init and run levels.

Essential linux commands Understanding shells, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces.

Process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units, Creating and editing files with vi, joe & vim editor

MS Word Basics: Introduction to MS Office; its components, Introduction to MSWord; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Saving document, Saving as different format, Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting- Using page border and watermark, Text Editing using various features ; Bullets, Numbering, Auto formatting, word count, various page view options, Printing & various print options

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with section breaks and page breaks, Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References – footnotes, endnotes, and Table of contents, Insert drawing, Mail Merge, Envelops & Mailing Labels, protect and secure documents in MS Word, Working in different languages in MS Word. Using Unicode in MS Word, Insert WordArt and other objects like shapes, clipart, charts and SamrtArts, symbol in Document. Using Macros in Word- Record, edit and run macros.

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Zooming, Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations using various type of functions-Logical, string, date & time, maths and other types; Cell

Formatting including Borders & Shading; conditional formatting, sorting data items, Working with Different Chart Types; Printing of Workbook & Worksheets with various options. Import and export excel sheets to/from various format, add headers and footers, using macros in excel sheet- Record, edit and run macros.

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects, Insert WordArt and other objects like shapes, clipart, charts and SamrtArts, symbol in PowerPoint, Designing & Presentation of a Slide Show; Master slide, Adding custom animation and effects in your presentation, Add time to your slide, Slide Sorting, Printing Presentations, Notes, Handouts with print options, Package your presentation for CD.

Outlook express: Setup email account with outlook, sending and receiving mail through outlook, concepts of CC and BCC, forwarding mail, Draft messages, formatting e-mail message, Concept of MIME Protocol, attaching files and items into messages, inserting hyperlink using outlook editor creating and using send and receive group emails, opening received messages, opening messages with attachment, replying to mail forwarding messages flagging for further action, setting email options, managing contacts with outlook, Setting up multiple email accounts on single machine.

PGDCA3 - PROGRAMMING CONCEPTS & TECHNIQUES, PROGRAMMING IN FOXPRO

Programming Concepts

Introduction, Steps in program development, Problem identifications task, data analysis, input design, output identification and specifications, decision tables, algorithm, data validation.

Flowcharts, coding the program, debugging, testing, flowchart symbols, rules for making flowcharts, some examples of flowcharts, types of flowcharts, use of flowcharts, advantages and disadvantages of flowcharts.

Pseudo code – introduction, logical construction of Pseudo code, Advantages of using Pseudo code, Meta-code, Programming techniques-Top down and Bottom Up design and implementation, Modular design and Programming.

Structured Programming, Three basic modules of structured programming, Iterative logic, Modular Design and programs.

Testing and Debugging- Introduction, Testing process, debug, compiler and interpreters as debuggers, data definition languages, cohesion in modular design, Kinds of modules – sequential, selective and interactive.

FOXPRO - THE RDBMS FOR PC

FoxPro - Versions, features, requirement of Hardware and Software, FoxPro - Menu System, Working with FoxPro, Creating Database File Some common operations on data- CREATE, LIST, APPEND, CLOSE, QUIT, FoxPro - Data Types

VIEWINING AND EDITING DATA

Data Displaying and Monitoring Commands - DISPLAY, LIST, LOCATE, EDIT, CHANGE, BROWSE, REPLACE, DELETE, RECALL, PACK (All Commands with various Options)

MODIFY STRUCTURE, MEMO FIELD AND FILE UTILITIES - File utilities in FoxPro - DISPLAY DIRECTORY, COPY, DELETE, RENAME.

SORTING AND INDEXING OF DATABASE FILES

Sorting & Indexing Concept, Sort Commands - Single & Multiple Key, Advantage & Disadvantages of Sort

Indexing Vs Sorting, Single & Multiple Key, Indexing, FIND, SEEK, Rushmore Technology

PRINTING REPORTS AND LABELS

FoxPro Report - its creation, features & Utilities, Preview, Printing, Custom Report, grouping & Subgrouping.

FoxPro Label - Designing & Printing

MEMORY VARIABLES, DATE & TIME FUNCTIONS AND KEYBOARD MACROS

Memory Variables - Creation and Uses, Simple Vs Array, Saving and Restoring Memory Variables, ?/??/??? Commands, Time & Date Functions and Commands, Date Arithmetic, Converting Defining Function Keys, Keyboard Macros - Creating and Using

MATHEMATICAL COMMANDS AND FUNCTIONS

Arithmetic Operations, Mathematical Functions, Mathematical, Commands, Statistical Functions.

PROGRAMMING WITH FOXPRO

Concepts of FoxPro commands file, Modify Commands, Conditioning , Branching and Looping within Program files with Do-While Enddo, If - Endif, Scan-Endscan, For - Endfor, Docase-Endcase, Text - Endtext, Executing Commands from other command files, Macro Substitution

ERROR CONDITIONS AND PROGRAM DEBUGGING AIDS

Common Error Massages, Debugging techniques and commands

MULTIPLE DATA FILES

Concept of Multiple Database Files - Using multiple database files, Relationing the database - SET RELATION, UPDATE, APPEND FROM, COPY TO, JOIN, Relation Query by Example and SQL, CUSTOM SCREENS & USER DEFINE FUNCTIONS & OTHER TOOLS, Create Custom Screen with @, @_GET, @_EDIT, _SAY_GET_READ, Creating Box & Lines, User Define Functions, Custom Screen, Designing and their Use, FoxDoc for documentation.

PGDCA4 - INTRODUCTION TO FINANCIAL ACCOUNTING WITH TALLY

Basic Concepts of Accounting, Financial Statements, Financial Statement Analysis, Cost Centre, Basic concepts of Inventory Tally Configuration & INI setup, Data Directory & Folders configuration, Single & Multiple User, Tally Screen Components, Mouse / Keyboard Conventions & Key, Combinations, Switching between screen areas, Quitting Tally. Maintaining Company Data, Basic Company Details, Create/ Alter/ Select/ Load/ Close a Company, Chart of Accounts, Company Features, Configuration.

Create, Alter & Display Groups and Ledgers, All accounting voucher types and transactions, Create and Alter new Voucher type, Item and Account Invoice transactions, Excise Invoice, Export Invoice, Transactions using Bill-wise details Create, Alter & Display Cost Centre and Cost Categories, Cost centre & Cost Category allocation in voucher entry, Creating Cost centre Class, Invoice entry in a Class situation, Create, Alter & Delete Foreign Currencies, Voucher entry using foreign currency, Bank Reconciliation, Interest calculations using simple & advance parameters, Interest calculations on outstanding balances & on invoices, Use of voucher class, adjustment of interest, Creation of voucher class, Invoice entry in a class situation.

Create, Alter & Delete Budgets for groups, ledgers & cost centres, Defining credit limit & credit period, Display Budgets & variances, Create, Alter & Delete a scenario. Enabling Job Costing in Tally, Master creation & configuration for Job costing, Creation of Voucher type & Voucher class for Stock Transactions, Creation of Transfer journal for transfer of stock between godowns, Consumption journal Transactions, payment

Voucher, Godown summary Report, Job Work Analysis, Material consumption summary. Reports like balance sheet, Profit & Loss account, Ratio analysis, Trial Balance. Accounts books like cash/bank book, All ledgers, Group summary & vouchers, Sales, purchase & journal registers, Cost centre & category summary, Cost centre breakup, ledger & group breakup, outstanding receivables & payables, interest receivable & payable, Statistics, Cash & Fund flow, Day book, List of Accounts, Reversing journals, optional vouchers, post-dated vouchers.

Create, Alter & Display Stock Groups and Stock Items, Stock item behaviour using costing and market valuation method, other behaviour like treating all sales as new manufacture, treating all purchases as consumed, treating all rejections inward as scrap, ignoring negative balances, Treating difference due to physical counting, Create, Alter & Display Stock categories, Create, Alter, Display simple & compound units of measures, Stock items using alternate units, Defining standard cost & selling price, Defining Rate of duty, Defining MRP, Create, Alter & Display Godowns, Allocation of items to the Godowns, All inventory voucher types and transactions, Inventory details in accounting vouchers, Defining re-order level, Transactions using tracking numbers, Use of batch-wise details in voucher, Additional cost details in vouchers, Creating Bill of material, Cost estimation, Creating Price list & defining Price levels, invoice using Price list, Zero valued entries, Transactions in case of Different actual & billed quantities. Reports like Stock summary, Inventory books like Stock item, Group summary, Stock transfers, Physical stock register, Movement analysis, Stock group & item analysis, stock category analysis, Ageing analysis, Sales order & Purchase order book, Statement of inventory related to Godowns, categories, stock query, Reorder status, Purchase & Sales order summary, Purchase & Sales bill pending, Exception reports like negative stock & ledger, overdue receivables & payables, memorandum vouchers, optional vouchers, post-dated vouchers, reversing journals.

Cheque Printing, Common printing options, Different printing formats, Multi-Account printing, Dynamic- Report specific options. Creating Group company, Use of Tally vault, Using Security control & defining different security levels, Use of Tally Audit. Back-up & Restore, Splitting company data, Export & import of Data, ODBC compliance, use of E-mail, Internet publishing, Upload, web browser & online help, Re-write data.

PGDCA5 - OOPS & PROGRAMMING IN C++

Object-Oriented Programming Paradigm, Basic Concepts of Object- Oriented Programming, Benefits of OOPs, Object-Oriented Languages, Applications of OOP, C++ Statements, Class, Structure of C++ Program ,Turbo C++ IDE Creating the Source File, Compiling, Linking and executing.

Tokens, Expressions And Control Structures :- Introduction, Tokens, Keywords, Identifiers, Basic Data types, User Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Conditional statements, various loops in C++, Arrays, string processing in C++, Scope Resolution Operator, Member Dereferencing Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, Operator Precedence, Control Structures.

Classes And Objects :- Specifying a Class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Function, Arrays within a Class, Memory Allocation for Objects, Static Data Member, Static Member Functions, Arrays of Objects, Object as Function Arguments.

Constructors And Destructors :- Introduction, Constructors, Parameterized Constructors, Multiple Constructors with Default Arguments, Dynamic Initialisation of Objects, Copy Constructors, Dynamic Constructors, Destructor.

Functions In C++ :- The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Argument, Const. Arguments, Function Overloading, Friend and Virtual Function

Operator Overloading And Type Conversions :- Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators Using Friends, Manipulation of strings using Operators, Rules for Overloading Operators, Type conversions.

Inheritance : Extending Classes :- Introduction, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance.

Pointers, Virtual Functions And Polymorphism :- Compile time Polymorphism, run time polymorphism, Pointers to Objects, This Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.

The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O.

PGDCA6 - SYSTEM ANALYSIS & DESIGN

Introduction to SAD - Fundamentals of Systems, Important Terms related to Systems, Classification of Systems, Real Life Business Subsystems, Real Time Systems, Distributed Systems, Development of a successful System, Various Approaches for development of Information Systems, Structured Analysis and Design Approach, Prototype, Joint Application Development

Systems Analyst-A Profession - Why do Businesses need Systems Analysts?, Users, Analysts in various functional areas. Systems Analyst in Traditional Business, Systems Analyst in Modern Business, Role of a Systems Analyst, Duties of a Systems Analyst, Qualifications of a Systems Analyst. Analytical Skills, Technical Skills, Management Skills , Interpersonal Skills

Process of System Development- Systems Development Life Cycle, Phases of SDLC, Project Identification and Selection. Project Initiation and planning, Analysis, Logical Design, Physical Design, Implementation, Maintenance, Product of SDLC Phases, Approaches to Development, Prototyping Joint Application Design, Participatory Design.

Process of System Planning- Fact finding Techniques, Interviews, Group Discussion, Site Visits, Presentations. Questionnaires, Issues involved in Feasibility Study, Technical Feasibility, Operational Feasibility, Economic Feasibility, Legal Feasibility, Cost Benefit Analysis, Preparing Schedule, Gathering Requirements of System, Joint Application Development.

Prototyping, Design Principles, Top Down Design, Bottom Up Design, Structure Charts.

Modularity, Goals of Design, Coupling, Cohesion, System Design and Modelling, Logical and Physical Design Process Modeling: Data Flow Diagrams, Data Modeling, E-R Diagrams, Process Specification Tools, Decision Tables, Decision Trees, Notation Structured English Data Dictionary.

Implementation and Maintenance of Systems - Implementation of Systems, Conducting System Tests, Preparing Conversion Plan.

Installing Databases, Training the end users, Preparation of User Manual, Converting to the new System, Maintenance of Systems, Different Maintenance activities, Issues involved in Maintenance.

Audit and Security of Computer Systems - Definition of Audit, Objectives of Audit, Responsibility and Authority of the System Auditor, Confidentiality, Audit Planning.

Management Information Systems - Role of MIS in an organization, Different kinds of Information Systems, Transaction Processing System, Management Information , System Decision Support System. Expert System.

PGDCA7 - RDBMS & SQL

RDBMS Concepts - Basic concepts of database ; Data independence ; Data models, Relational Data Model; Relational Algebra, Relational Query language – SQL ; Functional dependencies; 1st, 2nd and 3rd Normal forms, Decomposition; Integrity; Security; Concurrency; Recovery; Concept of distributed databases.

Functional Dependencies: Trivial and nontrivial dependencies, closure of a set of dependencies. Higher Normals Form: BCNF and Fourth normal forms.

Entity Relationship Model: E/R diagrams and database design with E/R diagrams.

SQL - Introduction to SQL constructs, Basic SQL statements , Select, Project, Join, Describing Oracle tables, Restricting row returns, Using SQL*Plus

Creating basic reports, Using the set commands, Column wrapping, Creating breaks and summaries, Adding prompts to queries, Joining Oracle tables

Equi-join, Outer join, Hiding joins by creating views, Using IN, NOT IN, EXISTS and NOT EXISTS, Subqueries, Correlated subquery, Non-correlated subqueries

Advanced SQL operators - Between operator, IN and NOT In operators, Sub-queries, EXISTS clause, Using wildcards in queries (LIKE operator)

Aggregation in SQL - Count(*), Sum, Avg, Min and max, Using the group by clause

SQL access methods - Review of Basic joining methods, Merge join, Hash Join, Nested Loop join, Advanced SQL operators, Between operator

SQL Tuning - Introduction to rule-based optimization, Introduction to cost-based optimization, Collecting table and index statistics, Changing the default optimizer modes, Using TKPROF, Using SQL*Trace, improving SQL performance, Using parallel query to improve performance, Tuning sub-queries

PL/SQL - An Introduction to PL/SQL, PL/SQL Overview, Declaration section, Executable Commands section, Condition logic, Loops, Exception Handlings, Triggers, Required System Privileges, Required Table Privileges, Types of triggers, Triggers Syntax, Enabling and Disabling Triggers, Replacing and Dropping Triggers

PGDCA8 - PROGRAMMING IN VISUAL BASIC.NET

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming - Methods and events.

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement, Msgbox & Inputbox.

Working with Forms : Loading, showing and hiding forms, controlling One form within another.

GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menues : ContextMenu, access & shorcut keys.

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public Private, Projected. Overloading, My Base & My class keywords. Overview of OLE, Accessing the WIN32 API from VB.NET. COM technology, advantages of COM+, COM & .NET, Create User control, register User Control, access com components in .net application.

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

PGDCA9 - INTRODUCTION TO INTERNET & WEB TECHNOLOGY

Internet - Evolution, Protocols, Interface Concepts, Internet Vs Intranet, Growth of Internet, ISP, Connectivity - Dial-up, Leased line, VSAT etc., URLs, Domain names, Portals, Application.

Word Wide Web (WWW) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols

Browsers – features, services offered by browsers, browsers evaluation, extensions and plug-ins for browsers, some important plug-ins introduction like – flash, java, silverlight, etc. features of some major browsers – IE, Firefox, and Google Chrome.

E-mail- Process, obtaining an e-mail address, types of email services – Web based and POP3. Understanding e-mail address, SMTP and MIME protocols, Using web based and pop3 e-mail – creating a message, sending a message, CC, BCC, replay, forward, reply to all, attach a document, add signature to mail, spam mails handling, junk mails, etc. email clients software – installation and configuration. Configuring and Using Outlook Express.

File Transfer using FTP – FTP Process fundamentals, How to use FTP using browsers, FTP using client software like – Cute FTP, WS FTP, File Zilla etc. File formats and Transfer types, Anonymous and non- anonymous FTP.

E-Mail - Concepts, POP and WEB Based E-mail ,merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free Email services. Internet Protocols - Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation, Massage Board, Internet chatting - Voice chat, text chat.

Web publishing - Concepts, Domain name Registration, Space on Host Server for Web site, HTML, Design tools, HTML editors , Image editors, Issues in Web site creations & Maintenance, FTP software for upload web site.

HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Basic Tags of HTML - HTML Tag, TITLE Tag, BODY Tag, Formatting of Text – Headers, Formatting Tags, PRE Tag, FONT Tag, Size, Color and other attributes, Special Characters, Working with Images, META Tag, Links - Anchor tag, Lists - Unordered Lists, Ordered Lists, Definition Lists, Tables - TABLE, TR and TD Tags, Cell Spacing and Cell Padding, Colspan and Rowspan, Frames- Frameset, FRAME Tag, NOFRAMES Tag, Forms - FORM and INPUT Tag, Text Box, Radio Button, Checkbox, SELECT Tag and Pull Down Lists, Hidden, Submit and Reset, Some Special Tags – COLGROUP, THREAD, TBODY, TFOOT, _blank, _self, _parent, _top, IFRAME, LABEL, Attribute for <SELECT>, TEXTAREA

Introduction to WYSIWYG Design tools for HTML, Overview of MS FrontPage/ Macromedia Dreamweaver/ MS Expression Web and other popular HTML editors, designing web sites using MS FrontPage/MS Expression Web.

Interface basics, Create your first page, View your page in browser, Insert hyperlinks , insert image, text alignment and formatting, Insert Images, bookmarks, setting up background, images and colors, Creating tables, table properties, cell properties, background pictures and colors, create list, bullets and headlines, Introduction to CSS, using CSS.

Javascript Overview, Javascript vs. VBScript, Javascript vs. Java, Javascript versions, Script element,syntax & conventions. Variables, Expressions, Branching & Looping statements, Functions, Arrays Objects, Events & Document Object Model – onClick, onMouseOver, onSubmit, onFocus, onChange, onBlur. onLoad, onUnload. Alerts, Prompts & Confirms, Getting data with forms.

