AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-I

BCA-101 COMMUNICATIVE ENGLISH

Business Correspondence :
Structure of a Letter, Inquiry Letter, Sales Letter, Order Letter, Complaints, Complaint Handling, Routine letter

Government Correspondence : Memo, Agenda, Minutes, Proposals

Writing Skills:
Report Writing, Composition (argumentative, explanatory, descriptive and narrative), Paragraph writing

Grammar :
Sentence Structure, Idiomatic Usage of Language, Tenses, Direct & Indirect Parts of Speech, Active & Passive Voice, Vocabulary.

Selected Short Stories:
Three short stories from the book, "Added Value: The Life Stories of Indian Business Leaders." by Peter Church, Lotus Collection, New Delhi

1. Rahul Bajaj/ Bajaj Group (Page No. 20)
2. Subhash Chandra/ Essel Group/Zee TV (Page No. 40)
3. NR Narayana Murthy/Infosys (Page No. 148)

Preparation for Job :
Writing Applications for Jobs, Preparing Curriculum Vitae, Preparing for Interviews, Preparing for Group Discussions.

Text Books:

1. Added Value: The Life Stories of Indian Business Leaders; Peter Church; Roli Books.
2. Organisations - Structures, Processes and Outcomes; Richard h Hall; Prentice Hall India.
3. English for the Secretary; Yvonne Hoban; Tata McGraw Hill.
4. Technical Communication : M. Raman & S. Sharma; Oxford University Press.
5. Business Communication Process and Product : M.E. Guffey; Thomson Learning.

Reference Book:

1. Human Behavior at Work; John W Newstorm & Keith Davis; Tata McGraw Hill.
2. The Most Common Mistakes in English Usage; Thomas Elliot Berry, Tata McGraw Hill.
3. Business Communication: R.K. Madhukar; Vikas Publication.

BCA-102 BASIC MATHEMATICS

Objectives : To know about Logical operators, validity of arguments, set theory and set operations, relations and functions, linary operations, Binary algebra, Permutations & Combinations, Differentiation, Straight lines, pair of straight lines, Circles

MODULE I : SYMBOLIC LOGIC & SET THEORY :

Proposition, Logical operators, conjunction, disjunction, negation, conditional and bi-conditional operators, converse, Inverse, Contra Positive, logically equivalent, tautology and contradiction. Arguments and validity of arguments. Set operations, Venn diagram, Properties of sets, number of elements in a set, Cartesian product, relations & functions, Relations : Equivalence relation.
Equivalence class, Partially and Totally Ordered sets, Functions: Types of Functions, Composition of Functions.

MODULE II : DIFFERENTIAL CALCULUS

Differentiation, successive differentiation, Leibnitz theorem, partial differentiation, Applications of differentiation, Tangent and normal, angle between two curves, Maximum and Minimum values (Second derivative test), Curvature and radius of Curvature (Cartesian coordinates), Envelopes.

MODULE III : INTEGRAL CALCULUS

Definite Integral and its application for area, length and volume. Multiple Integrals. Change of order of Integration. Transformation of integral from Cartesian to polar. Applications in Areas, volume and surfaces.

MODULE IV : TWO DIMENSIONAL ANALYTICAL GEOMETRY

Straight Lines .Pair Straight Lines .Circles.

Text Books:

1. Das BC and Mukherjee, Differential Calculus, Calcutta, U.N. Dhar Publishers
2. Das BC and Mukherjee, Integral Calculus, Calcutta, U.N. Dhar Publishers
3. Grewal B.S., Higher Engineering Mathematics, Delhi Khanna Publishers.

BCA-103 INFORMATION TECHNOLOGY AND APPLICATION

Introduction To Computers

Introduction, Characteristics of computers, Evolution of computers, Generation of Computers, Classification of Computers, The Computer System, Applications of Computers.

Input / Output devices and Memory

Introduction, Keyboard, Pointing Devices, Speech Recognition, Digital Camera, Scanners, Optical Scanners. Classification of Output, Printers, Plotters, Computer Output Microfilm (COM),
Monitors, Audio Output, Projectors. Random Access Memory (RAM), Read Only Memory (ROM), Types of ROM. Classification of Secondary Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto Optical disk.

Software Concepts

Introduction to Software, Relationship between Software and Hardware, System Software, Application Software Algorithm, Flowchart, Program, Pseudocode (P-Code).Features of a Good Programming Language.

Operating Systems: History & Evolution, Functions of an Operating System, A Brief History of MS-DOS, Linux, Windows System. Database Management System

Data Communication And Computer Network

Introduction, Data Communication, Transmission Media, Multiplexing, Switching, Computer Network, Network Topologies, Communication Protocols, Network devices.
World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Case
Study, Intranet.

MS-Office – MS-Word, MS-Excel, Ms-Power Point.

Text Books:

1. V. Rajaraman, Fundamentals Of Computers, 3rd Edition , PHI Publications
2. Nasib S. Gill, Essentials of Computer & Network Technology, Khanna Publications.
3. Deepak Bharihoke, Fundamentals of Information Technology, Excel Books.

BCA-104 PRINCIPLES OF MANAGEMENT & ORGANIZATION

Concept of Management: Definition, Nature, and scope, and overall view of Management, Relation with other social sciences and industry.

Evolution of Management thought:

(A) Classical Theory of Management.
(A1) Bureaucracy- Introduced by Max Weber.
(A2) Scientific Management - F.W. Taylor and his followers. (A3) Process Management - H. Fayol and others.
(B) Neoclassical Theory of Management.
(B1) Human Relations - B.E. Mayo and Roethlisberger
(B2) Behavioral Science approach - By D. McGregor, A. Maslow & others.
(C) Modern Management theories: Peter Drucker.

Management Functions: Planning, Organizing, Staffing, Directing, and Controlling.

Executive Functions: Production, Marketing, Finance, Personnel.

Planning: Concept, Nature, Importance, Objectives, Policies, Procedure, Strategies and Method of Decision Making

Organization: Definition, Theories of Organization, Forms of organization, Formal and Informal Organization, Types of Formal Organizations, Departmentation, Line and Staff Relationship, Span of Management, Authority, Responsibility, Delegation, Centralization, Decentralization, Committees.

Staffing: Selection, Recruitment, Training, Development and Welfare

Directing: Leadership and Supervision, Motivation and Communication

Controlling: The Elements, Process and style of Control, Techniques of control. Social Responsibility of business

Text Books:

1. Koontz and O'Donnel - Principles of Management, Essentials of Management.
2. Theo Haiman - Management Theory and Practice.

