

COMPUTER CONCEPTS

Subject Code	P.G.D.C.A 1.1	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Fundamentals of Computers:

Introduction to Computer, Memory, Main Memory, Secondary Memory , Operating system, Types of Operating systems, Introduction to DOS, Introduction to Windows, Internet Explorer, Windows Explorer – Types of Programming Languages.

12 hrs.

UNIT - II: MS Word and MS Power Point:

Word Basics, Formatting, Headers and Footers, Tables, Graphics, Macros, Mail Merge : Mail Merge concept, Main document, data sources, merging data source and main document. Overview of word menu options word basic tool bar.

Power Point, Creating Presentations, Power Point Transition and build effects, Printing presentation elements.

14 hrs.

UNIT - III: MS Excel and MS Access:

MS Access: Creating a Simple Database and Tables, Forms, Queries and Dynasets , Printing Reports ,Relational Databases, Relational Types.

12 hrs.

UNIT - IV: MS Excel:

Excel Basics, Formatting, Introduction to functions, Excel Charts, creation of different types of charts, printing charts, deleting charts – Linking in Excel Excel Graphics: Creating and placing graphic objects, Resizing Graphics, Drawing Lines and Shapes.

14 hrs.

TEXT BOOKS:

1. *V Rajaraman* “Fundamentals of Computers”.
2. *Ron Mansfield*, “Working in Microsoft Office”, Tata McGraw Hill (2008) (Chapters : 4 to 9, 11, 12, 13, 14, 15, 17, 18, 19, 24, 25, 28, 30, 31, 33, 34, 35).

REFERENCE BOOKS:

1. *Peter Norton*, “Introduction to Computers”, Sixth edition, Tata McGraw Hill (2007).
2. *Stephen G. Kochan*, “Programming in C”, Third Edition, Pearson Education (2007) (Chapters: 1 to 14, 16, 17).
3. *Michael Miller*, “Absolute Beginners Guide to Computer Basics”, Fourth Edition, Pearson Education (2007).

C PROGRAMMING

Subject Code	P.G.D.C.A 1.2	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: C Fundamentals:

C Character Set, Identifiers and Key Words under ANSI C. Data Types, Constants :int, float, double, char, Qualifiers, long, short, unsigned and signed, Escape sequences (like \n, \b etc.), Arithmetic expressions and different operators, Pre-processor directives, Symbolic constants, Comments, sizeof. **14 hrs.**

UNIT - II: Loop Control Structure:

The for statement, Nested for Loop, for loop variants, the while statement, Increment/decrement operators, Use of Break and Continue, the do-while loop. **12 hrs.**

UNIT - III: Decision and Case Control Structure:

If statement, if-else construct, use of logical operators and Compound Relational Tests, Nested if statements, The else if construct, the relational operators, the conditional expression (ternary) operator, The switch statement with or without break. **14 hrs.**

UNIT - IV: Arrays:

Declaration, Referring individual elements, Entering data into an array, reading data from an array, Array Initialization, Bounds checking, Passing array elements to a function, Passing array to a function **12 hrs.**

TEXT BOOK :

1. *Balguruswamy*, "Programming in ANSI C", TATA Mc GRAW HILL.

REFERENCE BOOKS :

1. *H.Schidt* "Turbo C/C++ - The Complete Reference"
2. *S.Kochan*, "Programming in C.
3. *H.Schidt*, "Born to code in C.
4. *H.Schidt*, "The Art of C.
5. *Kerighan and Ritchie*, "C Programming", 2nd Ed.
6. *Agarwal*, "Programming in ANSI C.
7. *Kanitkar*, "Let us C".

DATABASE MANAGEMENT SYSTEMS

Subject Code	P.G.D.C.A 1.3	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Introduction:

Introduction; An example; Characteristics of Database approach; Actors on the screen; Workers behind the scene; Advantages of using DBMS approach; A brief history of database applications; when not to use a DBMS. Data models, schemas and instances; Three-schema architecture and data independence; Database languages and interfaces; The database system environment; Centralized and client-server architectures; Classification of Database Management systems. **14 hrs.**

UNIT - II: Entity-Relationship Model:

Using High-Level Conceptual Data Models for Database Design; An Example Database Application; Entity Types, Entity Sets, Attributes and Keys; Relationship types, Relationship Sets, Roles and Structural Constraints; Weak Entity Types; Refining the ER Design; ER Diagrams, Naming Conventions and Design Issues; Relationship types of degree higher than two. **12 hrs.**

