

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIRST SEMESTER

- **COURSE NUMBER** : BIT-101
 - **NAME OF COURSE** : **FUNDAMENTAL OF COMPUTER & INFORMATION TECHNOLOGY**
 - **CREDIT HOURS** : 3 (3-1-0)
 - **PREREQUISITE** : NIL
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1. **Number system:** Binary, Decimal, Octal, Hexadecimal and their inter-conversions. Computer Arithmetic – Binary addition and subtraction using signed-magnitude complement, Binary multiplication and division
 2. **Digital logic circuits:** Boolean algebra – Basic identities of Boolean algebra, Boolean function. Logic Gates – AND, OR, NOT, NOR, NAND, EX-OR, EX-NOR operations and their truth tables.
 3. **Information concept & processing:** Definition of information, need for information, quality of information, value of information, categories and levels of information in business organization.
 4. **Computer & communication-** Application of data transmission, types of data transmission, media for data transmission, types of networking, client server architecture.
 5. **Programming language classification-**Computer languages, generation of languages, translators-interpreters, compilers, assembles, introduction to 4gls.application of it & computer

Reference Books-

1. Introduction to information technology, ITL education solution limited, personal education.
2. Introduction to computer science, ITL Education solution limited. Personal education.
3. Foundation of information technology by D S Yadav. New age publication ltd.
4. Introduction to computer by peter Norton TMH. Publication Ltd.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIRST SEMESTER

- **COURSE NUMBER** : BIT-102
- **NAME OF COURSE** : PROGRAMMING IN 'C'
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. **C Fundamental:** Character set, identifiers and keywords, data types, constants, variables and arrays, declarations, operators and expressions, library functions, statements, symbolic constants, preprocessor directives, formatted input, output, basic data types, type conversion, data type modifiers, expressions and operators, precedence of C operators, Flow Charts.
2. **Control statements:** If, If-else, while, do-while, goto, for statements, nested Control structures, switch, break, continue statements, comma operator, types of loops.
3. **Function and macros:** Function prototypes, passing arguments to a function by value, recursion. Storage classes macros, header files, types of function.
4. **Arrays:** Defining- processing array, passing arrays to function, introduction to multidimensional arrays, arrays and strings.
5. **Pointers and structures:** Structures and unions, defining and processing a structure.

Reference Books-

1. Let us c by Yashawant kanetkar, BPB publication, New Delhi.
2. Computer & data processing with basic by Emdad H . Khan & Anil k. Sharma.
3. Programming in ANSI C Ram Kumar & Rakesh Agrawai tata Me Graw-hill publishing company limited.
4. Mastering turbo c by stan Kelly – bottle , BPB Publication, New Delhi.
5. B Programming in c by Dennis Ritchie , BPB Publication , New Delhi.
6. The c programming language by Kernighan &Ritchie, PHI

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIRST SEMESTER

- **COURSE NUMBER** : BIT-103
- **NAME OF COURSE** : ELEMENTARY MATHEMATICS
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. Permutation & combination, binomial & simple problems based on it., Logarithmic and Exponential series.
2. Probability – Conditional Probability, Independent events, simple problems, Introduction to coordinated plane.
3. Distance between two points, Section formula i.e. co-ordinates of a division of straight line joining two point
4. Equation of straight lines, Area of Triangle.
5. Circle different form of Equation, Tangent to the circle condition of tangency.

Reference Books-

1. Higher Algebra by Hall & Knight.
2. Senior secondary school Mathematics by R.S. Agrawal.
3. Co-ordinate Geometry by Manjeet Singh.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIRST SEMESTER

- **COURSE NUMBER** : BIT-104
 - **NAME OF COURSE** : FINANCIAL ACCOUNTING
 - **CREDIT HOURS** : 3 (3-2-2*2)
 - **PREREQUISITE** : NIL
1. **Introduction:** Conceptual framework, double entry system of accounting, introduction of basic books of account, control for debtors & creditors, closing of books of accounts. Importance of Accounting.
 2. **Final accounts:** Trading, profit & loss account, balance sheet, introduction to manufacturing account of partnership firms, limited company. Financial management, Meaning and roll, Ratio analysis: Meaning, advantage, limitation, type of ratio & their usefulness.
 3. **Fund flow statement:** Meaning of the terms, fund, flow of fund, working capital cycle, preparation & interpretation of fund flow statement. Costing: Nature, importance & basic principles, rules of books keeping.
 4. **Budget & budgetary control:** Nature, scope, importance, method of finalization of master budget & functional budget.
 5. **Marginal & standard costing:** Nature, scope, importance, break even analysis, its uses & limitation, construction of break even charts, practical application of marginal costing. Computation & analysis of variances with reference to material cost, about cost, over head cost in entry control.

Reference Books –

1. Kellock, “Elements of accounting,” Heinemann
2. Levy & Sranat, “Principles of financial managements,” PHI
3. Anathony RN, “Fundamental of Management accounting prospects”
4. Bhattacharaya & Deardon, “Accounting of Management test & cases”, Vikas publishing.
5. Khan M.Y. & Jain PK, “Financial management” Tata Megraw Hill.
6. Van Horn J C.
7. Horngren CT, “Management & accounting”.
8. S.M.Shukla, “Advanced accounting”.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIRST SEMESTER

- **COURSE NUMBER** : BIT-105
 - **NAME OF COURSE** : MATHEMATICAL FOUNDATION
 - **CREDIT HOURS** : 3 (3-2-0)
 - **PREREQUISITE** : NIL
1. Real Numbers and Function, classes of function, limits and continuity, differentiability, derivative of function, Algebraic and transcendental functions. Application of Derivative, Higher order Derivative.
 2. Drawing of curves, Ups & Downs, Geometrical Properties of Curves.
 3. Differential calculus: Mean value Theorem, Taylor's Theorem. Tangent and Normal, partial Differentiation, application of differential calculus, maxima & minima.
 4. Conics: Equation of parabola, Ellipse, Hyperbola, Elementary complex number polar & Exponential number form.
 5. De Moivre's, Theorem, Argument of Modulus of complex number.