Reference Books:

1. P.F. Drucker - Management - Task and Responsibility
2. P.F. Drucker - The Practice of Management
3. Newman and Warren - Process of Management
4. E.F.L. Beach- The Principles and Practical Management
5. H.F. Merril - Classics in Management – Preface
6. Mee J.E. - Management Thought in a Dynamic Economy
7. Daniel A. Wren - The Evolution of Management – Thought
8. S. N. Banerjee - Principles of Management

BCA-105: Python Programming (Elective 1)

Overview: Environment, Basic Syntax, Variable Types, Basic Operators, Installing Python. Very Simple Programs, Scripts Loops, Conditionals Functions. Tuples, Lists, Dictionaries for Loop Classes Importing Modules File I/O Error Handling.

Structures: if...else , while Loop , for Loop , Loop Control. Numbers, Strings, Lists, Tuples, Dictionary, Date & Time. Functions, Modules, Files I/O, Exceptions. Classes / Objects, Reg Expressions, GUI Programming.

Text Books and References:

1. Programming Python: Powerful Object Oriented Programming; Mark Lutz; Shroff/O'Reilly; 2010.
2. Beginning Python: Using Python 2.6 & Python 3.1; James Payne; Wiley India; 2011.
3. Head First Programming: A Learner's Guide to Programming using Python Language; Barry & Griffiths; Shroff/O'Reilly; 2009.

BCA-106 : PROBLEM SOLVING AND PROGRAMMING CONCEPTS (Elective 2)

Introduction to Problem Solving and Programming : Problem Solving Concepts – Problem Solving in everyday life, types of problems, problem solving concepts for computers, Algorithms and Flow charts; Programming Concepts.

Logic Structures : Introduction to Programming structure – Modules and their functions – Local and Global Variables – Four Logic structures – Problems solving with Sequential and Decision Logic Structures.

Loop & Case Logic Structure : Loop Logic structure – While/While Wend Structure, Repeat / Until Structure, Automatic Counter loop, Nested Loops and Recursion.

Array Data Structure & File Concepts : Processing Arrays – Arrays, one dimensional arrays, 2D arrays, Multidimensional arrays – Searching and Sorting Techniques. Definition – Record, File – Primary and Secondary Keys – Sequential Access File Applications.
Application Domains : Bio-informatics and medical Applications – Business Applications – Law Enforcement and political Process – Ecommerce – Manufacturing – Education – Entertainment and Agriculture.

Text Books and References:

1. Maureen Sprankle, Problem solving and Programming Concepts, Pearson Education, New Delhi.
2. Compilation Notes, Department of Information Technology, SRM University.
3. Elizabeth A. Dickson, Computer Program Design, Tata McGraw Hill.
4. Kenneth C. Louden, Programming Languages – Principles and Practice, Thomson Asia Pvt. Ltd.
5. Yuskel Uckan, Problem Solving Using C, McGraw Hill.

PRACTICALS

BCA 107 LAB: (103)

BCA-108 LAB: (105)

BCA-109 LAB: (106)

AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-II

201 Business English

Section I: Grammar

Expressing in Style; Words often confused; One-word substitution; Phrases; Idioms.

Section II: Advanced Reading

Paraphrasing; Interpreting visual information: Tables, Graphs, Charts; Speed Reading. Comprehension and Analysis of the book, "Who Moved My Cheese."

Section III: Effective Writing

Business Correspondences: Fax, Email; Taking Notes; Making Inquiries; Placing Orders; Asking & Giving Information; Registering Complaints; Handling Complaints; Drafting Notices; Job Applications; Expository Composition; Argumentative Composition; Techniques of Argument; Logical Presentation; Descriptive Composition; Narrative Composition; Summary Writing, Proposal; Abstract, Agenda, Minutes.

Section IV: Speaking

Business Etiquettes; Impromptu Speech; Debate; Role Play; Presentations.

Section IV: Listening

Business-related Conversation Exercises.

Reference Books:

1. Spencer Johnson; Who Moved My Cheese; Vermilion; (2009).

2.Balasubramanian, T., A Textbook of English Phonetics for Indian Students; Macmillan India,Delhi 98.

3.McLearn, Stephen., Writing Essays and Report: A Student's Guide; Viva Books, New Delhi (2011).

4.Burton Roberts, N., Analysing Sentences; Longman, London (1986).

5.Wekker, H. And Haegeman, L., A Modern Course in English Syntax; Croom Helm, London (1985).

BCA-202 MATHEMATICS [NUMERICAL TECHNIQUES]

Errors in Numerical Calculations: Numbers and their accuracy, Errors and their Computations-Absolute, Relative and Percentage, General Error Formula. Solution of Algebraic and Transcendental Equations: Introduction, Bisection method, Iteration method, Method of False Position, Newton- Raphson method

Interpolation: Introduction, Errors in Polynomial Interpolation, Finite Differences – Forward, Backward and Central, Detection of errors using Difference tables, Differences of a Polynomial, Newton's formulae for Interpolation, Central Difference Interpolation.

Formulae: Gauss's Central Difference Formula, Interpolation with unevenly spaced points, Lagrange's Interpolation Formula, Divided Differences and their properties- Newton's General Interpolation Formula

Numerical Differentiation and Integration: Introduction, Numerical Differentiation and Errors, Numerical Integration – Trapezoidal Rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule. Numerical Solution of Linear System of Equations: Direct Methods- Gauss-Jordan Method, Gauss Elimination Method, Method of Factorization, Ill- conditioned Linear System, Iterative Method- Gauss- Jacobi Method, Gauss-Seidel Method. Numerical Solution of Ordinary Differential Equations: Solution by Taylor's Series, Euler's method, Modified Euler's method, Runge-Kutta method of 2nd and 4th order.

Text Book:

1. S.S.Sastry -Introductory methods of Numerical Analysis,4th Edition,Prentice Hall of India, New Delhi, 2006.

Reference Books:

1. V.N.Vedamurthy et.al.-Numerical Methods, Vikas Publishing House, New Delhi, 2005.
2. B.S.Grewal- Numerical Methods in Engineering & Science, Khanna Publishers, Delhi,2005.

BCA-203 SYSTEM ANALYSIS & DESIGN

Introduction to SAD : Fundamentals of System, Important Terms related to Systems, Classification of Systems, Real Life Business Subsystems, Real Time Systems, Distributed Systems, Development of a successful System, Various Approaches for development of Information Systems. Structured Analysis and Design Approach, Prototype, Joint Application Development.

