

**PGDCA**

			Instructional System								
Course Code	SLM Code	Name of Subject	PC P	A W	V G D	P D P	PE C	P P W	II I L	Credits	Marks
PGDCA-1	C-101	Computer Fundamentals & Programming in C	√	√	√		√			4	100
PGDCA-2	C-104	Data Structure Through C	√	√	√		√			4	100
PGDCA-3	C-117 C-109	(A) Internet & E-commerce (B) DBMS	√	√	√	√	√			8	100
PGDCA-4	C-110	Operating System with Unix & Shell programming	√	√	√		√			4	100
PGDCA-5	C-111 C-112	(A) System Analysis & design (B) Visual Basic	√	√	√		√			8	100
PGDCA-6	C-113	Mathematics & Graph theory	√	√						6	100
PGDCA-7	-	Practical covering PGDCA -1 to 5					√			10	250
<b>Total</b>									<b>44</b>	<b>850</b>	

**COMPUTER FUNDAMENTAL AND PROGRAMMING IN C  
C-101**

**SECTION A**

Number System: Decimal, Octal, Binary & Hexadecimal, Representation of Integer, fixed and floating points, character representation : ASCII, EBCDIC.

**SECTION B**

Functional Units of Computer : I/O devices, primary and secondary memories.

**SECTION C**

Programming Fundamental : Algorithm development, techniques of problem solving, flowcharting, stepwise refinement, algorithm for searching sorting exchange and insertion merging of order lists.

**SECTION D**

Representation of integers, character, reals, data types, constants and variables, arithmetic expression, assignment statement logical expression, sequencing, alteration and iteration, arrays, string processing, sub program, recursion, files and pointers testing and debugging of program.

**DATA STRUCTURE THROUGH 'C'**  
**C-104**

**SECTION A**

1. Problem solving concepts, top down and bottom up design structured programming.
2. Concept of data type and data structure, differences between data type and data structures, view of data structures at logical level, implementation level and application level, built-in-data structures and user defined data structures.

**SECTION B**

3. Concepts of dynamic variables, difference between static and dynamic variables, concepts of pointer variables.
4. Study of the following user define data structures using static and variables.
  - Built-in data structures like arrays, records.
  - User defines data structures like stacks, queues, linked. User defines data structures like stacks, queues, linked lists, circular linked lists, doubly linked list.

**SECTION C**

5. Non-linear data structures: trees, terminology of trees, concepts and applications of binary trees, tree traversal techniques and algorithms.

**SECTION D**

6. Sorting and searching algorithms and their efficiency considerations.
7. Considerations for choice of proper data structure.

**INTERNET AND E-COMMERCE**  
**C-117**

**SECTION-A**

**Architectural framework of E-commerce**

Web architecture, web browser, HTTP, TCP/IP, Webserver, HTML, Scripts standards:- EDIFACT, edi.

**SECTION-B**

**Security Issue**

Introduction to viruse , worms, bombs and protective measure and security issue, firewalls, and proxy application gateways, secure, electronic transaction, public and private key encryption, digital signature, and digital certificate.

**SECTION-C**

**Electronic Payments Systems**

Digital cash, electronic signature, debit cards at point of scale, smart cards, online credit cards based system, electronic fund EFT, payment gateways.

**SECTION-D**

**Electronic Commerce Application**

E-commerce banking, online shopping, business, models, and revenue models, online publishing, e- commerce in retail industry, CBS, digital copyrights, electronic data interchanges, electronic fund transfer, electronic display board, electronic catalogue.

**DATA BASE MANAGEMENT SYSTEM**  
**C-109**

**SECTION A**

**1. Introduction**

Purpose of database, data models, instances & schemas, data independence, data definition language, data manipulation language, database manager, database administration.

**SECTION B**

**2. Entity Relationship Model**

Entity & Entity sets, relationship sets, mapping constraints, candidate & primary Key, entity relationship diagram, reducing E-R diagram to tables.

**3. Relational Model**

Concepts of relational model, integrity constraints, extension & intension, relational algebra, relational calculus, commercial query language, modifying the database, comments on relational model.