Reference Books-

1. Calculus and Analytical Geometry by Thomas Finny.
2. Text book on Integral calculus by Gorakh Prasad.
3. Advance Engineering Mathematical text book by Ervin Kreyszig Willey Eastern Pvt Ltd New Age international.
4. Differential calculus by HS Dhani, New age international Pvt Ltd.
5. Integral calculus by HS Dhani, New age international Pvt Ltd.
6. Advanced Engineering Mathematics by Jain & Iyenger, Narosa book company.
7. Engineering Mathematics by Sastry, PHI.
8. Mathematical Techniques, D W Jordan & P Smith, Oxford University press.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SECOND SEMESTER

- **COURSE NUMBER** : BIT-201
 - **NAME OF COURSE** : INTRODUCTION TO DATA STRUCTURE
 - **CREDIT HOURS** : 3 (3-1-0)
 - **PREREQUISITE** : NIL
1. **Introduction and Definition of Data Structure:** Basic terminology, Data structure, operations, Algorithms, algorithm complexities, mathematical notations of algorithm.
 2. **Arrays, Records and Pointers:** Introduction, Linear Arrays, Representations of Linear Arrays in Memory, Traversing Linear Arrays, Inserting and Deleting, Sorting, Bubble Sort, Searching, Linear Search, Binary Search, Multidimensional Arrays, Pointers, Pointers Arrays, Declarations, referencing and de- referencing, passing pointers to functions, pointer to array, operations on file using pointers, concept of dynamic allocation of memory, linked list, Records; Records Structures, Representation of Records in Memory; Parallel Arrays, Matrices, Sparse Matrices.
 3. **Linked Lists:** Introduction, Linked Lists, Representation of Linked Lists in Memory, Traversing a Linked List, Searching a Linked List, Memory Allocation; Garbage Collection, Insertion into a Linked List, Deletion from a Linked List, Header Linked Lists, Two-Way Lists, Insertion in a Linked lists.
 4. **Stacks, Queues, Recursion:** Introduction, Stacks, Array Representation of Stacks, Arithmetic Expressions; Polish Notation, Quick sort, an Application of Stacks, Recursion, Towers of Hanoi, Implementation of Recursive Procedures of Stacks, Queues, Deques, Priority Queues, Double Ended Queue.
 5. **Trees:** Introduction, Binary Trees, Representing Binary Trees in Memory, Application of Binary Tree, Traversing Algorithms Using Stacks, Header Nodes; Threads, Binary Search Trees, Searching and Inserting in Binary Search Trees Deleting in Binary Search Tree, Heap; Heap Sort, Path Lengths; Huffman's Algorithm, General Trees. Insertion Sort, Selection Sort, Merging, Bubble Sort, Merge-Sort, Radix Sort, Linear & Binary Search, Searching and Data Modification, Hashing.

Reference Books-

1. Theory and Problems of Data Structures by Seymour Lipschutz, McGRAW-Hill Publication Ltd.,New Delhi
2. Data Structures & Program Design in "C" by Rober L Kruse, Bruce & P.Leung & Clovis, L.Tondo, Prentice Hall-Publication, New Delhi.
3. Expert Data Structures with C by R. B. Patel Khanna Book Publication Co. (P) Ltd.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SECOND SEMESTER

- **COURSE NUMBER** : BIT-202
 - **NAME OF COURSE** : COMMUNICATIVE ENGLISH
 - **CREDIT HOURS** : 3 (3-1-0)
 - **PREREQUISITE** : NIL
1. English Grammar: Use of articles, preposition & tenses.
 2. Communication: oral communication conversation business letters, pronunciation & transcription words.
 3. Presentation skills: précis writing, essay writing, presentation skills related to seminars and conferences.
 4. Reading, comprehension-factual –formatting, global compression –language –use in term of synonyms.
 5. Idiomatic, expression conditional sentences.

Reference Books-

1. Wrien, P.C.& Martin, H: “English grammar:&composition”, S. Chand
2. T. Seth. Agarwal “The art of English grammar & composition, Retan Prekeshan, Agra.
3. Sinha K K “Business Communication”, Galgotia.
4. W.E.Allen “living English structure”
5. “Business Communication”, Irwin Mc Graw hill.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SECOND SEMESTER

- **COURSE NUMBER** : BIT-203
 - **NAME OF COURSE** : ORGANIZATIONAL BEHAVIOR
 - **CREDIT HOURS** : 3 (3-2-0)
 - **PREREQUISITE** : NIL
1. Individual Differences at work: Personality, attitude and intelligence.
 2. Motivation: Importance of motivation in work behavior approaches to motivation, content theories, and process theories.
 3. Job analysis and Design: Approaches, job enlargement, job design models. Communication: Types, transaction analysis, Johari windows. Training needs assessment, training techniques and training evaluation.
 4. Organization Power, Politics and Conflict: Types, sources, conflict coping strategies.
 5. Leadership: Styles, theories and models. Performance Appraisal: Need, methods and applications.

Reference Books-

1. S.P. Robins, Organizational Behaviour Concepts, Controversies and Application (8th Ed.) 2000.
2. N.K. Chadha, Human Resources Management 2000, Sai New Delhi Printographers.
3. F. Luthans, Organizational Behaviour, Tata McGraw Hill.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SECOND SEMESTER

- **COURSE NUMBER** : BIT-204
 - **NAME OF COURSE** : DISCRETE MATHEMATICS & ADVANCED MATHEMATICS
 - **CREDIT HOURS** : 4 (4-2-0)
 - **PREREQUISITE** : NIL
1. **Logic** - Propositions and Logical operations, Conditional Statements, methods of proof, mathematical induction, **Relations and digraphs**- product sets and partitions, Relations and digraphs, paths in relations and digraphs, properties of Relations, equivalence relations, computer representation of Relations and digraphs, manipulation of relations transitive closure and Warsh hall's algorithm.
 2. **Functions**- functions for computer science, permutation functions, growth of functions, **Abstract algebraic structures**-binary operations, semi groups, products and quotient of semi groups, groups, products and quotient of groups, Computer application of groups, **Groups and coding**- coding of binary information and error detection decoding and error correction.
 3. **Introduction to differential equations**- order and degree of a differential equations, differential equations of first order and first degree and applications. Differential equations of higher order and application, linear equation with constant coefficients, linear equations of second order.
 4. **Introduction to partial differential equations**-analytic and geometric techniques for finding and interpreting solution of pde's, boundary value problems for heat equation.
 5. **Trigonometric functions**- graphs of sine and cosine, functions, inverse trigonometric functions, application of trigonometry, **Vector algebra**- vector algebra & vector differential gradient and curl. Divergence.