Systems Analyst-A Profession Why do Businesses need Systems Analysts? Users, Analysts in various functional areas, Role of a Systems Analyst Duties of a Systems Analyst, Qualifications of a Systems Analyst, Analytical Skills, Technical Skills, Management Skills, Interpersonal Skills.

Process of System Development

Systems Development Life Cycle, Phases of SDLC, Project Identification and Selection, Project Initiation and planning, Analysis, Logical Design, Physical Design, Implementation, Maintenance, Product of SDLC Phases, Approaches to Development, Prototyping, Joint Application Design, Participatory Design, Case Study.

Introduction to Documentation of Systems

Concepts and process of Documentation, Types of Documentation, System Requirements Specification, System Design Specification, Test Design Document, User Manual, Different Standard for Documentation, Documentation and Quality of Software, Good Practices for Documentation.

Planning and Designing Systems

Process of System Planning: Fact finding Techniques, Interviews, Group Discussion, Site Visits, Presentations, Questionnaires, Issues involved in Feasibility Study, Technical Feasibility, Operational Feasibility, Economic Feasibility, Legal Feasibility, Cost Benefit Analysis, Preparing Schedule, Gathering Requirements of System, Joint Application Development, Prototyping.

Modular and Structured Design Design Principles, Top Down Design, Bottom Up Design, Structure Charts, Modularity, Goals of Design, Coupling, Cohesion.

System Design and Modelling Logical and Physical Design, Process Modeling, Data Flow Diagrams, Data Modeling, E-R Diagrams, Process Specification Tools, Decision Tables, Decision Trees, Notation Structured English, Data Dictionary. More Design Issues and CASE Tools

Forms and Reports Design: Forms, Importance of Forms, Reports, Importance of Reports, Differences between Forms and Reports, Process of Designing Forms and Reports, Deliverables and Outcomes, Design Specifications, Narrative Overviews, Sample Design, Testing and Usability Assessment, Types of Information, Internal Information, External Information, Turnaround Document, General Formatting Guidelines, Meaningful Titles, Meaningful Information, Balanced Layout, Easy Navigation, Guidelines for Displaying Contents, Highlight Information, Using Colour, Displaying Text, Designing Tables and Lists, Criteria for Form Design, Organization, Consistency, Completeness, Flexible Entry, Economy, Criteria for Report Design, Relevance, Accuracy, Clarity, Timeliness, Cost.

Audit and Security of Computer Systems -Introduction, Definition of Audit, Objectives of Audit.

Text Book:

1. Elias M. Award : System Analysis and design; Galgotia
2.James A. Sen : Analysis of Design of Information System TMH
3.Rojer S. Pressman : Software Engineering : A Practitioners Approach,MCH
4.Pankaj Jalote : An Integrated Approach to Software Engineering; Springer.

Reference Book :

1. J. L. Whitten & L. D. Bentley : System Analysis and Design Method; TMH
2.J. B. Dixit & Rajkumar : Structured system Analysis and Dseign; University Science Press
3.K.C. Landon & J. P.Landon : MIS ; Macmillan

BCA-204 PROBLEM SOLVING TECHNIQUE & PROGRAMMING IN C

Fundamentals of C: Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical , Assignment and Conditional Operators - Library functions. Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator. **Functions** -Definition - prototypes - Passing arguments – Recursion- Storage Classes - Automatic, External, Static, Register Variables .

Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Arrays and Strings.

Structures and unions - User defined data types - Passing structures to functions - Self-referential structures - Unions - Bit wise operations.

Pointers - Declarations - Passing pointers to Functions - Operation on Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files: Creating, Processing ,Opening and Closing a data file.

The C Preprocessor: # define to Implement Constants, # define to Create Functional Macros, Reading from Other Files using # include ,Conditional Selection of Code using #ifdef, Using #ifdef for different computer types.

Using #ifdef to temporarily remove program statements, Other Preprocessor Commands, Predefined Names Defined by Preprocessor, Macros Vs Functions.

Files: File Handling in C Using File Pointers, Open a file using the function fopen ( ), Close a file using the function fclose ( ), Input and Output using file pointers, Character Input and Output in Files, String Input / Output Functions, Formatted Input / Output Functions, Block Input / Output Functions, Sequential Vs Random Access Files, Positioning the File Pointer.

Text Book:

1. E. Balaguru Swamy - ANSI C Programming Language, 2nd Edition, PHI, 1988.
2. H. Schildt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.
3. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.
4. Reema Thareja - Programming in C
5. Byron Gotlfried – C Programming; Oxford University Press

BCA-205 OPERATING SYSTEM & UNIX

Introduction: Introduction to Operating Systems, Operating system services, multiprogramming, time-sharing system, storage structures, system calls, multiprocessor system. Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms,algorithm evaluation, multiple processor scheduling, real time scheduling I/0 devices organization, I/0 devices organization,I/0 devices organization, I/0 buffering.

Process Management: Process concept, process scheduling, operations on processes, threads, inter-process communication, precedence graphs, critical section problem, semaphores, classical problems of synchronization. Deadlock problem, deadlock prevention, avoidance, recovery .

Memory Management: Concepts of memory management, logical and physical address space, swapping, contiguous and non-contiguous allocation, paging, segmentation, and paging combined with segmentation. Virtual memory, demand paging, page replacement algorithms, allocation of frames, thrashing, demand segmentation. Security threads protection intruders-Viruses-trusted system.

Introduction to Open Source technology, Files System hierarchy, Logging in, Simple commands like ls, cp, mv, wc, sort, tsort, cat, cut, grep, dd, head, tail, uniq, diff, echo, touch, which, whereis, whatis, type, who, whoami, finger, w (option and variations included), tty, ,uname, printf, ps, pwd , history, exec, kill, pkill, clear, lpstate, cancel, compress, uncompress, exit. Directory commands like: Brief introduction to file system, mkdir, dir, cd, df, dfspace, du, ll, dirname, rmdir, dir access permission, changing access permission for files and directories like: chmod, chgrp, chown, hard & soft links. Environments and path setting. I/O redirection & piping commands

vi editor: General startup of vi editor and it modes , Creating and editing files, features of vi, screen movement , cursor movement, insertion, deletion, searching, submitting operations, yank, put, delete commands, reading & writing files, exrc file for setting parameters, advance editing techniques, vim (improved vi).

Shell: meaning and purpose of shell, introduction to types of shell. The command line, standard input and standard output, redirection, pipes, filters special characters for searching files and pathnames. Built-ins, functions, history, aliases, job control, file substitution, source code management - RCS and CVS. awk utility.

