BACHELOR OF COMPUTER APPLICATION (BCA)

Title of the thesis/report

Submitted in partial fulfilment of the requirements for

The award of the degree of
Bachelor of Computer Applications

(Bookman Old Style, 16 point, centre)

Guide
(Guide Name)

Submitted By
(Student's Name)

Submitted to
Jagadguru Rambhadracharya Handicapped University
Chitrakoot -210204, Uttar Pradesh

THE PROGRAM

The Bachelor of Computer Application (BCA) program is developed to prepare undergraduates to take up more responsibilities in the field of Information Technology and more into coveted positions in software industry. The BCA program is designed to give a theoretical knowledge along with the practical experience required to meet the challenges in the actual work environment. At the end of this program the student will have:

- A strong knowledge of computer and their application.
- Proficiency in advance programming.
- Skills required for higher end application in Information Technology.

THE UNIVERSITY

This is the only University of its kind not only in India but all over the World. This has been established by an Act of the Legislature of the state of Uttar Pradesh in 2001. The Name of the said University has already been included in the list of Universities maintained by the University Grants Commission under section 2(f) and it has been declared eligible to receive central assistance under section 12(b) of the UGC Act 1956.

The objective of the University is to ensure greater participation of disabled in higher & professional education by providing disabled friendly campus, class rooms and courses in order to prepare students of strong character enriched with traditional and modern knowledge.

PROGRAMME STRUCTURE

Duration of the Program: The minimum duration for BCA students in 3 years and the maximum duration is 6 years.

Note: There is no limit for the number of attempts for writing the examination to clear the back papers provided it falls within the maximum duration permitted for completion of the course.

Academic Calendar: The academic calendar starts from 15th July and ends on 15th May of subsequent year. Admissions are done once in a year during June and July.

Criteria for Passing the Examination: In each paper, a student at least 40% marks in theoretical and 40% in practical examination. A student who fails in any one will be required to reappear in that component only.

Pattern of Question Paper (External)- Time : 3 Hrs, Max Marks : 80

1. There will be eight questions.
2. The first question carrying 30 marks, will be objective type and compulsory, that covers all units of that component.
3. Other seven questions carrying equal marks and four are to be attempted out of them.

Pattern of Internal Evaluation- Max. Marks: 20

1. There will be 20 marks for Internal Evaluation.
2. In which 10 marks are allotted for Assignment related to that particular component.
3. And 10 marks will be reserved for Internal Test. There will be two paper for Internal Test, the highest attained marks in separate papers will be taken in account in the result of concern examinee.

Practical & Viva Voce– Max. Marks : 100

70 marks for External and 30 marks for Internal evaluation..

GUIDELINES FOR SUBMISSION OF BCA PROJECT
(Max. Marks: 300)

All the candidates of BCA are required to submit a project-report based on the work done by him/her during the assignment period.

THE GUIDE

The Guide for BCA would be a person having at least MCA/B. Tech/M.Sc(CS)/M.Sc(IT) or equivalent.

A guide cannot guide more than six projects of JRHU at a given time.

Note: If the company/organization in which the student has done his project is not allowing the student to submit the code to the University then the company/oraganisation has to send a confidential report, clearly indicating the percentage of marks obtained by the student for his software project. In the absence of such a certificate, the student will not be entitled for any marks for their project.

If on the basis of viva if the examiner feels that the project work has not actually being done by the student then he/she can allot zero marks for software coding.

SUMMARY/ABSTRACT

All students must submit a summary/abstract separately with the project report. Summary, preferably, should be of about 3-4 pages. The content should be as brief as is sufficient enough to explain the objective and implementation of the project that the candidate is going to take up. The write up must adhere to the guidelines and should include the following:

- Name / Title of the Project
- Statement about the Problem
- Why is the particular topic chosen?
- Objective and scope of the Project
- Methodology (including a summary of the project)
- Hardware & Software to be used
- Testing Technologies used
- What contribution would the project make?

TOPIC OF THE PROJECT- This should be explicitly mentioned at the beginning of the Synopsis. Since the topic itself gives a peep into the project to be taken up, candidate is advised to be prudent on naming the project. This being the overall impression on the future work, the topic should corroborate the work.

