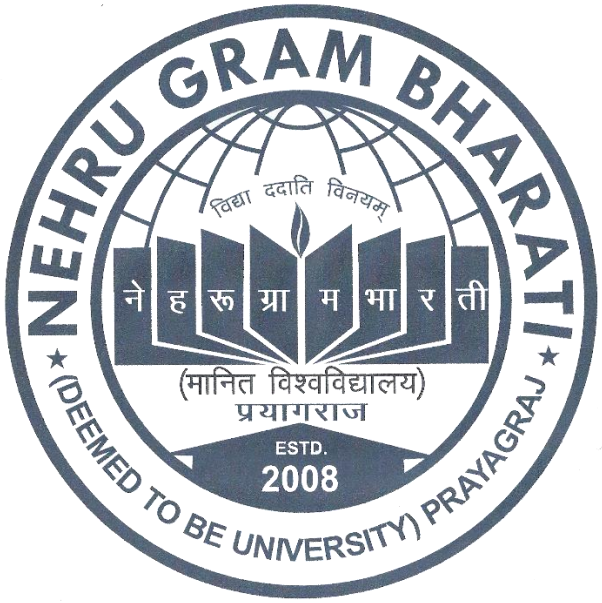
Nehru Gram Bharti

(Deemed to be University)



::Syllabus::

Post Graduate Diploma in Computer Application
Department of Computer Application

PGDCA-101: FUNDAMENTAL OF COMPUTER & IT

UNIT-1

Fundamental of Computer: Block diagram, Computer generation and classification, characteristics, Types & Applications.

UNIT-2

Input/Output units & computer memory : Input devices ,Output devices ,Keyboard, Mouse ,Hard disk, Floppy disk, CD-ROM, DVD, Plotters ,Scanners , Printer, Monitor etc. Computer Memory, Types of Memory.

UNIT-3

Information Technology: Meaning and needs of Information Technology and IT application in India, Scientific, Business, Educational ,Entertainment Application Industry Automtion,Weather forecasting awareness of on going information technology in India.

UNIT-4

Computer Languages: Programming, Machine& Assembly Language, High & Low level Language, Compiler, Interpreter & Assembler.

UNIT- 5

Computer and Communication: Single user, Multi user, Workstations, and overview of LAN, WAN, MAN, Overview of modem, email internet facilities through WWW.

Reference Books-

1. Fundamental of computer - V Raja Raman.
2. Fundamental of computer - B-Ram
3. Computer Fundamental - P.K.Sinha
4. Digital Computer Fundamentals – Thomas C Bartee

PGDCA-102 OPERATING SYSTEM

UNIT-1

Introduction to operating system: What is an OS, its need and services, operating system classification – single user, multi user, simple batch processing, multiprogramming, multi tasking, Time sharing system, distributed system, real time system.

UNIT-2

Process management: process concept, process scheduling, overview of inter process communication, CPU concepts, scheduling criteria, scheduling algorithm.

UNIT-3

Deadlocks: Deadlocks characterization method for Handling deadlocks, deadlocks presentation, deadlock Avoidance, Deadlock detection recovery from deadlocks.

UNIT-4

Memory Management: Logical versus physical address space, swapping partition, paging and segmentation, concepts of virtual memory

UNIT-5

Security: Authentication program threats, system threats and Encryption.

Reference Books

1. Operating system concepts - Silerschatz Galxin
2. Operating Systems (Mc-Graw Hill Book comp.) : Madnick & DonovanMilan Milenkovic- operating system
3. O.S. principles (PHI) - P,Britch Hansen
4. Operating Systems_A Design Approch (TMH) - Growley, Charles

PGDCA 103:COMPUTER & C-PROGRAMMING

UNIT-1

Introduction To Computers: Computer hardware components, Disk storage, memory, keyboard, mouse, printers, monitors, CD etc., and their functions, Comparison based analysis of various hardware components.

UNIT-II

Basic operating System Concepts: MS-DOS, WINDOWS, Functional knowledge of these operating systems, Introduction to basic commands of DOS, Managing file and directories in various operating systems, Introduction to Internet, Basic terms related with internet, TCP/IP.

UNIT-III

Programming in C: History, Introduction to C-programming languages, Structure of C programs. Compilation and execution of C programs. Debugging techniques. Data types and Sizes. Declaration of variables, Identifiers and keywords, Symbolic constants. Storage classes (automatic, external, register and static), Enumerations, Command line parameters, Macros. The C preprocessor.