Features of Linux: Drawbacks of Linux, Components of Linux, Memory Management Subsystems, Linux Process and Thread Management, File Management System, Device Drivers.

Linux Commands and Utilities: Entering the Machine, User Names and Groups, Logging In, Correcting Typing Mistakes, Format of Linux Commands, Changing Your Password, Characters with Special Meanings, Linux Documentation, The File System, Current Directory, Looking at the Directory Contents, Absolute and Relative Pathnames, Some Linux Directories and Files.

Linux Utilities and Editor: Some Useful Commands, Permission Modes and Standard Files, Pipes, Filters and Redirection, Shell Scripts, Graphical User Interface, Editor.

UNIX System Administration: System Administration, Installing Linux, Choosing an Installation Method, Choosing an Installation Class, Pre-installation checks, Installation, Booting the System, Maintaining User Accounts, File Systems and Special Files, Backups and Restoration.

TEXT BOOK:

1.A. Silberschatz et.al.-Operating System Concepts , 6th Edition, John Wiley Inc., 2003
2.H.M. Deitel -Operating Systems , 6th Edition, Pearson Education, 2006
3.A. Robbins- Linux Programming by Example- Pearson Education, New Delhi- 2005
4. Sumitabh Das : Your UNIX The Ultimate Guide; TMH

REFERENCE BOOKS:

1.D.M. Dhandhare - Operating Systems, 2nd Edition, Tata McGraw Hill, New Delhi, 2006
2.J.Goerzen- Linux Programming Bible, IDG Books, New Delhi- 2001
3.N.Mathew & R.Stones- Beginning Linux Programming Wiley Publishing India, 2004.

4. S.E. Mandnick & J.J. Donovan : Operating System; TMH

BCA-206 Lab: (204)

Arrays; Structures; Linked Lists; Stacks; Queues; Trees; Advanced Trees; Graphs; Searching; Sorting.

BCA-207 Lab: (205)

AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-III

BCA-301 OBJECT ORIENTED PROGRAMMING USING C++

Introduction to programming paradigms : Concept of object, class, objects as variables of class data type, difference in structures and class in terms of access to members, private and public members of a class, data & function members. Characteristics of OOP- Data hiding, Encapsulation, data security.
Basics of C++: Structure of C++ programs, introduction to defining member functions within and outside a class, keyword using, declaring class, creating objects, constructors & destructor functions, Initializing member values with and without use of constructors, simple programs to access & manipulate data members, cin and cout functions. Dangers of returning reference to a private data member, constant objects and members function, composition of classes, friend functions and classes, using this pointer, creating and destroying objects dynamically using new and delete operators. Static class members, container classes and iterators, proxy classes.

Operator overloading: Fundamentals, Restrictions, operator functions as class members v/s as friend functions. Overloading stream function, binary operators and unary operators. Converting between types.

Inheritance: Base classes and derived classes, protected members, relationship between base class and derived classes, constructors and destructors in derived classes, public, private and protected inheritance, relationship among objects in an inheritance hierarchy, abstract classes, virtual functions and dynamic binding, virtual destructors.

Advanced Topics: Multiple inheritance, virtual base classes, pointers to classes and class members, multiple class members. Templates, exception handling, File handling

Text Books :

1.E. Balagursamy : Object oriented programming with C++; TMH Publication.
2.Deitel and Deitel : C++ How To Program (currently in its 4th edition); PHI.

Reference Books:

1. Robert Lafore : Object oriented programming in Turbo C++; Galgotia Publication

BCA–302 INTERNET & WEB DESIGNING

Internet Basics: Basic concepts, Communication on the Internet, Internet Domains, Internet Server Identities, Establishing Connectivity on the Internet, Client IP Address, A brief overview of TCP/IP and its Services, Transmission Control Protocol, Web Server, Web Client, Domain Registration.

Introduction to HTML: HTML, HTML Tags, Commonly Used HTML Commands, Title and Footers, Text Formatting, Text Style, Lists, Adding Graphics to HTML Documents, Tables, Linking Documents, Frames.

Java Script : Java Script in Web Pages, Advantages of Java Script, Advantages of JavaScript, Data Types and Literals, Type Casting , Java Script Array, Operators and Expression, Conditional Checking , Function, User Defined Function. Understanding XML: SGML, XML, XML and HTML
Creation of Dynamic Web pages using JSP: Dynamic Web Page, Introduction of JSP, Pages Overview, JSP Scripting, Standard Action, Page Directive, Include Directive.

Text Books:

1. Ivan Bay Ross - Web Enable Commercial Application Using HTML, DHTML, BPB Publication.
2.Michel Morrison - HTML and XML for Beginners, PHI, New Delhi- 200
3.H.M Dietal and P.J Dietal - Java How to Program, PHI, New Delhi- 2005

Reference Book:

1. Java Server Side Programming -WROX Publication

BCA–303 JAVA PROGRAMMING

Java Evolution and Overview of Java Language: How Java differs from C and C++,Java and Internet, Java and World Wide Web, 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.

Constants, Variables, and Data Types: Introduction, Constants, Variables, Data Types,Declaration of Variables, Giving Values of Variables, Scope of Variables, Symbolic Constants, Type Casting, Getting Values of Variables, Standard Default Values.

Operators and Expressions: Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, ConditionalOperators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evolution of Expressions, Precedence of Arithmetic Operators, Type Conversion in Expressions, Operator Precedence and Associativity, Mathematical Functions.

Decision Making and Branching: Introduction, Decision Making with if Statement, Simple if Statement, The if... else Statement, Nesting of if ... else Statements, The else if Ladder, The switch Statement, The ?: Operator.

Decision Making and Looping: Introduction, The while Statement, The do Statement, The for Statement, Jumps in Loops, Labelled Loops.

Classes, Objects and Methods: Introduction, Defining a Class, 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 Methods, Abstract Methods and Classes, Visibility Control.

Arrays, String and Vectors: Arrays, One-Dimensional Arrays, Creating an Array, Two-Dimensional Arrays, Strings, Vectors, Wrapper Classes. Interfaces: Multiple Inheritance: Introduction, Defining Interfaces, Extending Interfaces, implementing Interfaces, Accessing Interface Variables. Packages: Putting Classes Together: Introduction, Java API Packages, Using system Packages, Naming Conventions, Creating Packages, Accessing a Packages, Using a Package, Adding a Class to a Package, Hiding Classes. Multithreaded Programming: Introduction, Creating Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization.

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 Application, Preparing to Write Applets, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, More About Applet Tag, Passing Parameters to Applets.