OBJECTIVE AND SCOPE: This should give a clear picture of the project. Objective should be clearly specified. What the project ends up to and in what way this is going to help the end user has to be mentioned.

PROCESS DISCRIPTION: The process of the whole software system proposed, to be developed, should be mentioned in brief. This may be supported by DFDs / Flowcharts to explain the flow of the information.

RESOURCES AND LIMITATIONS: The requirement of the resources for designing and developing the proposed system must be given. The resources might be in form of the hardware/software or the data from the industry. The limitation of the proposed system in respect of a larger and comprehensive system must be given.

CONCLUSION: The write-up must end with the concluding remarks-briefly describing innovation in the approach for implementing the Project, main achievements and also any other important feature that makes the system stand out from the rest.

The following suggested guidelines must be followed in preparing the Final project Report:

Good quality white executive bond paper A4 size should be used for typing and duplication. Care should be taken to avoid smudging while duplicating the copies.

Page Specification :(Written paper and source code)

- Left margin - 3.0 cms
- Right margin- 2.0 cms
- Top margin 2.54 cms
- Bottom margin 2.54 cms
- Page numbers - All text pages as well as Program source code listing should be numbered at the bottom center of the pages.

Normal Body Text: Font Size: 12, Times New Roman, Double Spacing, Justified. 6 point above and below para spacing

Paragraph Heading Font Size: 14, Times New Roman, Underlined, Left Aligned. 12 point above & below spacing.

Chapter Heading Font Size: 20, Times New Roman, Centre Aligned, 30 point above and below spacing.

Coding Font size : 10, Courier New, Normal pasted inside of the back cover of the project report.

Submission of Project Report to the University : The student will submit his/her project report in the prescribed format. The Project Report should include:

1) One copy of the summary/abstract.
2) One hard Copy of the Project Report.
3) Soft copy of project on Floppy/CD in a thick envelope
4) The Project Report may be about 75 pages (excluding coding).

FORMAT OF THE STUDENT PROJECT REPORT ON COMPLETION OF THE PROJECT

- Cover Page as per format
- Acknowledgement
- Certificate of the project guide/Centre Manager as at Annexure III
- Certificate of the Company/Organisation (for direct candidates)
- Synopsis of the Project
- Main Report
  - ❖ Objective & Scope of the Project
  - ❖ Theoretical Background Definition of Problem
  - ❖ System Analysis & Design vis-a-vis User Requirements.
  - ❖ System Planning (PERT Chart)
  - ❖ Methodology adopted, System implementation & details of Hardware & Software used System used.

  ♦ Cost and benefit Analysis

  ♦ Detailed Life Cycle of the Project

  ERD, DFD
    - o Input and output screen design
    - o Process involved
    - o Methodology used for testing
    - o Test Report, Printout of the Report print out of the Code Sheet
- User/Operational Manual - including security aspects, access rights, back up, controls, etc.

Annexure:

1. Brief background of the organisation where the student has developed the project.
2. Data Dictionary (This should give a catalogue of the data elements used in the system / sub system developed. The following are the details required. Write NA if NOT applicable :
   Data Name , Aliases (if any), Length (Size), Type, Numeric, Alpha, Binary etc.
3. List of abbreviations, Figures, Tables
4. References
   Bibliography
   Website
5. Soft copy of the project on CD/Floppy

Formats of various certificates and formatting styles are as:

1) Certificate from the Guide

Guide Name & Designation Full Address

CERTIFICATE

This is to certify that this project entitled " xxxxxx xxxxx xxxxx xxxx xxxx xxx" submitted in partial fulfillment of the degree of Bachelor of Computer Applications to the J. R. Handicapped University, Chitrakoot), done by Mr./Ms._____, Roll No. _____ is an is an authentic work carried out by him/her at _____ under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Signature of the Student **Signature of the Guide**

2) Self certificate by the students

SELF CERTIFICATE

This is to certify that the dissertation/project report entitled "_____" is done by me is an authentic work carried out for the partial fulfilment of the requirements for the award of the degree of Bachelor of Computer Applications under the guidance of _____. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Signature of the student **Name of the Student**

ACKNOWLEDGEMENTS

In the "Acknowledgements" page, the writer recognises his indebtedness for guidance and assistance of the thesis adviser and other members of the faculty. Courtesy demands that he also recognise specific contributions by other persons or institutions such as libraries and research foundations. Acknowledgements should be expressed simply, tastefully, and tactfully.