E - Commerce An introductions, Concepts, Advantages and disadvantages, Some popular E-commerce sites of World and India – Amazon, e-bay, rediff, irctc etc. (at least 10 from World and 10 from India) Technology in E-Commerce, Internet & E-business, Applications, Feasibility & various constraints. E-transition challenges for Indian corporate. Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems.

PGDCA10 – PROJECT REPORT

All the candidates of PGDCA are required to submit a project-report based on the work done by him/her during the project period. A detailed Viva shall be conducted by an external examiner based on the project report. Students are advised to see the detailed project

related guidelines on the website of AISECT. (www.cvru.ac.in) under Project Guidelines for student section.

COUNSELLING AND STUDY STRUCTURE

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counselling and Study Structure (hours)				Project
					Face to Face Counselling	Self study	Practical	Assignments	
Semester I									
1	PGDCA1	Fundamentals of Computers and Information Technology	3	90	12	51	-	27	-
2	PGDCA2	Operating System & MS Office	5	150	20	55	30	45	-
3	PGDCA3	Programming Concepts & Techniques, Programming in FoxPro	3	90	12	33	18	27	-
4	PGDCA4	Introduction to Financial Accounting with Tally	2	60	8	22	12	18	-
5	PGDCA5	OOPS & Programming in C++	3	90	12	33	18	27	-
Semester II									
6	PGDCA6	System Analysis & Design	3	90	12	33	18	27	-
7	PGDCA7	RDBMS & SQL	3	90	12	33	18	27	-
8	PGDCA8	Programming in Visual Basic.Net	3	90	12	33	18	27	-
9	PGDCA9	Introduction to Internet and Web Technology	3	90	12	51	-	27	-
10.	PGDCA10	Project	4	120	-	-	-	-	120

STUDY MODULES AND BOOKS INFORMATION

Course Code	Name of the Course	Books / Module to be used
Semester-I		
PGDCA1	Fundamentals of Computers and Information Technology	• Fundamentals of Computers and Information Technology S01, AISECT, [E] • Fundamentals of Computers and Information Technology S01 H, AISECT, [H]
PGDCA2	Operating System & MS Office	• Disk Operating System , MS-Windows , Linux , MS-Word , MS Excel , MS-Power Point S02,S18,S26,S19,S20,S25, AISECT, [E] • Disk Operating System ,MS-Windows , Linux , MS-Word , MS Excel , MS-Power Point S02,S18,S26,S19,S20,S25 H, AISECT, [H]
PGDCA3	Programming Concepts & Techniques, Programming in FoxPro	• Programming Concepts and Techniques ,FoxPro S05,S07, AISECT, [E] • Programming Concepts and Techniques , FoxPro S05,S07 H, AISECT, [H]
PGDCA4	Introduction to Financial Accounting with Tally	• Introduction to Financial Accounting S51, AISECT, [E] • Introduction to Financial Accounting S51, AISECT, [H]
PGDCA5	OOPS & Programming in C++	• OOPS and C++ S30, AISECT, [E] • OOPS and C++ S30, AISECT, [H]
Semester-II		
PGDCA6	System Analysis & Design	• System Analysis & Design S16, AISECT, [E] • System Analysis & Design S16, AISECT, [H]
PGDCA7	RDBMS & SQL	• RDBMS and SQL S38, AISECT, [E] • RDBMS and SQL S38, AISECT, [H]
PGDCA8	Programming in Visual Basic.Net	• Visual Basic.net , AISECT, [E] • Visual Basic.net, AISECT, [H]
PGDCA9	Introduction to Internet & Web Technology	• Internet, HTML ,Front Page S27,S37,S40, AISECT, [E] • Internet,HTML ,Front Page S27,S37,S40 H, AISECT, [H]
PGDCA10	Project	

DATE SCHEDULE AND INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	**Assignment No.**	**Due Date**
First Semester	PGDCA (1) PGDCA (2) PGDCA (3) PGDCA (4) PGDCA (5)	• April 30 (for January Session) • October 31 (for July session)
Second Semester	PGDCA (6) PGDCA (7) PGDCA (8) PGDCA (9)	• October 31 (for July Session) • April 30 (for January session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

BACHELOR OF COMPUTER APPLICATIONS (BCA)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

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BACHELOR OF COMPUTER APPLICATIONS (BCA)

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical Marks		Assignments	
				Max	Min	Max	Min	Max	Min
Semester-I									
BCA1	Fundamental of Computers & Information Technology	3	100	70	24	-	-	30	10
BCA2	PC Packages	3	100	50	17	20	7	30	10
BCA3	Programming logic and Design	3	100	50	17	20	7	30	10
BCA4	Programming in C	3	100	50	17	20	7	30	10
BCA5	Environmental Studies	2	100	70	24	-	-	30	10
BCA6	Communicative English	2	100	70	24	-	-	30	10
Total			**600**	**360**	**130**	**60**	**22**	**180**	**65**
Semester-II									
BCA7	Digital Computer & Architecture	3	100	50	17	20	7	30	10
BCA8	Advanced Programming in C	3	100	50	17	20	7	30	10
BCA9	Fundamental of Data Structure	4	100	50	17	20	7	30	10
BCA10	RDBMS Programming in FoxPro	3	100	50	17	20	7	30	10
BCA11	Financial Accounting	3	100	70	24	-	-	30	10
Total			**500**	**270**	**98**	**80**	**29**	**150**	**54**
Semester-III									
BCA12	Information Technology Trends	3	100	50	17	20	7	30	10
BCA13	GUI programming in Visual Basic	3	100	50	17	20	7	30	10
BCA14	Database Management System	4	100	50	17	20	7	30	10
BCA15	Computer Networking and LAN	3	100	50	17	20	7	30	10
BCA16	Management Skill - I	3	100	70	23	-	-	30	10
Total			**500**	**270**	**98**	**80**	**29**	**150**	**54**
Semester-IV									
BCA17	Operating System	3	100	50	17	20	7	30	10
BCA18	OOPs Programming in C++	4	100	50	17	20	7	30	10
BCA19	Internet and Web Technology	3	100	50	17	20	7	30	10
BCA20	Linux Operating System	3	100	50	17	20	7	30	10
BCA21	Management Skill - II	3	100	70	23	-	-	30	10
Total			**500**	**270**	**98**	**80**	**29**	**150**	**54**
Semester-V									
BCA22	Computer Architecture	4	100	50	17	20	7	30	10
BCA23	Multimedia Tools & Applications	4	100	50	17	20	7	30	10
BCA24	Programming in Java	4	100	50	17	20	7	30	10
BCA25	Oracle RDBMS	4	100	50	17	20	7	30	10
BCA26	Theory of Computation	4	100	70	23	-	-	30	10
Total			**500**	**270**	**98**	**80**	**29**	**150**	**54**
Semester-VI									
BCA27	Project	12	100	-	-	100	33	-	-
Total			**100**			**100**	**36**		

Evaluation Scheme

1. 33% in each theory, practical, project, dissertation & internal assessment
2. 36% Aggregate marks to pass

BCA – I YEAR

SEMESTER - I

BCA1 - FUNDAMENTALS OF COMPUTERS & INFORMATION TECHNLOLGY

UNIT-I

Introduction to computer: Introduction, Uses of computers and human beings, Characteristics of a computer, Limitations of computers, Application of computer, Bock Diagram of computer.Generation and types of computers: Prehistoric and early calculating devices, Generations of computers, Types of computers: Micro, Mini, Mainframe and Super computer.Motherboard, BIOS, Booting process

UNIT-II

Input/Output Device: The system concept, hardware, Software, input devices, New input devices, Output devices, Multifunction devices.Storage devices : Data hierarchy and data capacity, Units of measurement Primary vs. secondary storage, Floppy disk, Hard disk, CDROM, Tape drive.Memory Device: Memory, its types, Random access memory(RAM), Read only memory(ROM), Other forms of memory,

UNIT-III

Operating System: Introduction, Futures, Its types, Some Popular OS. Dos terminology, Dos commands.Translator: Introduction, Interpreter, Compiler, Assembler.

Computer software: What is software? Relationship between hardware and software, Types of software: Application, System and Utility software, Basic software tools: Word processing software, Spread sheet software, Data base management system software, Graphics software, Computer Number system and arithmetic: Data representing in computer, Different types of data, Representing number in the decimal system, Binary number system, Octal and hexadecimal number, Binary arithmetic, Advantages of these numbers, Standard coding system.

UNIT-IV

Computer language: What is computer language? Characteristics of programming language, Different types of programming language, Machine languages, Assembly languages, High level languages, Advantages of high level languages, Limitations of high level languages, Some popular high level languages, Computer virus: Types of viruses, Beating the viruses, Detection of viruses, Prevention of viruses, Viruses and Networks, Non dos viruses.

UNIT-V

Data Communication and networks: Communications, Two models of communications, Telephone related Communications, Computers and Communications, New technologies in modem, Communication protocols, Communication channels, Types of connections, Types of networks, Local area networks (LAN), Transmission modes.

BCA2 - P.C. PACKAGES

UNIT-1

WINDOWS 95 AND 98 : Introduction, why window 95 & 98, Getting started, Opening a Document, Finding file & folder, Managing file & folder, Working with Document, configuring Printer, H/W & S/W Installing, Features of Windows, Benefits of Windows, Difference between Windows 95 & 98 & 2000.

UNIT-2

WORD : H/W & S/W Requirement for word, starting word, Composing Document, Editing a Document, Creating a New Document, Opening a Document, Closing Document, Selecting & Deleting Text, Finding & Replace Text, Hyper Links with word, spelling & Grammar Tools, AutoCorrect Tools, Fonts, Alignment, Header & Footers, Mail merge, Columns and tables, Advantages of word, Menus, Title Bar, Task Bar, Advantage.

UNIT-3

EXCEL: Introduction, The Microsoft Office Spreadsheet, H/W & S/W Requirement for Excel, Starting Excel, Workbook, Working with Workbooks, Editing Entries, Coping and Moving

Entries, Clearing Cells, Inserting and Deleting Columns, Changing Column Width, Formulas and Functions, Creating Graphics, Types of Graph, Linking Workbooks, Hyperlinks, PivotTable Report, Advantage.

UNIT-4

ACCESS: Introduction, H/W & S/W Requirement for Access, Components of the Access Window /Table/ and Form, Macros, Creating a Table with the Datasheet View, Finding Data, Creating a Report Using AutoReport.

UNIT-5

POWERPOINT: Introduction, Starting PowerPoint, Overview of PowerPoint Windows, Creating a Presentation, Adding a slide to a Presentation, The Spelling Tools, Applying a Presentation Design, Viewing a Presentation, Editing Slides, Adding a Table Slide to a Presentation, Using ClipArt Gallery, Editing a WordArt Object, Types of Chart.

BCA3 - PROGRAMMING LOGIC AND DESIGN

UNIT-1

Task Analysis-Decision tables: Programming step in program development, problem identification, task analysis, data analysis input design, output identification and specifications, designing the solution, design tables, algorithm, data validation, flow charts, coding the program, debugging, testing.

UNIT-2

Programming Aids: Flow charts symbols, ruler for making flowcharts, advantages of using flowcharts, Disadvantages of flowcharts, types of flowcharts, use of flowcharts, psendo code, structured English, logical constructs in psendo code, advantages of psendo code, meta code.

UNIT-3

Programming to techniques: programming techniques, top down design, bottom design, modular design & programming, structured programming, three basic modules of structured programming interactive logic.

UNIT-4

Programming tools: testing, debugging, testing procedures, selecting test data, debuggers, computer and interpreters as debuggres, link editors, data definition language.

BCA4 - PROGRAMMING IN C

UNIT -1

Overview Of C : Introduction, Importance of C, Sample of C Programs, Basic structure of C programs, programming style, executing a c program.

UNIT -2

Constants, Variables, and Data types: Introduction, character-set, c token, keywords and identifiers, constants, variables, data types, declaration of variables, assigning values to variables, defining symbolic constants.

UNIT -3

Operators and Expression: Introduction, arithmetic of operators, relational operators, logical operators, assignment operators, increment and decrement operators, conditional operator, bitwise operators, special operator, arithmetic expressions, evaluation of expressions, precedence of arithmetic operators, some computational problems, type conversions in expressions, operator precedence and associatively, mathematical functions.

Managing input and output: Introduction, reading a character, writing a character, formatted input, formatted output.

UNIT -4

Decision making and branching: Introduction, decision making with IF statement, simple IF statement, the IF Else statement, nesting of IF....Else statements, the Else If ladder, the switch statement, the?: operators, the GOTO statement.

Decision making and looping: Introduction, The WHILE statement, The DO statement. The FOR statement, Jumps in loops.

UNIT -5

Array: Introduction, One-dimensional arrays, Two-dimensional arrays, Initializing two-dimensional arrays, Multimensional arrays.

Handling of Character Strings: Introduction, Declaring and initializing string variables, Reading strings from terminal, Writing strings to screen, Arithmetic operations on characters, Putting strings together, Comparison of two strings, String-Handling functions, Table of strings

BCA5 - ENVIRONMENTAL STUDIES

UNIT-1

The multi disciplinary nature of environmental studies :-
Defination, scope and importance
Nature for public awareness.
Natural Resources:
Renewable and nonrenewable resources:
Natural resources and associated problem:

a) forest resources: use and over-exploitation, deforestation, case studies timber extraction. mining, dams and their effects on forests and tribal people
b) Water resources : use and over-utilization of surface and ground water, floods, drought, conficts over water dams benefits and problems
c) Mineral resources : use and exploition environmental effects of extracting and using mineral resources, case studies
d) Food resources : world food problems changes caused by agriculture and overgrazing, effect of modem agriculture, fertilizer-pestic- ide problems water logging salinity, case studies
e) Energy resources: growing energy need ene wable and non renewable energy sources use of alternate energy sources. case studies
f) Land resources, Land as a resources, land degradation, man induced landslides, soil erosion and desertification

* Role of an individual in conservation of natural resources.
* Equitable use of resources for sustainable life-styles

UNIT-2

ECO-SYSTEMS

Concept of an ecosystem
Structure and function of an ecosystem.

- producers, consumers and decomposer
- energy flow in the ecosystem.
- ecological succession food chains, food webs and ecological pyramids.
- introduction, types, characteristic features, structure and function of the following ecosystem.
    (i) forest ecosystem
    (ii) grassland ecosystem
    (iii) deslt ecosystem
    (iv) aquatic ecosystem

UNIT-3

BIODIVERSITY AND ITS CONSERVATION

INTRODUCTION-

definition genetic, species and ecosystem diversity Biogeogaphical classification of India.

Value of biodiversity, consumptie use, productive use, productive use, social, ethical, aestheise and option values Biodiversity at global national and local levels India as mega diversity nation.

Threats to biodiversity habital loss, poaching of wildlife, manwildife conflicts.

Endangered and endemic spccies of India.

Conservation of biodiversity:in-situ and EX-situ conservation of biodiversity.

UNIT-4

ENVIRONMENTAL POLLUTION

DEFINITION

Causes, effccts and control measures of:-

- Airpollution
- Water pollution
- soil pollution
- Marine pollution
- Noise pollution
- thermal pollution
- Nucler hazards.
- Solid waste management : causes, effects and control measures of urban and Industrial wastes
- Role of an individual in prevention of pollution

Disaster management : floods, earthquake, cyclone and landslides

HUMAN POPULATION AND THE ENVIRONMENT

- Population growth, variation among nations
- Pulation explosion – Family Welfare Programme
- Environment and human health
- Human Rights

UNIT-5

SOCIAL ISSUES AND THE ENVIRONMENT

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Environmental ethics, Issues and possible solutions
- Climate change, global warming rain, ozone layer depletion, nuclear accidents and holocaust Case studies
- Wasteland reclamation
- Air Act
- Wildlife Protection Act
- Forest Conservation Act
- Public awareness.
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Case Studies.

BCA6 - COMMUNICATIVE ENGLISH

UNIT -1-

INTRODUCING COMMUNICATION:

Process & Element of communication, Objectives of communication, Media of communication, Types of communication, Barriers in communicaton, 7'Principals of communication, communication in organisation.

UNIT – II

AIDS TO CORRECT WRITING:

1- Grammar in use : errors of syntax with reference to parts of speech, Agreement of subject and verb, Tenses, Modals, Active and passive voice, connection.

2- Punctuation and the use of capital letters.

3- Foreign words & Phrases, spelling rules.

4- Words often confused, synonyms, Antonyms, on word subsitution.

UNIT – III

WRITTEN COMMUNICATION :
1- structure & Layout of letters : Element of structure, forms of Layout, Style of presentation, Plannin of Letter, Importance of Planning, Five steps to planning.

2- Sales Letters : Introduction, advantages, qualities of a sales letter, writing a sales letter.

3- Complaints & Adjustments : Making Claims, Offering adjustments.

4- Job Application letters : Importance & function, drafting the application, Preparing the resume, covering letter, Interview letters, References. Letter of Appointment, Testimonials, Promotion & retrenchment, Resignation letters.

5- Quatations, orders & Tenders:

UNIT -IV

REPORT WRITING 1:
1- Business reports: What is a report, characteristics of a good report, importance, types of business reports.

2- Structure of reports : Front matter, main body, back matter,

REPORT WRITING 2 :
1- Introduction, report by individual, report by committee.

2- Agenda & minutes of meeting.

Agenda, minutes, specimen agenda & minutes of various board meeting.

3- Copy writing for advertisement.

Introduction, characteristics of good advertisement, attractive & effective structure of advertisement, its type.

UNIT – V

ORAL COMMUNICATION :
Achiving desired clarity and fluency, effective speaking task oriented, inter-personal, informal and semi-formal speaking.

Meeting, seminar, conferences, interviews, presentation, audio-visual communication.

SEMESTER – II

BCA7 - DIGITAL COMPUTER AND ARCHITECTURE

UNIT-I
Digital computer and digital system, Binary number system: number base conversion . Compliments: one's, two's, 9's and 10's complements. Binary code: Gray BCD, ASCII, and error detection code.

Logic Gates: AND, OR, NOT, EX-OR, Universal gate. Logic Circuit . Boolean function: Rules and simplification, simplification of Boolean function using map method, Don't care condition.

UNIT-II
Combinational Circuits: Adders, Subtractors, Multiplexer, Demultiplexer, Decoder, Encoder.

Sequential Circuit: Flip-Flop: RS, Clocked RS, JK, D flip-flop, and Master-slave flip-flop

Register- Introduction, Shift register, serial Transfer & parlor Load.

Counters- Ripple Counter (Asynchronous), Synchronous Counters.