Managing Input/Output Files in Java: Introduction, Concepts of Streams Stream Classes, Byte Stream Classes, Character Stream Classes, Using Streams, Other Useful I/O Classes, using the File Class, Input/Output Exceptions, Creation of Files.

Text Book:

1.E. Balagurusamy, Programming with Java, A Primer Second Edition, Tata McGraw Hill, New Delhi.

Reference Books:

1.H.M.Deitel & P.J.Deitel- JA V A- How to Program, 5th Edn, Pearson Education,New Delhi- 2004.
2.P.Naughton and H. Schildt-JAVA: The Complete Reference, TMH, New Delhi 2005.
3. D.Jana- Java and Object Oriented Programming Paradigm, PHI, New Delhi-2005.

BCA-304 SOFTWARE ENGINEERING

Introduction to Software Engineering: Characteristics, Emergence of Software Engineering, Software Metrics & Models, Process & Product Metrics. Software Life Cycle Models: Waterfall, Prototype and Spiral Models and their Comparison.

Software Project Management: Size Estimation- LOC and FP Metrics, Cost Estimation-Delphi and Basic COCOMO, Introduction to Halstead's Software Science, Staffing Level Estimation-Putnam's Model. Software Requirements Specification: SRS Documents, their Characteristics and Organization.

Software Design: Classification, Software Design Approaches, Function Oriented Software Design, Structured Analysis- Data flow Diagrams and Structured Design, Introduction to Object Oriented Design.

Coding and Testing of Software: Unit Testing, Block Box Testing, White Box Testing, Debugging, Program Analysis Tools, System Testing. Software Reliability and Quality Assurance: Reliability Metric- Musa's Basic Model.

Software Quality Assurance: ISO 9000 and SEI CMM and their Comparison. Software Maintenance: Maintenance Process Models and Reverse Engineering, Estimation of Maintenance Costs.

Text Book:

1.Rajib Mall -Fundamentals of Software Engineering, Prentice Hall of India, New Delhi, 2005.

Reference Book:

1. Pankaj Jalote- An Integrated Approach to Software Engineering, 3rd Edition, Narosa Publishing House, New Delhi, 2005.
2. Richard Fairley- Software Engineering Concepts, Tata McGraw Hill, New Delhi, 2006.
3. Roger S Pressman – Software Engineering; T.M.H

BCA-305 LAB (301 & 303)

BCA-306 LAB (302 & 304)

AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-IV

BCA-401 RELATIONAL DATA BASE MANAGEMENT SYSTEM

INTRODUCTION TO DATABASE SYSTEMS: Overview and History of DBMS. File System vs DBMS .Advantage of DBMS Describing and Storing Data in a DBMS. Queries in DBMS. Transaction management and Structure of a DBMS, Components of DBMS; The 3 level architecture of DBMS – Hierarchical, Network, and Relational Model; Distributed Database; KB-DBMS; OODBMS (Basic Concepts).

ENTITY RELATIONSHIP MODEL: Overview of Data Design Entities, Attributes and Entity Sets, Relationship and Relationship Sets. Features of the ER Model-Key Constraints, Participation Constraints, Weak Entities, Class Hierarchies,Aggregation, Conceptual Data Base, Design with ER Model-Entity vs Attribute, Entity vs Relationship Binary vs Ternary Relationship and Aggregation vs ternary Relationship Conceptual Design for a Large Enterprise. RELATIONSHIP ALGEBRA AND CALCULUS: Relationship Algebra Selection and Projection, Set Operations Renaming, Joint, Division, Relation Calculus, Expressive Power of Algebra and Calculus.

SQL QUERIES PROGRAMMING AND TRIGGERS: The Forms of a Basic SQL Query, Union, Intersection and Exception,Nested Queries ,Correlated Nested Queries, Set-Comparison Operations, Aggregate Operators, Null Values and Embedded SQL, Dynamic SQL, ODBC and JDBC, Triggers and Active Databases.

SCHEMA REFINEMENT AND NORMAL FORMS: Introductions to Schema Refinement, Functional Dependencies, Boyce-Codd Normal Forms, Third Normal Form, Normalization-Decomposition into BCNF Decomposition into 3-NF.

TEXT BOOKS:

1.Fundamental of Database Systems- Elmasri Navathe- Pearson Education Asia.

2. Database- Principles, Programming and Performance- Parick O' Neil Elizabeth O' Niel, Harcort Asia PTE Limited.

REFERENCES BOOKS:

1.An Introduction to Database Systems- C.J.Date, Addison Wesley, Pearson Education Press.

2.Database System Concepts- Abraham Silberschat, Henry F. Korth, S.Sudarshan, Tata McGraw Hill.

3. Database Management – Bipin C. Desai – BPB Publications.

BCA-402 DIGITAL ELECTRONICS,COMPUTER SYSTEM ARCHITECTURE, AND RGANISATION

Introduction to Digital Circuits: The Basic Computer; The Von-Neumann Architecture, Instruction Execution: An Example, Instruction Cycle Interrupts, Interrupts and Instruction Cycle, Computers: Then and Now, The Beginning, First Generation Computers, Second Generation Computers, Third Generation Computers, Later Generations.

The Data Representation: Data Representation, Number Systems, Decimal Representation in Computers, Alphanumeric Representation, Data Representation for Computation, Error Detection and Correction Codes.

Principles of Logic Circuits I: Logic Gates, Logic Circuits, Combinational Circuits, Canonical and Standard Forms, Minimization of Gates, Design of Combinational Circuits, Examples of Logic Combinational Circuits, Adders, Decoders, Multiplexer, Encoder, Programmable Logic Array, Read Only Memory ROM.

Principles of Logic Circuits II: Sequential Circuits: The Definition, Flip Flops, Basic Flip-Flops, Excitation Tables, Master Slave Flip Flops, Edge Triggered Flip-flops, Sequential Circuit Design, Examples of Sequential Circuits, Registers, Counters: Asynchronous Counters, Synchronous Counters, RAM, Design of a Sample Counter.

Basic Computer Organisation: The Memory System: The Memory Hierarchy, RAM, ROM, DRAM, Flash Memory, Secondary Memory and Characteristics, Hard Disk Drives, Optical Memories, CCDs, Bubble Memories, RAID and its Levels, The Concepts of High Speed Memories, Cache Memory, Cache Organisation, Memory Interleaving, Associative Memory.

The Input/Output System: Input / Output Devices or External or Peripheral Devices, The Input Output Interface, the Device Controllers and its Structure, Device Drivers, Input Output Techniques, Programmed Input /Output, Interrupt-Driven Input /Output, Interrupt-Processing, DMA (Direct Memory Access). Input Output Processors, External Communication Interfaces.