UNIT-IV

Operators: Unary operators, Arithmetic & logical operators, Bitwise operators and expressions, Conditional expressions, Precedence and order of evaluation.

Control statements: If-else, switch, break continue, the comma operator, goto statement.

Loops: for, while, do–while.

Functions: built-in and user-defined function declaration, Definition an function call, Parameter passing; Call by value, Call by reference, Recursive functions, multifile programs.

Arrays: Linear arrays, Multidimensional arrays, Passing arrays to functions, Arrays and strings.

UNIT-V

Structure and Union: definition and differences, Self- referential structure.

Address of (&) operators, pointer to pointer, Dynamic Memory allocation, called and malloc function array of pointers, function of pointers, Structures and pointers.

File handling in C: Opening and closing data file, Creating a data file, Read and write functions, Unformatted data files.

Reference Books:

1 C in Depth – S.K. Srivastva

2 Programming in C- E .Balaguruswami (YMH Publication)

3 Let us C- Y. Kanetkar

4 Exploring with C – Y. Kanetkar

PGDCA-104: COMPUTER ORGANIZATION AND ARCHITECTURE

UNIT-1

Introduction: Digital and Analog methods, definition of digital computer, Major components of digital computer.

Number system: Binary, Decimal, Octal and Hexadecimal, Number system conversion, coding-BCD, ASCII & EBCDIC. Binary Arithmetic, Binary addition, Binary subtraction, complement representation of numbers, 1^s complement ,2^s compliment, 9^s complement.

UNIT-2

Logic gates and Boolean algebra: AND, OR, NOT, NAND, Exclusive- OR Gates

Laws of Boolean algebra, De Morgan's theorem, reducing Boolean Expression.

Standard Representation for Logic Function: SOP Form, POS Form. K-Map, two & three variable, Simplification of Boolean algebra using K-Maps, pairs, quads and octets,

Don't care condition.

UNIT-3

Data Processing circuits: Adders: Half Adder, Full Adder, substructures, multiplexers, de multiplexers, encoder, and decoder.

UNIT -4

Memory System: Memory Hierarchy, Main Memory, cache-memory, Auxiliary memory, Memory Addressing in RAM & ROM.

Digital Integrated Circuits: RTL,DTL,TTL ,MOS and CMOS.

UNIT-5

Microprocessor: Basic concept of 8 bits Micro processor (8085).

Introductory concept of Pipeline Flynn's and Feng's classification, Parallel architecture classifications.

Reference Books -

1.Malvino and Brown : - Digital Electronics
2.Morris : Computer organization
3.Moires mono – digital Logic & Computer design.

PGDCA105: DATABASE MANAGEMENT SYSTEMS

UNIT-1

An overview of database management system: Database Administrator and his responsibilities. Database system concepts and Architecture .Data model schema and instances, data independence (physical and logical independence) DDL, & DML

UNIT-2

Introduction to data models: Entity relationship model, notation for E-R Diagram, mapping Constrains, Keys, concepts of super key, Candidate key and primary key. Hierarchical, network and relational model.

UNIT-3

SQL: Characteristics of SQL. Advantage of SQL. SQL data types and literals. Types of SQL commands.SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.Introduction to PL/SQL.

UNIT-4

Normalization: Normalization concept and update anomalies functional dependencies, Multi valued and join dependencies, normal forms (INF, 2NF, 3NF, BCNF).

UNIT-5

Database protection: Recovery, concurrency, security, integrity and control.

Reference Books

1.C.J.Date: “An Introduction to Data base System” Narosa Publications
2.Desai Bipin : An Introduction to data base system
3.Ullman:”Principles of Database System”(Galgoria publication)
4. Navin Prakash-“Introduction to database management “ TMH
5. Henry F. Korth-“Database system Concepts” (Mc Grahill)
6. Sql Pl/sql 3rd Revised Edition Ivan Bayross Bpb Publications
7. Oracle 9i PL/SQL Programming Scott Urman McGraw-Hill

PGDCA-201 : DATA STRUCTURE USING C++

UNIT-1:

Introduction: Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm
Complexity and Time-Space trade-off.
Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address
calculation, application of arrays, Character String in C, Character string operation, Array as Parameters,
Ordered List, Sparse Matrices.

UNIT-2:

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array
Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks,
Application of stack: Conversion of Infix to Prefix and Postfix Expressions.