UNIT-III
Register Transfer, Bus and Memory transfer, Microoperation: Logic and Shift.

Instruction code: Instruction code, Direct and Indirect address. Interrupt and Interrupt cycle . Machine Language: Assembly language, assembler. Subroutines.

UNIT-IV

Control processing unit: general register organization, stack organization, polish notation.

Instruction Format: Three Address instruction, Addressing modes. RISC and CISC. Pipeline and its types.

UNIT-V

Computer Arithmetic: Addition and Subtraction with H/W algorithm, Multiplication algorithm, Booth Multiplication. Mode of transfer: DMA, DMA controller.

Memory Organization: Memory Hierarchy- Main memory, Auxiliary, Associative, catch, and Virtual memory.

BCA8 - ADVANCE PROGRAMMING IN C

UNIT -1

User- Defined Function: Introduction, Need for user- defined functions, A multi-function program, The form of C functions, Return values and their types, Calling a function, Category of functions, No Arguments and no return values, Arguments but no return values, Arguments with return values, Handling of non- integer functions, Nesting of functions, Recursion, Function with arrays, The scope and lifetime of variables in functions.

UNIT -2

Structure and Unions: Introduction, Structure definition, Giving values to members, Structure definition, Giving values to members, Structure initialization, Comparison of structure variables, Arrays of structures, Arrays within structures, Structures within structures, structures and functions, Unions, Size of structures, Bit fields.

UNIT -3

Pointers: Introduction, Understanding pointers, Accessing the address of a variable, Declaring and initializing pointers, Accessing a variable through its pointer, Pointer expressions, Pointer increments and scale factor, Pointers and arrays, Pointers and character strings, Pointers and functions, Pointers and structures, Points on pointers.

UNIT -4

File management in C: Introduction, Defining and opening a file, Closing a file, Input/Output operations on files, Error handling during I/O operations, Random access to files, Command line arguments.

Dynamic Memory Allocation and Linked List: Introduction, Dynamic memory allocation, Concepts of linked lists, Advantages of linked lists, Types of linked lists, Pointers revisited, Basic list operations, Application of linked lists.

The Preprocessor: Introduction, Macro substitution, File inclusion, Complier control directives, ANSI additions.

UNIT -5

Graphics in C:VDU Basic, Component of VDU, Display Adapter, Resolution, Colors in Various Mode(Graphics, CGA, EGA, VGA), Video Page, Displaying Character in VDU memory, Drawing Line, Drawing and filling Image

BCA9 - FUNDAMENTAL OF DATA STRUCTURES

UNIT-1

Introduction to Data Structures :Concept of Data, Data types, Data object, Data structure, Abstract Data types(ADT), Problem analysis, algorithm complexity, Big O notation and time space trade off.

UNIT-2

Linear Data Structures using sequential Organization :Concept of sequential organization, Concept of Linear and Non-Linear Data structures. What are Array, Memory Representation of array, Array Mathematics, Representation of sparse matrix using arrays, algorithm for sparse matrix addition transpose and time and space complexity analysis, for simple and fast transpose for sparse matrix

Stacks, Array representation of stack, PolishNotation, Recursion, Application of stack for expression conversion and recursion. Towers of Hanoi. Queues, Representation of Queues, Deques, Circuler Queues, Priority Queues

Linked Lists: Representation of Linked List, Basic operation on linked List, Single linked list, circular linked list, doubly linked list and dynamic storage management, generalized list, Garbage Collection.

UNIT-3

Non Linear Data Structures :Trees and binary trees-Concept and terminology. Data structures for binary trees, Algorithm for tree traversals (recursive and non recursive). Threaded Binary Tree, Inorder Threading, Binary Search Tree Searching, Inserting and deleting in Binary Tree, Huffman Algorithm, General Tree, B tree+ tree, AVL tree. Graphs: Concpets and terminology, Graph Theory Terminology, Sequential Representation of graphs using adjacency matrix, Path Matrix, Warshalls algorithm, Depth First search and Breadth First Search Algorithms for minimal spanning tree and shortest path, Operation on Graph, Traversing a graph. Topological Sort

UNIT-4

Searching and sorting : linear and binary search, insertion sort, selection sort, merge sort, bubblesort, quicksort, Heapsort.

UNIT-5

File Structure: Physical storage media, File Organization, Organization records into blocks, Sequential blocks, Indexing & Hashing, Primary Indices, Secondary Indices, B+ tree Index files, B tree index files, Static Hash functions, Indexing & hashing comparisons

BCA10 - RDBMS PROGRAMMING IN FOXPRO

UNIT-1

Introduction to DBMS: Database, Problem with manual database, Advantages of computerized database. Introduction to FoxPro: Create database, open database, Modify structure of database, Add Records to database, save database, view database. Editing Database: Browse, Edit, Close, delete, Recall, Pack, Zap, and Replace.

UNIT-2

Sorting & Indexing: Sorting, Indexing, Type of Index, difference between sort and Index. Finding Records: Find and Seek, Locate and continue, Set filter. Commands & Function: Mathematical Commands, Functions. FoxPro Tools: Report, Label, Set command.

UNIT-3

FoxPro Programming: Command file, Creating command file, using Accept input and wait, displaying and manipulating information, memory variables. The @ Command And Designing Screens: displaying and inputting data (@, say, get), Read, Range, default,, Validating GET variable. Loop Structure: do while-Enddo, Nested do while loops, Text-End text, making Decisions with if-End if, For-End for, Handling multiple choices with do case, Scan-End scan.

UNIT-4

ARRAYS: Defining one dimensional array, two dimensional arrays, Copying Arrays, Scatter and Gather. Errors & Program debugging: Errors in command mode, Errors in program debugging, commands and Techniques.Realting Multiple database: Concept of Multiple database, Relation: One to one, one to many, many to many, linking database with set realation, Updating information with update, joining two database with join.

UNIT-5

Windows, Menus & Popups:Defining and using user defined window, window characteristics, Creating a menu with @ Prompt, Creating Menu bar, Creating a Horizontal menu, defining and using popup, define bar, Using nested popups.SQL commands: SQL Commands, Creating Table, Insert, Delete, Update, Select. Procedures And Parameters: Procedures, Parameters.

BCA11 - FINANCIAL ACCOUNTING

UNIT 1

AN INTRODUCTION TO FINANCIAL ACCOUNTING :-
The quest for financial accounting knowledge, accounting cycle, accounting process, role of an accountancy in society, objective of booking and accountancy, merits and demerits of accounting, accounting principal :-concept and convention(GAAP), Introduction to journal, book of original record, journal, book-keeeping.

UNIT 2

THE RECORDING SYSTEM
Ledger, method of posting, closing and balacinh of accounting, sub-division of journal, trial balance meaning, object of preparing a trial balance, method of preparatiom of trial balance, errors disclosed by trial balance.

UNIT 3

THE TRADING AND PROFIT AND LOSS ACCOUNT:-
Objective, the trading and profit & loss account, difference between trial balance and trial balance sheet, marshling of balance sheet, preparation of trading and

With balance sheet, preparing final account from a trial balance

UNIT 4

DEPRICATION OF FIXED ASSETS
Objective, why charge deprication, the straight line method of depriciation, the reducing balance method of depreciation, depreciation of final assets

Ratio analysis:-The interpretation of financial statement, Obective, accounting ratio, the limitation of ratio analysis, types of accounting ratio's.

UNIT 5

FUND FLOW AND CASH FLOW STATEMENT:
Objective, why a fund flow, the flow of business funds, fund flow statement, cash flow objective, difference between fund flow and cash flow statement.

SEMESTER-III

BCA12 - INFORMATION TECHNOLOGY TRENDS

UNIT-I
Concepts of Information, Data Concept, Element of Data Processing, Special Application, Number System in Computer, Elements of Computer System, Classification of Computer System, Concept of Hardware, Concept of Software, Concept of Storage Devices And Data Communication Equipment

UNIT-II
Operating System: Concept of OS, Commands of DOS, Windows and GUI, Unix, Overview of Windows MS-DOS Directory, Communication Services Across Network Protocols.

UNIT-III
Computer and Communication: Introduction to Computer Network, Concept of LAN and WAN, Electronic mail, Concept of Network, Computer Distributed processing,

Real-Time and On-Line System, Processing.

UNIT-IV- FUNDAMENTALS OF PROGRAMMING LANGUAGES:
Classification of Programming Languages, Generation of Computer Languages. Principal of Data Security and Maintenance:

Concept of security, tools of security and Protection, Password, Hardware and Software Locks, preventive maintenance of computer systems, Trouble Shooting (Recovering from Viruses)

UNIT-V OVERVIEW OF INFORMATION TECHNOLOGY APPLICATIONS:
Concepts Scientific and Business Applications, Application with Social Impact, Multi-Lingual Application, Awareness of Ongoing IT Project in India

BCA13 - GUI PROGRAMMING IN VISUAL-BASIC

UNIT-I
Getting Started: Introduction to visual basic, Application wizard Visual basic environment :Tool Box and Components, Project explorer, Menu. Customizing a form: Initial Window, Property Window, form properties, code windows, tool -box, message-box, dialogues box. First Step in Programming:-cod window, List properties/ quickinfo, setting properties, variables, variables declaration, operators, colour system, multiple form, example program interest calculation

UNIT-II
Displaying information and controlling program flow: Font properties, format function, picture boxes, message box, rich text box, picture object, repeating operation, making decision, goto statement Built in Function :String function, numeric function, date and time function, pattern matching

UNIT-III
Procedure and error trapping :procedures, sub-procedures, passing values and references, error trapping

UNIT-IV
Organizing Information : Control array, One Dimension array, Array with more than one dimension, flex grid control

file system : sequential file organization, random file organization

UNIT-V
Working with Data bases: Using database control, programming with data control, database object Communication with other windows application: Clip Board, Dynamic data exchange (DDE), Object linking and embedding

BCA14 - DATABASE MANAGEMENT SYSTEM

UNIT-I
Introduction : Objective, early information system, problems with early information systems, organization of database, component of database management system, data models, entity relationship model, network data model, hierarchical data model, semantic data modeling Basic file system :Introduction :secondary storage device, basic terminology, files, buffer management .file organization : Sequential file organization, indexed sequential file organization, hashing key to address transformation, overflow management in hashed file

Additional file organization: B-tree based indexed file organization, secondary indexes, organization and usage, File organization based on dynamic hashing with deferred splitting, linear splitting.

UNIT-II
Relational Data Model :Introduction, Basic Definition and Terminology, realational algebra, ISBL-A pure relational algebra based query language, realational calculas, tuple calculas system, domain calculas system, structured English query language(SEQUEL or SQL) QUEL query language QBE (query by language) secondary indexing in evaluating relational algebric operation

UNIT-III
Relational database design :Introduction Integrity Constraints, functional dependency, logical implication of dependency, inference axioms for functional dependencies, covers of functional dependency, normal forms, decomposition of relational schema, design procedure, multivalues dependencies, join dependencies, closed family of dependencies.

UNIT-IV
Query processing and optimization :Query optimization by algebric manipulation, join algorithms, SQL query optimization strategies, query decomposition . Semantic and Object

Oriented data model:Inroduction, relational models does not offer suffuiciently, rich conceptual model, features of different semantic models. object oriented model

UNIT-V

Network and hierarchical database system :

Network data model, hierarchical database systems.

Security :introduction, accsess control, cryptosystems, statistical database security . Concurrency control and database recovery : transaction, database system architecture, Serializability, locking, non-locking schedulers, database recovery Distributed database : Structure of distributed databases, data model, query processing, join processing, query processing in SDD-I, A system for distributed database, distributed Query processing in R, concurrency control R, concurrency control, recovery in distributed databases.

BCA15 - COMPUTER NETWORKING AND LAN

UNIT-I

INTRODUCTION:DATA COMMUNICATION:-Data Representation, Components of Network, What is Networks, Interconnection of Networks, Intranet, Communication system, Analog and Digital Data & Signals, Communication Channels, syschronous and Asyschronous, Advantages and Disadvantages of Network.

UNIT-II

NETWORK MODELS: OSI AND TCP/IP Network LAYERS.

PROTOCOLS: Backbone Network, Repeater, Bridge, Routers, Hubs & Gateways. TRASMISSION MEDIA: Guided & Unguided Media, Digital and Analog Conversion, Transmission Modes, Multiplexing: TDM & FDM, WDM.

UNIT-III

NETWORK SWITCHING: Circuit, Packet, Datagram & Virtual Circuit Networks. DATA NETWORKS: Different Types of TOPOLOGY, Logical Types of TOPOLOGY.DATA MODEMS: Types of Modulation, Baseband & Broadband Transmission.

UNIT-IV

DATA LINK CONTROL: Framing, Noisy & Noise Free Channels, Go-Back-N Sliding Window Protocols. ETHERNET: IEEE Standards, Standard Ethernet, Bluetooth. How FDDI Works, FDDI Protocols. SATELLITE NETWORKS: Polling, ALOHA, CDMA..

UNIT-V

NETWORK LAYER: IP v4 & IP v6 Architecture, ICMP & IGMP Messages. NETWORK SECURITY: Cryptography, Digital Signature, DNS, Electronic mail Architecture. Process-to Process Delivery: Clint/Server Paradigm, UDP, TELNET, DATA TRAFFIC, CONGESTION CONTROL. WWW & HTTP.

BCA16 - MANAGEMENT SKILLS-I

UNIT 1:-

Meaning and definition of management, characteristics function, process, advantages of management, principal of management, F.W Taylor and Faylos, managerial role, managerial skills, management level.

UNIT 2:-

Planning, characteristics of good planning, planning procedure.

UNIT 3:-

Organization, characteristics of organization, importance of organization, forms of organization, process of organization, essential points of ideal organization.

UNIT 4:-

Meaning of staffing, importance of staffing, recruitment of personal, recruitment policy, source of recruitment, selection of employee, selection process, distinction between recruitment and selection of personal, Direction –nature and concept

UNIT 5:-
Motivation, characteristics of motivation, importance of motivation, motivation theory, controlling, characteristics of control, objective of control, importance of control method of control, process of control

SEMESTER - IV

BCA17 - OPERATING SYSTEM

UNIT-I
Operating System : operating system, operating enviroment, history of operating system operating system component, operating system service, types of operating system,

Operating system interaction, interaction, important operating systems.

UNIT-II
Process management and deadlock

Introduction, definition of process, process scheduling, operation on process, interprocess communication

Process Scheduling : Basic concept, Scheduling criteria scheduling algorithm, multiple processor scheduling

Dead lock: System model, deadlock characterization, method of handling deadlock, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock

UNIT III
Memory management and file System

Introduction, swapping, contiguous memory allocation, paging, segmentation Virtual Memory :Definition of virtual memory, Demand paging, Copy on write, page replacement, allocation of frame, thrashing, memory mapped file.

File System: file concept, Access method, Directory structure, file system mounting, file sharing, protection, file system Structure, file system implementation, directory implantation, allocation method, NFS.

UNIT –IV
File Management and I/O System

File Sytem: file concept, Access method, Directory structure, file system mounting, file sharing, protection, file system Structure, file system implementation, directory implantation, allocation method, NFS.

I/O System: Introduction, I/O hardware, application I/O interface, kernel I/O subsystem, streams

UNIT-V
Introduction to unix : history of unix, why unix, unix components, logging on to unix system, using unix commands, terminal control keys, changing your pass word getting help.

Unix file organization : file types, file names, file and directory commands, file access permission, standard unix file system, command summary

Text editor : the standard editor VI, VI provides commands for escape mode, VI commands, setting the VI environment .

The Unix shell the shell, redirection and piping, metacharacter, shell variable, shell programs, commands line argument.

System administration: responsibilities, super user, about devices connected with the system, process termination, message of the day, displaying free space, wall command, tar command, adding of removing user, shutdown the system.

BCA18 - OOPS PROGRAMMING IN C++

UNIT-I

Introduction:-look at the procedure oriented programming language, object oriented programming paradigm, basic concept of oops, benefit of oops, comparison between procedure oriented and oops.

Beginning with C++:-definition of C++, Structure of C++ program, Application of C++, simple C++ program.

DATA TYPE:-Basic data type in C++, tokens, identifier, constant, variable, type compatibility, reference variable.

Operators in C++:-Memory management operator, manipulators, type cast operators.

Control structure in C++:-

Selection structure in C++:-if statement, if…….else statement, switch statement

Loop structure in C++:-for loop, while loop, do while loop.

UNIT-II:-

FUNCTION :-Main in C++, types of function.

Function calling:- call by reference, call by value .Inline function, Default argument, Const argument Friend function

Class and Object:-What is class, Difference between class and structure, specifying class, Defining class members, making an outside function inline, nesting of member function, nesting of member function, Array within the class definition of object, creating object, accessing class members, Static data members, static member function, array of object, object as function argument.

UNIT-III:-

Constructors and Destructors:- what is constructors,

types of constructors:-parameterized constructors, dynamic constructors, copy constructors, Multiple constructors in class, Dynamic initialization of object, destructors.

Operators overloading :what is operators overloading, overloading unary operators, overloading binary operators, rules of overloading operators, type conversion.

UNIT-IV :-

Inheritance : definition and advantage of inheritance, types of inheritance, Defining derived class, Virtual base class, Abstract class, constructors in derived class, destructors .

Pointers, virtual Function and polymorphism : pointers to object, this pointers, pointer to derived class, virtual function, pure virtual function

Managing console I/O operation :C++ streams, C++ Stream classes, Unformatted I/O operation, formatted console I/O operation, managing output with manipulators.

UNIT-V:-

Working with file :-Classes for file stream operation, opening and closing a file, detecting end of file, more about open(), file modes, file pointers and their manipulators, sequential input and output operation, updating a file : random access, error handling during file operation, command-line argument.

Exception Handling :-Basics of exception handling, exception handling mechanism, throwing mechanism, catching mechanism, rethrowing an exception, specifying exception

BCA19 - INTERNET & WEB TECHNOLOGY

UNIT-I

Internet Basics: Introduction, Brief History of Internet, Evolution of Internet, How does Internet work, Applications of Internet, Intranet, Extranet.

Internet Connectivity: Dial-up Connection, Broadband Connection, Wireless Connection (Wi-Fi, WiMax).

Internet Addressing: IP Address, Domain Name System, Internet Service provider (ISPs), URL, WWW.

UNIT-II

E-MAIL: How E-Mail works, E-Mail address, Advantages & Limitation of Mail, Creating an E-Mail Account, Viewing Received E-Mail, Replying or Forwarding an E-Mail Message, Structure of en E-Mail Message, Sending an E-Mail, Attaching file with an email message.