The Central Processing Unit: Instruction Set Architecture; Instruction Set Characteristics, Instruction Set Design Considerations, Operand Data Types, Types of Instructions, Number of Addresses in an Instruction, Addressing Schemes, Types of Addressing Schemes, Immediate Addressing, Direct Addressing, Indirect Addressing, Register Addressing, Register Indirect Addressing, Indexed Addressing Scheme, Base Register Addressing, Relative Addressing Scheme, Stack Addressing, Instruction Set and Format Design Issues, Instruction Length, Allocation of Bits Among Opcode and Operand, Variable Length of Instructions, Example of Instruction Format.

Registers, Micro-Operations and Instruction Execution: Basic CPU Structure, Register Organization, Programmer Visible Registers, Status and Control Registers, General Registers in a Processor, Micro-operation Concepts, Register Transfer Micro-operations, Arithmetic Micro-operations, Logic Micro- operations, Shift Micro-operations, Instruction Execution and Micro-operations, Instruction Pipelining.

ALU Organisation: ALU Organisation, A Simple ALU Organization, A Sample ALU Design, Arithmetic Processors.

The Control Unit: The Control Unit, The Hardwired Control, Wilkes Control, The Micro-Programmed Control, The Micro-Instructions, Types of Micro-Instructions, Control Memory Organisation, Micro-Instruction Formats, The Execution of Micro-Program.

Text Books :

1.M. Morris Mano, Charles Kime : Logic and Computer Design Fundamentals, 4/E; Prentice Hall.

2.Rajaraman V.: Fundamental of Computers, PHI

3.Willam Stalling : Computer Organization & Architecture- Desigining for Performance; PHI

4.B Ram: Computer Fundamentals: Architecture and Organization,New Age Int. Pub.

Reference Books :

1. M. Morris Mano : Computer System Architecture ; PHI.

BCA-403 File & Data Structure

Introduction to Data Structure and Application of Data Structure

Algorithms and Analysis of Algorithms: Definition, Structure and Properties of Algorithms, Development of an Algorithm, Data Structures and Algorithms, Data Structure – Definition and Classification, Efficiency of Algorithms, Apriory Analysis, Asymptotic Notations, Time Complexity of an Algorithm using O Notation, Polynomial Vs Exponential Algorithms, Average, Best and Worst case Complexities, Analyzing Recursive Programs, Open source software development process.

Linked List, Linked Stacks and Linked Queues: Singly Linked Lists, Circularly Linked Lists, Doubly Linked Lists, Multiply Linked Lists, Applications of Linked Lists, Introduction to Linked Stack and Linked Queues, Operations on Linked Stacks and Linked Queues, Dynamic Memory Management and Linked Stack, Implementations of Linked Representations, Applications of Linked Stacks and Linked Queues.

Arrays, Stacks and Queues: Array Operations, Number of Elements in an Array, Representation of Arrays in Memory, Applications of Array, Stack-Introduction, Stack Operations, Applications of Stack, Queues-Introduction, Operations on Queues, Circular Queues, Other Types of Queues, Applications of Queues, Polynomials & Sparse matrix.

Trees, Binary Trees, BST, AVL Trees and B Trees: Trees: Definition and Basic Terminologies, Representation of Trees, Binary Trees: Basic Terminologies and Types, Representation of Binary Trees, Binary Tree Traversals, Threaded Binary Trees, Applications, BST & AVL Trees: Introduction, BST: Definition and Operations, AVL Trees: Definition and Operations, B Trees: Introduction, m-way search trees: Definition and Operations, B Trees: Definition and Operations.

Graphs: Introduction, Definitions and Basic Terminologies, Representations of Graphs, Graph Traversals, Single-Source Shortest-Path Problem, Minimum Cost Spanning Trees.

Sorting: Understanding Internal and External Sorting.

Internal Sorting: Insertion Sort, Bubble Sort, shell sort, Quick Sort, 2-way Merge Sot, Heap Sort, Sorting on Several Keys.

Searching: Introduction, Binary Search, Transpose Sequential Search, Interpolation Search.

Text Book:

1. G A V Pai – Data Structures and Algorithms: Concepts, Techniques and Applications, 2ed, TMH, 08.
2. Horowitz E.Sahni, S., Susan A., Fundamentals of Data Structures in C, 2ed, University Press,2010

Reference Books:

1.J. P. Tremblay , P. G. Sorenson – An Introduction to Data Structures With Applications, 2nd Edn, McGraw-Hill, Inc. New York, NY, USA.
2.Seymour Lipschutz – Data Structures, 6th Edn, 9th Reprint 2008, Tata McGraw-Hill.
3.Adam Drozdek – Data Structures and Algorithms in C++, Thomson Learning, New Delhi 2007.
4.J. Feller, B. Fitzgerald -Understanding Open Source Software Development, Pearson Education Ltd, New Delhi.
5. Aron M. Tenenbaum & Others – Data Structure using C & C++; Pearsons Publications

BCA-404 INTRODUCTION TO STATISTICS

UNIT-I

COMBINATORICS: Permutation and Combination, Repetition and Constrained Repetition, Binomial Coefficients, Binomial Theorem.

UNIT-II

Frequency distributions, Histograms and frequency polygons, Measures of central tendency: Mean, Mode, Median, Dispersion, Mean deviation and standard deviation. Moments, Skewness, kurtosis,

UNIT–III

Elementary probability theory: Definition, conditional probability, Probability distribution, mathematical expectation'

Theoretical distribution: Binomial , poisson and Normal distribution, Relation between the binomial, poisoned Normal distribution.

UNIT-IV

Correlation and Regression: Linear Correlation, Measure of Correlation, Least Square Regression lines.

Curve fitting: Method of least square, least square line, least squares Parabola. chi-square test: definition of chi-square; signification test: contingency test, coefficient of contingency.

UNIT-V

Basic of sampling theory: Sample mean and variance, students t-test, test of Hypotheses and significance, degree of freedom, Z-test, small and large sampling, Introduction to Monte Carlo method.

TEXT BOOKS:

1. Advanced Engineering Mathematics: H.K. Dass; S. Chand & Co., 9 Revised Edition, 2001.
2. Discrete Mathematics: S.K. Sarkar; S. Chand & Co., 2000.
3. Numerical Analysis: S.S. Sastry; Prentice Hall of India, 1998.
4. Mathematical Statistics: J.N. Kapoor and H.C. Saxena.
5. Mathematical Statistics: M. Ray and H. Sharma

BCA-405 Lab: (401) BCA-406 Lab: (403)

AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-V

BCA-501 Windows Programming using VB .Net Introduction to .Net Technology

Why .Net?, The .Net Framework Class Library, Working with the .Net FCL, Namespaces, Types of a .Net Namespace.