UNIT - III: Relational Model and Relational Algebra:

Relational Model Concepts; Relational Model Constraints and Relational Database Schemas; Update Operations, Transactions and dealing with constraint violations; Unary Relational Operations: SELECT and PROJECT; Relational Algebra Operations from Set Theory; Binary Relational Operations : JOIN and DIVISION; Additional Relational Operations; Examples of Queries in Relational Algebra; Relational Database Design Using ER- to-Relational Mapping. **14 hrs.**

UNIT -IV: SQL - 1:

SQL Data Definition and Data Types; Specifying basic constraints in SQL; Schema change statements in SQL; Basic queries in SQL; More complex SQL Queries. **12 hrs.**

TEXT BOOKS:

1. *Elmasri and Navathe*, "Fundamentals of Database Systems", 5th Edition, Addison-Wesley, 2007
2. *Raghu Ramakrishnan and Johannes Gehrke*, "Database Management Systems", 3rd Edition, McGraw-Hill, 2003.

REFERENCE BOOKS:

1. *Silberschatz, Korth and Sudharshan*, "Data Base System Concepts", 5th Edition, Mc-GrawHill, 2006.
2. *C.J. Date, A. Kannan, S. Swamynatham*, "An Introduction to Database Systems" 8th Edition, Pearson Education, 2006.

VISUAL BASIC (VB)

Subject Code	P.G.D.C.A 1.4	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT – I: Visual Programming:

The Fundamentals of Visual Basic: Getting Started with visual Basic, the Menu Bar, The Toolbars, The Project Explorer, The Toolbox, The Properties Window

12 hrs.

UNIT - II:

Visual Basic’ Declaring Variables, Types Of Variables, Converting variables Types, User Defined Data Types, Constants, and Array. Control Flow Statements, Loop Statements

14 hrs.

UNIT - III:

The Appearance of Forms, the Start-up Form, Designing Menus, The Menu Editors ,Programming Menu Commands Drag & Drop operation.

14 hrs.

UNIT - IV: Working With Forms:

The Multiple Document Interface MDI Application: The Basic, Built-In Capabilities Of MDI Parent & Child Menus, Accessing Child Forms.

12 hrs.

TEXT BOOKS:

1. “Mastering visual Basic” 6 Evangelos Pertroutsos, BPB Publications.

REFERENCES:

1. *John socha & Devra Hall*, “Teach yourself visual Basic for windows”, BPB Publications.
2. *Carry Cornell*, “The vb4 for window 95”, Mcgraw.
3. *Noel Jeshe*, “The complete reference Visual Basic”, TATA MCGR WILL.

ELECTIVE – I
E-COMMERCE

Subject Code	P.G.D.C.A 1.5.1	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT – I:

Introduction to E-Commerce: Benefits, Impact of E-Commerce, Classification of E-Commerce, Application of E-Commerce Technology, Business Models, Framework of E-Commerce., Business to Business, Business to Customer, Customer to Customer. **10 hrs.**

UNIT – II:

Network Infrastructure: LAN, Ethernet (IEEE 802.3), WAN, Internet, TCP/IP reference model, Domain names, Internet Industry Structure, FTP applications, Electronic mail, History of WWW. HTTP, Web Browsers, HTML, Simple exercises in HTML, Common, Gateway Interface. **13 hrs.**

UNIT - III:

Securing Business on Network: Security Policy, Procedures and Practices, Site Security, Firewalls, Securing Web Service, Transaction Security, Cryptology, Public Key, Authentication Protocols, Digital Signatures, Security protocols for Web Commerce. **13 hrs.**

UNIT - IV:

Electronic Payment Systems: Online Electronic Payment Systems, Prepaid and Post Paid Electronic Payment Systems Information Directories and Search Engines Internet Advertising, Models of Internet advertising, Sponsoring Content, Corporate Website, Weaknesses in Internet advertising, Web Auctions.Launching Your E business-Marketing an E-Business, Search Engines and Directories, Public Relations, Consumer Communication, News Groups & Forums.

16 hrs.

TEXT BOOK:

1. *Bharat Bhasker*, “Electronic Commerce -Framework, Technologies and Applications”, TMH Publications.