Internet Tools: Web Browsers, Search Engine, BLOGS, Social Networking, News Group, Gopher, Archie.

UNIT-III

Internet Protocols: TCP/IP, SMTP/POP, SLIP/PPP, SMTP.

File Transfer Protocol (FTP), FTP Terminology, Types of FTP Servers. Telnet, How Telnet works. Hypertext transfer Protocol (Http).

UNIT-IV

HTML: Introduction, History of HTML, How HTML works, HTML Documents structure, HTML Tags.

Elements of HTML: HTML element, Head element, Title element, Body element, Text formatting tags, List element, Image element, Table element, Hyperlinking.

BCA20 - LINUX OPERATING SYSTEM

UNIT-I

Introduction to linux: basic feature OS, advantage of using linux installing reqirements, partitioning the hard drive for linux, installing the linux system, system shut down, basic architecture of unix/linux system, kernel, . shell, unix file system .

UNIT-II:-

Managing the file system : understanding the file and directory system, linux standard directories, command for file and directories cd, ls, cp, rm, mkdir, rmdir, more, less creating and viewing file, using cat, file comparison.

UNIT-III:-

Linux commands :-understanding shells, understanding process, connecting process with pipes, redirecting input output, manual help, background processing, managing multiple process, kill, ps, who, sleep, printing, commands, grep, ofgrep, find, sort vi-editor.

UNIT-IV:-

System administrator :command administrative tasks, centralized processing system and distributed processing system, the client/server model, managing user accounts adding a user, password, creating group, adding and deleting a group, modifying group attributes, managing user account.

UNIT-V:-

Security and Networking :-file security and permission, becoming super iser using su, administrative tasks, the network file system, configuring ethernet

BCA21 - MANAGEMENT SKILL-II

UNIT 1:-

Organization behavior, concept, significance, organization design and structure

UNIT 2:-

Understanding and managing individual behavior, personality – definition and concept of personality, determination of personality, theory of personality, scale of personilty, perception concept, values and attitude

UNIT 3:-

Group dynamics, group decision, making leader ship, style theory.

UNIT 4:-

Organizational conflict source, pattern level and types of conflict, stress management

UNIT 5:-

Communication – types of communication, process, barriers of communication, globalization.

SEMESTER V

BCA22 - COMPUTER ARCHITECTURE

UNIT –I
Representation of information: number system, integer and floating point representation character codes(ASCII, EBCIDIC), error detection and correction codes.

Basic building blocks, Boolean algebra, combinational blocks, gates, multiplexes, decoders.

UNIT-II
Sequential building blocks : flip-flop, registers, counters, ALU, Random Access memory, Register transfer language and Micro-operation, concept of bus, data movement among register, a language to represent conditional data transfer, data movement from / to memory, arithmetic and logical operation along with register transfer, timing in register transfer.

UNIT-III
Architecture of simple processor : A Simple computer organization and instruction set, instruction formats, addressing modes, instruction execution in terms of microinstruction.

UNIT –IV
Concept of interrupt and simple I/O Organization, implementation of processor using the building blocks

BCA23 - MULTIMEDIA TOOLS & APPLICATIONS

UNIT –I
Introduction : definition, where to use multimedia, Introduction to making multimedia, multimedia skills, project manager, multimedia designer, interface designer

UNIT –II
Multimedia hardware and software : Macintosh an windows production platform, basic software tools, making instant multimedia, multimedia authoring tools.

UNIT –III

Multimedia building blocks: Text, sound, images, animation, vide

UNIT –IV
Multimedia and internet : the internet and how it work, tools for the world wide web designing fo the world wide web.

UNIT-V
Assembling and delivering a project : Planning and costing, designing and production content and telnet, delivering .

BCA24 - PROGRAMMING IN JAVA

UNIT-1
Fundamentals of object-oriented Programming : Introduction, Object-Oriented Programming, Basic concepts of object- oriented programming, Benefits of OOP, Applications of OOP.

JAVA Evolution: Java History, Java Features, How Java differs from C and C++, Java and Internet, Java and World Wide Web, Web Browsers, Hardware and Software Requirements, Java Support Systems, Java Environment.

Overview of Java Language : Introduction, Simple Java Program, More of Java, An application with two classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java virtual machine, command line arguments, Programming style.

Constants, variables and Data Types : Introduction, Contents, Variables, Data Types, declaration of variables, Giving values of variables, Scope to variables, Symbolic constants, Type casting, Getting values of variables, Standard default values

Operators and Expressions : Introduction, Arithmetic operators, Relational Operators, Logical operators, Assignment operators, Increment and decrement operators, conditional operators, Bitwise operators, Special operators, Arithmetic

Expressions, evaluation of expressions, precedence of arithmetic operators, type conversions in expressions, operator precedence and associatively, Mathematical functions.

Decision Making and Branching : Introduction, decision making with if statement, simple if statement, The if....else statement, nesting of if.....else statements, The else if ladder, The switch statement, The : operator.

Decision Making and Looping : Introduction, The while statement, The do statement, The for statement, jumps in loops, Labeled Loops.

UNIT-2

Classes, Objects and Methods : Introduction, defining a class, adding variables, adding variables, adding methods, creating objects, accessing class members, constructors, methods overloading, static members, nesting of methods, Inheritance: extending a class, overriding methods, final variables and methods, final classes, Finalizer method, Abstract methods and classes, visibility control.

Arrays, Strings and Vectors : Arrays, one-dimensional arrays, creating an array, two dimensional arrays strings, vectors, wrapper classes.

UNIT-3

Interfaces : Multiple Inheritance : Introduction, defining interfaces, extending inter-Faces, implementing interfaces, accessing interface variables.

Packages : Putting classes together : Introduction, java API packages, using system Packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package, hidings classes.

Multithreaded Programming : Introduction, creating threads, extending the thread class, stopping and blocking a thread, life cycle of thread, using thread methods, thread exception, thread priority, synchronization, implementing the 'Run able' Interface.

Managing Errors and Exceptions : Introduction, Types of errors, exceptions, syntax of exception handling code, multiple catch statements, using finally statement, Throwing our own exceptions, using exceptions for debugging.

UNIT-4

Graphics programming using AWT: Component, Windows and Frame, Creating a Frame, Event Delegation Model, Drawing in a Frame, Displaying text in a Frame, Displaying Image in Frame, Listeners, Working With Several Frame

Applet Programming : Introduction, how applets differ from applications, preparing to write applets, building applet code, applet life cycle, creating an executable applet, designing a web page, applet tag, adding applet to HTML file, running the applet, more about applet tag, passing parameters to applets, aligning the display, more about HTML tags, displaying numerical values, getting input from the user.

UNIT-5

Managing Input/Output Files in Java : Introduction, concept of streams, stream classes, byte stream classes, character stream classes, using streams, other useful I/O classes, using the file class, Input/output exceptions, creation of files, reading / writing characters, reading / writing bytes, handling primitive data types, concatenating and buffering files, random access files, interactive input and output, other stream classes

BCA25 - ORACALE RDBMS

UNIT – I

RDBMS concept : Introduction to network, hierarchical and relational models, DBMS terminology, DBMS component, normal notation(1st, 2nd, 3rd), ER-diagram, data (Integrity, security, backup, recovery)

UNIT-II

Interactive SQL Invoking SQL * plus, the oracle data type –two dimension matrix creation, insertion of data into tables, updating data into tables, updating the content of table, deletion operation, the many faces of the select commands, modifying the structure of table, removing /defeating /dropping tables, date constraints, computation in expression, lists used to select data, logical operators, range searching, pattern matching, oracle function, grouping data from tables in SQL manipulating data in SQL joins, constructing an English sentence with data from table content.

UNIT-III

Sub queries, using the union, interest and minus clause indexes, views, sequences, granting permission, revoking the permission given, creation of report in SQL* plus . PL/SQL: Introduction, the PL/SQL execution, the PL/SQL syntax, understanding the PL/SQL block structure, oracle transaction, concurrency control in oracle, locks and cursors, error handling in PL/SQL.

UNIT-IV

Stored Procedure, procedure, declarative part, executable part, exception handling part, where do procedure resides, creating a procedure, executing procedure, advantages of procedure, syntax for creating stored procedure.

UNIT –V

Stored Function : where do function resides, creating a function, executing a function, advantage of function, syntax for creating a stored function, deleting a stored procedure .

Data base triggers: Introduction, Use of database triggers, database trigger, types of triggers, syntax for creating and deleting a trigger.

BCA26 - THEORY OF COMPUTATION

UNIT –I

Review of mathematical preliminaries, relation, function, set theory, predicate and prepositional calculus, principal of mathematical induction /strong mathematical induction.

UNIT –II

Formal language, phase structured grammar and their classification, chomskey hierarchy, closure properties of families of language, regular grammar, regular expression properties of regular sets, finite automata, DFA, 2DFS, FSM with output, determinism and non determinism, FA minimization and related theorems.

UNIT-III

Context free grammars and its properties, derivation tree simplifying CFG, unambiguifying CFG, CNF and GNF of CFG, push down automata, 2 way PDA, relation of PDA wirth CFG, determinism and non determinism in PDA and related theorems.

UNIT-IV

Concept of linear bounded automata, context sensitive grammars and their equivalence .

UNIT –V

Unrestricted grammar and their equivalence with TM, determinism and non determinism in TM, TM as acceptor/generator /algorithm and related theorems, Multi tape, multi head, multi track, TM, automata with two push down store and related theorems, introduction to complexity theory, recursively enumerable sets, recursive set, partial recursive sets, russell's paradox, undesirability and some non-computable problems

BCA 27 : PROJECT

COUNSELING AND STUDY STRUCTURE

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counseling and Study Structure (hours)				Project
					Face to Face Counseling	Self study	Practical	Assignments	
Semester I									
1	BCA 1	Fundamental of Computer& information Technology	3	90	12	51	-	27	-
2	BCA 2	PC Packages	3	90	12	33	18	27	-
3	BCA 3	Programming Logic and Design	3	90	12	33	18	27	-
4	BCA 4	Programming in C	3	90	12	33	18	27	-
5	BCA 5	Environmental Studies	2	60	8	34	-	18	-
6	BCA 6	Communicative English	2	60	8	34	-	18	-
Semester II									
7	BCA 7	Digital Computer & Architecture	3	90	12	33	18	27	-
8	BCA 8	Advanced Programming in C	3	90	12	33	18	27	-
9	BCA 9	Fundamental of Data Structure	4	120	16	44	24	36	-
10	BCA 10	RDBMS Programming in FoxPro	3	90	12	33	18	27	-
11	BCA 11	Financial Accounting	3	90	12	51	-	27	-
Semester III									
12	BCA 12	Information Technology Trends	3	90	12	33	18	27	-
13	BCA 13	GUI programming in Visual Basic	3	90	12	33	18	27	-
	BCA 14	Database Management System	4	120	16	44	24	36	-
	BCA 15	Computer Networking and LAN	3	90	12	33	18	27	-
	BCA 16	Management Skill - I	3	90	12	51	-	27	-
Semester IV									
	BCA 17	Operating System	3	90	12	33	18	27	-
	BCA 18	OOPs Programming in C++	4	120	16	44	24	36	-
	BCA 19	Internet and Web Technology	3	90	12	33	18	27	-
	BCA 20	Linux Operating System	3	90	12	33	18	27	-
	BCA 21	Management Skill - II	3	90	12	51	-	27	-
Semester V									
	BCA 22	Computer Architecture	4	120	16	44	24	36	-
	BCA 23	Multimedia Tools & Applications	4	120	16	44	24	36	-
	BCA 24	Programming in Java	4	120	16	44	24	36	-
	BCA 25	Oracle RDBMS	4	120	16	44	24	36	-
	BCA 26	Theory of Computation	4	120	16	44	24	36	-
Semester VI									
	BCA 27	Project	12	360	-	-	-	-	360

STUDY MODULES AND BOOKS INFORMATION

Course Code	Name of the Course	Books / Modules to be used
Semester-I		
BCA 1	Fundamental of Computer& Information Technology	• AISECT Module, S01/S02 H,AISECT,AISECT,[H] • AISECT Module S01/S02,AISECT,AISECT,[E]
BCA 2	PC Packages	• AISECT Module S18/S19/S20 H,AISECT,AISECT,[H] • AISECT Module S18/S19/S20,AISECT,AISECT,[E]
BCA 3	Programming Logic and Design	• AISECT Module S05/S07 H,AISECT,AISECT,[H] • AISECT Module S05/S07,AISECT,AISECT,[E]
BCA 4	Programming in C	• Programming in C,Dandin,Pragya Publications,[E] • Programming in C (Hindi) ,Dandin,Pragya Publications,[H]
BCA 5	Communicative English	• Essentials of Business Communication,Rajendra pal,Sultan Chand & Company,[E] • Essentials of Business Communication ,Rajendra pal,Sultan Chand & Company,[H]
BCA 6	Environmental Studies	• Textbook of Environmental Studies for Undergraduate Courses,[E]rach Bharucha,Universities Press,[E] • Parya varan Ek Parichaya,Santosh Shukla,Dr. N.K.Tiwari,AISECT,[H]
Semester-II		
BCA 7	Digital Computer & Architecture	• Computer Architecture,Sheetanshu Rajoriya,Pragya Publications,[E] • Computer Architecture,Sheetanshu Rajoriya,Pragya Publications,[H]
BCA 8	Advanced Programming in C	• Advance Programming in C,Dandin,Pragya Publications,[E] • Advance Programming in C (Hindi) ,Dandin,Pragya Publications,[H]
BCA 9	Fundamental of Data Structure	• Data Structure,N.K.Tiwari & Shailesh Pandey,Ram Prasad & Sons,[E] • Introduction to Data Structure (Hindi),Dandin,Pragya Publications,[H]
BCA 10	RDBMS Programming in FoxPro	• AISECT Module S05/S07 H,AISECT,AISECT,[H] • AISECT Module - RDBMS Programming in FoxPro S05/S07,AISECT,AISECT,[E]
BCA 11	Financial Accounting	• Essentials of Financial Accounting,Ashish k Bhattacharya,PHI,[E] • Essentials of Financial Accounting,Ashish k Bhattacharya,PHI,[H]
Semester-III		
BCA 12	Information Technology Trends	• AISECT Module S01/S02 H,AISECT,AISECT,[H] • Information Technology Trends S01/S02,AISECT,AISECT,[E]
BCA 13	GUI programming in Visual Basic	• AISECT Module,AISECT,AISECT,[H] • GUI programming in Visual Basic,AISECT,AISECT,[E]
BCA 14	Database Management System	• Concepts of DBMS, Nitin Nayak,Kamal Prakashan,[E] • Concepts of DBMS, Nitin Nayak,Kamal

		Prakashan,[H]
BCA 15	Computer Networking and LAN	• Insight Into Computer Networks,Ekta Gupta,Pragya Publications,[E] • Insight into Computer Networks (Hindi),[E]kta Gupta,Pragya Publications,[H]
BCA 16	Management Skill - I	• Developing Managerial Skills in Organisational Behaviour,Mainiero &Tromley,Pearson Education,[E] • Principles of Management (Hindi),Dr. Mukti Jain,Pragya Publications,[H]
Semester-IV		
BCA 17	Operating System	• Principals of Operating Systems,Santosh Shukla,Ram Prasad & Sons,[E] • Overview of Operating System (Hindi),Chaturvedi & Jain,Pragya Publication,[H]
BCA 18	OOPs Programming in C++	• Insight Into OOPS and C++,Shukla,Pragya Publications,[E] • Insite into OOPS & C++(Hindi),Shukla, Pragya Publication,[H]
BCA 19	Internet and Web Technology	• HTML, Front Page S27/S37/S40 H,AISECT,AISECT,[H] • Internet, HTML, Front Page S27/S37/S40,AISECT,AISECT,[E]
BCA 20	Linux Operating System	• Linux & Server Administration, Seetha,Pragya Publications,[E] • Linux & Server Administration (Hindi),Seetha,Pragya Publications,[H]
BCA 21	Management Skill - II	• Developing Managerial Skills in Organisational Behaviour,Mainiero &Tromley,Pearson Education,[E] • Sangthanatmak Vyavhar (Hind),Jain,Kailash Pustak Sadan,[H]
Semester-V		
BCA 22	Computer Architecture	• Computer Architecture,Sheetanshu Rajoriya,Pragya Publications,[E] • Computer Architecture (Hindi),Sheetanshu Rajoriya,Pragya Publications,[H]
BCA 23	Multimedia Tools & Applications	• Multimedia at Run,Rajeshwar Shukla,Pragya Publications,[E] • Multimedia at Run (Hindi),Rajeshwar Shukla,Pragya Publications,[H]
BCA 24	Programming in Java	• Concept of Programming in Java (Hindi),Seetha & Rastogi,Pragya Publications,[H] • Concept of Programming in Java,Seetha & Rastogi,Pragya Publications,[E]
BCA 25	Oracle RDBMS	• AISECT Module – RDBMS and SQL S38 H,AISECT,AISECT,[H] • AISECT Module – RDBMS and SQL S38,AISECT,AISECT,[E]
BCA 26	Theory of Computation	• Theory of Computation,Natrajan,Tamilarsi & Balasubramani,New Age International Publishers,[E] • Theory of Computation,Natrajan,Tamilarsi & Balasubramani,New Age International Publishers,[H]
Semester-VI		
BCA 27	Project	•

DATE SCHEDULE AND INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	**Assignment No.**	**Due Date**
First Semester	BCA (1) BCA (2) BCA (3) BCA (4) BCA (5) BCA (6)	• April 30 (for January Session) • October 31 (for July Session)
Second Semester	BCA (7) BCA (8) BCA (9) BCA (10) BCA (11)	• October 31 (for July Session) • April 30 (for January Session)
Third Semester	BCA (12) BCA (13) BCA (14) BCA (15) BCA (16)	• April 30 (for January Session) • October 31 (for July Session)
Fourth Semester	BCA (17) BCA (18) BCA (19) BCA (20) BCA (21)	• October 31 (for July Session) • April 30 (for January Session)
Fifth Semester	BCA (22) BCA (23) BCA (24) BCA (25) BCA (26)	• April 30 (for January Session) • October 31 (for July Session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (MSCIT)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

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MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (MSCIT))

Duration : 24 Months Eligibility : Graduate in relevant Subject

Scheme of Examination

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical Marks		Assignments	
				Max	Min	Max	Min	Max	Min
FIRST YEAR									
MSCIT 1	Fundamentals Of Computers And Information Technology	4	100	70	26	-	-	30	11
MSCIT 2	Data Communications and Computer Networking	4	100	50	18	20	8	30	11
MSCIT 3	Data Structure Using C	5	100	50	18	20	8	30	11
MSCIT 4	Object Oriented Programming in C ++	5	100	50	18	20	8	30	11
MSCIT 5	Data Base Management System	5	100	50	18	20	8	30	11
MSCIT 6	Programming In Visual Basic.Net	5	100	50	18	20	8	30	11
MSCIT 7	Discrete Mathematics	4	100	50	18	20	8	30	11
Total			**700**	**370**	**148**	**120**	**48**	**210**	**84**
SECOND YEAR									
MSCIT 8	Computer Architecture	4	100	50	18	20	8	30	11
MSCIT 9	Numerical Method and Statistical Analysis	4	100	50	18	20	8	30	11
MSCIT 10	Software Engineering	5	100	50	18	20	8	30	11
MSCIT 11	Core Java	5	100	50	18	20	8	30	11
MSCIT 12	Microprocessor and Assembly Language	5	100	50	18	20	8	30	11
MSCIT 13	Computer Graphics	4	100	50	18	20	8	30	11
MSCIT 14	Advanced Java	5	100	50	18	20	8	30	11
Total			**700**	**350**	**140**	**140**	**56**	**210**	**84**

Evaluation Scheme

1. 36% in each theory, practical, project, dissertation & internal assessment

2. 40% Aggregate marks to pass

FIRST YEAR

MSCIT1 – FUNDAMENTALS OF COMPUTERS AND INFORMATION TECHNOLOGY

Unit-1

Brief history of computer, Definition of computer, characteristics of computer, applications of computer, computer v/s calculator, computer Vs human being, Types of computers Generations of computers, Basic components of a computer system - Control unit, ALU, Input/Output their functions and characteristics. instruction cycle of computer.