THE SYLLABUS

The Semester wise Syllabus for Bachelor of Computer Application (BCA) Program:

BCA– Ist Semester

Paper Code	Subject Title	Credits
BCA-101	**Mathematics**	4
BCA-102	**Discrete Mathematics**	4
BCA-103	**Computer Fundamentals and Programming Concepts**	4
BCA-104	**PC Packages**	4
BCA-105	**Practical Software Lab based on BCA-103**	2+2
Qualifying Paper-		
ES-006	**Environmental Studies**	4

BCA– IInd Semester

Paper Code	Subject Title	Credits
BCA-201	**Principles of Management**	4
BCA-202	**Data Structure &Programming with C**	4
BCA-203	**DBMS (Data Base Management System)**	4
BCA-204	**Computer Architecture and Organization**	4
BCA-205	**Practical Software Lab based on BCA-201, BCA-202 & BCA-203**	2+2

The Semester wise Syllabus for Bachelor of Computer Application (BCA) Programme:

BCA– IIIrd Semester

Paper Code	Subject Title	Credits
BCA-301	**Computer Oriented Statistical and Optimization Methods**	4
BCA-302	**Operating Systems** Organization and Unix	4
BCA-303	**Object Oriented Programming and C++**	4
BCA-304	**Cyber Law and Security**	4
BCA-305	**Practical Software Lab based on BCA-302**	2+2

BCA– IVth Semester

Paper Code	Subject Title	Credits
BCA-401	**Computer Oriented Financial Management**	4
BCA-402	**Data Communication and Network**	4
BCA-403	**Programming in Visual Basic .Net**	4
BCA-404	**Internet and E-commerce**	4
BCA-405	**Practical Software Lab based on BCA-401, BCA-402 BCA-403 & BCA-404**	2+2

BCA– Vth Semester

Paper Code	Subject Title	Credits
BCA-501	**Programming with Java**	4
BCA-502	**Computer Graphics**	4
BCA-503	**Software Engineering**	4
BCA-504	**Technical Documentation, Presentation & Communication Skills**	4
BCA-505	**Practical Software Lab based on BCA-501 & BCA-502**	2+2

BCA– VIth Semester

Paper Code	Subject Title	Credits
BCA-601	**Software Testing and Project Management**	4
BCA-602	Multimedia	4
BCA-603	**Project Work**	8
BCA-604	**Viva-Voce based on BCA-601 & BCA-602**	2+2

DETAILED SYLLABUS OF EACH SEMESTER
FIRST SEMESTER
BCA-101 Mathematics

Differentiation and partial differentiation of vector functions, Derivative of sum, dot product and cross product of two vectors, gradient, divergence and curl.

Straight lines; Circles and the system of circles; standard equations and properties of parabola, Ellipse and Hyperbola. General equation of second degree in two variables, tracing of simple conic sections.

Successive differentiation, Leibniz theorem, partial differentiation, Euler's theorem. Change of variables Jacobean.

Integration of rational and irrational functions, Reduction formulae; Rectification; Quadrature, volumes and surfaces of revolution .Some simple problems of double and triple integrals.

Differential equations of first order, Differential equations of second order with constant coefficients.

Text & Reference Book :

1) Numerical methods in engg & science –B.S. Agrawal
2) Numerical method –S.S. Sastry

FIRST SEMESTER
BCA-102 Discrete Mathematics

Mathematical Logic

Statements, Negation operation, logic connectives and compound statements, conjunction, disjunction, truth tables, duality, conditional and in-conditional statements, valid arguments, law of detachments and syllogism, tautologics and fallacies.

Boolean Algebra

Development of Boolean algebra, Truth functions, AND, OR, NOT operators Laws of Boolean Algebras, Reducing Boolean expression, Boolean expressions. Boolean expression and logic diagrams, universal laws, Building blocks, negative logic Minterms. Truth tables and maps, Reduction of maps, hybrid functions.

Graph Theory

Definition of a graph ,finite and infinite graphs , incidence and degree, null graph , sub graph, tree graph ,cut sets and cut vertices, planner graphs, incidence matrix, Directed graphs, Fundamentals circuits in Diagraphs, Adjacency matrices of a diagraph .