Reference Books-

1. Discrete structures by B Kolman, RC Busby, S Ross PHI Pvt. Ltd.
2. Discrete structures by C L Liu TMH Publications Limited.
3. Discrete mathematics and its applications Kenneth H. Roshan TMH, Publications
4. Discrete mathematics , Schaum's outline series, Seymour Lipschutz , Mare Lipson, TMH Publication Ltd.
5. Essence of logic by Kelly PHI Publication Ltd.
6. Advance engineering mathematics textbook: Ervin Kreyszig Willey Eastern Publication.
7. Differential equations Vol I ,H S Dhami , jaipur publishing House, jaipur(Raj).
8. Differential equations, Vol II, H S Dhami , jaipur publishing House, jaipur(Raj.)
9. Elementry differential equations and Boundary value problem, William E Boyee, Richord C, Diprima, jhon WILLEY & Sons, Inc.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SECOND SEMESTER

- **COURSE NUMBER** : BIT-205
 - **NAME OF COURSE** : DIGITAL ELECTRONICS
 - **CREDIT HOURS** : 4 (3-1-2)
 - **PREREQUISITE** : NIL
1. **Introduction-** Number system, Conversion from one number system to another number system, Binary operations -1's & 2's complements addition, subtraction, multiplication, division and other operation.
 2. **Logic gates-** AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, various TTL & CMOS logic gates, Electronic components in digital systems - Diode switching, transistor as switching elements, digital signals & basic circuits.
 3. **Parameters of TTL & CMOS circuits-** Power dissipation, noise immunity, loading & delays etc. **Boolean Algebra-** Theorems, operation, logic expressions, rule & laws, DeMorgan's theorem, Simplification. **Combinational Logic circuit-**Function representation- Standard, non-standard and canonical representation of logic functions, minterms, maxterms, SOP, POS, function representation etc. Minimization-Karnaugh map method, Quine McCluskey (tabular) method, search techniques.
 4. **Combinational Circuit And Circuit Design-** Half & full adders and subtractors, analysis and design of combinational logic circuit, use of AND,OR,NOR/NAND(universal gates),Ex-OR, Ex-NOR,NOT gates in digital circuit, seven segment displays, decoder, encoder, multiplexer, demultiplexer, parity generators/checkers, magnitude comparator, function realization using multiplexer and decoders: other examples of practical combinational circuits, ROMs, ALU.
 5. **Sequential Circuits-** Introduction to sequential circuits (asynchronous & synchronous),concept of memory, latches & various flip-flops-D,T, RS, JK, master- slave, data-lockout etc., method of edge triggering and clocked applications, various implementations of latches & flip-flop, Introduction to counters, shift registers, astable and monostable multivibrators, practical sequential circuits and their application including 555 timers IC.

Reference Books-

1. Digital circuits and logic design by Samuel C Lee, prentice hall of India (PHI) private limited, New Delhi.
2. Digital logic and computer design by M Morris Mano, prentice hall of India (PHI) private limited, New Delhi.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
THIRD SEMESTER

- **COURSE NUMBER** : BIT-301
 - **NAME OF COURSE** : COMPUTER BASED NUMERICAL TECHNIQUE
 - **CREDIT HOURS** : 4 (3-2-2*2)
 - **PREREQUISITE** : NIL
1. **Floating Point Arithmetic:** Representation of Floating Point Numbers, Operation, Normalization, Pitfalls of floating point representation, Errors in numerical computation.
 2. **Iterative Methods:** Zeros of single transcendental equation and Zeros of polynomial using Bisection Method, Iteration Method, Regula- Falsi Method, Newton Raphson method, Secant Method, Rate of convergence of iterative method.
 3. **Simulation Linear Equation:** Solution of system of Linear equation, Gauss Elimination direct method and pivoting , III conditioned system of equation , refinement of solution, Gauss seidal iterative method, Rate of Convergence.
 4. **Interpolation and approximation:** Finite differences, Difference tables, Polynomial Interpolation: Newton's forward and backward formula, Central Differences formulae: Gauss forward and backward formula, stirling's bassel's Everett's formula. Interpolation with unequal intervals: Language's Interpolation, Newton Divided difference formula.
 5. **Numerical Differentiation and Integration:** Introduction, Numerical Differentiation ,Numerical Integration, Trapezoidal rule, Simpon's rule, Boole's Rule Euler Maclaurin formulas , Solution of Differentiation Equation: Picard's method, Euler's Method, Taylor's Method, Runge- Kutta method.

Reference Books-

1. Rajaraman V; "Computer Oriented Numerical Methods" PHI
2. Gerald and Wheatley, "Applied Numerical Analysis", AW
3. Jain, Lyengar and Jain, Numerical Methods for Scientific and Engineering Computation, New Ager Int.
4. Grewal B.S., "Numerical methods in Engeneering and Science. Khanna Publishers", Delhi.
5. T. Veeraranjan, T. Ramchandran, "Theory and Problems of Numerical Methods".

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
THIRD SEMESTER

- **COURSE NUMBER** : BIT-302
 - **NAME OF COURSE** : DATA BASE MANAGEMENT SYSTEMS
 - **CREDIT HOURS** : 3 (3-1-0)
 - **PREREQUISITE** : NIL
1. **Introduction:** An overview of database management system, Role of DBA, Database System Vs File System, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language
 2. Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concept of Super Key, candidate key, primary key, Generalization, aggregation reduction of an ER diagrams to table, extended ER model, DML, Data Independence, Indexing.
 3. **Relational Data Model and Language:** Relational data model concepts, integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus, Codd's Ruler, Files & Records.
 4. **Introduction to SQL:** Characteristics of SQL, Advantages of SQL, SQL data types, 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, PL/SQL, Triggers and Cursors, Procedure
 5. **Database Design & Normalization:** Functional dependencies. Normal forms, first, second, third normal forms, BCNF, inclusion dependencies, normalization using FD, MVD, and JDs, alternative approaches to database design.