Personal Computer (PCs) – evolution of PCs, configurations of PCs- PC/XT, AT, 486, Pentium computers and Newer, PCs, Motherboard and its various sections, use of Expansion slots and various types of extension cards, Introduction and main capabilities & characteristics of new microprocessors--Dual core, Core 2 duo and quad core processors, Memory –primary and secondary types of memory RAM, ROM, EPROM, PROM, Cache Memory, SDRAM, DDR, DDR2 etc.

Unit-2

Input/Output & Storage Units-: Introduction, types, functions and working principles of various I/O devices like - Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners,

Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers and its types – Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Multi Functions Devices (MFD), Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Index Sequential and Direct Access, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW.

Unit-3

Software and its Need, Types of Software - System software, Application software, Utility Software, System Software - Operating System, Programming languages, Assemblers, Compilers and Interpreter, Introduction to various operating system for PCs—DOS, Windows, Linux etc.

File System basics – File Allocation Table (FAT & FAT 32), NTFS and ext3 file systems, files & directory structure and its naming rules, booting process details of DOS and Windows, DOS system files.

Unit-4

Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, Graphics, Browsers, E-mail clients, Report Writers etc., characteristics, Uses and examples and area of applications of each of them.

Computer Virus - working principles, Types of viruses, virus detection and prevention, viruses on network, Viruses on Windows and Linux.

Unit-5

Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet & its working. Various services of Internet.

Computer Applications in Business-Need and Scope, Computer Applications in daily life, Sales, Marketing, advertising, GIS, Multimedia, Computer Applications in Classes, Virtual Classrooms, Computer applications in Offices, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing. Use of computers in common public services and e-governance. Various e-governance initiatives in India.

MSCIT2 - DATA COMMUNICATION AND COMPUTER NETWORKING

UNIT-I

Introduction: uses of computer networks, network hardware, network software, reference models, example networks, network standardization, metric units.

UNIT-II

The physical layer: the theoretical basis for data communication, guided transmission media, wireless transmission, the public switched telephone network, the mobile telephone system, cable television.

UNIT-III

The data link layer: the data link layer design issues, detection and correction, elementary data link protocols, sliding window protocols, protocol verification, example data link protocols

UNIT-IV

Medium access control sublayer: channel allocation problem, multiple access protocols, ethernet, wireless lans, broadband wireless, bluetooth, data link layer switching.

The network layer: network layer design issues, routing algorithms, congestion control algorithms, quality of service, internetworking, the network layer in the internet.

The transport layer: the transport service, elements of transport protocols, simple transport protocol, the internet transport protocols: udp the internet transport protocols: tcp, performance issues

UNIT-V

The application layer: dns- the domain name system, electronic mail, the world wide web, multimedia

Network security: cryptography, symmetric-key algorithms, public-key algorithms, digital signatures, management of public keys, communication security, authentication protocols, e-mail security, web security, social issues.

MSCIT3 - DATA STRUCTURE USING C

UNIT-I

Introduction: Introduction to Algorithm, Abstract Data type and Data Structure, Analysis of Algorithm, Asymptotic of Notation, verification of algorithm.

Arrays: Introduction, ordered list & arrays, 2- dimensional array, Representation of polynomials, sparse, matrix representation, representation of multidimensional array.

UNIT-II

Linked Lists: Introduction, Implementation of linked list, Data type Structure using pointer data types, Doubly linked list, circular list, array representation of linked lists, Dynamic Memory Management, shared & recursive lists.

Stacks and Queues: Introduction, array representation, linked list representation of stacks and queues, application of stack, application of queue.

UNIT-III

Strings: Introduction, strings as an ADT, representation of string, string searching algorithms.

Recursion: Introduction, simple recursion and recursion free, divide and conquer, tower of Hanoi, permutation generation, removal of recursion.

UNIT-IV

Trees: Introduction, Definition, Binary Tree, Array representation, Binary Tree Traversal, properties of Binary Tree, Binary Search Tree.

Advanced Trees: Introduction, AVL Tree, insertion, deletion from an AVL Tree, B-Trees, Definition, Searching a B-tree, insertion deletion from B-Tree, priorty queues, heaps, construction of Heaps.

UNIT-V

Searching and sorting: Introduction, sequential search linear search, binary search, internal sorting, sorting methods, shuttle sort, straight insertion sort shell sort, simple selection sort, straight selection sort bubble sort, quick sort, merge sort, heap sort, hashing, hash function.

Elementary Graphs: Introduction, definition, representation, traversal of graphs, shortest path.

MSCIT4 - OBJECT ORIENTED PROGRAMMING IN C++

UNIT-I

Principles of Object-Oriented Programming: Software Crises, Software Evolution, A Look at Procedure-Oriented Programming, Object-Oriented Programming Paradigm, Basic Concepts of Object-Oriented Programming, Benefits of OOP, Object-Oriented Languages, Applications of OOP

Beginning With C"++: What is C++ ?, Applications of C++ Simple C++ Program, More C++ Statements, An Example with Class, Structure of C++ Program, Creating the Source File, Compiling and Linking

Tokens, Expressions and Control Structures: Introduction, Tokens, Keywords, Identifiers and Constants, Basic Data Types, User-Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Their Types, Special Assignment Expressions, Implicit Conversions, Operator Overloading, Operator Precedence, Control Structures.

UNIT-II

Functions in C++: Introduction, The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, const Arguments, Function Overloading, Friend and Virtual Functions, Math Library Functions.

Classes and Objects: Introduction, C Structures Revisited, Specifying a Class. Defining Member Functions, AC++ Program with Class, Making an Outside Function Inline, Nesting of Member Functions, Private Member Functions, Arrays within a Class Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friendly Functions, Returning Objects, const Member Functions, Pointers to Members, Local Classes

UNIT-III

Constructors and Destructors: Introduction, Constructors, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, constructing Two-Dimensional Arrays, const Objects, Destructors.

Operator Overloading and Type Conversions: Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Binary Operators Using Friends, Manipulation of Strings Using Operators, Rules for Overloading Operators, Type Conversions.

UNIT-IV

Inheritance: Extending Classes: Introduction, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructors in Derived Classes, Member Classes: Nesting of Classes

Pointers, Virtual Functions and Polymorphism: Introduction, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.

Managing Console I/O Operations: Introduction, C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with manipulators

UNIT-V

Working With Files: Introduction, Classes for File Stream Operations, Opening and Closing a File, Detecting End-of File, More about Open(): File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling During File Operations, Command-Line Arguments.

MSCIT5 – DATA BASE MANAGEMENT SYSTEM

UNIT-I

Introduction: Database System Applications, Database System versus File Systems, View of Data, Data Models, Database Languages, Database Users and Administrators, Transaction Management, Database System Structure, Application Architectures, History of Database Systems

Data Models: Entity- Relationship Model, Basic Concepts, Constraints, Keys, Design Issues, Entity-Relationship Diagram, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables, The Unified Modeling language UML

Relational Model: Structure of Relational Database, The Relational Algebra, Extended Relational-Algebra Operations, Modification of the Database, Views, The Tuple Relational Calculus, The Domain Relational Calculus.

RELATIONAL DATABASES: Background, Basic Structure, Set Operations, Aggregate Functions, Null Values, Nested Subqueries, Views, Complex Queries, Modifications of the Database, Jointed Relations, Data-Definition Language, Embedded SQL, Other SQL Features

UNIT-II

Other Relational Languages: Query-by-Example, Datalog, User Interfaces and Tools

Integrity and Security: Domain Constraints, Referential Integrity, Assertions, Triggers, Security and Authorization, Authorization in SQL, Encryption and Authentication

Relational-Database Design: First Normal Form, Pitfalls in Relational-Database Design, Functional Dependencies, Decomposition, Desirable Properties of Decomposition, Boyce-Codd Normal Form, Third Normal Form, Fourth Normal Form, More Normal Forms, Overall Database Design Process

Object-Based Databases: Object-oriented Databases: Need for Complex Data Types, The Object-Oriented Data Model, Object-Oriented Languages, Persistent Programming Languages, Persistent C++ System, Persistent Java Systems

UNIT-III

Object-Relational Databases: Nested Relations, Complex Types, Inheritance, Reference Types, Querying with Complex Types, Functions and Procedures, Object-Oriented versus, Object-Relational

XML Background, Structure of XML Data, XML Document Schema, Querying and Transformation, The Application Program Interface, Storage of XML Data, XML Applications

DATA STORAGE AND QUERYING: Storage and File Structure, Overview of Physical Storage Media, Magnetic Disks, RAID, Tertiary Storage, Storage Access, File Organization, Organization of Records in Files, Data-Dictionary Storage, Storage for Object-Oriented Databases.

UNIT-IV

Indexing and Hashing: Basic Concepts, Ordered Indices, B+Tree Index Files, B-Tree Index Files, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Index Definition in SQL, Multiple-key Access

Query Processing: Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions

Query Optimization: Overview, Estimating Statistics of Expression Result, Transformation of Relational Expressions, Choice of Evaluation Plans, Materialized Views

Transaction Management: Transactions, Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Transaction Definition in SQL, Testing of Serializability

UNIT-V

Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocol, Validation-Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock Handling, Insert and Delete Operations, Weak Levels of Consistency, Concurrency in Index Structures

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-Based Recovery, Shadow Paging, Recovery with Concurrent Transactions, Buffer management, Failure with Loss of Nonvolatile Storage, Advanced Recovery Techniques, Remote Backup System

Database System Architectures: Centralized and Client-Server Architectures, Server System Architectures, Parallel Systems, Distributed Systems, Network Types

Distributed Databases: Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions, Commit Protocols, Concurrency Control in Distributed Databases, Availability, Distributed Query Processing, Heterogeneous Distributed Databases, Directory System

Parallel Databases: Introduction, I/O parallelism, Interquery Parallelism, Intraquery Parallelism, Intraoperation Parallelism, Interoperation Parallelism, Design of Parallel Systems.

MSCIT6 - PROGRAMMING IN VISUAL BASIC.NET

Unit -1

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming - Methods and events.

Unit -2

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement, Msgbox & Inputbox.

Unit -3

Working with Forms : Loading, showing and hiding forms, controlling One form within another.

GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menues : ContextMenu, access & shorcut keys.

Unit -4

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public Private, Projected. Overloading, My Base & My class keywords. Overview of OLE, Accessing the WIN32 API from VB.NET. COM technology, advantages of COM+, COM & .NET, Create User control, register User Control, access com components in .net application.

Unit -5

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

MSCIT7 - DISCRETE MATHEMATICS

UNIT-I

Set Theory: Introduction, Sets and Elements, Universal Set and Empty Set, Subsets, Venn Diagram, Set Operations, Algebra of Sets and Duality, Finite Sets, Counting Principle, Classes of Sets, Power Sets, Partitions, Mathematical Induction.

Relations: Introduction, Product Sets, Relations, Pictorial Representations of Relations, Compostition of Relations, Types of Relations, Closure Properties, Equivalence Relations, Partial Ordering Relations, n-ary Relations.

Functions and Algorithms: Introduction, Functions, One-to-One Onto and Invertible Functions, Mathematical Funcations, Exponential and Logarithmic Functions, Sequences, Indexed Classes of Sets, Recursively Defined Functions, cardinality, Algorithms and Functions, Complexity of Algorithms.

Logic and Propositional Calculus: Introduction, Propositions and Compound Propostions, Basic Logical Operations, Propositions and Truth Tables, Tautologies and Contradictions, Logical Equivalence, Algebra of Propositions, Conditinal and Biconditional Statements, Arguments, Logical Implication, Propositional Functions, Quantifiers, Negation of Quantified Statements.

UNIT-II

Vectors and Matrices: Introduction, Vectors, Matrices, Matrix Additions and Scalar Multiplication, Matrix Multiplication, Transpose, Square Matrices Invertible (Nonsingular) Matrices, Inverses, Determinants, Elementary Row Operations, Gaussian Elimination, Boolean (Zero-One) Matrices.

Counting: Introduction, Basic Counting Principles, Factorial Notation Binomial Coefficients. Permutations, Combinations, The Pigeonhole Principle, The Inclusion-Exclusion Principle, Ordered and Unordered Partitions.

Probability Theory: Introduction, Sample Space and Events, Finite Probability Spaces, Conditional Probability, Independent Events, Independent Repeated Trials, Binomial Distribution, Random Variables.

UNIT-III

Graph Theory: Introduction, Data Structures, Graphas and Multigraphs, Subgraphs, Isomorphic and Homeomorphic Graphs, Paths, Connectivity, The Bridges of Konigsberg, Traversable Multigraphs, Labeled and Weighted Graphs, Complete, Regular and Bipartite Graphs, Tree Graphs, Planar Graphs, Graph Colorings, Representing Graphs in Computer Memory, Graph Algorithms.

Directed Graphs: Introduction, Directed Graphs, Basic Definitions, Rooted Trees, Sequential Representation of Directed Graphs, Warshall's Algorithm, Shortest Paths, Linked Representation of Directed Graphs, Graph Algorithms Depth-First and Breadth-First Searches, Directed Cycle-Free Graphs, Topological Sort, Pruning Algorithm for Shortest Path.

Binary Trees: Introduction Binary Trees, Complete and extended Binary Trees, Representing Binary Trees in Memory, Traversing Binary Trees, Binary Search trees, Priority Queues, Heaps, Path Lengths, Huffmans's Algorithm, General (Ordered Rooted) Trees Revisited.

UNIT-IV

Properties of the integers: Introduction, Order and Inequqlities, Absolute value, Mathematical Induction, Division Algorithm, Divisibilty, Primes, Greatest Common Divisor, Euclidean Algoritm, Fundamental Theorem of Arithmetic, Congruence Relation, Congruence Equation.

Algerbaic Systems: Introduction, Operations Semigroups, Groups, Subgroups, Normal Subgroups, and Homomorphism, Rings, Integral Domains, and Filelds, Polynomials over a Field.

UNIT-V

Languages, Grammars Machines: Introduction, Alphabet, Words, Free Semigroup, Languages, Regular Expresssions, Regular Languages, Finite State Automata, Grammars, Finite State Machines, Godel Numbers, Turing Machines, Computable, Functions.

Ordered sets and Lattices: Introduction, Ordered sets, Hasse Diagrams of Partially Ordered Sets, Consistent Enumeration, Supremum and Infimum, Isomorphic (Similar) Ordered Sets, Well-ordered Sets, Lattices, Bounded Lattices, Distributive Lattices, Complements, Complemented Lattices.

Boolean Algebra: Introduction, Basic Definitions, Duality, Basic Theorems, Boolean Algebras as Lattices, Representation Theorem, Sum-of-Products Form for Sets, Sum-of-Products, Form for Boolean Algebras, Minimal Boolean Expressions, Prime Implicants, Logic Gates and Circuits, Truth Tables, Boolean Functions, Krnaugh Maps.

SECOND YEAR

MSCIT 8 - COMPUTER ARCHITECTURE

UNIT-I

Digital computer and digital system, Binary number system: number base conversion . Compliments: one's, two's, 9's and 10's complements. Binary code: Gray BCD, ASCII, and error detection code.

Logic Gates: AND, OR, NOT, EX-OR, Universal gate. Logic Circuit . Boolean function: Rules and simplification, simplification of Boolean function using map method, Don't care condition.

UNIT-II

Combinational Circuits: Adders, Subtractors, Multiplexer, Demultiplexer, Decoder, Encoder.

Sequential Circuit: Flip-Flop: RS, Clocked RS, JK, D flip-flop, and Master-slave flip-flop

Register- Introduction, Shift register, serial Transfer & parlor Load.

Counters- Ripple Counter (Asynchronous), Synchronous Counters.

UNIT-III

Register Transfer, Bus and Memory transfer, Microoperation: Logic and Shift.

Instruction code: Instruction code, Direct and Indirect address. Interrupt and Interrupt cycle . Machine Language: Assembly language, assembler. Subroutines.

UNIT-IV

Control processing unit: general register organization, stack organization, polish notation.

Instruction Format: Three Address instruction, Addressing modes. RISC and CISC. Pipeline and its types.

UNIT-V

Computer Arithmetic: Addition and Subtraction with H/W algorithm, Multiplication algorithm, Booth Multiplication. Mode of transfer: DMA, DMA controller.

Memory Organization: Memory Hierarchy- Main memory, Auxiliary, Associative, catch, and Virtual memory.

MSCIT9 - NUMERICAL METHODS AND STATISTICAL ANALYSIS

UNIT-I

Introduction to Numerical Computing: Introduction, numeric data, Analog computing, digital computing, process of numerical computing, characteristics of numerical Computing.