Text & Reference Book :

- *S.S.SASTRY,* ***"Engineering Mathematics"****, Prentice Hall of India*
- *Bernard Kolman, Robert C.Busby, Sharon Ross,* ***"Discrete Mathematical Structures Engineering Mathematics "***

BCA-103 Computer fundamentals and programming concepts

Computer fundamentals: Number system: Decimal, octal, binary and Hexadecimal Representation of integers, fixed and floating points, character Representation: ASCII, EBSDIC Functional units of computer, I/O devices, primary and secondary memories.

Programming fundamentals: Algorithm development techniques of problems Solving, flowcharting, stepwise refinement, Algorithms for searching, sorting (exchange and insertion), merging of ordered lists.

Programming in C: Representation of integers, characters, real. Data types: Constants and variables; Arithmetic expression, Assignment statements, Logical expression, sequencing, alteration and iteration; arrays. String Processing, sub programs, recursion files and pointers structured programming concepts; top down design, development of efficient programs, program correctness, debugging and testing of programs.

Text & Reference Book :

1) Fundamental of Computers – By V. Rajaraman B.P.B. Publications
2) Fundamental of Computers – By P. K. Sinha
3) Computer Today- By Suresh Basandra
4) C Programming:
5) Let us C-Yashwant Kanetkar.
6) Programming in C- Balguruswamy
7) The C programming Lang., Pearson Ecl – Dennis Ritchie

BCA– 104 PC Packages

UNIT – I

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; simple operations like copy, delet, moveing of files and folders from one drive to another, Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel- setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hardware & Software program on your computer.

UNIT – II

MS Word : Introduction to MS Office; Introduction to MS-Word; Features & area of use. Working with MS Word; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features ; Bullets, Numbering, Auto formatting, Printing & various print options. Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Autotexts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.

UNIT – III

MS Excel: Introduction and area of use; Working with MS Excel; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

UNIT – IV

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

Text & Reference Books:

- ***Windows XP Complete Reference, BPB Publications***
- ***MS Office XP complete,*** *BPB publication*
- ***MS Windows XP Home edition complete****, BPB Publications*

FIRST SEMESTER

BCA– 105 Environmental Studies

UNIT-1

THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance, Need for Public Awareness.

UNIT-2

NATURAL RESOURCES

Renewable and Non-renewable Resources:

NATURAL RESOURCES AND ASSOCIATED PROBLEMS

a) ***FOREST RESOURCES:*** use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
b) ***WATER RESOURCES:*** use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
c) ***MINERAL RESOURCES:*** use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d) ***FOOD RESOURCES:*** World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e) ***ENERGY RESOURCES:*** Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies
f) ***LAND RESOURCES:*** Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles

UNIT-3: ECOSYSTEMS

- Concept of an ecosystem

- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:

A) Forest ecosystem b) Grassland ecosystem
c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT-4: BIODIVERSITY AND ITS CONSERVATION

- Introduction – Definition: genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity: Consumptive use, productive use, social, ethical, and aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation
- Hot-sports of biodiversity.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT-5: ENVIRONMENTAL POLLUTION

DEFINITION:

- Causes, effects and control measures of: -
  a) Air pollution b) Water pollution
  c) Soil pollution d) Marine pollution
  e) Noise pollution f) Thermal pollution
  g) Nuclear pollution
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster Management: Floods, earthquake, cyclone and landslides.

UNIT-6: SOCIAL ISSUES AND THE ENVIRONMENT

- From Unsustainable to Sustainable development
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental Ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products
- Environment Protection Act.

- Air (Prevention and Control of Pollution) Act
- Water (Prevention and Control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

UNIT-7: HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations, Population explosion: Family Welfare Programme, Environment and human health, Human Rights, Value Education, Women and Child Welfare, Role of Information Technology in Environment and human health, Case Studies

UNIT-8: FIELD WORK

- Visit to a local area to document environmental assets-river / forest / grassland / hill / mountain.
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5 lecture hours).

BCA– 106 Practical based on BCA-103 & 104

SECOND SEMESTER
BCA-201 Principles of Management

UNIT–I

Management basics : What is management, history of management, types of manager, manager qualities, Management responsibilities, management tasks and functions.