REFERENCE BOOKS:

1. *Kamlesh K Bajaj*, “E-Commerce – Cutting Edge of Business”, Debjani Nag – Tata McGraw Hill, 1/e, 2003.
2. *Napier, Judd, Rivers, Wagner*, “Creating a winning E-Business”, Course Technology-Thomson Learning, 2001.
3. *P T Joseph* “E-Commerce, an Indian perspective”, Prentice Hall, 2/e, 2005.
4. “Strategic Management of e-Business”, Stephen Chen John Wiley & Co.

COMPUTER GRAPHICS

Subject Code	P.G.D.C.A 1.5.2	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: A Survey Of Computer Graphics:

Computer Aided Design, Presentation Graphics, Computer Arts, Entertainment, Education And Training, Visualization, Image Processing, Graphical User Interface.

Overview Of Graphics Systems: Video Display Devices, Raster Scan Systems, Random Scan Systems, Input Devices, Hard Copy Devices, Graphics Software.

12 hrs.

UNIT – II: Output Primitives:

Points And Lines, Line Drawing Algorithms, Loading And Frame Buffer, Line Function, Circle Generating Algorithms, Pixel Addressing, Filled Area Primitives, Filled Area Functions, Cell Array, Character Generation.

12 hrs.

UNIT- III: Attributes Of Output Primitives:

Line Primitives, Curve Primitives, Colors And Gray Scale Levels, Area Fill Attributes, Character Attributes.

Two Dimensional Geometric Transformations: Basic Transformations, Matrix Representation And Homogeneous Coordinates, Composite Transformations.

16 hrs.

UNIT - IV: Two Dimensional Viewing:

The Viewing Pipeline, Viewing Co-Ordinate Reference Frame, Window To View Port Co-Ordinate Transformations, Clipping Operations, Point Clipping.

12 hrs.

TEXT BOOK:

1. *Donald Hearn and Pauline Baker*, “Computer Graphics” C Version”, 2nd Edition, Pearson Education, 2003.

REFERENCE BOOK:

1. *Filly, Van Dam*, “Computer Graphics”.
2. *F.S. Hill, Jr.*, “Computer Graphics Using Open GL”, 2nd Edition, Pearson Education, 2001

DATA STRUCTURES

Subject Code	P.G.D.C.A 1.5.3	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT – I: Pointers:

Pointers: Concept, pointer variables, Accessing variables through pointers, pointer declaration and definition of pointer variables, Pointer and function, pointer to pointers, Compatibility, Lvalue and Rvalue, Array and pointer, pointer arithmetic and arrays, passing an array to a function, Understanding complex declaration, Memory allocation function, Array of pointers. **12 hrs.**

UNIT – II:

Introduction to concept of Data structures, Overview and Implementation of Data Structures.

Stacks: Stack representation, Operation on stack, Application of stack, Conversion of expression precedence. **12 hrs.**

UNIT – III: Recursion:

Recursion: Recursive definition, How recursion works, Fibonacci series, Tower of Hanoi problems.

Queue: Definition of queue, Operations on queue, Application of Queue, Types of queue, Double ended queue, Circular queue, priority queue. **14 hrs.**

UNIT - IV:

Lists: Definition of Linked list, Singly linked list, Operation on singly linked list.

Trees: Binary tree, representation of binary tree, Operation on binary tree, Application of Binary tree. **12 hrs.**

TEXT BOOKS:

1. Behrouz A. Forouzan and Richard F. Gilberg, “Computer Science A Structured Programming Approach Using C”, Second Edition, Thomson, 2003.

REFERENCES :

1. A. M. Padama Reddy, “Systematic Approach to Data Structures using C” Sri, Nandz P Publications.
2. Robert Kruse and Bruce. Lenug, “Data structures & program design in C”, Pearson Education.
3. Richard F. Glberg and Behrouz A. Forouzan, “Data structures A Pseudocode approach with C”, Thomoson, 2005.