Introduction to computers and computing concepts: Introduction, Types of computers, computing concepts, computer Organization.

Computer codes and Arithmetic: Introduction, Decimal system, Binary system, Hexadecimal system, octal system, conversion of numbers.

Approximation and Errors in computing: Introduction, Inherent Errors, numerical errors.

UNIT-II

Fortran Overview: Need and scope, FORTRAN constants, FORTRAN variables, Subscripted variables, Input/Output statements, control of execution, Intrinsic Functions,

Roots of Nonlinear Equations : Introduction, Interative methods Starting and stopping an iterative process, Bisection Methods, Regula Falsi method, Newton-Raphson Method, Secant method, Roots of Polynomials, complex roots by Bairstow method, Muller's method.

Direct Solution of Linear Equations : Need and Scope, Existence of solution, Solution by elimination, basic Gauss Elimination method, Gauss Elimination with pivoting, Gauss Jordan method, Triangular factorization Methods, Cholesky's Method, Matrix Inversion Method, Multiplication of matrix.

UNIT-III

Iterative Solution Of Linear Equations: Need and scope, Jacobi Iteration method, gauss-Seidel method, Method of relaxation.

Curve Fitting: Interpolation: Introduction, Polynomial forms, Linear Interpolation, Lagrange Interpolation polynomial, Newton Interpolation polynomial, Divided different table, Spline interpolation, Chebyshev interpolation polynomial.

Curve Fitting : Regression : Introduction, Fitting linear equations, Fitting a polynomial function, Multiple linear Regression.

UNIT-IV

Numerical Differentiation: Need and Scope, Differentiating continuous functions, Differentiating Tabulated functions, Difference Tables.

Numerical Integration: Need and scope, Newton-cotes methods, Trapezoidal rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule, Gaussian Integration.

Numerical solution of ordinary Differential Equations: Need and scope, Taylor series method, Euler's method, Polygon method, Runge-kutta methods, Multistep methods, Systems of Differential Equations, Higher-order Equations.

UNIT-V

Boundary-value and Eigenvalue Problems: Need and scope, Shooting method, Finite difference method, Solving Eigenvalue problems, Polynomial method, Power method.

Solution of partial Differential Equations: Need and Scope, Elliptic Equations, Parabolic Equations, Hyperbolic Equations, Relaxation Method.

MSCIT10 - SOFTWARE ENGINEERING

UNIT-I

Introduction to Software Engineering:-The Evolving role of software, Software Characteristics & Applications, The Changing Nature of Software.

The Software Process: - Software Engineering A Layered Technology, Process Framework, A Capability Maturity Model Integration (CMMI).

Process Models:-The waterfall Model, Incremental Process Models, Evolutionary Process Models, Prototyping Models, RAD Model.

UNIT-II

Project Management Concept:-The Management Spectrum, the people, The product, The process, The project.

Software Process & Project Metrics:- Metrics in the Process & Project Domains, Software Measurement.

Software Project Planning:- Project Planning Objectives, Software Scope, Resources, Software Project Estimation, Empirical Estimation Models.

UNIT-III

Risk Analysis & management:-Risk Strategies, Software Risk, Risk Identification, Risk Projection, Risk Refinement.

Software Quality Assurance:-Quality Concepts, Software Quality Assurance, Software Review, The ISO 9000 Quality Standard, Software Configuration Management, The SCM Process.

UNIT-IV

Software Testing Strategies:-Software Testing Fundamentals, Unit Testing, Integration Testing, Validation Testing, System Testing, Black Box & White box testing, Test strategies for conventional software, The Art of Debugging.

RE-Engineering:- Business Process Engineering, Software reengineering, Reverse Engineering, Forward Engineering.

UNIT-V

WEB – Engineering:-The attribute of WEB –BASED Application, Design for WEB Based application.

An Agile View of Process:-What is Agility, agile process, agile process model.

Computer-Aided Software Engineering: - What is CASE, Building blocks for CASE, CASE tool.

MSCIT11- CORE JAVA

UNIT-I

Fundamentals of object-oriented Programming : Introduction, Object-Oriented Programming, Basic concepts of object- oriented programming, Benefits of OOP, Applications of OOP.

JAVA Evolution: Java History, Java Features, How Java differs from C and C++, Java and Internet, Java and World Wide Web, Web Browsers, Hardware and Software Requirements, Java Support Systems, Java Environment.

Overview of Java Language : Introduction, Simple Java Program, More of Java, An application with two classes, Java Program Structure, Java Tokens, Java Statemnts, Implementing a Java Program, Java virtual machine, command line arguments, Programming style.

Constants, variables and Data Types : Introduction, Contents, Variables, Data Types, declaration of variables, Giving values of variables, Scope to variables, Symbolic constants, Type casting, Getting values of variables, Standard default values

UNIT-II

Operators and Expressions : Introduction, Arithmetic operators, Relational Operators, Logical operators, Assignment operators, Increment and decrement operators, conditional operators, Bitwise operators, Special operators, Arithmetic

Expressions, evaluation of expressions, precedence of arithmetic operators, type conversions in expressions, operator precedence and associatively, Mathematical functions.

Decision Making and Branching : Introduction, decision making with if statement, simple if statement, The if....else statement, nesting of if.....else statements, The else if ladder, The switch statement, The : operator.

Decision Making and Looping : Introduction, The while statement, The do statement, The for statement, jumps in loops, Labeled Loops.

UNIT-III

Classes, Objects and Methods : Introduction, defining a class, adding variables, adding variables, adding methods, creating objects, accessing class members, constructors, methods overloading, static members, nesting of methods, Inheritance: extending a class, overriding methods, final variables and methods, final classes, Finalizer method, Abstract methods and classes, visibility control.

Arrays, Strings and Vectors : Arrays, one-dimensional arrays, creating an array, two dimensional arrays strings, vectors, wrapper classes.

UNIT-IV

Interfaces: Multiple Inheritance: Introduction, defining interfaces, extending inter-Faces, implementing interfaces, accessing interface variables.

Packages : Putting classes together : Introduction, java API packages, using system Packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package, hidings classes.

UNIT-V

Multithreaded Programming : Introduction, creating threads, extending the thread class, stopping and blocking a thread, life cycle of thread, using thread methods, thread exception, thread priority, synchronization, implementing the 'Run able' Interface.

Managing Errors and Exceptions : Introduction, Types of errors, exceptions, syntax of exception handling code, multiple catch statements, using finally statement, Throwing our own exceptions, using exceptions for debugging.

MSCIT12 - MICROPROCESSOR AND ASSEMBLY LANGUAGE

UNIT-I

Computer Number System, codes and Digital Devices: Computer number system and codes, arithmetic operations on binary, hex, and BCD numbers, basic digital devices. Computers, Microcomputers, and Microprocessors – An Introduction: Types of Computers, how computers and microcomputers are used, overview of microcomputer. Microprocessor evolution and types, The 8085 microprocessor family-overview, 8085 internal architecture.

UNIT-II

8086 family Assembly language programming – Introduction: Program development steps, writing programs for use with an assembler, Assembly language program development tools. Implementing standard program structures in 8085 assembly language: simple Sequence programs, jumps, flags and conditional jumps, If-Then-Else, and multiple If-Then-Else programs, While-Do programs, Repeat-Until Programs, Instruction timing and delay loops.

UNIT-III

Strings, Procedures and Macros: The 8085 string instructions, writing and using Procedures, writing and using assembler macros.8085 Instruction descriptions and assembler directives: Instruction descriptions, assembler directives.

UNIT-IV

8086 Interrupts and Interrupt Applications: 8085 Interrupts and Interrupt responses, Hardware interrupt applications, 8254 software programmable Timer/Counter, 8259A priority interrupt controller, software interrupt applications. Digital Interfacing: Programmable parallel ports and handshake input/output, interfacing a microprocessor to keyboards, interfacing to alphanumeric display, interfacing microcomputer ports to High-Power devices.

UNIT-V

High-Level language for system Programming: Introduction-A simple C program example, program development tools for C, programming in C. The 80286, 80386 and 80486 Microprocessors : Multiuser/ Multitasking operating system concepts, The Intel 80286 microprocessor, The Intel 80386 32-bit microprocessor, The Intel 80486 microprocessor.

MSCIT13 -COMPUTER GRAPHICS

UNIT-I

INTRODUCTION & CONCEPT:

Introduction & Concept of Computer graphics, origin, classification and application of computer graphics.

Programming in Simple Raster Graphics Package, Drawing with SRG, basic interaction handling, Raster Graphics features, limitation of SRG.

UNIT-II

PROGRAMMING IN SIMPLE RASTER GRAPHICS PACKAGE:
Basic Raster Graphics Algorithms For Drawing 2D Primitives: Scan converting lines, Scan converting circles, clipping lines, clipping circles,, clipping polygons.

Graphics hardware: Input devices, Hard-copy Devices, Display Device.

UNIT-III
Geometric transformation: Translation, Rotation, Scaling, Other Transformations, Composite Transformations, Three-Dimensional Transformation Functions, Modelling and Coordinate Transformations.

Viewing in 3D: Basic Transformations, Matrix Representations and Homogeneous coordinate, Composite transformations, Transformation functions, Raster method For Transformation.

UNIT-IV
Representative curves & surfaces: Polygon surfaces, curved lines and surfaces, Quadratic surfaces, superquadratics, Blobby objects spline Representations, cubic spline interpolation methods, Bezier curves and surfaces, B-spline curves and surfaces, Beta-splines, conversion between spline representations, Displaying spline curves and surfaces, sweep Representations, Constructive Solid-Geometry methods, Octrees

Solid Modeling, Visual Realism .

UNIT-V
Visual Surfaces Determination: Techniques for efficient visible surface algorithm.Z buffer algorithm, Scan line algorithm, Areas of sub division algorithm.

Illumination and Shedding: Shedding model for polygons Transparency.

Animations: Conventional and computer assisted animation should Desirable to study.

MSCIT14 - ADVANCED JAVA

UNIT-I

GRAPHICS PROGRAMMING USING AWT:
AWT Classes, Windows Fundamentals, Component, Windows and Frame, Working with Graphics, Working with colors, Working with Fonts, Control Fundamentals, Labels, Buttons, Checkbox, Using List, Scroll Bars, Layout Managers, Menu Bar, Dialog Box, Handling Event.

UNIT-II
Applet Programming : Introduction, how applets differ from applications, preparing to write applets, building applet code, applet life cycle, creating an executable applet, designing a web page, applet tag, adding applet to HTML file, running the applet, more about applet tag, passing parameters to applets, aligning the display, Event Handling.

UNIT-III
Introduction of Swing, Swing Features, components & containers, A swing Package, Create a swing applet, A paint Example, swing controls:- jlabel & Imageicon, jtextfield, The swing Button, jscrollpane, jlist, jcombobox,

UNIT-IV
Managing Input/Output Files in Java : Introduction, concept of streams, stream classes, byte stream classes, character stream classes, using streams, other useful I/O classes, using the file class, Input/output exceptions, creation of files, reading/writing characters, reading / writing bytes, handling primitive data types, concatenating and buffering files, random access files, interactive input and output, other stream classes

UNIT-V

Introduction of Java Beans, Advantages of the java Beans Java Beans API, Introduction of Servlets, The Life cycle of Servlets, A simple Servlets, Servlets Packages

COUNSELING AND STUDY STRUCTURE

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counseling and Study Structure (hours)				Project
					Face to Face Counseling	Self study	Practical	Assignments	
First Year									
1	MSCIT 1	Fundamentals of Computers and Information Technology	4	120	16	68	-	36	-
2	MSCIT 2	Data Communications and Computer Networking	4	120	16	44	24	36	-
3	MSCIT 3	Data Structure using C	5	150	20	55	30	45	-
4	MSCIT 4	Object Oriented Programming in C ++	5	150	20	55	30	45	-
5	MSCIT 5	Data Base Management System	5	150	20	55	30	45	-
6	MSCIT 6	Programming in Visual Basic .Net	5	150	20	55	30	45	-
7	MSCIT 7	Discrete Mathematics	4	120	16	44	24	36	-
Second Year									
8	MSCIT 8	Computer Architecture	4	120	16	44	24	36	-
9	MSCIT 9	Numerical Method and Statistical Analysis	4	120	16	44	24	36	-
10	MSCIT 10	Software Engineering	5	150	20	55	30	45	-
11	MSCIT 11	Core Java	5	150	20	55	30	45	-
12	MSCIT 12	Microprocessor and Assembly Language	5	150	20	55	30	45	-
13	MSCIT 13	Computer Graphics	4	120	16	44	24	36	-
14	MSCIT 14	Advanced Java	5	150	20	55	30	45	-

STUDY MODULES AND BOOKS INFORMATION

Course Code	Name of the Course	Books / Modules to be used
First Year		
MSCIT 1	Fundamentals Of Computers And Information Technology	• AISECT Module S01/S02, AISECT, AISECT, [E] • AISECT Module S01/S02H, AISECT, AISECT, [H]
MSCIT 2	Data Communications and Computer Networking	• Insight in to Computer Network , Ekta Gupta, Pragya Publication, [E] • Insight in to Computer Network (Hindi), Ekta Gupta, Pragya Publication, [H]
MSCIT 3	Data Structure Using C	• Data Structure using C, Birthare & Agrawal, Kamal Prakashan, [E] • Data Structure using C, Birthare & Agrawal, Kamal Prakashan, [H]
MSCIT 4	Object Oriented Programming in C ++	• Insite into OOPS & C++, Shukla, Pragya Publication, [E] • Insite into OOPS & C++ (Hindi), Shukla, Pragya Publication, [H]
MSCIT 5	Data Base Management System	• Introduction to DBMS, Shridhar B. Dandin, Pragya Publication, [E] • Introduction to DBMS (Hindi), Shridhar B. Dandin, Pragya Publication, [H]
MSCIT 6	Programming In Visual Basic.Net	• Illuminating Microsoft Visual Basic.Net, Sandeep Kumar Gupta, Pragya Publication, [E] • Illuminating Microsoft Visual Basic.Net (Hindi), Sandeep Kumar Gupta, Pragya Publication, [H]
MSCIT 7	Discrete Mathematics	• Discrete Mathematics (Paperback, Rajendra Akerkar,Rupali Akerkar, Pearson Education, [E] • Discrete Mathematics (Paperback), Rajendra Akerkar,Rupali Akerkar, Pearson Education, [H]
Second Year		
MSCIT 8	Computer Architecture	• Computer Architecture (Hindi), Sheetanshu Rajoriya, Pragya Publication, [E] • Computer Architecture, Sheetanshu Rajoriya, Pragya Publication, [H]
MSCIT 9	Numerical Method and Statistical Analysis	• Computer Oriented Numerial Methods, Vaidehi Bhagat, Kamal Prakashan, [E] • Computer Oriented Numerial Methods, Vaidehi Bhagat, Kamal Prakashan, [H]
MSCIT 10	Software Engineering	• Software Engineering (Hindi), Ekta Gupta, Pragya Publication, [E] • Software Engineering , Ekta Gupta, Pragya Publication, [H]
MSCIT 11	Core Java	• Concept of Programming in Java (Hindi), Seetha & Rastogi, Pragya Publication, [E] • Concept of Programming in Java , Seetha & Rastogi, Pragya Publication, [H]
MSCIT 12	Microprocessor and Assembly Language	• Microprocessor 8085: Architecture, Programming and Interfacing , Wadhwa, PHI, [E] • Microprocessor 8085: Architecture, Programming and Interfacing, Wadhwa, PHI, [H]
MSCIT 13	Computer Graphics	• Computer Graphics (Hindi), Shridhar B. Dandin, Sheetanshu Rajoriya, Pragya Publication, [E]

		• Computer Graphics, Shridhar B. Dandin, Sheetanshu Rajoriya, Pragya Publication, [H]
MSCIT 14	Advanced Java	• Advance Java (Paperback), Gajendra Gupta, Laxmi Publication, [E] • Advance Java (Paperback), Gajendra Gupta, Laxmi Publication, [H]

DATE SCHEDULE AND INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Year	**Assignment No.**	**Due Date**
First Year	MSCIT (1) MSCIT (2) MSCIT (3) MSCIT (4) MSCIT (5) MSCIT (6) MSCIT (7)	• April 30 (for January Session) • October 31 (for July Session)
Second Year	MSCIT (8) MSCIT (9) MSCIT (10) MSCIT (11) MSCIT (12) MSCIT (13) MSCIT (14)	• April 30 (for January Session) • October 31 (for July Session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

POST GRADUATE DIPLOMA IN FASHION DESIGNING (PGDFD)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

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POST GRADUATE DIPLOMA IN FAISHON DESIGNING (PGDFD)

Scheme of Examination

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical Marks		Assignments	
				Max	Min	Max	Min	Max	Min
Semester-I									
PGDFD1	Fashion Designing	4	100	50	18	20	8	30	11
PGDFD2	Fashion Sketching and Illustration	4	100	50	18	20	8	30	11
PGDFD3	Garment Construction	4	100	50	18	20	8	30	11
PGDFD4	Textile Studies	4	100	50	18	20	8	30	11
Total			**400**	**200**	**80**	**80**	**32**	**120**	**48**
Semester-II									
PGDFD5	Computer Aided Fashion Design	5	100	50	18	20	8	30	11
PGDFD6	Fashion Sketching & Illustration, Garment Construction	5	100	50	18	20	8	30	11
PGDFD7	Portfolio Development – Project Work and Viva Voce	6	100	-	-	100	36	-	-
Total			**300**	**100**	**40**	**140**	**56**	**60**	**24**

Evaluation Scheme

1. 36% in each theory, practical, project, dissertation & internal assessment

2. 40% Aggregate marks to pass

DETAILED SYLLABUS

PGDFD1- FASHION DESIGNING

UNIT 1

Introduction to Fashion Design Fashion – definition, terminologies, history, cycle: interrupted and recurring cycles; theories, designer's role, contribution of leading fashion designers.

Design – definition, motif and pattern, types: fabric design – natural, stylised, geometric, historic and abstract

Garment design – structural, decorative and functional.

UNIT 2

Elements and Principles of Design Elements of design - line, shape, form, size, colour and texture.

Principles of design – balance, proportion, emphasis, rhythm and harmony. Introducing elements and principles of design on apparels

COLOUR: Colour theories – Prang colour chart, Munsell colour theory, colour coding, colour dimensions- hue, value, intensity, warm and cool colours. Colour harmonies

UNIT 3

Figure Analysis Analysis of the proportions of various figures - Stout figure, slim figure, slender, narrow shoulder, broad shoulders, round shoulders, large bust, flat bust, large hips, large abdomen, short waist, long waist, sway back, large neck, short neck, large face, small face, square or broad face, round face.