The business environment: defining the organization, organization structure, quality organization, organizational changes, Centralisation and Decentralisation, managing changes. Management obligations, social and professional responsibilities, government regulations.

UNIT–II

Strategy formulation: elements of strategy, strategy formulation process, alliances and acquisitions, strategy formulation tools and techniques, plan implementation.

Decision making : nature of management decision, decision making process, decision making techniques.

Information presentation and reporting: Principle, Type of Reports, Presentation on Modes, Function reporting system, Information and its uses, Characteristics of information, flow of information.

UNIT–III

Management information system (MIS) and its uses, Computer based MIS – Advantages & Disadvantages.

UNIT–IV

Management skills

Leadership and motivation : Nature of leadership, leadership theories, delegation, motivation and motivation theories, need of motivation, motivation techniques. Team building – Defining and effective team, selecting team members, building teams, training and development. Effective communication: The communication process, presentation skills. Tools and techniques.

UNIT–V

Time management: importance of time, characteristics of management tasks, determining time elements, time management techniques. Entrepreneurship – Entrepreneur and its role, how to become an entrepreneur, essentials steps to become an entrepreneur, EDP training.

Text & Reference Book :

- *S.K.Basandra,* ***"Computers Today",*** *Galgotia Publications*
- *Mazda,* ***Engineering Management****, Addisen Wesley*
- *Koontz H,* ***"Essentials Of Management",*** *TMH Publications.*

SECOND SEMESTER
BCA-202 Data Structure &Programming with C

UNIT-I

C– Programming: Data type, I/O functions, logical operators, control structure of c, conditional statements, switch statements, Array, pointer, functions, structures & unions, operations on bits, file handling & c preprocessor.

UNIT-II

Data Structure: Introduction to Algorithm Design and Data Structure: Design & analysis of algorithm, Top down and Bottom-up approaches to algorithm design, analysis of algorithm, frequencies count , complexity measures in time and space.

UNIT-III

Arrays, Stacks and Queues: Representation of array (single & multi dimensional arrays).Address calculation using column & row major ordering, representation of stacks & Queues using arrays and their operations, circular queues, Application of arrays, stacks &queues, conversions from infix to postfix and evolution of prefix expressions using stack.

UNIT-IV

Linked list: Singly linked list (operations on list), Linked stacks and queues, polynomial representation and manipulation using linked list, Application: Reading and writing polynomial addition .Circular linked list and doubly linked list, generalized list, and sparse matrix representation using generalized list structure. Trees: Logical level of binary search tree, BST transversal methods (Preorder, Postorder and Inorder), Recursive and non-recursive algorithm for traverse methods .Insertion into and deletion from a BST and their implementation. Preorder and post order traversal, Insertion in Threaded tree, B-tree (Insertion and Deletion algorithms)

UNIT-V

Searching and Sorting: Sequential and binary searches, indexed search, hashing schemes, sorting methods (Insertion, selection, bubble, quick, merge sorts.)

Text & Reference Book :

- ***Fundamentals Of Data Structure,*** *By S. Sawhney & E. Horowitz*
- ***Data Structure using C:*** *By Trembley & Sorrenson*
- ***Data Structure*** *: By lipschuists (Schaum's Outline Series Mcgraw Hill Publication)*
- ***Fundamentals Of Computer Algorithm:*** *By Ellis Horowitz and Sartaj Sawhney*

SECOND SEMESTER

BCA-203 DBMS (Data Base Management System)

Unit-1: Overview of Database Management System

- Elements of Database system
- DBMS and its architecture
- Advantage of DBMS (including Data independence)
- Types of database users
- Role of Database administrator

Unit-2 Data Models

- Brief overview of Hierarchical and Network Model.
- Detailed study of Relations Model (Relations, properties of relational model, key and integrity rules.)
- Comparison of Hierarchical, network and relational model
- CODDs rules for relational model
- E-R diagram

Unit-3 Normalization

- Normalization concepts and update anomalies.
- Functional dependencies.
- Multivalued and join dependencies.