UNIT-3

Queues: Array and linked representation and implementation of queues, Operations on Queue: Create,
Add, Delete, Full and Empty. Circular queue.
Linked list: Representation and Implementation of Singly Linked Lists, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists,

UNIT-4

Trees: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete
Binary Tree. Extended Binary Trees, Array and Linked Representation of Binary trees, Traversing Binary Trees, Threaded Binary trees. Traversing Threaded Binary trees.

UNIT-5

Searching and Hashing: Sequential search, binary search, Hash Table, Hash
Functions, Collision Resolution Strategies, Hash Table Implementation.
Sorting: Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort.
Binary Search Trees: Binary Search Tree (BST), Insertion and Deletion in BST, AVL Trees, B-trees.

Reference Books -

1. Data Structures using C – E.Balaguruswami (YMH Publication)
2. Data Structures using C - Lip Schutz
3. Data Structures using C - Radhakrishanan
4. Data Structures using C in Depth - Srivastava
5. A M Tenenbaum etal, “Data Structures using C & C++”, PHI

6. Horowitz and Sahani, “Fundamentals of data Structures”, Galgotia

PGDCA-202: SOFTWARE ENGINEERING

UNIT-1

Introduction: Definition of Software engineering, importance of software, software characteristics, software components, software crises, software development life cycle.

UNIT-2

Software Requirement Specification: Software process models, water fall model, prototyping, spiral, Role of management in software development, Role of matrices and measurements, Requirement specification, monitoring and control**.**

UNIT-3

Software Project planning-Objectives, Decomposition techniques: software sizing cost estimation models, coco mo model. System analysis: principal of structured analysis, DFD, ER diagram, data dictionary**.**

UNIT-4

Software Design: Design principles, Top-down and bottom up design, design specification and verification, monitoring and control.

UNIT-5

Coding-Top: down and bottom up programming, structured programming information hiding, programming style etc.Testing fundamentals- objective principles testability/ test cases: while box & black box testing. Testing Strategies- verification & validation unit test/ integration test, validation tests / system testing.

Reference Books -

1- Roger s. Pressman, software engineering- “A Prachtioner’s Approach”, Third edition, McGrowHill,
2- R.E. Fairley- “software engineering concepts” McGrowHill,
3- Jalole/ Pankaj “ software engineering edition 2”, New Delhi Naras-2002.
4- Alexis, Lcon and Mathews lcon, ”Fundamental of Software are Engineering Vikas Fairly, “software Engineering” New Delhi.TMN

PGDCA-203 : E-COMMERCE

UNIT-1

Introduction: Electronic Commerce, Definition of E-commerce, Force behind E-commerce, Advantages and disadvantages, Architectural framework, Impact of E-commerce on business

UNIT-2

Mobile Commerce: Introduction, wireless application protocol, WAP technology, Mobile computing information.

UNIT-3

Web Security: Security issues on web, Importance of firewall, Components of firewall, Factors to consider in firewall design, Limitaion of firewall

UNIT-4

Encryption Techniques: Symmetric Encryption keys and data Encryption standards, Triple Encryption, Public & Private keys, Digital signature, Virtual private network.

UNIT-5

Electronic Payments: Overview, The SET Protocol, Payment gateway, Certificate, Smart Card, Credit Card, On-line banking-Commerce law, Forms of agreement

Reference Books

1. Ravi Kalakota, Andrew Winston," Frontiers of Electronic Commerce", Addition Wesley
2. Bajaj and Nag,"E-Commerce the cutting edge of Business", TMH.
3. P.Loshin, John Vacca,"Electronic Commerce", Firewall Media, New Delhi

PGDCA-204 : MICROSOFT .NET FRAMEWORK USING C#

Unit 1

The .NET Framework: Introduction, common language runtime, common type system, common language specification, The NET class library intermediate language, garbage collection, web services, Unified clean.

Unit 2

C# Basics: Introduction, Data types, Identification variables & constants, c# statements, object oriented concept, object and class, arrays and strings, delegates events, indexes attributes, versioning.

Unit 3

C# Using libraries: Home space system, input output, multi- threading, Networking and sockets, windows form c# in web publishing, error handling.

Unit 4

Advanced features using c#: web services, windows services, reflection, COM and C# localization unsafe mode

Reference Books

1.Shibi Panikkar and Kumar Sanjeev, "C# with NET frame work" firewall media
2.Balagurusamy, "programming with C#"TMH
3. Jeffrey Richter, "Applied Microsoft.NET frame work programming" (Microsoft)
4. Fergal Grimes, "Microsoft, NET for programmers"(SPD)

PGDCA-205:Project Work