Designing garments and accessories.

UNIT 4

Design and Development Fashion forecasting – techniques, market research, trend, colour, fabrics, silhouettes, texture, designs and seasons, presentation of forecast.

Designer boards - Mood board, fabric board, colour board, accessory board.

Fashion illustration – head theories, illustration techniques – strokes, hatching, shading; colouring techniques – medias for colouring.

Portfolio presentation – communication, practicalities of presentation, presentation styles.

UNIT 5

Fashion Show Wardrobe Planning: Life style analysis, pre-existing wardrobe analysis, resource evaluation, basic and extra wardrobe component identification, purchase planning, dress for selected occasions.

Fashion shows and window display: Fashion show - advantages, elements, role – players and types.

Window display - types of window, materials and type of displays.

PGDFD2 - FASHION SKETCHING AND ILLUSTRATION

UNIT 1

Fashion Sketching Lines, Curves, Object Drawing & Perspective Drawing

Shading – Pencil Medium & Ink Medium

UNIT 2

Figure Drawing Figure Drawing, Portrait, Hands, Feet, Arms And Legs, Different Angles of Head, Hands, Feet, Features

Basic croqui drawing- all sizes and all poses (front, back, side, ¾). Face analysis Hands and Feet Features- eyes, nose, lips, ear, Hairstyles.

Fleshing of block figures.

Draping of different Garments, Illustration of Gathers, Folds, Pleates showing fullness in a garment.

Body Movements (kids, female and male), Leg and hand movement, Face drawing and detailing, Feature drawing, Actions, Poses and composition

UNIT 3

Rendering Techniques Rendering Techniques – Pencil, Steadler and Color Pencil, Charcoal, Water Color, Poster Color, Oil and Acrylic.

Fabric Rendering

Photo Analysis

Development of Costumes

UNIT 4

Textural Techniques Illustration in Textural Techniques, Inspirational Designing-inspirations from nature, seasons, objects, fabrics, toys, signs and symbols, surroundings, etc. Visual Studies and rendering effects.

Designing Clothes line: Kids wear and Women wear.

Different Presentation Techniques- collage work, swatch board, front and back, stylization, textural effects, etc.

UNIT 5

Designer Sketching and Fashion Illustration Classic and innovative Fashion Details, Collars, Necklines, Pockets, Sleeves, Waistlines, Cuffs, Skirts, Trousers, Yokes, Waistlines, etc.

Matching poses to garments, Dressing the pose in the garment

Drawing flats and specs, drawing flats and styling the flats, way to lay out flats, flats and specs.

PGDFD3 - GARMENT CONSTRUCTION

UNIT 1

Measurements

Human Anatomy - Eight head theory, Movements of Joints & their functions, Brief study of human growth. Body Measurements – Importance, Preparation for measurements (girth, arc, vertical width and length) measurement needed for men's women's boy's, girl's and infants dresses; Standardizing body measurements.

Importance and Techniques; A practical exercise in Standardizing for any one garment / age group.

Relative girth measures in gentlemen and relative girth measures in ladies. Relative length measures in gentlemen.

UNIT 2

Pattern Making

Importance of paper patterns, types of paper patterns.

Principles for pattern drafting – pattern grading, drafting pattern for gent's shirt, ladies skirt, finding of arm hole and body rise measurements.

Human figure analysis – proportion, disproportion and deformity of human figuration

Glossary of apparel terms – body rise, armhole depth, notches, pleats, darts, gatherings, tuck etc.

UNIT 3

Pattern Layout and Cutting

Different types of woven fabric –napped, pile, plain, striped, checked, printed, one way design and two way design.

Different types of lays – pattern layout, rules striped, checked and one way designs

Economy of fabrics in placing patterns – rules for placement of pattern if the fabric is not sufficient. Importance lay length in garment industries.

Brief study of cutting process and cutting machine uses in industries – straight knife, band knife, round knife cutting machine drills, notchers and die cutters.

UNIT 4

Garment Making

Tools required for clothing construction -parts of sewing machine and its importance, selection of threads and needles.

Types of stitches and seams – study of accessories like buttons, zippers, interlining, lining, hooks, elastics, fasteners, seaming defects and rectification

Study of pressing, finishing packing system –fabric and finished garment defects. Measurements and their sequence required for body leg garments

Quality control in garment industry.

Construction details of men' s shirt – full sleeve with cuff, stand –up collar, double pocket with flap . Construction details of ladies skirt with elastic waist band. Types of collars, pockets, plackets etc.

UNIT 5

Computerised Garment Manufacture

Computer application in pattern making and grading – duplication – marker efficiency. Computer application in sewing technology – Computer Aided Garment Designing. – Merits and Limitations.

Study of Garment CAD software packages.

PGDFD4 - TEXTILE STUDIES

UNIT 1

Introduction to Textile Fibres and Natural Fibres

Textile Fibre – Definition, Classification, Properties of Ideal Textile fibre, Identification of fibres by microscopic view, burning test & solvent test.

Natural fibres - cotton varieties, physical & chemical properties, uses.

Silk - varieties, physical and chemical properties, uses.

Wool - varieties, physical and chemical properties, uses.

UNIT 2

Manmade Fibres

Polyester - production process, physical & chemical properties, uses.

Nylon - physical & chemical properties, uses, comparison of Nylon 6 & Nylon 6.6, uses of Acrylic and Polypropylene fibres.

Viscose - production process, physical and chemical properties, uses.

Properties of Acrylic fibres and polypropylene fibres and uses.

UNIT 3

Yarn Manufacturing Process

Introduction to Ginning- Objects- Sequence of process involved in Carded & Combed yarn manufacturing- Objects of Mixing and Blending

Texturisation - Definition, types, brief study of false twist texturisation, air texturisation, sewing threads, varieties, ticket number, selection, brief study of yarn defects.

UNIT 4

Woven and Knitted Fabric Formation Introduction to Ginning, Objects, Sequence of process involved in Carded and Combed yarn manufacturing, Objects of Mixing & Blending, Objects of Blow room, Flow chart for Blow room line process.

Sequence of process involved in Weaving, Objects of warping, Sizing, Comparison of Sectional Warping & Beam warping, Sizing ingredients, Sizing materials used for

Different type of yarns.Brief Study of Conventional Plain and Automatic looms. Comparison between Shuttle looms & Shuttleless looms. Brief study of Woven structures, Plain, Basic Twill, Sateen, Satin, Crepe, Brief study of Woven structures, Plain, 1x1 Rib, 1x1 Interlock, Defects in woven & Knitted fabrics.

UNIT 5

Indian Textile Industry Origin, Growth and Development of Indian Textile Industry - Cotton, Wool, Silk, Rayon, Man-Made Textiles, Ready made garments.

Five year plans for the textile Industry - Recent plan and previous 5 Five year plans, Organisations related to the Textile and clothing Industry

Technological developments in Fibre, Fabric, Printing and Dyeing Industry.

PGDFD5 - COMPUTER AIDED FASHION DESIGN

UNIT 1

Computer Aided Designing Fundamentals of CAD Design Process - application of computer for design creation

The manufacturing database benefits of computer-aided design.

UNIT 2

Computer Application in Pattern Making and Sewing Technology Computer Applications Fabric - pattern making – grading - marker making – laying cutting – sorting and labeling - duplicating-marker efficiency.

Computer applications in sewing technology - garment designing and stitching - Computer & Quality Control.

UNIT 3

Computer Aided Process Planning Introduction to Computer Aided Process Planning, Planning function type

Process planning – system generative -process planning systems benefits

UNIT 4

CAD / CAM CAD-CAM Integration for textile Industry

Computer aided knitting - weaving and embroidery.

UNIT 5

CIM Computer Integrated Production Management System (CIM)

Advanced Computer Assisted Design

PGDFD6 - FASHION SKETCHING & ILLUSTRATION, GARMENT CONSTRUCTION

UNIT 1

Illustration

Types and techniques of illustration, Working with 3 – D shapes.

Basic anatomy - proportions – children, men and women, Creating various poses, Drawing face and hair styles, Drawing arms and legs with accessories.

Basic Drawing Drawing Design details – types of Silhouette, necklines, collars, sleeves and cuffs.

Drawing blouses, skirts, pants and coats.

Drawing Accessories, Colouring techniques

UNIT 2

Apparel Designing Designing Children Apparel - casual wear, summer wear, winter wear, party wear and school uniforms.

Designing Ladies Apparel - formal wear, casual wear, summer wear, winter wear, party wear, bridal wear and maternity wear.

Designing Men's Apparel - formal wear, casual wear, summer wear, winter wear, party wear and bridegroom wear

Garment Construction

Torso Foundation Develop torso block for various garments – Semi fitted and fitted.

Develop low waisted and high waisted skirts

UNIT 3

Sleeve Bodice combinations Develop sleeves variations with bodice - Basic Kimono, Basic Dolman Raglan.

Stylelines Develop garments with stylelines - Classic princess, Armhole princess, Panel styleline

UNIT 4

Term Garments

Construction of Salwar suit

Construction of One piece garment

Cut Dresses Adaptation of basic block / torso block in to strapless dresses

Adaptation of basic torso block in to bias cut dresses

Adaptation of basic torso block into ladies tops

Gents Shirts with Cuff & Collar variations

UNIT 5

Lining and Interfacing Stitching garments with lining and interfacing

Indian Traditional Wear Stitching Traditional wear (Lehenga & Choli)

PGDFD7 - PORTFOLIO DEVELOPMENT – PROJECT WORK AND VIVA VOCE

Objectives

i) To implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment.

ii) Get exposure on industrial environment and its work ethics. Acquire the practical knowledge regarding the working procedure and the production of garments at industrial or Commercial level.

iii) To study the current market trends of garments at boutique and industrial level.

iv) To get acquainted with the basic merchandising concepts related to the Fashion Industry.

v) Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.

Procedure

Students have to select any one topic of their own interest under the guidance of the department faculty in their area of specialisation, emphasising the principles studied in the theory and practical subjects.

All the students have to undertake a Project Work / Internship / Industrial Apprenticeship in any of the Garment Industry / Manufacturing Unit / Designer's Boutique / Import – Export Unit / Textile Manufacturing Units / Merchandising Firms etc. before the completion of the PG Diploma Course.

Students will present a portfolio of all the files/ folders/ projects created during the course of study. The portfolio should include projects on-colour and texture, drafting and pattern

making, basic weaves, fashion sketching, appreciation of Indian fashion designers, industrial visit reports, fashion details, and any other projects made during the semesters.

Evaluation The external examiner will evaluate the portfolio and take a viva of the student.

The evaluation will be done as per the Scheme of Examinations of the University.

The viva will have questions from the whole syllabus.

Counseling and Study Structure

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counseling and Study Structure (hours)				Project
					Face to Face Counseling	Self study	Practical	Assignments	
Semester I									
1	PGDFD1	Fashion Designing	4	120	16	44	24	36	-
2	PGDFD2	Fashion Sketching and Illustration	4	120	16	44	24	36	-
3	PGDFD3	Garment Construction	4	120	16	44	24	36	-
4	PGDFD4	Textile Studies	4	120	16	44	24	36	-
Semester II									
5	PGDFD5	Computer Aided Fashion Design	5	150	20	55	30	45	-
6	PGDFD6	Fashion Sketching & Illustration, Garment Construction	5	150	20	55	30	45	-
7	PGDFD7	Portfolio Development – Project Work and Viva Voce	6	180	-	-	-	-	180

STUDY MODULES AND BOOKS INFORMATION

Course Code	Name of the Course	Books / Modules to be used
Semester-I		
PGDFD1	Fashion Designing	• Introduction To Fashion Technology by Pooja Khurana & Monika Sethi, Laxmi Publications
PGDFD2	Fashion Sketching and Illustration	• Fashion Illustration and Presentation by Manmeet Sodhia, Kalyani Publishers
PGDFD3	Garment Construction	• Garment Construction by Manmeet

		Sodhia, Kalyani Publishers
PGDFD4	Textile Studies	• Text Book of Clothing and Textiles by Sushma Gupta, Garg, Saini, Kalyani Publishers
Semester-II		
PGDFD5	Computer Aided Fashion Design	• Online Tutorials available at Web such as http://www.insidegraphics.com http://www.compufield.com http://www.advancedartist.com • CAD for Fashion Design by Renee Weiss Chase
PGDFD6	Fashion Sketching & Illustration, Garment Construction	• Fashion Designs & Illustrations by Pradeep Kumar, Indica Pub. • Dress Designing, Manmeet Sodhia, Kalyani Pub.
PGDFD7	Portfolio Development – Project Work and Viva Voce	•

DATE SCHEDULE & INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	**Assignment No.**	**Due Date**
First Semester	PGDFD (1) PGDFD (2) PGDFD (3) PGDFD (4)	• April 30 (for January Session) • October 31 (for July session)
Second Semester	PGDFD (5) PGDFD (6) PGDFD (7)	• October 31 (for July Session) • April 30 (for January session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.

PROGRAMME GUIDE

DISTANCE EDUCATION PROGRAMMES

POST GRADUATE DIPLOMA IN COMPUTER HARDWARE AND MAINTENANCE (PGDCHM)

- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**

INSTITUTE OF OPEN AND DISTANCE EDUCATION (IODE)
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POST GRADUATE DIPLOMA IN COMPUTER HARDWARE AND MAINTENANCE (PGDCHM)

Eligibility – Graduate

Duration – 12 Months

Course Code	Title of the Course	Credit	Total Marks	Theory		Practical		Assignment	
				Max.	Min.	Max.	Min.	Max.	Min.
SEMESTER-I									
PGDCHM1	Fundamental of Computers and Information Technology	3	100	70	26	-	-	30	11
PGDCHM2	Assembly of PC	3	100	50	18	20	8	30	11
PGDCHM3	PC Installation and Maintenance	3	100	50	18	20	8	30	11
PGDCHM4	Basic and Digital Electronics	3	100	50	18	20	8	30	11
PGDCHM5	PC's components and peripherals	4	100	50	18	20	8	30	11
Total			**500**	**270**	**108**	**80**	**32**	**150**	**60**
SEMESTER-II									
PGDCHM6	Networking Fundamentals	3	100	50	18	20	8	30	11
PGDCHM7	Windows NT Server Management	3	100	50	18	20	8	30	11
PGDCHM8	Windows 2000 & 2003 Server Management	3	100	50	18	20	8	30	11
PGDCHM9	Linux Installation & Configuration	3	100	50	18	20	8	30	11
PGDCHM10	Project	4	100	-	-	100	36	-	-
Total			**500**	**200**	**80**	**180**	**72**	**120**	**48**

Evaluation Scheme

1. 36% in each theory, practical, project, dissertation & internal assessment

2. 40% Aggregate marks to pass

DETAILED SYLLABUS

SEMESTER-I

PGDCHM1 - FUNDAMENTAL OF COMPUTERS AND INFORMATION TECHNOLOGY

Brief history of development of computers, Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) – evolution of PCs, configurations of PCs- Pentium and Newer, PCs specifications and main characteristics. Basic components of a computer system - Control unit, detailed functions of ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.

Input/Output & Storage Units-:Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers& types – Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Direct and Index Sequential, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk, Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW.

Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers,

Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux, File Allocation Table (FAT & FAT 32), NTFS files & directory structure and its naming rules, booting process details of DOS and Windows, DOS system files Programming languages-Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, characteristics, Uses and examples and area of applications of each of them, Virus working principles, Types of viruses, virus detection and prevention, viruses on network.

Use of communication and IT, Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band, Types of Network - LAN, WAN, MAN, Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways.

PGDCHM2 - ASSEMBLY OF PC

- Introduction of assembling, difference between branded and assembled computer.
- Tools used for assembling.
- Identification and selection of basic components for assembling a PC.
- Opening of Cabinet.
- Install the power supply and check it. .
- Install the components on motherboard - CPU, Heat sink / fan assembly, RAM.
- Install the motherboard.
- Install internal drive-Hard Disk.
- Install drives in external ways- Optical Drive and Floppy Drive.
- Install adapter Cards- NIC, Video adapter & Sound.
- Connect all internal cables - Power cables and Data cables.
- Connect all front panel indicators, switches and cables.
- Close the cabinet.
- Connect all peripherals – Keyboard, Mouse, Monitor, Speaker, Printer etc.
- Final check before Booting.
- Testing –Boot Computer for the first time, identify beep codes and BIOS setup.

PGDCHM3 - PC INSTALLATION AND MAINTENANCE

INSTALLATION:

- Booting of system from DOS/Windows
- Fundamentals of Hard Disk Partitioning and Formatting Hard Disk using Fdisk/Disk Manager
- Basic concepts of operating systems- Desktop, Network, Server.
- Determine minimum hardware requirements and compatibility with the OS
- Characteristics of modern operating systems.
- Using desktop operating system(DOS/Windows).
- Identify applications and environments that are compatible with an operating system
- Installation of operating system, Installation of Multiple Booting (Win-98, Win-XP, VISTA Media Center)

- Installation of Different Drivers (Sound, display, USB Devices, Printer, Scanner, Web Camera, TV Tuner Card, Modem, Modem Setting)
- Importance of rebooting
- Installation of Application Software, (Office XP, Visual Studio, Java, Auto Cad etc)
- Installation of DTP Softwares (Photoshop, Corel, PageMaker, etc.)
- Installation of Media Players (Adobe Flash Player, Real Player, Jet Audio, Power DVD)
- Installation of Nero and Other Optical Disk Writer.
- Installation of Anti-Virus, Scan Virus File & Folder, Repair Virus File & Folder.
- Create a Rescue Disk,
- Installation of Acrobat Reader, WinZip etc.