- Normal forms: (1NF,2NF, 3NF, BCNF,4NF, and 5NF)

Unit-4: SQL

- SQL constructs
- SQL join : Multiple table queries
- Built in functions
- Views and their use
- Overviews of ORACLE: (Data definition and manipulation)

Unit-5 Database Security, Integrity and control

- Security and Integrity threats
- Defense mechanism
- Integrity
- Auditing and control
- Recent trends in DBMS-Distributed and Deductive Database

Text & Reference Book :

1) Database System Concepts By Henry korth and A. Silberschatz
2) An Introduction to Database System by Bipin Desai
3) File Structure by Michael J. Folk, Greg, Riccardi
4) Teach Yourself SQL in 14 days by Jeff Parkins and Bryan Morgan
5) Introduction to Postgresql Wrox Publication

SECOND SEMESTER

BCA-204 Computer Architecture and organization

UNIT-I

Logic gates and circuits: Gates (OR, AND NOR, NAND, XOR & XNOR); Demorgans laws, Boolean laws, circuit designing techniques (SOP, POS, K-Maps).

UNIT-II

Combinational Building Blocks: Multiplexers, Decoders, Encoders; Adder and Substracter.
Sequential Building Blocks: Flip-flop (RS, D, JK, Master-slave & T flip-flops): Registers & shift registers: Counters: Synchronous and Asynchronous (Designing method).

UNIT-III

Memories: ROMs, PROMs, EPROMs, Hard disk, floppy disk and CD-ROM.

UNIT-IV

Central Processing Unite: Introduction, Register Organization, Instruction format and addressing models.
Control Unit: Control memory; Horizontal and vertical formats; Address sequencer, Multiprogramming Vs Hardwired control; RISC Vs CISC.
Arithmetic Algorithms: Integer multiplication using shift and add, Booths algorithm integer division, floating point representations and arithmetic algorithms.

UNIT-V

I/O Organization: Strobe based and handshake base communications; Vector and priority interrupt; DMA based data transfer.

Memory Organization: Basic cell of static and dynamic RAM; Building large memories using chips; Associative memory; Cache memory organization and virtual memory organization.

Text & Reference Book :

- *BARTEE, **"Digital Computer Fundamentals "*** TMH Publication ISBN 0-07-003899-6
- *MALVINO, **" Digital Computer Electronics "*** TMH Publication ISBN 0-07-462235-8
- *MORRIS MANO, **"Computer System Architecture "*** PHI Publication ISBN 81-203-0417-9

\BCA-205 Practical Software Lab based on BCA-202 & BCA-203

THIRD SEMESTER

BCA-301 Computer Oriented Statistical and Optimization Methods

UNIT-I

Collection of data, Sampling and Sampling Designs, Classification and Tabulation of Data, Graphical Representation of Data, Measures of Central value Measures of Dispersion, Skew ness, Moments and Kurtosis Correlation and Regression.

UNIT-II

Probability and probability Distributions (Normal, Poisson's, Binomial)

UNIT-III

linear programming Graphical Method, simplex method (simple application) Transportation problems, Assignment problems, Game theory.

Text & Reference Book :

- ***Mathematical statistics****: J.N .Kapoor and H.C. Saxena*
- Mathematical statistics**: M.Ray and H. Sharma**

THIRD SEMESTER

BCA-302 Operating Systems Organization and Unix

UNIT-I

Operating System as Resource Manager:

Operating system classifications, Simple monitor, Multiprogramming, time sharing, real time systems, Multiprocessor systems, Operating system services.

UNIT-II

File Systems:

File supports, Access methods, allocation methods-contiguous liked and index allocation Directory systems-single level tree- structures, A cyclic graph and general graph directory, file protection.

UNIT-III

CPU Scheduling:

Basic scheduling concepts, process overviews, Process states, multiprogramming, schedulers and scheduling algorithms, Multiple-processor scheduling.

UNIT-IV

Memory Management:

Bare machine approach, Resident monitor, partition, paging and segmentation, virtual memory, Demand paging.

UNIT-V

Deadlocks:

Deadlock characterization, Deadlock prevention, avoidance detection and recovery.

UNIT-VI

Resource protection:

Mechanisms, Policies and domain of protection, Access matrix and its implementation dynamics protection structures.

UNIT-VII

Case study of the windows- NT:

Design principle, system components, Environment subsystem, File system, programmer interface.

(This course should be taught in the context of UNIX operating system).

