

Pt. Sundarlal Sharma (Open) University, Chhattisgarh, Bilaspur

PROGRAMME GUIDE

for

Computer Science and Application Course

Post Graduate Diploma in Computer Application

(PGDCA)



DEPARTMENT OF COMPUTER SCIENCE AND APPLICATION (DCSA)

PT. SUNDARLAL SHARMA (OPEN) UNIVERSITY, CHHATTISGARH, BILASPUR

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MESSAGE FROM PROGRAMME COORDINATOR

Dear Student,

I welcome you to the Computer Applications Programme. In integrated mode, you will receive support from PSSOU through network of our Regional and Study Centers. You will be attached to a Study Centre which will offer counseling sessions as per university schedule (Both Theory and Practical). You will receive printed course material in accordance with our dispatch schedule.

You need to have a minimum of 75% attendance for practical counseling sessions to appear for Term End Practical Examinations. You need to submit requisite assignments before the due dates to become eligible to appear for Term End Theory Examinations.

Also, students are requested to take note of the following:

“The University sends study materials and assignments, wherever prescribed, to the students through Regional/Study Centre and if a student does not receive the same for any reason whatsoever, the University shall not be held responsible for that u can regularly contact with Study Centre.” “In case a student wants to have assignments, s/he can obtain a copy of the same from the Study Centre/Regional Centre/Programme Co-ordinator.

“The students are specifically instructed to send Examination Forms to Controller of Examination or as per university instruction. and to no other place and they are also advised to submit the Registration/Re-registration Forms only at the respective Regional Centers/Study Centre or as per instruction given by the university time to time and nowhere else. If any student sends the Registration/Re-registration Forms, Examination Forms to wrong places and thereby misses the scheduled date and consequently year, s/he will have no claim on the University for regularization.”

Programme Guide is a very important document for you. Preserve it until you successfully complete the programme.

I wish you success in pursuing computer applications programme.

Wishing you all the best,

Smt. Pushpa Mahant

Contact us:

info@pssou.ac.in

Phone No. 07752-261051

PGDCA Examination Scheme

Course Code	Course Title	Continuous Evaluation		Term-end Examination						Aggregate Total	
				Theory			Practical				
		Max.	Min.	Duration	Max.	Min.	Duration	Max.	Min.	Max.	Min.
PGDCA-01	Fundamentals of Computers and Information Technology	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-02	Operating System (Dos, Linux, Windows)	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-03	RDBMS Programming in FoxPro	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-04	PC Packages (Word, Excel, Power Point)	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-05	GUI Programming in visual Basic	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-06	Internet and E-COMMERCE	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-07	OOPs & Programming in C++	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-08	System Analysis and Design	30	10	3 Hours	70	30	-	-	-	100	40
PGDCA-09	Computer Lab – I	----	----	----	----	----	3 Hours	100	40	100	40
PGDCA-10	Computer Lab – II	----	----	----	----	----	3 Hours	100	40	100	40
PGDCA-11	Project Work	Report – 50			Viva -50			100	40	100	40
TOTAL										1100	440

Note:

1. For passing the examination minimum 40% marks must be scored in each Paper head individually.
2. For passing the PGDCA examination, the aggregate marks must be at least 40% in theory & Continuous Evaluation and practical papers. On successful compilation of the PGDCA course, as per “examination scheme” shall be made as follows.
3. The examinees who have obtained 60% or more marks in the total marks shall be placed in “First Division”.
4. The examinees who have obtained less than 60% marks and more than 45% marks shall be placed in “Second Division”

Detailed Syllabus of PGDCA

PGDCA-01 FUNDAMENTAL OF COMPUTERS AND INFORMATION TECHNOLOGY

UNIT -1

INTRODUCTION TO COMPUTER AND INFORMATION TECHNOLOGY

- ❖ Brief history of development of computer & Generations of computers
- ❖ Computer system concept
- ❖ Computer system characteristics.
- ❖ Capabilities and limitations
- ❖ Types of computers-Analog. Hybrid. General purpose, Special purpose, Micro, Mini, Mainframe, Super.
- ❖ Personal Computer (PCs)-Personal Computer family, Pentium and Newer PCs specification and their main characteristics.
- ❖ Types of PCs-Desktop, Laptop, Notebook, Palmtop etc. their characteristics.
- ❖ Computer Organisations and Working
- ❖ Basic components & block diagram of computer system-Control unit, ALU, Input/Out put and memory their functions and characteristics.