ARTIFICIAL INTELLIGENCE

Subject Code	P.G.D.C.A 1.5.4	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: What Is Artificial Intelligence?:

The AI Problem, The Underlying Assumptions, What Is An AI Technique? The Level Of The Model, Criteria For Success. **12 hrs.**

UNIT - II: Problems, Problem Spaces And Search:

Defining The Problem As A State Space Search, Production Systems, Problem Characteristics, Production System Characteristics, Issues In The Design Of Search Problems. **14 hrs.**

UNIT - III: Heuristic Search Techniques:

Generate And Test, Hill Climbing, Best First Search, Problem Reduction, Constraint Satisfaction, Means –Ends Analysis. **12 hrs.**

UNIT - IV: Knowledge Representing Issues:

Representations and Mappings, Approaches To Knowledge Representation, Issues In Knowledge Representation, The Frame Problem. **14 hrs.**

TEXT BOOK:

1. *Elaine Rich, Kevin Knight*, “Artificial Intelligence”, Tata Mc-GRAW HILL

REFERENCE BOOKS:

1. *Nils J. Nilsson*, “Principles Of Artificial Intelligence”, Elsevier,
2. *Stuart Russel, Peter Norvig*, “Artificial Intelligence A Modern Approach”, Pearson Education.

NEURAL NETWORKS

Subject Code	P.G.D.C.A 1.5.5	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Neural Dynamics – Activations And Signals:

Neurons As Functions, Signal Monotonicity, Biological Activations And Signals, Neuron Field, Neuron Dynamical System, Common Signal Function.

12 hrs.

UNIT- II: Neural Dynamics – Activations Models:

Neuronal Dynamical Systems, Additive Neuronal Dynamics, Additive Neuronal Feedback, Additive Activation Models, Additive Bivalent Models.

14 hrs.

UNIT - III: Synaptic Dynamics – Unsupervised Learning:

Learning As Encoding, Change And Quantization, Four Unsupervised Learning Laws, Probability Spaces And Random Processing, Stochastic Unsupervised Learning Stochastic, Competitive Learning.

14 hrs.

UNIT - IV: Synaptic Dynamics And Supervised Learning:

Supervised Function Estimation, Supervised Learning As Operant Conditioning, Supervised Learning As Stochastic Pattern Learning With Known Class Membership And As Stochastic Approximation.

12 hrs.

TEXT BOOK:

1. *Bart Kosko*, “Neural Networks And Fuzzy Systems - A Dynamical Systems Approach To Machine Intelligence”, PHI (L996).

REFERENCES:

1. *Kaufman*, “Fuzzy Sets And Systems”, Academic Press.
2. *Stamatios V. Kartalopoulos*, “Understanding Neural Networks And Fuzzy Logic”, PHI
3. *S. Rajashekharan, G.A.Vijayalakshmi Pai*, “Neural Networks, Fuzzy Logic And Genetic Algorithms”, PHI
4. *H.J.Zimmerman*, “Fuzzy Sets Theory And Its Applications”, KAP.

C PROGRAMMING LAB PROGRAMS

Subject Code	P.G.D.C.A 1.6	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

VISUAL BASIC (VB) LAB PROGRAMS

Subject Code	P.G.D.C.A 1.7	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

OBJECT ORIENTED PROGRAMMING WITH C++

Subject Code	P.G.D.C.A 2.1	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Principles Of Object Oriented Programming:

Object Oriented Programming, Object Oriented Programming Paradigm, Basic Concepts Of Object Oriented Programming, Benefits Of Object Oriented Programming, Applications Of Object Oriented Programming. **10 hrs.**

UNIT - II:

Beginning With C++: What is C++? Applications of C++, Structure of C++ program, Creating A Source File, Compiling and Linking, Tokens, Keywords, Identifiers and Constants, Data Types. **12 hrs.**

UNIT - III:

Class and Objects: Introduction to Classes and Objects. Member Functions and Member data, Nesting of Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects. **12 hrs.**

UNIT - IV:

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. Constructors and Destructors: Introduction to Constructors, Parameterized Constructors, Destructors. **18 hrs.**

TEXT BOOK:

1. *Balagurusamy*, "Object Oriented Programming With C++", Tata McGraw Hill.

REFERENCE BOOK:

1. *Sourav Sahay*, "Object Oriented Programming With C++", Oxford University Press
2. *Stanly B. Lippman, Josee Lajoie, Barbara E. Moo*, "C++ Primer", Edition Wesley.
3. *Herbert Schildt*, "The Complete Reference C++", TMH.

SOFTWARE ENGINEERING

Subject Code	P.G.D.C.A 2.2	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Introduction:

what is software, Software Engineering, Software process, What is a software Process Model, Costs of Software Engineering Attributes of good Software.

10 hrs.

UNIT - II: Socio Technical Systems:

Requirement Definition, System Design, System Modeling, Sub System Development, Systems integration , System Evolution.

12 hrs.