Text & Reference Book :

- ***Operating System Concepts*** *by Silberschatz & Galvin, Addison Wesley Publication 6th Edition.*
- ***Operating System Concepts & Design*** *by Milan Milen Kovic, TMH Publication*
- **UNIX –** ***Concepts*** **& Applications (Third Ed.)** – Sumitabha Das, Tata McGraw Hill Publications.

THIRD SEMESTER

BCA-303 Object Oriented Programming and C++

UNIT-I

Object-Oriented Analysis and Data Modeling: Object Oriented concepts, object oriented Analysis Modeling, Data Modeling.

UNIT-II

Object-Oriented Design: Origin of object- oriented Design, object oriented design concepts, object oriented design method, class and object definition, Refining operations, Program components and Interfaces, Annotation for object-oriented Design, Implementation of Detail Design, An alternative object-oriented Design strategy, Integration OOD with SA/SD.

Introduction to OOP and C++: Advantages of OOP, Need of object-oriented programming, characteristics of object-oriented languages, C++ and C.

UNIT-III

C++ Programming Basics: Basic program construction, input /output using cin/cout, Preprocessor Directives, Comments, integer, character, float data type manipulators Arithmetic operators, Library functions.

UNIT-IV

Loops and Decisions: Relational operators, Loops Decisions, Logical Operators, Precedence Control statements.

UNIT-V

Structure and Functions: Structure, Enumerate. Ed Data types, simple functions Passing arguments toad returning values from functions Reference augments, Overloaded functions, Inline functions, Default Arguments, Variables and storage classes, Returning by reference.

UNIT-VI

Objects and classes: Specifying & using class & object. Constructors and objects as function arguments.

UNIT-VII

Arrays and Operator Overloading: Arrays fundamentals, Arrays as class member data, Arrays of objects, strings overloading Unary & Binary operators, Data conversion, Pitfalls of overloading & Conversion.

UNIT-VIII

Inheritance: Derived class and their constructs, overriding member functions, class hierarchies, Public & Private Inheritance, Inheritance levels.

UNIT-IX

Pointers: Pointers with Arrays, functions strings pointer to objects, new-delete, Linked-Lists, Virtual functions files and streams, Virtual, friend and static functions, this pointer, Disk 1/O with member function, error Handling, Redirection: -line Arguments.

Text & Reference Book :

- *Herbert Schildt, **"C++ The Complete Reference "** - TMH Publication ISBN 0-07-463880-7*
- *R. Subburaj, **"Object Oriented Programming With C++ ",** Vikas Publishing House, New Delhi.isbn 81-259-1450-1*
- *Balguruswamy, **"C++ "**, TMH Publication ISBN 0-07-462038-x*

THIRD SEMESTER
BCA-304 Cyber Law and Security

UNIT-I

History of Information Systems and its Importance, basics, Changing Nature of Information Systems, Need of Distributed Information Systems, Role of Internet and Web Services, Information System Threats and attacks, Classification of Threats and Assessing Damages Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, authentication Service Security, Functions of various networking components: routers, bridges, switches, hub, gateway and Modulation Techniques .

UNIT-II

Basic Principles of Information Security, Confidentiality, Integrity Availability and other terms in Information Security, Information Classification and their Roles. 11 Security Threats to E Commerce, Virtual Organization, Business Transactions on Web, E Governance and EDI, Concepts in Electronics payment systems, E Cash, Credit/Debit Cards.

UNIT-III

Physical Security- Needs, Disaster and Controls, Basic Tenets of Physical Security and Physical Entry Controls, Access Control- Biometrics, Factors in Biometrics Systems, Benefits, Criteria for selection of biometrics, Design Issues in Biometric Systems, Interoperability Issues, Economic and Social Aspects, Legal Challenges Framework for Information Security, ISO 27001, SEE-CMM, Security Metrics, Information Security vs Privacy.

UNIT-IV

Model of Cryptographic Systems, Issues in Documents Security, System of Keys, Public Key Cryptography, Digital Signature, Requirement of Digital Signature System, Finger Prints, Firewalls, Design and Implementation Issues, Policies Network Security: Basic Concepts, Dimensions, Perimeter for Network Protection.