The Visual Basic.Net Language

VB.Net Data types, Operators, Decision Statements- If..then, If..then..else, Select.. Case, Loop Statements- While, Do .. Loop, For .. Next, For Each ..Next, Arrays.

OOP using VB.Net

Object Oriented features- Abstraction, Encapsulation, Polymorphism, Inheritance, Declaring Classes, Implementing Typecasting, Procedures and Functions, Optional arguments, Error handling in Procedures, Properties, Public and Private variables, Types of Properties, Polymorphism, Inheritance, Method Overriding.

Windows Form

Introduction to Class Libraries, Event and Event Handlers, Windows Application, Windows GUI, First Win Forms Application, Controls, Text controls, Selection List Controls, VB.Net is overridden, Some controls with examples. **Error handling In Windows Forms:** Types of Validations, Types of Errors, Exceptions, Classified Runtime based Exceptions. **SDI and MDI Applications:** SDI and MDI interfaces, Characteristics of MDI components, Creating MDI Forms.

Data access with ADO.Net

Overview of Microsoft Database Access Technology, ADO.Net, Creating a Database, ADO.Net Architecture, ADO.Net Class Libraries, Databound Controls, Creating a Data Set, Using XML Data.

BCA-502 GRAPHICS & MULTIMEDIA

Computer Graphics: Picture analysis, Overview of programmer's model of interactive graphics, Fundamental problems in geometry. Scan Conversion: point, line, circle, ellipse polygon, Aliasing, and introduction to Anti Aliasing (No antialiasing algorithm).

2D & 3D Co-ordinate system: Homogeneous Co-ordinates, Translation, Rotation, Scaling, Reflection, Inverse transformation, Composite transformation. Polygon Representation, Flood Filling, Boundary filling. Point Clipping, Cohen-Sutherland Line Clipping Algorithm, Polygon Clipping algorithms.

Hidden Lines & Surfaces: Image and Object space, Depth Buffer Methods, Hidden Facets removal, Scan line algorithm, Area based algorithms. Curves and Splines & Rendering: Parametric and Non parametric Representations, Bezier curve, BSpline, Basic illumination model, diffuse reflection, specular reflection, shading, Ground shading, ray tracing, color models like RGB, YIQ, CMY, HSV

Multimedia: Multimedia components, Multimedia Input/Output Technologies: Storage and retrieval technologies, Architectural considerations, file formats.

Animation: Introduction, Rules, problems and Animation techniques.

Text/References:

1. J. Foley, A. Van Dam, S. Feiner, J. Hughes: Computer Graphics- Principles and Practice, Pearson
2. Hearn and Baker: Computer Graphics, PHI
3. Multimedia Systems Design, Prabhat Andleigh and Thakkar, PHI.
4. Multimedia Information Networking, N.K.Sharda, PHI.

BCA-503 COMPUTER NETWORK, DATA COMMUNICATION, AND CLIENT SERVER TECHNOLOGY

Data Transmission Basic Concepts and Terminology: Data Communication Model, Communication Tasks, Parallel & Serial Transmission, Transmission Models, Transmission Channel, Data Rate, Bandwidth Signal Encoding Schemes, Data Compression, Transmission Impairments, Layering and Design Issues, OSI Model, Services and Standards. Computer Network: Network Topology, Performance of Network, Network Classification, Advantages & Disadvantages of Network, Transmission Media (guided and unguided), Network Architecture, OSI Reference Model, TCP/IP, SNA and DNA.

Data Line Devices: Modems, DSL, ADSL, Multiplexer and Different Multiplexing Techniques: (FDM, TDM).

Physical Layer: Function and interface, physical layer standard, null modem. Local Area Network: Definition of LAN, LAN topologies, Layered architecture of LAN, MAC, IEEE standard. Ethernet LAN, CSMA, CSMA/ CD, Token passing LAN. Network Security: Security Requirement, Data encryption strategies, authentication protocols, Firewalls.

Data Link Layer: Need for Data Link Control, Frame Design Consideration, Flow Control & Error Control (Flow control mechanism, Error Detection and Correction techniques) Data Link Layer Protocol, HDLC.

Network Layer: Routing, Congestion control, Internetworking principles, Internet Protocols (IPv4 packet format, Hierarchal addressing sub netting, ARP, PPP), Bridges, Routers.

Transport Layer; Session Layer; Presentation Layer; Application Layer. Basic Applications: Telnet, FTP, NFS, SMTP, SNMP and HTTP.

Fundamental of Distributed System: An Introduction– Client/Server Technology, classification. Distributed Computing Environment: introduction, DCE architecture. Types of CS architecture: 2-tier architecture, 3-tier architecture, Distributed collaborative enterprise architecture – Object Request Broker (ORB). Complementary technology to 3-tier : Object oriented design, Database Two phase. Commit processing , Remote procedure call, Message Oriented middle-ware.

Distributed Computing Environment: Introduction : interoperability , C/S Model , Defining a distributed Environment. Motivation for distributed computing , developming the distributed computing architecture framework, Fundamental technologies, requirements of distributed system.

Text Book:

1. Prakash C. Gupta – Data Communications & Computer Networks, PHI, New Delhi.
2. Behrouz Forouzan – Introduction to Data Communication & Networking; T. M. H.
3. William Stallings – Data and Computer Communications; Pearson.

BCA-504 Business Accounting & ERP (Enterprise Resource Planning)

Accounting Fundamentals: Basic Concepts of Accounting,The Accounting Process; Cash Book and Bank Reconciliation; Other Subsidiary Books Bills of Exchange; Final Accounts.

Concepts Relating to Final Accounts: Final Accounts – I; Final Accounts – II; Errors and their Rectification.

Consignment and Joint Ventures: Consignments Accounts – I; Consignments Accounts – II; Consignments Accounts – III; Joint Venture Accounts.

Accounts from Incomplete Records: Self Balancing System; Accounting from Incomplete Records – I; Accounting from Incomplete Records – II; Accounting from Incomplete Records –III.

Accounts of Non-trading Concerns, Depreciation, Provisions and Reserves: Accounts of Non-trading Concerns – I; Accounts of Non-trading Concerns – II; Depreciation – I, Depreciation – II, Provisions and Reserves.