UNIT - III: Software Processes:

software Process Models, The Waterfall Model , Spiral Development Software Design & implementation Software validation , Software evolution.

12 hrs.

UNIT - IV: Project Management:

The Project Plan, Milestones & Deliverables , Risk Management, Risk Identification, Risk Analysis , Risk Planning , Risk Monitoring.

18 hrs.

TEXT BOOK:

1. *Ian Somerville*, “**Software Engineering**”, 8th Edition, Pearson Education, 2007.

REFERENCE BOOKS:

1. *Waman S Jawadekar*, “Software Engineering Principles and Practice”, Tata McGraw Hill, 2004.
2. *Roger S. Pressman*, “A Practitioners Approach”, 7th Edition, McGraw-Hill, 2007.
3. *P Jalote, Narosa*, “An Integrated Approach to software Engineering”.
4. *Mall R*, “Fundamentals of Software Engineering, Prentice Hall of India

COMPUTER NETWORKS

Subject Code	P.G.D.C.A 2.3	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Introduction of computer networks:

what is Computer Network, Network Goal/Motivations, Applications of Networks, Network Structure, Topology, Classification of Networks, OSI Reference Model. **10 hrs.**

UNIT - II:

Transmission media, error detection & correction : Twisted Pair cable, Co-axial Cable, Fiber-Optic cable, Radio Waves, Microwaves, Infrared Error Detection Techniques-parity Checks, Cyclic Redundancy Checks, Forward Error Correction. **13 hrs.**

UNIT - III: Multiple access:

Random Access, ALOHA, Carrier Sense Multiple Access (CSMA), Carrier Sense Multiple, Access With Collision detection (CSMA/CD), Carrier Sense Multiple Access With Collision Avoidance(CSMA/CA). **15 hrs.**

UNIT - IV: Bluetooth:

Bluetooth Architecture, Applications, The Bluetooth Protocol Stack, The Bluetooth Radio layer, The Bluetooth Based Layer, The Bluetooth L2CAP Layer, The Bluetooth Frame Structure. **14 hrs.**

TEXT BOOKS:

1. *Andrew S. Tanenbau A. T.*, “Computer Networks”, PHI, 4th Edition.

REFERENCE BOOKS:

1. *Benrouz A Forouzan*, “Data communication & networking”, McGraw-Hill Companies, 4th Edition.
2. *Alberto Leon , Garcia & Indira Widjaja* “Communication network Fundamental Concept’s & Key architecture”, 3rd Edition Tata McGraw Hill .
3. *William Stallings*, “Data & Computer Communication” 8th Edition, Pearson Education.
4. *Nader F. Mir*, “Computer & communication Networks” Pearson Education, 2007
5. *Wayne Tomasi*, “Introduction of Data communications & Networking” Pearson Education .

JAVA AND INTERNET PROGRAMMING

Subject Code	P.G.D.C.A 2.4	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I:

History and design features of JAVA, Advantages of Java compared to CPP, how java works, basics of JAVA, Applications and Applets, using the tools in JDK, java doc, java, jdb etc. JAVA Language keywords, Constants, variables and Data Types. Operators and Expressions. **10 hrs.**

UNIT - II:

Conditional Statements, branching and Looping, Labeled Loops Statement, Jump statements: Break, Continue, and Return. Arrays and Strings-Creating an Arrays, one and two Dimension, String Array. **12 hrs.**

UNIT - III:

Classes, Objects and Methods Defining a class, adding variables and Methods, creating Objects constructors, class inheritance, Basics types, using super, multi level hierarchy, abstract and final classes, object class. **13 hrs.**

UNIT - IV:

Packages and interfaces, Access protection, Extending interfaces, packages. Exception Handling, Fundamentals exception types, uncaught exceptions, throw and try catch, blocks, final statements. Multithreading Fundamentals, Java Thread model priorities, synchronization, messaging, thread class. **17 hrs.**

TEXT BOOK:

1. *Patrick Naughton And Herbert Schildt*, "Java The Complete Reference", TMH Publication.

REFERENCES:

1. *Cay S. Horstmann and Gary Cornell*, "Core JAVA 2, Volume-I", 7/e, Pearson Education.
2. *Cay S. Horstmann and Gary Cornell*, "Core JAVA 2", Volume-II, 7/e, Pearson Education (2006)
3. *C. Muthu*, "Programming with JAVA", Thomson-Vijay Nicole.