UNIT II

INPUT DEVICES:

- ❖ Keyboard, Mouse, Trackball, Joystick, Digitizing table, Scanners, Digital Cameras, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen.
- ❖ Output devices
- ❖ Monitors-types-Digital, Analog, characteristics-Size, Resolution, Refresh Rate, Interlaced Non Interlaced, Dot Pitch, Video Standard- VGA, SVGA, XGA etc.

UNIT III

STORAGE DEVICE : STORAGE FUNDAMENTALS-PRIMARY VS SECONDARY.

Data Storage and Retrieval methods-Sequential, Direct and index Sequential-Variou Storage

Devices-Magnetic tape, Magnetic Disks, Cartridge Tape, Data Drives, Hard Disk Drives, Floppy Disks, Optical Disks-CD, VCD, CDR, CDRW, DVD, Zip Drive, DAT drive, Pen drive.

Number system Data representation in computers. Numbers System of computers binary, Octal, Hexa, Representation & their conversion. Coding System ASCII, BCD, EBCDIC etc.

UNIT IV

Computer Software Need - Types of Software - System Software, Application software.

❖ System Software - Operating System. Utility program. Assemblers, Compilers and Interpreter.

❖ Operating System Functions- Types Batch, Single User, Multi User, Multiprogramming, Multiprocessing.

❖ Programing languages- Machine, Assembly, High level, 4GL, their merits and demerites.

❖ Application Software- Word processing, Spreadsheet, Presentation graphics, Data basemanagement software their characteristics, uses. examples & area of applications of each of them

❖ Computer Virus - Types of Virus Virus detection & prevention

❖ Virus on network.

UNIT V

❖ DATA COMMUNICATION AND NETWORKS- Analog and Digital Signals.

● Modulations - Amplitude Modular (AM), Frequency Modulation (FM), Phase Modulation (PM) ● Communication Process- Use of Communication in Daily life. Direction of Transmission flow - Simplex, Half Duplex, Full Duplex.

● Communication Software. ● Types of network - LAN, WAN, MAN etc. Topologies of LAN Ring, Bus, Star, Mesh and Tree Topologies ● Communicatio Protocols - TCP/IP protocol suit. ● Communication Channels / Media - Twisted, Coaxial Fiber Optic, serial and parallel communication. ● Components of LAN

- NIC, Network operating system (NOS), Bridges, HUB, Routers, Repeater and Gateways. ● Modem - working and characteristics. Types of Connections - Dialup leased lines, ISDN, Broadband.

TEXT & REFERENCE BOOKS:

1. Introduction to Computers and Information Technology by Anurag Seetha, Ram Prasad & Sons, Bhopal.
2. Computers Today by S.K. Basandra Galgotia Publications.
3. Fundamentals of Information by Alexos Leon & Mathews Leon, Vikas Publishing House, New Delhi.

PGDCA-02 OPERATING SYSTEMS (DOS, LINUX, WINDOWS)

UNIT -1

DISK OPERATING SYSTEMS (DOS)

Introduction, History & versions of DOS

- ❖ DOS basics, Physical Structure 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 CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, RDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS, etc.
- ❖ Executable Vis Non-executable files in DOS.

UNIT II

WINDOWS 95/98

- ❖ Hardware requirements of windows. Windows concepts, features, windows structure, desktop, taskbar, start menu, my computer, recycle bin.
- Windows Accessories, Calculator, notepad, Paint, Wordpad, Character map
- Windows Explorer, Creating folders and other explorer facilities.
- Entertainment CD player, DVD player, Media player, Sound Recorder, Volume Control.

UNIT III

ADVANCED FEATURES OF WINDOWS

- ❖ Managing Hardware & Software Installation of Hardware & Software Using Scanner

- ❖ System Tool, Backup, Character map, Clipboard, Viewer, Disk Defragmenter, Drive Space, Scandisk System Information, System Monitor, Drive converter (FAT 32)
- ❖ Communication Dial up Networking, Direct Cable Connection, Hyper Terminal, Phone Dialer
- ❖ Multiple Users Features of Windows
- ❖ Accessibility Features of Windows.
- ❖ Sharing Information between Programs Understanding OLE.
- ❖ Embed/Link Using Cut and Paste, Embed/Link Using Insert Object, Manage Embedded Linked Object.