Reference Books-

1. Date C.J. "An Introduction to Database System" Addison Wesley
2. Korth, Silbertz, Sudarshan, "Database Concepts", MCGraw Hill
3. Elmasri, Navathe, "fundamentals of Database Systems" Addison Wesley
4. Paul Beynon Davis, "Database Systems" Palgrave Macmillan
5. Bipin C.Desai, "An introduction to Database Systems", Galgotia Pub.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
THIRD SEMESTER

- **COURSE NUMBER** : BIT-303
 - **NAME OF COURSE** : COMPUTER ORGANIZATION
 - **CREDIT HOURS** : 4 (3-1-2)
 - **PREREQUISITE** : NIL
1. **Introduction:** Structured computer organization functional units. Languages, virtual machines, evolution of multi level machines, and historical perspective in computer architectures, Interconnection Structure.
 2. **Computer Systems Organization:** Block Diagram of Computer Systems.
 3. **Processors:** CPU organization Instruction execution RISC, CISC, M/Cs, Design principles for modern computer system, instruction level parallelism, processor level parallelism, addresses decoding & selecting, Instruction Cycle, Sequences.
 4. **Primary Memory, Secondary memory, cache memory:** I/C devices, CPU Chips, 16-32 bit processor, Buses, Bus arbitration Bus operation, Example buses ISA bus, PCII Bus, Universal Buses, Single bus, multi bus concepts. Micro architecture level: Data path Micro instruction micro programming, Future Bus.
 5. **Instruction Set:** Assembly Language instruction formats, addressing modes, assembly Language programming Virtual Memory: paging Demand paging, Segmentation, implementation of principles of pipe lining, Parallel Processing, Semiconductor memory & memory organization.

References Books:

1. Computer Organization by Hamacher, Vranesic & Zaky.
2. Structured Computer Organization by Tanne Baum
3. Computer System Architecture by M.M. Mano

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
THIRD SEMESTER

- **COURSE NUMBER** : BIT-304
 - **NAME OF COURSE** : OPERATING SYSTEM
 - **CREDIT HOURS** : 5 (3-1-2*2)
 - **PREREQUISITE** : NIL
1. **Operating System:** definition, simple batch system, Time sharing system, Real time system, storage Hierarchy, operating system service, System Calls. Process: Process concept, process Scheduling, operating on process, co-operating process, CPU: Scheduling concepts, Scheduling algorithms, process synchronization, critical section problem, synchronization hardware, semaphores, Two Level Scheduling.
 2. **Deadlocks:** deadlock characterization, deadlock prevention, avoidance detection and recovery. Storage management, Resident monitor, Logical versus physical address space, swapping and segmentation. Virtual Memory: Virtual memory, Demand paging, page replacement and page replacement algorithms, allocation of frames, thrashing.
 3. **File system:** File supports, access methods, allocation methods-contiguous, linked and index allocation, directory system – single level, tree structured, acyclic graph and general graph directory, file protection, File Basis.
 4. **Secondary storage structure:** Disk structures, disk scheduling, disk management, allocation methods, free space management, security management, Security, Protection Management.
 5. **Case study of the UNIX system:** design principles, programmer and user interface, process, memory and file management, process Management.

Reference Books-

1. Silberschatz galvin Operating System Concepts
2. Tanenbaum A.S. Modern Operating system, (PHI) 1998
3. Growley Operating system a design Approach

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
THIRD SEMESTER

- **COURSE NUMBER** : BIT-305
 - **NAME OF COURSE** : SYSTEM ANALYSIS & DESIGN
 - **CREDIT HOURS** : 4 (4-2-0)
 - **PREREQUISITE** : NIL
1. **System Concepts and Information System environment:** The System concept, Definition, Characteristics of System, Element of a system, open and closed system , formal & informal Information systems ,Computer based Information System, Management Information System , Decision Support system, general Business Knowledge, and Interpersonal Communication System. The System Development Life Cycle: Recognition of needs, Impetus for system change, feasibility study, analysis, design, implementation, post implementation & maintenance.
 2. **The Role of the system analyst:** historical perspective, academic & personal qualification, the multifaceted role of the analyst, the analyst/ user interface, behavioral issues. System planning & Initial Investigation: Strategies for determining information requirement, problem definition & project initiation, background analysis, fact analysis, review of written documents, onsite observations, interviews & questionnaires, fact analysis, performance analysis, Efficiency analysis, service analysis.
 3. **Information Gathering:** Kind of information needed, Information about the firms, information gathering tools, the art of interviewing, arranging the interview, guides to successful interview, types of interviews and questionnaires, the structured and unstructured alternatives.
 4. **The Tools of structured analysis:** the dataflow diagram {DFD}, Data Dictionary, Decision trees and structure English. Feasibility Study: System performance, Economic feasibility, technical feasibility, Behavioral Feasibility, steps in feasibility analysis,
 5. **Input/ Output and forms design:** Input design, CRT Screen Design, Output Design, Requirement form design.

