

## **PGDCA SYLLABUS SEMESTER I**

### **CS 1.1 : COMPUTER FUNDAMENTALS AND PROGRAMMING**

Data types, variables, constants, operators (including bitwise operations), expressions, assignment statement, control statements, arrays, functions, pointers, structures union and enumerated data type, C preprocessor, storage class (# define, # include), Insertion, selection – rout linear, Binary search

Reference Books:

1. Schaum series – Programming in ‘C’
2. Y. Kanetkar – Working with ‘C’

### **CS 1.2: COMPUTER ORGANIZATION AND SYSTEM PROGRAMMING**

CPU Organization : Arithmetic logic unit, Register Organization, Instruction cycle, Instruction format, Instruction types, Addressing modes.

I/O & Bus Organization : Interrupt and DMA structure

### **CS 1.3 : Accounting & Financial Management**

Accounting principle: double entry system, preparation of trial balance, Final Accounts: Trading; profit and loss account and balance sheet.

Financial Management: Meaning and role, Ratio Analysis.

Fund flow statement; Costing; Marginal costing; Standard costing; budget and inventory control.

Introduction to computerized accounting system: coding logic and codes required, master files, transaction file, introduction to document files and outputs obtained.

Accounting package should be used for this course.

### **CS 1.4: FILE PROCESSING**

Basic file concepts: Entities, attributes, records, files, keys.

Physical Devices- Tapes, Magnetic Disks, Storage characteristics, Blocking, Deblocking and Buffering.

File Organization and functions : Sequential file; Relative file; Direct access file; Index sequential file, inverted and multilist files.

Hashing : Functions, Algorithms for handling synonyms-rehashing, linear probing and chaining.

COBOL to be used for implementation of concepts and case studies.

### **CS 1.5: DATABASE MANAGEMENT SYSTEM**

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

### **CS 1.6 PC Software Lab**

Software Lab to be used for the following :

Windows, Managing Windows, Working with Disk, Folders and files  
MS Word etc.

C language, COBOL

## **PGDCA SEMESTER-II**

### **CS 2.1: Operating Systems**

Over view of Operating System: Operating System as resource manager : Multitasking, Multithreading, Monolithic & Microkernel Architecture, Client-server Model, Windows NT client server Architecture.

Process & Threads: Process address space, process objects, thread objects, synchronization of threads, process structure, windows NT implementation of process & threads

Object Model Operating Systems Architecture: Executive Object, Object management, Object protection, Windows NT object implementation.

Microkernel Client Server Architecture: Comparison of monolithic and microkernel architecture, Windows NT Subsystem implementation, Win 32 subsystem MSDOS & 16 bit API, Virtual DOS machine Windows on win 32, Posix subsystem, OS/2 subsystem, Local Procedure Call.

Virtual memory Management: Virtual memory, Memory sharing, Memory Protection, Virtual memory implementation of window NT.

Kernel Functions: Context switching & Scheduling, Interrupt and Exception handling, Kernel features of windows/NT operating systems.

I/O Systems: Object model, Uniform driver model, Asynchronous operation, I/O processing, Layered driver model, I/O system of windows/NT.

### **CS 2.2: Database Design**

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.

Introduction to Oracle: Oracle DataBase Management System, Oracle Server options, and Oracle products.

Introduction to SQL: SQL command set, queries and nested subqueries

Introduction to Functions: Single row functions, Character and Number Functions, Nested Functions, Group Functions.

Data Manipulation Language: Create, Insert, Copy, Update, Delete, Commit, Savepoint, Rollback  
Concurrency and Locking: Table Locking, Data Locking

Views: Creating, Dropping and using views

Users and Security: System privileges, Table privileges, Granting/Revoking access rights

Forms Generation: Using Developer 2000

Introduction to PL/SQL

### **CS 2.3: Object Oriented Programming**

Object oriented programming concepts: objects, classes, encapsulation, abstraction, single/multiple inheritance, polymorphism, Implementation of concepts using Visual Basic language

## **CS 2.4: Computer Networks and Internets**

Network Overview: - LAN, MAN & WAN architecture, Circuit switching & voice network, Packet switching & data network, Integrated services Digital Networks, Frame Relay, Cell switching & ATM, Broad band ISDN, Satellite-based network and VSAT, Ethernet, fast Ethernet, Ethernet switching.

Network Reference Model: ISO Reference Model; TCP/IP Reference Model, Socket interface  
Internetworking: - Intranet & Internet architecture, Bridges, switches, Routers & gateways, Internet service provider – Dial up TCP & shell account.

Internet Services: Client-server protocol architecture, File Transfer Protocol, Simple Mail Transfer Protocol, Post Office Protocol, World wide Web Pages and browsing, CGI Technology for Dynamic web document, Java Technology for Active Web documents.  
Case Studies of network model used in Windows/NT should be taught.

## **CS 2.5 Multimedia Systems and Applications**

Multimedia Input Devices: Scanner, Digital Camera, Microphone, Video Camera.

Multimedia Output Devices: Sound/Speaker, colour Monitors, Printers

Storage Devices: CD-ROM's, DVD – Digital Versatile Disk, Coding & Compression Formats for Image, Audio, Video

Nonlinear form of Presentation: Hypertext, Hypermedia, Human/Computer Interaction  
Cognitive Aspects of Information Transfer: Various Models of Structuring of Content  
Methodology for developing Multimedia CDROM Titles.

Use of Multimedia tools: PhotoShop, Sound Editor, Video Editor, Animator, Authorizing tool – Director Multimedia Databases, Multimedia Application in Education, Libraries, Publishing, Art & Culture, Medicine and Industry

## **CS 2.6 Software Lab**

Software Lab to based on CS 2.1 to 2.5 Oracle, Visual Basic and Multimedia

## **SEMESTER – III**

### **CS 3.1 Project**

Live Project in IT Industry