UNIT IV

LINUX

- ❖ History & Features of Linux.
- ❖ Linux Structure
- ❖ File system of Linux.
- ❖ Hardware requirements of Linux
- ❖ Various flavors of Linux
- ❖ Program & Process
- ❖ Process creation and process Identifiers.
- ❖ Functions of profile and login files in Linux.
- ❖ Linux kernel.

UNIT V

MULTI-USER FEATURES OF LINUX

- ❖ Login and logout from Linux system
- ❖ Linux Commands bc, cal, cat, cd, chgrp, chmod, clear, cmp, copy, date, find, ps, kill, is, mail, mkdir, more, mv, rm, rmdir, tty, we, who, whois, grep, write, tel net.
- ❖ Pipeline concepts
- ❖ Using floppy and cdrom in linux.
- ❖ Vi editor

Windows NT

- ❖ Network concept and components.
- ❖ windows NT features & capabilities.
- ❖ Hardware are requirements of windows NT

NOTE : There is NO practical on windows NT. Only DOS, Windows and Linux practical are to be performed.

PGDCA 03 RDBMS PROGRAMMING IN FOXPRO

UNIT I

- ❖ Foxpro - Versions features, requirement of hardware and software.
- ❖ Foxpro - Menu System, Working with Foxpro
- ❖ Creating Database File Some common Operation on data CREATE, LIST, APPEND, CLOSE, QUIT.
- ❖ Foxpro - Data types.
- ❖ 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 and RENAME

UNIT II

- ❖ 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.

UNIT III

- ❖ 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 Function, Mathematical Commands, Statistical Functions.

UNIT IV

- ❖ Concepts of Foxpro commands file, Modify Commands
- ❖ Conditioning Brining and Looping within Program files with Do-While Enddo.

UNIT V

- ❖ 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.
- ❖ Custom Design of Input Screens, Output Screens and Report formats in regional languages (like Hindi etc) in foxpro 2.6 for windows and write some programs for this.

TEXT & REFERENCE BOOKS :

- ❖ Foxpro Mode Simple by R.K. Taxali, BPB Publication
- ❖ Mastering Foxpro 2.5 BPB Publication
- ❖ Foxpro 2.6 for Dummies Pustak Mahal.

PGDCA -04 PC PACKAGES (word, excel, powerpoint)

UNIT - 1

WORD PROCESSING : MS WORD

- ❖ Introduction to word processing
- ❖ Introduction to MS word : features, Creating, saving and opening documents in word, Interface, toolbars, ruler, menus, keyboard shortcut.
- ❖ Editing a Document -Moving, Scrolling in a document, Opening multi document windows, editing text-selecting, Inserting, deleting, moving text.
- ❖ Previewing documents, Printing documents, print a document from the standard toolbar, print a document from the menu, shrinking a document to fit a page, reduce the number of pages by one,
- ❖ Formatting Documents : Paragraph formats, Aligning Text and Paragraph, Borders and shading headers and footers, multiple columns.

UNIT -II

ADVANCED FEATURES OF MS WORD :

- ❖ Find and Replace, Checking the grammar and spelling.
Formatting via find and replace.
- ❖ Using the Thesaurus, Using auto correct, auto complete and auto text, word count.
- ❖ Hyphenating, mail merge, mailing labels wizards and templates, handling graphics, tables and charts, converting a word document into various formats like-text, rich format, wordperfect, HTML etc.

UNIT III

WORKSHEET : MS EXCEL

- ❖ worksheet basics
- ❖ Creating worksheet, entering data into worksheet, heading information, data, text, dates, alphanumeric, values, saving & quitting worksheet.
- ❖ Opening and moving around in an existing worksheet, toolbar, and menus, keyboard shortcuts.
Endif, scan endscan, for - endfor, Docase Endcase, Text - Endtext, Executing Commands from other command files, Macro Substitution.

- ❖ Error condition and program debugging aids.
- ❖ Common Error Messages.
- ❖ Debugging techniques and commands
- ❖ Working with single and multiple workbook- coping, renaming, moving, adding and deleting, coping entries and moving between workbooks.