References Books-

1. Elias.M.Award, “Systems Analysis & Design” Galgotia publication.
2. Hoffer, “Modem Systems Analysis & Design” Addison Wesley
3. Kendall, “Introduction to System Analysis & Design”, McGraw Hill

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FOURTH SEMESTER

- **COURSE NUMBER** : BIT-401
 - **NAME OF COURSE** : SOFTWARE ENGINEERING
 - **CREDIT HOURS** : 4 (3-2-2)
 - **PREREQUISITE** : NIL
1. **Introduction:** Introduction to Software engineering, Importance of software evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems, Software Development Life Cycle, Software Process.
 2. **Software Requirement Specification:** Analysis, Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, Role of management in software development, Role of matrices and Measurement, Problem Analysis, COCOMO Model.
 3. **Software- Design:** Design principles, problem partitioning, abstraction, top-down and bottom-up design, structured approach functional versus object oriented approach, design specification and verification, Monitoring and control, Software Architecture, Transaction and Transaction and Transform Mapping, Component Level Design, Fourth Generation Techniques.
 4. **Coding:** Top-Down and Bottom-Up programming, information hiding, programming style and internal documentation, Testing Principles: Levels of testing, functional testing, test plane, test case specification, Unit testing, Integration Testing, Alpha & beta testing, system testing and debugging.
 5. **Software Reliability & Quality Assurance:** Reliability issues, Reliability metrics, Reliability growth modeling, Software quality, IOS 9000 Certification for Software industry, SEI capability maturity model, CMM. CASE (Computer Aided Software Engineering): CASE and its scope, CASE support in software life cycle, documentation, project management, internal interface.

Reference Books-

1. Pressman, Roger S., "Software Engineering A Practitioner's Approach Ed. Boston: McGraw Hill, 2001.
2. Jalote, Pankaj, "Software Engineering Ed.2" New Delhi: Narosa 2002.
3. Schaum's Series, "Software Engineering" TMH.
4. Ghezzi Carlo and Others "Fundamentals of Software Engineering" PHI.
5. Alexis, Leon and Mathews Leon, "Fundamentals of software Engg".
6. Sommerville, Ian, "Software Engineering" AWL.
7. Fairly, "Software Engineering" New Delhi TMH.
8. Pfleeger, S. "Software Engineering" Machmillan.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FOURTH SEMESTER

- **COURSE NUMBER** : BIT-402
 - **NAME OF COURSE** : FINANCIAL MANAGEMENT
 - **CREDIT HOURS** : 3 (3-2-0)
 - **PREREQUISITE** : NIL
1. **Introduction:** Objectives, importance and Functions of financial management, Concept of Profit Maximization & wealth Maximization, Functions of financial manager.
 2. **Capital Budgeting:** Data requirements; evaluation techniques-pay back, internal rate of return, net present value.
 3. **Working Capital Management:** Determination of working capital cash management, receivables management and inventory management.
 4. **Financial Decision:** Relationship between dividend policy and value of a firm, dividend policy in practice, factors affecting dividend policy, legal and procedural aspects of dividend policy.
 5. **Time value of money:** cost of capital, computation of specific and weighted-cost of capital, capital structure, Theories of capital structure.

Reference Books-

1. P. Chandra, Financial Management, Tata McGraw Hill.
2. M.Y. Khan, P.K. Jain, Basic Financial Management, Tata McGraw Hill.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FOURTH SEMESTER

- **COURSE NUMBER** : BIT-403
 - **NAME OF COURSE** : COMPUTER NETWORKS
 - **CREDIT HOURS** : 4 (3-1-2)
 - **PREREQUISITE** : NIL
1. Introduction to Computer Networking: Introduction ,Use, advantages, structure of the communication networks, analog to digital communication, Layered Protocols,
 2. Wide area and local area networks, connection oriented and connectionless networks, Narrow Band & Broad Band, ISDN. Guided media
 3. Network & the OSI Models, introduction , importance, layer, communication method , upper layer, lower layer , Mac, LLC, UDP,
 4. TCP/IP and Internetworking: example of TCP/IP operations, related protocols ports and sockets. The IP address structure, major features of IP, IP datagram, Major IP services.
 5. IP: source routing, value of the transport layer, TCP, Major features of TCP, passive and active operation, transmission control protocols (TCP), route discovery protocols, examples of route discovery protocols, application layer protocols, IPv6, Ethernet.

Reference Books-

1. Tanenbaum, A.S.: Computer Network, PHI-1985.
2. Martin J: Computer Network and Distributed processing, 1985.
3. Black: Computer Network; protocols, Standards and Interface PHI-1985.
4. Black: data Network; Concepts, Theory and practices, PHI.
5. Starlings, William: Local Networks; and Introduction Mack Publishing Co.
6. Corner; Internetworking: Principles, protocols Architecture, PHI with TCP.IP

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FOURTH SEMESTER

- **COURSE NUMBER** : **BIT-404**
 - **NAME OF COURSE** : **VISUAL PROGRAMMING**
 - **CREDIT HOURS** : **3 (3-0-0)**
 - **PREREQUISITE** : **NIL**
1. **Introduction to Visual Basic:** Introduction Graphical User Interface (GUI), Programming Language (Procedural, Object Oriented, Event Driven), The Visual Basic Environment, How to use VB compiler/ debug and run the programs. User defined data type, Control flow statement.
 2. **Introduction to VB Controls:** Textboxes, Frames, Check Boxes, Option Buttons, Images, Setting a border & Styles, The shape Control, The line Control, Working with multiple controls and their properties, Designing the User interface, Keyboard access, tab Controls, Default & Cancel Property, Coding for controls. Dialog Control box.
 3. **Variables, Constants, and Calculations:** Variables, Variables Public, Private, Static, Constants, Data Types, Naming rules/ conventions, Constants, Named & intrinsic, Declaring variables, Scope of variables, Arithmetic Operations, Formatting Data.
 4. **Decision & Conditions:** If Statement, If –then-else Statement, Comparing Strings, Comparing Strings, Compound Conditions (and, Or, Not) Nested If Statements, Case Structure, Using If statements with Option Buttons & Check Boxes, Displaying Message Box, Testing whether Input is valid or not.
 5. **Menus, Sub-Procedures and Sub-functions:** Defining/ creating and modifying a Menu, Using common dialog box, creating a new sub-procedure, Passing Variables to Procedures, Passing Argument ByVal or ByRef, Writing a Function Procedure, Multiple & Single document interface (MDI). Classes, objects & Instances, Encapsulation & Abstraction Derived Classes & base Classes, object linking & Embedding (OLE), Visual basic and Window API, Dynamic link libraries (DLL).