ELECTIVE - II

PRINCIPLES OF PROGRAMMING LANGUAGE

Subject Code	P.G.D.C.A 2.5.1	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Data types:

Properties of type and objects, data objects, Variables and Constants, Data types, Specification and Implementations of elementary data types, declaration, Type checking and type conversion. **7 hrs.**

UNIT - II:

Scalar data types, Structured data types, Vectors and arrays, records, lists, Character string, files input, input – output **6 hrs.**

UNIT - III: Sequence Control:

Implicit and Explicit sequence control, Sequencing with Arithmetic expressions, Sequence control between statements. **6 hrs.**

UNIT - IV: Subprogram Control:

Subprogram sequence control, attributes of data control, shared data in subprograms, Advances in language design, Comparative study of Programming languages. **6 hrs.**

TEXT BOOK :

1. Pratt, T. W. and Zelkowitz, Programming Language: Design and Implementation, 3rd Edition, PHI 1996

REFERENCES :

1. Ravi Sethi, “Programming Languages-Concepts and Constructs”, Addison-Wesely (1990)
2. Ellis Horowitz, “Fundamentals of Programming Languages”, Galgotia Publication
3. Alfred V.Aho, Ravi Sethi and Jeffrey D. Ullman, “Compilers-Principles, Techniques and Tools”, Addison-Wesley(1999).
4. Dhamdhare D.M, “Compiler Construction, Principles and Practice”, Mc Millan India, (1981).

OPERATING SYSTEM

Subject Code	P.G.D.C.A 2.5.2	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Introduction:

what is operating, system computer, system operation process management, memory management, storage management, File system management, mass storage management. **10 hrs.**

UNIT - II: System structure:

Operating system services, system programs, operating system Structure, simple structure. **12 hrs.**

UNIT - III: Process concepts & deadlock:

The process, process state, process control Block, Deadlock characterization, Resource –allocation Graph. **12 hrs.**

UNIT - IV: Memory management:

Contiguous memory Allocation, memory mapping & protection, memory Allocation, Fragmentation. **18 hrs.**

TEXT BOOK:

1. *Abraham Silberschatz, Peter Baer Galvin, Greg Gagne*, “Operating System Principles”, 7th edition, Wiley-India, 2006.

REFERENCE BOOKS:

1. *Milan Milankovic* “Operating System concepts and design”, 2nd Edition Migrawhill.
2. *D.M Dhamdhare*, “Operating Systems: A Concept Based Approach”, 2nd Edition 2. Tata McGraw- Hill, 2002.
3. *Harvey M Deital*, “Operating Systems”, 3rd Edition, Addison Wesley, 1990.
4. *P.C.P. Bhatt*, “Operating Systems”, 2nd Edition, PHI, 2006.

C# Programming and .NET Concept

Subject Code	P.G.D.C.A 2.5.3	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: The Philosophy of .NET:

Understanding the Previous State of Affairs, The .NET Solution, The Building Block of the .NET Platform (CLR, CTS and CLS), The Role of the .NET Base Class Libraries, What C# Brings to the Table, Additional .NET-Aware Programming Languages, An Overview of .NET Binaries (aka Assemblies), The Role of the Common Intermediate Language, The Role of .NET Type Metadata. The Role of the Assembly Manifest, Compiling CIL to Platform-Specific Instructions, Understanding the Common Type System, Intrinsic CTS Data Types, Understanding the Common Language Specification, Understanding the Common Language Runtime, A Tour of the .NET Namespaces, Increasing your Namespace Nomenclature, Deploying the .NET Runtime.

12 hrs.

UNIT - II: Building C# Applications:

The Role of the Command Line Compiler (csc.exe), Building C# Application Using csc.exe, Working with csc.exe, Response Files, Generating Bug Reports, Remaining C# Compiler options, The Command Line Debugger (cordbg.exe), Using the Visual Studio.NET IDE, Other Key Aspects of the VS.NET IDE, Documenting Your Source Code via XML, C# “Preprocessor” Directives, An Interesting Aside: The System.Environment Class, Building .NET Applications with other IDEs.

12 hrs.