MAINTENANCE:

- Identify and apply common preventive maintenance techniques for operating systems
- Create a preventive maintenance plan
- Schedule a task- Taking Backup of data and Restore the backup in the hard drive
- Updation of antivirus patches
- Troubleshoot operating systems- Review the troubleshooting process, Identify common problems and solutions
- Use of Control Panel.
- Use of System Tools

PGDCHM4 - BASIC AND DIGITAL ELECTRONICS

BASIC ELECTRONICS

- Fundamentals of Electronics-Atomic Structure, Energy Level Diagram of Insulator, Conductor, Semiconductor, Electric Field, Potential And Potential Difference, Electric Current, Direct Current, And Alternating Current, Ohm Law.
- Registers-Types of Registers, Color Codes, Series And Parallel Connections, Potentiometers, Trimmers, Basic Uses of Registers.
- Capacitors-Type of Capacitors, Color Codes, Series And Parallel Connection, Charging of Capacitor, Basic Uses of Capacitors
- Inductors- Concept of Coil, Inductance, Types of Inductors, Basic Uses Of Inductors
- Transformer- Transformer Working, Types of Transformer, Design Issues of Transformer, Basic Uses of Transformer.
- Semiconductor Device- Semiconductor Theory(P & N Type), PN Junction, Rectifier Types of rectifier, Transistor-NPN And PNP, Transistor Configurations, CB, CE And CC, Transistor as An Amplifier, Power Gain of a Transistor, Practical Facts About Transistor, Biasing of Transistor.
- FET Construction, MOSFET Constriction, Parameter And Specifications, UJT Construction And Its Parameters, Thyristor-SCR, DIAC, TRIAC.
- Special Purpose Diodes And opto Electronic Devices-Light Emitting Diode Photo Diode, Photo Resisters, photo Transistor, opto Couplers Displays –Constriction And Application, LCD, Screen Segment Displays Dot Matrix Display
- Amplifiers-Class A Class B Class Amplifier, Voltage And Current Amplifier

- Oscillator-RS Oscillator Phase Shift And Wien Bridge, LC Oscillator-Hartley And Colpitt, Crystal Oscillator.
- Voltage Regulator And Filters-Voltage Regulator, Series And Shunt Regulators, Capacitor Inductor And Choke Input Filters.
- Wave Shaping Circuits - Clamper, Clipper and Multivibrator,
- Opamp And IC Timer-Opamp Block Diagram And Its Application, IC Timer-Pin Diagram Of IC555 And Application of Basic Circuits.
- Basic Measuring Instruments-Ammeter, Voltmeter, Multimeter, CRO, Function Generator

DIGITAL ELECTRONICS

- Number System And Codes-Binary, Decimal, Octal and Hexadecimal Number System
- Conversion of Number Systems- Binary Addition, Subtraction, Alphanumeric Codes-ASCII And EBCDIC, Excess 3 And Gray Codes.
- Logic Gates and Boolean Algebra-Positive And Negative Logic Gates its Truth Tables OR, AND, NOT, Ex-OR, NOR, NAND, Ex-NOR, Pin Diagram Of All Gates. Basic Laws of Boolean Algebra.
- Combinational Logic Circuits- Multiplexer, De multiplexer Adder, Subtractor, Encoder/ Decoder,
- Flip-Flop- Basic Flip-Flop, SR Flip-Flop, clocked Flip-Flop, T Type Flip-Flop, D Type Flip-Flop, JK Flip-Flop, Race Around Condition, MS JK Flip-Flop. PIN Configuration of Each Flip-Flop ICs.
- Counters And Registers- Binary Ripple Counters, Operation of A Ripple Counters, Modules of A Counter, Synchronous or Parallel Counters Operation, And Modules of Counter UP/DOWN Counter, PIN Diagrams Of Each Counter.
- Shift Registers : Serial In Serial out, Serial In Parallel out, Parallel In Serial out, Parallel In Parallel out
- D/A And Converter : Basic A/D Converter - Its Types, Basic D/A Converter –Its Type.
- Semiconductor Memories: Memory Organization And Operation, Expanding Memory Size, Classification of Memories, Memory Based Numerical.
- Microprocessor- Introduction of Microprocessor, Block Diagram of Micro Computer, Block Diagram of CPU with system Bus, Bus Organization in Microprocessor, Details of different Microprocessor.

PGDCHM5 - PC'S COMPONENTS AND PERIPHERALS

PROCESSING UNIT

- Microprocessor Selection(Processor Frequency, Bus Speed, Cache RAM, Processor Marking) Type of CPU(Normal CPu, HT CPU, Mobile CPU, Centrino CPU, Dual Core CPU, Quad Core CPU, etc.), Introduction of different Companies (Intel, AMD, Cyrix, etc.)
- Details of Different CPU Series (P-I, P-II, P-III, P-IV & Celeron, AMD, HT-Supported CPU), CPU Slots (Socket 1-8, Socket 370, Socket 423, Socket 478…. . etc), Input Output Slot(ISA, VESA, PCI, AGP, AMR, CNR, PCI Express etc.), Introduction of RAM Slot (SIMM, DIMM, RIMM) Introduction of Motherboard's Chip Set (INTEL, SIS, VIA, NVIDIA, AMD)Onboard Facilities.

- Introduction of Motherboard and its various types, Block Diagram of Motherboard, Selection of motherboard(industry/home purpose)
- Understanding of Different Motherboard circuit diagrams.
- Description of Slot Ports : Describe of all sections, Slots & ports Identification, RTC(real Time Clock)
- Voltage Regulator Module section(Block diagram, Working, Output Current sense, Input volt Sens, Five bit Programmable section, Circuit of VRM, Testing and fault Finding),
- Clock Generator Section, Types of Clock Generator, Working and testing of Clock Generator
- Introduction of North Bridge & South Bridge section, System Control, GMCH, ICH etc.
- Description of BIOS Section, Types of ROM (BIOS), Testing & Fault Finding of BIOS
- I/O Controller Section, Working of I/O (Input Output) Controller, Types of I/O Controller, Identification of I/O, Pin detail of I/O Controller, Section wise description of I/O Controller(FDC Interface Stage, keyboard Interface Stage, LPC Interface Stage, Multimode Parallel Port Stage, Communication, ACPI Interface Stage, Hardware Monitoring Interface Stage, Input/output Ports, Power division Stage)Testing and fault Finding.
- Audio section, Working of Audio Section, Types of Audio Section, Version of Audio Section, Testing & Fault finding.
- General Fault Finding of Mother Board : Testing Flow Chart.
- C. R. O, Operating of CRO, Troubleshooting by CRO.
- Soldering & Desoldering, Soldering & Desoldering of Chip Components by SMD, IROn & Hot air gun.
- CMOS Setup, CMOS Setup Utility & Controlling Option of Setup, on Board BIOS Programming.

INPUT AND OUTPUT DEVICES

- Keyboard, Mouse & scanner
    - Types of Keyboard, Technology used in Keyboard, Scanning of row and Column and Interfacing, Key Rollover, Key debounce, QA Plus Software, Circuit Diagram and Fault Finding, Pin Details and Testing of Micro Controller, Wireless Keyboards.
    - Functions of Mouse, Types of Mouse, Cable Detail, Interfacing, Card Conflicts, IRQ Conflicts, Optical Mouse, Wireless Mouse
    - Basics of Scanner, Types of Scanner on the basis of (i)Image Scanning (ii) Technology used in Scanner, Detail of DPI, SPI, PPI, Interfacing, parts of Scanner, Port Controller, Power LED, Stepper Motor, Scan Head Unit, Home Sensor, Inverter, Fault Finding of Scanner
- CRT Monitor
    - Introduction of Monitor, Types of Monitor, Monitor CRT – (i) Mono CRT (ii) Colour CRT, CRT Working, Deflection Coil, Degauss Coil, Rotation Coil, Signal Cable Connector Description, Color Monitor, block Diagram.
    - Identification & working of Monitor section, SM Power Supply, Video Amp Stage, Video Driver & Output Stage, OSD Stage, System & System driver stage, Horz Osc State, Horz Driver & Output Stage, EHT Stage, Vertical Osc Stage, Vertical Driver Output Stage.

- LCD/TFT Monitor
    - Introduction of LCD, Working of LCD/TFT, Manufacturing of LCD/TFT, Different Between CRT & LCD/TFT VGA & DVI Cable, Introduction of Different Stage.
    - Identification and Working of LCD/TFT Monitor Section(Power supply Stage, Inverter Stage, Block Diagram of Main Board, Block Diagram of TFT Panel, Main PCB, Monitor Control Stage, Memory Stage, Functional Keyboard, Scaler Stage)
- Printer (DMP, Inkjet, Laser)
    - Introduction of Printer, Classification of printer, Different section of Printer, its detail and identification, Interface Section, Repairing of Printer, Testing of Printer(Self Test, Test by Computer)
    - Block Diagram of DMP Printer and its description, Layout of DMP Printer, Paper Sensor, Home Sensor, Front Panel LED Indicator, Carriage Motor Driver, paper Feed Motor Drive, Print Head Driver, Power Supply, Description of 24 V and 5V Power Supply, CPU and DIP Switch, Gate Array, RAM, ROOM Pin Details, Fault Finding of Printer.
    - Types of Inkjet Printer, Thermal Process, Print Head, Different sections of Inkjet, Motor, Sensor, Caping Locking, Wiping, Splitting, Mechanism of Inkjet Printer & detail.
    - Function Block Diagram of LASER Printer and its Process, Image Formation (Cleaning to Fusing Process), Electronic Section of Laser Printer(Formater PCA and DC Controller), Mechanical Section of Laser Printer(Paper feeding, Motor Solenoid), Fault Finding of Laser Printer., Refilling
    - Introduction to MFD.
- **STORAGE AND POWER SUPPORTING DEVICES**
    - Storage Devices
    - Introduction of Storage devices, Types of Hard Disks(IDE, SCSI, SATA, USB etc.), use of internal and external Hard Disk. Identification of HDD Capacity, Model, RPM Speed & Companies Comparison, Jumper Setting, Types of Floppy Disk Drive, Details of CD ROM, CD Writer, Combo Drive, DVD Drive, Pen Drive, etc. Use of cleaning tools.
- SMPS
    - Introduction of Basic Component, Working principle of SMPS, Introduction of AT, ATX & BTX SMPS, Connector Details with Voltage and Color, Block Diagram of SMPS, AC/DC stage, PS Stage, Switching output, DC Output, +3. 3 V Reg. & PG Stage, Calculation of SMPS wattages for different PCs.
- UPS
    - Introduction of UPS, Relay switch, Transformer Working, Fundamental of UPS & UPS Block Diagram, AVR Stage, Voltage Regulator Stage, Charger Stage, Oscillator Stage, Switching Stage, AC low & Hgh Sensor stage, AC/DC Selector Stage, Battery Low Stage, battery deep discharge protection stage.

SEMESTER-II

PGDCHM6 – NETWORKING FUNDAMENTALS

- Basics of Data communication and Networking
- Needs For Networking
- Advantage And Disadvantage Of Networking
- Type Of Network-LAN, WAN, MAN
- Network Topology- Bus, Ring, Star, Hierarchical
- Characteristics Of Network- Architectural Model, Topology
- Physical components of a network-Hubs, Bridges, switches, Routers, Wireless acess point.
- Network Cables-Twisted pair, coaxial cable, fiber optic cable.
- Network Model- Peer To Peer, Protocol, Client/Server Network, Hybrid Type.
- Types Of Server-File Server, Database Server, Print Server, Web Server, Proxy Server
- Network Protocols-Communication Protocol, Hardware Dependent Protocol, Software Dependent Protocol.
- Protocol Services-File& Printer, Multimedia, Email, WWW, Usenet Newsgroups, e-phonebooks, Video Conferencing, Administrative Record Keeping.
- Network Operating System-Windows XP, Windows NT, 2000, 2003, 2008 Server Unix, Linux.
- OSI Model and TCP/IP Model.
- Internet Basics and concept of Domain

PGDCHM7 - WINDOWS NT SERVER MANAGEMENT

- Introduction to Windows NT, Various Features, Differences with other Windows Environment and other O. S. s., Windows NT workstations Versus Server. Kernel and its Subsystems: Kernel/User Mode, Win32 Subsystem.
- Security Models: System level restrictions, Server application security, Domain group access, Right and privilege verification, Application Support- Windows and Non Windows applications.
- Installation: Requirement Analysis, Basic Hardware required, Workgroup and Domain concepts: PDC, BDC.
- Network Configuration: Selecting NIC, Installing NIC driver, Choosing protocols and services
- NT Administration: User manager for domain, Disk administration, Backup, System policy editor, Remote access administration, Network clients administration.
- Control panel- Start and stops services from control Panel, Adding/Removing Hardware and Software with control panel.
- Windows NT File systems: Physical file organization, Basic File systems: FAT, NTFS, CDFS, HPFS, The FAT file systems, The NTFS file systems, File systems Integrity and recoverability, File compression.
- Networking with TCP/IP: TCP/IP services in NT, Advantages of using TCP/IP in NT, TCP/IP installation and configuring DCHP and WINE services.
- Remote Access Service: Remote access clients and servers, Installing and configuring Remote Access Server, Administration of RAS.

- Setting and running up a web server – Windows NT web server - Internet Information Server, IIS setup, setting up a web site, Virtual directories, Virtual Web Sites. Administration of Web Server with ISM.
- Windows NT Registry – Registry working, Necessity of registry, Registry Database layout, Registry Editor and its working.
- Diagnosis and troubleshooting NT hardware and software installation problems, Startup problems, problems with Logon, Accounts & password, Network HW and SW problems, Performance problems. NT diagnostic tools: WINMSD, Network Monitor.
- HAL, Kernel and Executive: Hardware Abstraction Layer (HAL), Kernel – Kernel objects and Threads, NT Executives – I/O Manager and Device Drivers, Process Manager, Virtual Memory Manager, Object manager, LPC facility, Security Reference Monitor.
- Protected Subsystems: NT Subsystem's working, Win32 Subsystem difference between Win16 & Win32, Testing and Queuing Model, Win32 Programming Support, Windows on Windows- Starting win16 programs, Multitasking with WOW VDM, Thunking 16-bit to 32-bit runtimes, Intercrosses Communication (IPC), MSDOS Emulation Layers.
- Device Drivers: Windows device scheme, NT Drivers Models- Service Control Monitor, Kernel Mode, User modes, Virtual device mode, Driver requirements and operations.

PGDCHM8 - WINDOWS 2000 & 2003 SERVER MANAGEMENT

- Introduction To Windows Server 2003(R1, R2 variations -32 bit and 64 bit)
- Deployment Of Windows Server 2003
- User Group Management
- Storage Management
- TCP/IP And Ipv4 Network Management
- Understanding NetBIOS, Wins And NetBT
- Configuring DNS And DHCP Server
- Security Management
- Implementing Volume Shadow Copy
- Controlling With MMC
- Controlling With CLI
- Controlling Windows With Registry
- Controlling Windows Group Policy
- Windows Server Virtualization
- Active Directory Domains Services
- Active Directory Certificate Services
- Terminal Services Enhancements Clustering Enhancements
- Implementing And Troubleshooting Nap
- IIS installation and configuration.
- Implementing Active Directory Services.
- Planning And Implementing
- Restoring Active Directory.
- INTRODUCTION TO WINDOWS SERVER 2008

- Introduction, Managing And Maintaining Windows Server 2008 Environment
- New in Windows Server 2008
- Compare With Windows Server 2003
- Virtualization concepts

PGDCHM9 - LINUX INSTALLATION & CONFIGURATION

- Overview of Linux
- Installation of Linux
- Linux Advanced File System Management
- Besh Shell
- Linux Commands.
- Running DOS Command in Linux.
- Configuration of partition in Linux.
- Text Editor-vi
- Bash Shell Scripting
- Basic Networking in Linux.
- Configuration And Installation Of Hardware Device
- Linux File Security
- Connect to Internet in Linux.
- Installation software in Linux.
- Kernel Services And Configuration
- System Monitoring
- Reading Linux Partition in Windows & reading windows partition in Linux.

PGDCHM10 - PROJECT

- Select the project.
- Collect the information related to project
- Identify the technology in terms of front end, back end, hardware tools used, software tool used.
- Write the brief synopsis for project
- Approved the synopsis from project in charge
- Proceed for the project using system development life cycle
- System development life cycle contain the steps like in to gathering designing, coding, development, testing, dispatched.
- Demonstrate the complete project through power point presentation to project in charge

COUNSELING AND STUDY STRUCTURE

Sl. No.	Course Code	Title of the Course	Credit	Total Hours of Study	Counseling and Study Structure (hours)				Project
					Face to Face Counseling	Self study	Practical	Assignments	
Semester I									
1	PGDCHM 1	Fundamental of Computers and Information Technology	3	90	12	51	-	27	-
2	PGDCHM 2	Assembly of PC	3	90	12	33	18	27	-
3	PGDCHM 3	PC Installation and Maintenance	3	90	12	33	18	27	-
4	PGDCHM4	Basic and Digital Electronics	3	90	12	33	18	27	-
5	PGDCHM5	PC's Components and Peripherals	4	120	16	44	24	36	-
Semester II									
6	PGDCHM 6	Networking Fundamentals	3	90	12	33	18	27	-
7	PGDCHM 7	Windows NT Server Management	3	90	12	33	18	27	-
8	PGDCHM 8	Windows 2000 and 2003 Server Management	3	90	12	33	18	27	-
9	PGDCHM 9	Linux Installation & Configuration	3	90	12	33	18	27	-
10	PGDCHM 10	Project	4	120	-	-	-	-	120

STUDY MODULES AND BOOKS INFORMATION

Course Code	Title of the Course	Books / Modules to be used
Semester-I		
PGDCHM 1	Fundamental of Computers and Information Technology	AISECT Module S01/S02
PGDCHM 2	Assembly of PC	AISECT Module V28
PGDCHM 3	PC Installation and Maintenance	BPB Computer Hardware Course by BPB, BPB Publicatons
PGDCHM 4	Basic and Digital Electronics	AISECT Module H02 &H03 - Basic & Digital Electronics
Semester-II		
PGDCHM 6	Networking Fundamentals	AISECT Module IT 09
PGDCHM 7	Windows NT Server	Windows NT Server 4 (Rapidex Condensed User Guide), Eni – France, Pustak Mahal
PGDCHM 8	Windows 2000 & 2003 Server Management	AISECT Module H10
PGDCHM 9	Linux Installation & Configuration	Linux (Server Administration & Shell Programming), Anurag Seetha, Pragya Publications, [E] Linux (Server Administration & Shell Programming) (Hindi), Anurag Seetha, Pragya Publications, [H]
PGDCHM 10	Project	-

DATE SCHEDULE & INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	**Assignment No.**	**Due Date**
First Semester	PGDCHM (1) PGDCHM (2) PGDCHM (3) PGDCHM (4) PGDCHM (5)	• April 30 (for January Session) • October 31 (for July session)
Second Semester	PGDCHM (6) PGDCHM (7) PGDCHM (8) PGDCHM (9)	• October 31 (for July Session) • April 30 (for January session)

Note: Assignments of the course are available for download at the CVRU Website http://www.cvru.ac.in . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.