Reference Books-

1. Visual Basic Schaum’s Series, TMH Publication Ltd.
2. Visual Basic 6 from the Ground up by Gary Cornell Publisher: Osborne McGraw Hill.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FOURTH SEMESTER

- **COURSE NUMBER** : BIT-405
 - **NAME OF COURSE** : COMPUTING ARCHITECTURE
 - **CREDIT HOURS** : 3 (3-2-0)
 - **PREREQUISITE** : NIL
1. **Computer System:** System buses, Computer Components, Computer function, Interconnection Structures, Bus Interconnection, and PCI bus.
 2. **Memory:** Computer Memory System Overview, Semiconductor Main memory, Cache Memory, Advanced DRAM Organization.
 3. **Input / Output:** External Devices, I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels and Producers, the External Interface.
 4. **Computer Arithmetic:** CPU Introduction, Arithmetic and Logic Unit (ALU), Inter Arithmetic, Floating- Point Representation, Floating- Point Arithmetic, Control Unit Process.BUS,
 5. **Instruction Sets:** CISC, RISC Characteristics and Function, Machine Instruction Characteristics, Types of Operands, Types of Operations, Addressing Modes and Formats, Register Organization, The instruction, Cycle, Instruction pipelining, Micro-operation, control of the CPU, hardwired Implementation, Micro program controller, Basic concepts, Microinstruction, sequencing, and Microinstruction Execution.

Reference Books-

1. M.Mano, Computer System Architecture, 3rd Edition, Prentice- Hall India,
2. W.Stallings, Computer Organization and Architecture,4th Edition, Prentice- Hall India,
3. Harry, Jordan, Computer Systems Design & Architecture, Addison Wesley,
4. J.D.Carpinelli, Computer Systems Organization & Architecture, Addison Wesley,
5. J.P.Hayes, Computer Architecture and Organization, McGraw Hill
6. M.M.Mano and Charles, Logic and Computer design Fundamental, 2nd Edition Updated, Pearson Education Asia.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIFTH SEMESTER

- **COURSE NUMBER** : BIT-501
 - **NAME OF COURSE** : DISTRIBUTED COMPUTING
 - **CREDIT HOURS** : 4 (4-2-1)
 - **PREREQUISITE** : NIL
1. **Introduction:** Definition of Distributed Systems, Advantages and Disadvantages, Types of Distributed Systems, Resource Sharing and the Web Challenges, Introduction of system Architectures, Middleware, Client-Server Communication: Distributed Objects and Remote Invocation
 2. **Communication:** Introduction, OSI model, Types of communication, Communication Protocols, Topology, RPC, RMI, Message Oriented Communication, Stream Oriented Communication, Multicast Communication
 3. **Naming:** Introduction, Names, Identifier and Addresses, Flat Naming, Broadcasting and Multicasting, Name Spaces, Name Resolution, DNS, Synchronization: Introduction, Clock Synchronization, Physical Clock, Logical Clock, Vector Clock, Deadlock, Mutual Exclusion: Centralized Algorithm, Token Ring Algorithm, Election Algorithm
 4. **Consistency and Replication:** Data and Client Centric Consistency Model, Replica Management, Consistency Protocols, Fault Tolerance and Security: Introduction, Failure Models, Group Communication, Distributed Commit, Two and Three Phase commit, Recovery, Check pointing, Threats, Security Mechanism, Design Issues, Cryptography, Secure Channels, Digital signatures, DoS.
 5. **Distributed File Systems:** Introduction, good features of DFS, File Service Architecture, and Parallel Architecture system, NFS, CODA and CORBA.

Reference Books:

1. Distributed Systems: Principals and Paradigms, Andrew S.Tannen Buam and Maarten van.
2. Elements of Distributed Computing: Vijay K. Garg, Wiley, 2002.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIFTH SEMESTER

- **COURSE NUMBER** : BIT-502
 - **NAME OF COURSE** : WEB DESIGNING & APPLICATIONS
 - **CREDIT HOURS** : 3 (2-1-2)
 - **PREREQUISITE** : NIL
1. History of the web, Growth of the web, Protocols governing the web, Introduction to cyber laws in India. Introduction to International Cyber laws, Web project, Web tea, team dynamics.
 2. Communication Issues, the client, Multi-departmental and large scale websites, quality Insurance and testing, technological advances and impact no web teams.
 3. HTML: Formatting, tags, links tables, frames, forms, comments in HTML, DHTML. Java Script: Introduction, Documents, forms, Statements, Functions, Objects in Java scripts, events and event handling, arrays, FORMS, Button, Checkboxes, Text fields and text areas.
 4. XML: Introduction, displaying an XML Document, Data interchanges with an XML Document, Document type definition, Parsers using XML, Client-side usage, Server-side Usage.
 5. Common gateway interface (CGI), PERL, RMI, COM/DCOM, VBScript, Active server Pages (ASP).

Reference Books-

1. Burdman, “Collaborative Web Development”, Addison Wesley.
2. Sharma & Sharma, “Developing E-Commerce Sites”, Addison Wesley.
3. Ivan Bayross, “Web Technologies Part II”, BPB Publications.
4. Shishir Gundavarma, “CGI Programming on the World Wide Web”, O’Reilly & Associate.
5. DON Box, “Essential COM”, Addison Wesley.
6. Greg Buczek, “ASP Developer’s Guide”, TMH.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIFTH SEMESTER

- **COURSE NUMBER** : BIT-503
- **NAME OF COURSE** : MANAGEMENT INFORMATION SYSTEM
- **CREDIT HOURS** : 4 (3-1-2)
- **PREREQUISITE** : NIL

1. **Introduction:** MIS concept, definition role MIS, impact of MIS, MIS & Computer, MIS & Academics, MIS & user, Role & importance of management: Introduction to management approaches to management, function of the manager, manager & the environment, management as a control system, management by exception, MIS a support to the management.
2. **Process of the management:** Management effectiveness, planning, organizing, staffing, coordinated & directing, controlling, IS: a tool for management process, Organizing structure & theory: Basic model of organization structure, modifications of the basic model of organizing structure, organizing behavior, organizing as a system MIS: organization.
3. **Strategic management of business:** The concept of corporate planning, essentially of strategic planning, development of the business strategies, short range planning, tools of planning, MIS: Business planning, **Decision Making:** Decision making concepts, decision methods, tools & procedures, behavioral in decision making, organization decision making, MIS & Decision making concepts.
4. **Systems:** Systems concepts, systems controls, types of systems, handling systems complexity, post implementation, problems in systems MIS & Systems concepts , Information: Information concepts information ; a quality product classification of the information, methods of data & information collection, values of the information, general model of a human as an information processor, organizing & information, MIS & the information concepts.
5. **Choice of Information Technology:** Nature of IT decision, strategic decision configuration design, And evaluation information technology implementation plan, choice of “information technology” & the MIS, **Technology of Information systems:** Introduction, data processing transaction processing human factors & user interface, real time systems & design, programming languages for systems coding.