UNIT - III: C# Object-Oriented Programming with C#:

The Anatomy of a Basic C# Class, Creating Objects: Constructor Basics, The Composition of a C# Application, Default Assignment and Variable Scope, The C# Member Initialization Syntax, Basic Input and Output with the Console Class, Understanding Value Types and Reference Types, The Master Node: System.Object, The System Data Types (and C# Aliases), Converting Between Value Types and Reference Types: Constructs, C# Control Flow Constructs, The Complete Set of C# Operators, Defining Custom Class Methods, Understanding Static Methods, Method Parameter Modifiers, Array Manipulations in C# String Manipulation in C#, C# Enumerations, Defining Structures in C#, Defining Custom Namespaces.

18 hrs.

UNIT - IV: Object-Oriented Programming with C#:

Formal Definition of the C# Class, Definition the “Default Public Interface” of a Type, Recapping the Pillars of OOP, The First Pillars: C#’s Encapsulation Services, Pseudo-Encapsulation: Creating Read-Only Fields, The Second Pillar: C# Inheritance Supports, Keeping Family Secrets: The “Protected: Keyword, Nested Type Definitions Using Visual Studio.NET.

10 hrs.

TEXT BOOK:

1. *Andrew Troelsen*, “C# and the .NET Platform”, Second Edition, 2003, Dreamtech Press, India. (Chapter: 1 to 8, 9 (up to pp. 436).

REFERENCE BOOKS:

1. *Torn Archer*, “Inside C#”, 2001, WP Publishers.

SYSTEM SOFTWARE

Subject Code	P.G.D.C.A 2.5.4	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: Introduction:

System Software And Machine Architecture, SIC, Traditional (CISC) Machines, RISC Machines. **12 hrs.**

UNIT - II: Assemblers:

Basic Assembles Functions, Machine Dependent Assembler Features, Machine Independent Assembler Features, Assembler Design Options, Implementation Examples. **14 hrs.**

UNIT - III: Loaders And Linkers:

Basic Loader Functions, Machine Dependent Loader Features, Machine Independent Loader Features, Loader Design Options, Implementation Examples. **14 hrs.**

UNIT - IV: Macro Processors:

Basic Macro Processor Functions, Machine Independent Macro Processor Features, Macro Processor Design Options, Implementation Examples. **12 hrs.**

TEXT BOOK:

1. *Lenand L. Beck, D. Manjula*, "System Software An Introduction To System Programming" PEARSON.

REFERENCE BOOK:

1. *D.M.Dhamdhare*, "System Programming and Operating Systems", Tata McGraw - Hill.

OPERATIONS RESEARCH

Subject Code	P.G.D.C.A 2.5.5	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

UNIT - I: THEORY OF PROBABILITY:

Sample Space Events, Classical & Axiomate Definition Of Probability, Condition Probability, Addition Multiplication & Total Probability Theorems, Ayes Theorem.

LINEAR PROGGRAMING: Introduction Formulation Of LLP. General Mathematical Model Of LLP, Slack & Surplus Variables. **14 hrs.**

UNIT - II:

Canonical & Standards Form Of LLP, Graphical Method; Standard LLP & Basic Solution. Fundamental Theorem Of LLP. Simplex Algorithm, Big-M Method. **12 hrs.**

UNIT - III: CONCEPT OF DUALITY:

Formation Of Dual LLP. Duality Theorem, Advantage Of Duality Dual Simplex Algorithm. **12 hrs.**

UNIT-IV: TRANSPORT PROBLEM:

Introduction, Transport Problem, Loops In Transportation Table, Method For Finding Initial Basic Feasible Solution. Test For Optimality. Unbounded Transport Problem. **14 hrs.**

TEXT BOOK:

1. *TAHA, H.*, "Operation Research", Collin Mcmillan ,new edition

REFERENCES:

1. *Sharma J.K.* "Operation Research, Theory & Application", Holden Day.
2. *Panneerselvam R.*, "Operation Research", PHI.
3. *Kishore Trivedi*, "Probability & Statistical with Reliability & Queuing & computer science application", Prentice Hall.
4. *Hiiler F.S & Leibermann G.J.*, Operation Research", Holden day.

C++ AND JAVA LAB

Subject Code	P.G.D.C.A 2.6	IA Marks	20
No. of Lecture Hrs./Week	04	Exam Hours	03
Total No. of Lecture Hours	52	Exam Marks	80

P.G.D.C.A 2.6: PROJECT WORK

Individual project to be carried out under the supervision of the guide in the Department.

Software to be used as front end: VB/C++/JAVA.

Software to be used as back end: Oracle/SQL/MS Excess/Visual Foxpro.

Any other software/Hardware projects of practical relevance may also be encouraged.