**4. DBMS based on relational Model**

Introduction, the mapping operation, data manipulation facility, data definition facility, data control facility.

**SECTION C**

**5. Normalization**

Introduction to functional dependence, normalization- 1NF, 2NF, 3NF, 4NF, 5NF.

**SECTION D**

**6. Oracle Ingress or Sybase**

Creation of tables, modification of tables, DDL command for RDBMS, SQL command for RDBMS, command language.

**OPERATING SYSTEMS WITH UNIX  
AND SHELL PROGRAMMING  
C-110**

**SECTION A**

**Operating System Fundamentals**

**Introduction Concepts:** Operating system function and characteristics, historical evolution of operating system, Real time systems, Distributed system, Methodologies for implementation of O/S service, system calls, system programs, Interrupt mechanisms.

**SECTION B**

**I/O System, File Management and Process Scheduling**

**File system:** Function of the system, File access and allocation methods, Directory structure, file protection mechanisms, implementation issue, hierarchy of file, disk scheduling policies.

**Process Scheduling:** Process, PCB, state transition, Level of Scheduling Comparative study of scheduling algorithms.

**SECTION C**

Feature of UNIX, directory structure of UNIX, File structure of UNIX, concept of inodes. Logging into Unix, format of UNIX components, basis operations on files, filters and pipelines mail and communication commands.

**SECTION D**

**Shell Script**

Types of shells, control structure for shells and I/O for shells. Use of Editors, VI, EX & Ed.

# SYSTEM ANALYSIS AND DESIGN

## C-111

### SECTION (A)

#### **1.Introduction**

Concepts of a systems, examples of systems, types of systems – open and closed, static and dynamic with examples.

#### **2.Overview of system analysis and Design**

System development life cycle, brief introduction to analysis, implementation and testing and maintenance.

### SECTION (B)

#### **3.Preliminary Investigation**

Project selection, scope definition and preliminary investigation.

#### **4.Feasibility study**

Technical and economic and operational feasibility, cost and benefit analysis.

### SECTION C

#### **5.Requirement Specification and analysis**

Fact finding techniques, data flow diagrams, data dictionaries, decision trees and tables.

#### **6.Detailed Design**

Module Specification, file design, database design.

### SECTION D

#### **7.Testing and Quality Assurance**

Maintenance, unit and integration testing techniques, design objectives, quality factors such as reliability correctness etc.

#### **8.User Education and Training**

Issues in user education and training, method of educating and training the user.

## **VISUAL BASIC C-112**

### **SECTION-A**

#### **Visual basic environment and overview**

Overview of main screen, menu bar, tool bar, tool box using menus, customizing a form, building user control, command buttons text boxes, labels images controls.

### **SECTION-B**

Statements in visual basic, writing codes, dialog box, variable, type of variable string numbers,

### **SECTION-C**

Writing procedures, VB programs structure, projects. Forms, modules, and frames, project with multiple forms displaying information on form, picture boxes, textboxes.

### **SECTION-D**

Printer objects controlling program flow. Built in function user defined function and procedures. Arrays, grids & records. Object oriented programming, creating object, building classes.



**MATHEMATICS AND GRAPH THEORY**  
**C-113**

**SECTION – A**

Sets and elements, universal set and empty set, subsets, Venn diagrams, set operations, Algebra of sets, Cartesian product, Relations, mappings, Countable and uncountable sets, Domain and range, propositional logic, FOPL ,Logical equivalences, quantifiers.

**SECTION-B**

Partially ordered sets, External elements of partial ordered sets, Least upper bound and greatest lower bound, Finite Boolean algebra, Lattices, Bounded lattices, Distributive lattices.

**SECTION-C**

Matrices, matrix addition and scalar multiplication, Transpose, Inverse, Determinants, Eigen values and Eigen vectors.  
Permutations, Combinations, Pigeon hole principle, Elements of Probability, Conditional Probability, Baye's Theorem.

**SECTION-D**

Tree, Binary tree, Traversals, Huffman's algorithm, Minimum spanning trees, Euler graph , Hamiltonian cycle, Cutsets, Matching, Coloring.