Reference Books-

1. Management Information Systems by W.S. Jawadekar TMG.
2. Management Information Systems by James A.O Brien TMG.
3. Brein James O. –Management Information Systems,
4. Murdick & Ross- Information Systems for Modern Management.
5. Parker C.S. – Management Information Systems- Strategy and Action
6. Aktas A. Ziya- Structured Analysis and Design of Information Systems.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIFTH SEMESTER

- **COURSE NUMBER** : BIT-504
- **NAME OF COURSE** : MULTIMEDIA TECHNOLOGY
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. **Introduction:** Introduction to Multimedia, Multimedia objects, Multimedia in business & work.
2. **Stages of Multimedia Projects:** Multimedia Hardware, Memory & Storage Devices, Communication devices, multimedia software's, presentation tools, tools for object generations, video, sound, image capturing, authoring tools card and page based authoring tools.
3. **Multimedia Building Blocks:** Text, sound, MIDI, Digital Audio, audio file formats, MIDI under windows environment, Audio & video Capture.
4. **Speech Compression & Synthesis:** Digital Audio concepts, Sampling variables, Lossless compression of sound, lossy compression & silence compression.
5. **Images & video:** Multiple monitors, bitmaps, vector drawing, lossy graphic compression, image file formation animation, Images standards, JPEG Compression, Zig - Zig Coding. Video representation, Colors, Video compression, MPEG standard, MHEG Standards, recent development in Multimedia.

Reference Books-

1. Tay Vaughan "Multimedia, Making it work," Osborne Hill
2. Buford, "Multimedia Systems," Addison Wesley
3. Mark Nelson "Data Compression Book", BPB
4. Rosch, "Multimedia Bible", Sams publishing

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
FIFTH SEMESTER

- **COURSE NUMBER** : BIT-505
- **NAME OF COURSE** : OBJECT ORIENTED DESIGN
- **CREDIT HOURS** : 4 (3-1-2)
- **PREREQUISITE** : NIL

1. Information to Object Technology: Traditional Approach, Object Technology Basics, abstraction, Encapsulation, OOAD Methods, And Fundamentals of object-oriented Programming: Introduction, Object-Oriented Programming, Basic concepts of object oriented programming, Benefits of OOP, Applications of OOP.
2. JAVA Evolution: Java History, Java Features; How Java differs from C and C++, Java and Internet, Java and World Wide Web. Overview of Java Language: Introduction, Simple Java Program, More of Java, An application with two classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java virtual machine, command line arguments, Programming style.
3. Constants, variables and Data Types: Introduction, Contents, Variables, Data Types, declaration of variables, giving values of variables, Scope to variables, Symbolic constants, Type casting, Getting values of variables, Standard default values, Operators and Expressions, Expressions, evaluation of expressions, precedence of arithmetic operators, type conversions in expressions, operator precedence and associatively, Mathematical functions, Decision Making and Branching, Looping, Arrays, Strings and Vectors : Arrays, one-dimensional arrays, creating an array, two dimensional arrays strings, vectors, wrapper classes..
4. Classes, Objects and Methods : Introduction, defining a class, adding variables, adding variables, adding methods, creating objects, accessing class members, constructors, methods overloading, static members, nesting of methods, Inheritance: extending a class, overriding methods, final variables and methods, final classes, Finalizer method, Abstract methods and classes, visibility control, Interfaces: Multiple Inheritance: Introduction, defining interfaces, extending inter-Faces, implementing interfaces, accessing interface variables. Packages: Putting classes together : Introduction, java API packages, using system Packages, naming conventions, creating packages, accessing a package, using a package, adding a class to a package, hidings classes.
5. Multithreaded Programming : Introduction, creating threads, extending the thread class, stopping and blocking a thread, life cycle of thread, using thread methods, thread exception, thread priority, synchronization, implementing the 'Run able' Interface. Managing Errors and Exceptions: Introduction, Types of errors, exceptions, syntax of exception handling code, multiple catch statements, using finally statement, throwing our own exceptions, using exceptions for debugging, Applet Programming : Introduction, how applets differ from applications, preparing to write applets, building applet code, applet life cycle, creating an executable applet.

Reference Books-

1. Object Oriented Analysis & Design By Atul Kahate Tata McGraw-Hill Publishing Company Limited New Delhi.
2. The United Modeling Language User Guoide, Grady Booch, James Rumbaugh, Ivar Jacobson, Addison Wesley Longman, ISBN 0-201-57168-4.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SIXTH SEMESTER