BCA-505 Lab: (501)

BCA-506 Lab: (502)

AKU B CA SYLLABUS (BACHELOR OF COMPUTER APPLICATION) SEMESTER-VI

BCA-601: Web Technology (Elective 1)

Web2.0 and XHTML

What Is Web 2.0? Introduction to Web 2.0 terms:Search, Content Networks, Blogging, Social Networking, Social Media, Rich Internet Applications (RIAs), Web Services, Introduction to XHTML, Syntactic Differences between HTML and XHTML, Standard XHTML Document Structure, An example of XHTML covering Basic Syntax, Images, Hypertext Links, Lists and Tables, Creation of an XHTML Form, Internal Linking and MetaElements.

Introduction to XML

XML Basics, XML Document Structure, XML Name-spaces, Document Type Definitions, XML Schema, Displaying XML Documents, XSL and CSS.

Programming with Java Script – DOM and Events

The Document Object Model, Element Access in Java Script, Traversing and Modifying a DOM Tree, DOM Collections and Styles, Events, Examples of Event Handling from Body, Button, Text Box and Password Elements, Dynamic Documents using JavaScript – element moving, visibility, positioning etc., Example program (s), Introduction and example of AJAX.

The Server Side Scripting

Server side scripting and its need ,Two-Tier,Three-Tier, N-Tier and Enterprise Architecture,Various Languages / Technologies for server scripting, HTTP Methods (such as GET,POST,HEAD, and so on), Purpose, Technical characteristics, Method selection, Use of request and response primitives, Web container – Tomcat.

JSP – Basics

Basic JSP Life-cycle, JSP Directives and Elements, Script-lets, Expressions, Action Elements, Standard Actions, Comments and Template Data, JSP variables, The out Object, Request, response, sessions and application objects.

JSP Applications

Exceptions and exception handling using JSP, Cookies and sessions, Managing Email using JSP.

JSP Application Development

Example applications using JSP, What is JDBC? Need for JDBC, Database Drivers, Connection using JDBC API, Application development and deployment.

Text Books:

1. Ivan Bay Ross- Web Enable Commercial Application Using HTML, DHTML, BPB Publication
2. Michel Morrison -HTML and XML for Beginners, PHI, New Delhi- 2001
3. H.M Dietal and P.J Dietal -Java How to Program, PHI, New Delhi- 2005

Reference Book:

1. Java Server Side Programming -WROX Publication
2. David S. Plat : Introducing Microsoft .Net, Microsoft Press.

BCA-602 : CONCEPT OF DATA MINING AND DATA WAREHOUSING (Elective 2)

Introduction : Data Mining – Motivation, Importance of DM Functionalities, Basic Data Mining Tasks, DM Applications, and Social Implications

Data Warehousing : Differences between Operational Database and Data Warehouse – Multi-dimensional Data Model - From Tables to Data Cubes. Schemas, Measures, DW Implementation – Efficient Computation of Data Cubes.

Data Reprocessing, Data Mining Primitives, Languages : Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and concept of Hierarchy Generation, Task relevant Data, Background Knowledge, Presentation and Visualization of Discovered Patterns.

Data Mining Algorithms : Association Rule Mining, Classification and Prediction – Decision Tree, Baysian Classification Back Propagation, Cluster Analysis, Outlier Analysis.

Web, Temporal and Spatial Data Mining : Web Content Mining, Web Structure Mining, Web Usages Mining, Spatial Mining, Generalization and specialization, Spatial Rules, Spatial Classification and Clustering Algorithms, Temporal Mining, Modeling Temporal Events, Times Series, Pattern Detection, Sequences.

Reference Books :

1. Jiawei I-lan & Micheline Kambler, "Data Mining: Concepts and Techniques", Harcourt India Pvt. Ltd., First Indian Reprint, 2001

2.Margaret H. Dunham, "Data Mining : Introduction and Advance Topics", Pearson Education, First Indian Reprint, 2003

3.Arun K. Pujari, "Data Mining Techniques", University Press (India) Limited, First edition, 2001

4.Efrem O, Mallach, "Decision Support and Data Warehousing Systems", Mcgraw-Hill International Edition, 2000

BCA-603 E-COMMERCE

Introduction to E-commerce: E-commerce: The revolution is just beginning, The visions and forces behind E-commerce, Understanding E-commerce.

E-commerce business models and concepts: E-commerce business models, Major business-to-consumer (B2C) business models, Major business-to-business (B2B) business models, Business models in emerging E-commerce areas, How the internet and the Web change business.

E-commerce infrastructure: The Internet, Technology background, The internet today, The world wide web. **Building an E-commerce web site:** A systematic approach, choosing server software, choosing the hardware for an E-commerce site, other E-commerce site tools.

Security and Encryption: The E-commerce security environment, Security threats in the E-commerce environment, Technology solutions, Policies, Procedures and Laws.

E- commerce payment systems: Payment systems, Credit card E-commerce transactions, E-commerce digital payment systems in the B2C arena, B2B payment systems. Ethical, Social, and Political issues in E-commerce: Understanding ethical, social, and political issues in E-commerce, Privacy and information rights, Intellectual property rights, Governance, Public safety and welfare.

Text Book:

1. K.C. Laudon & C.G. Traver, E-commerce, Pearson Education, 2003.

Reference Books:

1. R. Kalakota & A.B.Whiilston-' Frontiers of Electronic Commerce, Pearson Education- 2006.
2.K.K.Bajaj & D.Nag- E-Commerce, Tata McGraw Hill, New Delhi, Second Edition.

BCA-604 Project and Viva

The objective of the BCA project work is to develop a quality software solution by following the software engineering principles and practices. During the development of the project the students should involve in all the stages of the software development life cycle (SDLC). The main objective of this project course is to provide learners a platform to demonstrate their practical and theoretical skills gained during five semesters of study in BCA Programme. During project development students are expected to define a project problem, do requirements analysis, systems design, software development, apply testing strategies and do documentation with an overall emphasis on the development of a robust, efficient and reliable software systems. The project development process has to be consistent and should follow standard.. For example database tables designed in the system should match with the E-R Diagram. SRS documents to be created as per IEEE standards.

Students are encouraged to spend maximum time of the sixth semester working on a project preferably in a software industry or any research organization. Topics selected should be complex and large enough to justify as a BCA final semester project. The courses studied by the students during the BCA Programme provide them the comprehensive background knowledge on diverse subject areas in computer science such as computer programming, data structure, DBMS, Computer Organization, SAD, Software Engineering, Computer Networks etc., which will be helping students in doing project work.

PRACTICALS

BCA-605 Lab: (601)