UNIT - IV

WORKING WITH FORMULAS & CELL REFERENCING

- ❖ Autosum
- ❖ Coping formulas
- ❖ Absolute & Relative addressing
- ❖ working with ranges-creating, editing and selecting ranges.
- ❖ Formatting of worksheet-auto format, changing, alignment, character, columnwidth, date format, borders & colours, currency sign,
- ❖ Previewing & Printing worksheet-page setting, print titles, adjusting margin, page break, headers and footers.
- ❖ Graphs and charts using wizards, various charts type, formatting grid lines & legends, previewing & printing charts.
- ❖ Database- creation, sorting, query & filtering a database.
- ❖ Functions database, date and time, maths & trigonometry, statistical, text and logical functions,
- ❖ Creating and Using Macros
- ❖ Multiple worksheets concepts, creating and using,

UNIT- V

PRESENTATION GRAPHICS : MS POWER POINT

- ❖ Features and various versions.
- ❖ Creating presentation using slide master and templates in various colour scheme.
- ❖ Working with different view and menus of power point.
- ❖ Working with slides-makes new slide, more, copy, delete, duplicate, lay outing of slide, zoom in or out of a slide.

- ❖ Editing and formatting text: Alignment, editing, inserting deleting, selecting, formatting of text, find and replace text, bullets, footer, paragraph formatting, spell checking.
- ❖ Printing presentation- print slides, notes, handouts and outlines.
- ❖ Inserting Objects-Drawing and inserting object using clipart's pictures and charts.
- ❖ Slides sorter, slide transition effects and other animation effects
- ❖ Presenting the show-making stand alone presentation, pack and go wizards.
- ❖ Learning word 97 for windows by Rajeev Mathur, BPB Publication
- ❖ Learning excel 97 for windows by Rajeev Mathur, BPB Publication
- ❖ A First course in Computers by Sanjay Saxena, Vikas Publishing House Pvt. Ltd. New Delhi
- ❖ Microsoft Office 97 by Gini Couter & Annette Marquis, BPB Publications.
- ❖ Office 97 Interactive Course by Greg Perry, Techmedia.

PGDCA-05 GUI PROGRAMMING IN VISUAL BASIC

UNIT- 1

- ❖ Integrated Development Environment of Visual Basics.
- ❖ Integrated Development Environment of VB, UserInterface Design, Basics of Event driven programming form designing, showing Hiding

UNIT- II

- ❖ Datatypes & Control Statements.
- ❖ Data types, Variables & Constant, Arrays, Dynamic Arrays, Array as function, Collections, Procedures, Arguments passing, Functions Return Values.
- ❖ Control Flow Statements : if-then, if then-else, select case, looping statement : Do-loop, Fornext, While-wend, Nested Control Structure, Exit stmt.

UNIT- III

- ❖ Building Blocks of Visual Basic
- ❖ Basic Active X Control & Their Use-Text box, List box, Combo Box, Scroll bar, Slider & Fire Control:

- ❖ Advance Active X control-common dialog controls, color, font, file open, file save, print help, tree view & list view controls.

UNIT- IV

- ❖ Components of visual basic.
- ❖ Graphics controls, :Image handling in VB, Coordinate system, graphics methods, text drawing, lines & shapes, filling shapes, grid methods,
- ❖ Menu editor: Pull-down and Pop-up-menus.
- ❖ Multiple Document interface-Parent & Child forms & methods.
- ❖ Error handling : Types of Errors, Error handling methods and functions.

UNIT - V

- ❖ Database programming with visual basic.
- ❖ Database programming with VB-DATA control-methods, properties, visual data manager, connectivity with database, DATA bound controls.

TEXT & REFERENCE BOOKS :

- ❖ Beginner's guide to visual basic 6 by reeta sahuo & G.B. sahuo, Khanna Publishing House
- ❖ Beginning Visual basic 6 by Peter Wright, Shroff Publishers.
- ❖ Mastering Visual Basic 6 by Evangelos Petroustos, BPB Publications.

PGDCA-06 INTERNET & E-COMMERCE

UNIT-I

- ❖ Internet, Evolution, Protocols, Interface, Concepts, Internet Vs Intranet, Growth of Internet, ISP, Connectivity, Dial-up, leased line, VSAT etc., URLs, Domain names, Portals Application.
- ❖ E-MAIL Concepts, POP and WEB Based E-mail, merits, address, basics of Sending & Receiving, E-mail protocols, Mailing list, free E-mail 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.