- **COURSE NUMBER** : BIT-601
- **NAME OF COURSE** : E-COMMERCE
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. **Introduction E-Commerce:** Brief History of E-Commerce, Introduction to E-Commerce, Model of E-Commerce (B2B, B2C, C2C, G2B, G2C), Network Infrastructure for E-Commerce, Application of E-Commerce with respect to models, Inter Organizational & Intra Organizational E-Commerce, E-Commerce laws, BPR (*Business Process Reengineering*) & E-Commerce, Creation of E-Commerce sites, E-Commerce Transactions, Validity & Enforceability of Agreements, Digital Documents, E-Commerce in India, Issues & Opportunities, Legal Requirement in E-Commerce, Introduction to Mobile Commerce.
2. **Web Security:** Introduction to web security, Secured Electronic Transaction (SET), Transaction Security, Securities in E-banking. Emerging Client Server Security Threats, IPsec (Internet Protocol Security), Computer Viruses, Types of viruses, Viruses detection & preventions, Worms, Security in IT – Attacks, Hackers, Crackers, Cryptography, etc.
3. **Network Security & Encryption:** Threats, Firewall, Packet-filtering firewalls, policies and rules, Common Problem with Packet Filtering, SSL – Secure Socket Layer, Virtual Private Networks, Symmetric Key Signatures, Public key Signatures, The Birthday Attack., **Encryption:** Symmetric Cryptography, Asymmetric Cryptography, RSA Algorithm, Public Key Encryption, Decryption.
4. **ERP (Enterprise Resource Planning):** Overview, Advantages, Challenges, ERP Module, ERP Market, ERP Implementation Life Cycle, ERP & Internet, Integrating ERP into Organizational Culture, Future Directives in ERP.
5. **Net Commerce & E-Banking:** Introduction, Home Banking, Online Banking, Transactions (Inter Banking, Intra Banking), Overview of E-Payments, Digital Token based E-Payment System (Payment – Gateway Example), Smart Cards, Credit Cards, Debit Cards based E-Payment System, Services Provided (ATM, Smart Card, ECS (Electronic Clearing System) e.g. Telephone, Electricity Bills), EDI (Electronic Data Interchange), EDI Applications in Business, Emerging Financial Instruments.

Reference Books-

1. Ravi Kalakota, Andrew Whinston , “frontiers of Electronic Commerce”, Addison Wesley
2. Denial Amor “The E Business revolution”, Addison Wesley
3. Sokol, “From EDI to Electronic Commerce: A Business Initiative”. TMH
4. Bajaj Nag, “E Commerce : The Cutting Edge of Business”, TMH.
5. E-Commerce by Pete Loshin and P.A.Murphy, JPH Publication.

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SIXTH SEMESTER

- **COURSE NUMBER** : BIT-602
- **NAME OF COURSE** : RECENT TRENDS IN INFORMATION TECHNOLOGY
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. **Cloud Computing:** Distributed Computing - Overview, Introduction to distributed computing, what's cloud computing? Properties & Characteristics, Service models, Deployment models. Infrastructure as a Service (IaaS): Introduction to IaaS, Resource Virtualization, Server, Storage, Network. Platform as a Service (PaaS): Introduction to PaaS, Cloud platform & Management, Computation, Storage. Software as a Service (SaaS): Introduction to SaaS, Web services, Web 2.0, Web OS. Cloud issues and challenges: Cloud provider Lock-in, Security.
2. **Data Warehouse:** Introduction to data warehouse, components of data warehouses, Data warehouse process & architecture, OLAP and data cubes , types of OLAP (Online Analytical Processing), data cleaning, data integration and transformation, data reduction, Different methods of storing data in data warehouse, Structure of a data warehouse, advantages of data warehouses, Data warehouse implementation. **Data Mining:** Introduction to data mining, Evolution of data mining, Data mining – verification vs. discovery, Advantages of data mining, KDD versus data mining, data mining techniques, tools and applications, Descriptive and predictive data mining, outlier analysis, clustering, Classification - decision tree, association rules, Technologies used in data mining.
3. Content Management and Dissemination, E-Learning, Models WBT, CBT, Virtual Campus, LMS & LCMS, Video Conferencing, Chatting Bulletin, Building Online Community, Asynchronous/ Synchronous Learning, Case study.
4. E-Governance: E-Governance Models: (G2B, G2C, C2G, G2G), Challenges to E-Governance, Strategies and tactics for implementation of E-Governance case study.
5. GIS/GPS: What is GIS? , Nature of Geographic data , Spatial Objects & Data Models, Getting map on Computers , GIS standards & Standardization Process of GIS development, Implementation and Deployment phases, Open Source Terminologies: Open Source Software, Freeware, Shareware, Proprietary Software, FLOSS, GNU, FSF, OSI.

Reference Books-

1. Management Information System: Jawadekar
2. Management Information System: Laudon & Laudon
3. The GIS Book: George B. Karte.
4. Internet (Use of Search Engines Google & Yahoo etc)
5. E-Governance Case Studies- Ashok Agarwal

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
SIXTH SEMESTER

- **COURSE NUMBER** : BIT-603
- **NAME OF COURSE** : WIRELESS COMPUTING
- **CREDIT HOURS** : 3 (3-2-0)
- **PREREQUISITE** : NIL

1. Introduction, Historical Perspective, Wireless Handheld Devices, Wireless Terminology, Micro browsers, Introduction to WML – general layout basic tags and images, Advantages and disadvantages of Wireless networking.
2. Wireless Service Providers Mobile service providers how cell phones works? Wap i-mode Messaging services- SMS, EMS, MMS wireless services WML- soft keys, tables, forms, comments.
3. Wireless Networks, WLANS IEEE 802.11 standards HIPETLAN European alternative WWANs, WPANs, Fixed Wireless WML- setvar, onevent, templates Multimedia
4. Wireless Communication Technologies, Radio Frequency (RF) Laser and infrared Wi-Fi, Bluetooth, Satellite Digital Cellular XHTML Mobile.
5. Wireless Access Technologies FDMA, TDMA, CDMA Generational technologies [2G, PCS,GSM, 2.5G, 3G, 4G(4G+)], XML. Location –based Services & Technologies. MAC protocols for wireless LANs such as IEEE802.11 and HIPERLAN I and II.

Reference Books-

1. Data Dissemination in Wireless Computing Environments, By Kian-Lee, Tan , Beng Chin Ooi
2. Wireless Information Networks, By Kaveh Pahlavan, Allen H. Levesque
3. Wireless Home Networking for Dummies ,By Danny Brier, Pat Hurley, Edward Ferris
4. Just Enough Wireless Computing, By Ian S. Hayes.
5. Ad Hoc Wireless Networks: Architectures and Protocols By C. Siva Ram Murthy, B. S. Manoj, Published Hall PTR, 2004.