UNIT-II

- ❖ Word wide web(www) History, working, web browsers, Its functions, concept of search engines, searching the web, HTTP, URLs, Web Services, Web Protocols.
- ❖ 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.

UNIT - III

- ❖ HTML -Concepts of hypertext, versions of HTML, Elements of HTML, syntax, Head & Body Sections, Building HTML documents, Inserting, texts, Images, Hyperlinks, Backgrounds and Color controls, Different HTML, tag, Table. layout and presentation, use of font size & Attributes, List types and its tags, Use of Frames and Forms in web pages.

UNIT- IV

- ❖ Javascript Overview, syntax & conventions.
- ❖ Variables, Expressions, Branching & Looping statements, Functions, Arrays.
- ❖ Objects, Events & Document Object Model-on Click, on Mouse Over, on Submit, on Focus, on Change, on Blur, on Load, on Unload.
- ❖ Alerts, Prompts & Confirms.

UNIT - V

- ❖ E-COMMERCE What is Electronic Commerce? Historical development, Key success factors in e-commerce, e-commerce problems, Product suitability, B2B, B2C, Advertising Based Models, Community Based Models, Business-to-employee electronic commerce, electronic data interchange, Internet fraud, e-marketing, disintermediation, Bricks and clicks business model, Reintermediation, Online action business model.

TEXT & REFERENCE BOOKS :

- ❖ O level Module-M1.2 Internet & webpage designing by V.K. Jain- BPB Publication
- ❖ Internet for Everyone- Alexis leon and Mathews leon, Vikas Publishing House Pvt. Ltd. New Delhi.

- ❖ Internet for Dummies-Pustak Mahal, New Delhi
- ❖ Introduction to JavaScript available at - www.mcu.ac.in/Javascriptguide.pdf

PGDCA-07 OOPS AND PROGRAMMING IN C++

UNIT - I

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, Creating the source file, compiling and linking.

UNIT-II

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++, Scope resolution operator member dereferencing operators, manipulators, type cast operator, expressions and implicit conversions, operator precedence, control structure.

UNIT-III

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, constructing two dimensional arrays, destructor,

Functions in C++; The Main function, function prototyping, call by reference, return by reference, Inline functions, default argument, constraint arguments, function overloading, friend and virtual function.

UNIT- IV

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, type conversions.

Note: Various real life case studies and examples in every stages of system analysis and design may be taken.

UNIT- V

Inheritance : Extending class-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.

TEXT & REFERENCE BOOKS:

- ❖ Object Oriented Programming with C++ by e. Balaguruswami, TMH Publications
- ❖ Object Oriented Programming with C++ by Nabajyoti Barakati SAMS PHI Pvt. Ltd.

PGDCA-08 SYSTEM ANALYSIS AND DESIGN

UNIT -1

- ❖ The System Concept, Characteristics, Elements and types of a system
- ❖ The System Development Life Cycle, Considerations for candidate systems, prototyping
- ❖ The Role of System Analyst.

UNIT - II

- ❖ System planning and Initial Investigation.
- ❖ Information Gathering, information gathering tools.
- ❖ Structured Analysis, The tools of Structured analysis (DFD,. Data Dictionary, Decision tree and Pseudo Codes, Decision Tables), pros and cons of each tool,
- ❖ system performance definition, description of outputs, feasibility study.

- ❖ Cost/Benefit Analysis, Data analysis, Cost/Benefit Analysis, The system proposal,

UNIT - III

- ❖ The Process and stages of system design; design methodologies, development activities,
- ❖ Input design, output design forms design, types of forms, basics of form design layout considerations and forms control.

UNIT-IV

- ❖ File structure, file organization, objectives of database, data structure, system testing and quality assurance, why system testing, what do we test for, the test plan quality assurance, trends in testing, role of data processing auditor, training and documentation.

UNIT-V

- ❖ Implementing and software maintenance, conversion combating resistance to change, post implementation review, software maintenance, hardware/software selection and the computer contract, suppliers, procedure for hardware/software selection, financial considerations in selection, the computer contract system security disaster recovery planning.

TEXT & REFERENCE BOOKS

- ❖ System Analysis and Design, Elias M. Awad, Galgotia Publications (P) Ltd.
- ❖ System Analysis and Design, International Ed. Perry Edwards, McGraw Hill Publications.