UNIT-V

Laws, Investigation and Ethics: Cyber Crime, Information Security and Law, Types & overview of Cyber Crimes, Cyber Law Issues in E-Business Management Overview of Indian IT Act, Ethical Issues in Intellectual property rights, Copy Right, Patents, Data privacy and protection, Domain Name, Software piracy, Plagiarism, Issues in ethical hacking.

Text & Reference Books:

1. Information Security and Cyber Law by Appin– BPB Publication
2. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sunit Belapure Nina Godbole **Publisher:** Wiley India Pvt Ltd (2011)
3. Cyber-laws indian and international perspectives by Aparna Viswanathan **Publisher:** Wiley India Pvt Ltd (2011)
4. NETWORK SECURITY, KAUFMAN, PEARLMAN AND SPECINER, PEARSON EDUCATION.
5. INFORMATION WARFARE : CORPORATE ATTACK AND DEFENSE IN DIGITAL WORLD, WILLIAM HUTCHINSON, MATHEW WARREN, ELSEVIER.
6. NETWORK SECURITY ESSENTIALS (APPLICATIONS AND STANDARDS) BY WILLIAM STALLINGS PEARSON EDUCATION.
7. FUNDAMENTALS OF NETWORK SECURITY BY ERIC MAIWALD (DREAMTECH PRESS)
8. CRYPTOGRAPHY AND NETWORK SECURITY, THIRD EDITION, STALLINGS, PHI/PEARSON
9. PRINCIPLES OF INFORMATION SECURITY, WHITMAN, THOMSON.
10. NETWORK SECURITY: THE COMPLETE REFERENCE, ROBERT BRAGG, MARK RHODES, TMH
11. INTRODUCTION *TO CRYPTOGRAPHY, BUCHMANN, SPRINGER.*

FORTH SEMESTER

BCA-401 Computer Oriented Financial Management

UNIT-I

Introduction to Accounting

- Meaning of accounting
- Advantage of accounting
- Uses of financial statements
- Double entry system of financial accounting
- Generally accepted accounting principles.
- Concepts underlying profit & loss accounts, balance sheet.

UNIT-II

Accounting Mechanics

- Cash Book
- Special journals
- Rules of Debit and Credit
- General Ledger
- Bank Reconciliation Statement

UNIT-III

Preparation of Financial Statement

- Preparation of Trial Balance
- Reconciliation of Trial balance
- Preparation of Financial Statements (including Adjustments)

UNIT-IV

- Familiarity with and use of standard Accounting Package (Ex- Tally)
- Capital Budgeting Basic Principles and Techniques.
- Working capital Management: An over all view.
- Capital Structure : Planning & Analysis
    - Ratio Analysis
    - Fund flow statement
    - Cash flow statement

Text & Reference Books:

1. Khan and Jain, “Financial Management and policy ”, TataMcGrawHill
2. *I.M.Pandey, “Financial Management”, Vikas Publication.*
3. *Archer, Stepen H., “Financial Management”, New york, JhonWiley.*
4. Tally Made Easy, TataMcGrawHill

FORTH SEMESTER

BCA – 402 Data Communication and Network

UNIT-I

Networking : Needs and Advantages, Network, Types- Client, Server and Peers, introduction to various types of servers.

Transmission technology: Signal Transmission-Digital signaling, Analog Signaling, Asynchronous & synchronous Transmission, Wired & Wireless Transmission, Base band and Broadband transmission,

Transmission Media types: Properties & specialty of various media – types, comparative study. Network Topology-Bus, Star, Ring, Mesh, Features, Advantages and Disadvantages of each type.

UNIT–II

Network adapters: working principals, configuration and selection,

Network Protocols: Hardware Protocols, software Protocols.

The theoretical Network Model: OSI, IEEE 802 standards, 802.3, 802.4, 802.5, Real World Networks: Ethernet, Fast Ethernet, Token Rings, FDDI, ATM, ARCnet and AppleTalk.

UNIT–III

Network Scaling-No. of nodes, distance, software, speed, special requirements, Connectivity Devices: Modem, Repeater, Hub – Active, Passive and Intelligent, Bridge-Local, Remote, Wireless, Routers-Static and Dynamic, Switches and its types . Brouters and Gateways.

Overview of TCP/IP reference model, TCP/IP Protocol suites – Comparision between OSI and TCP/IP Models, Classification of TCP/IP protocols- IP, TCP, UDP, ARP, ICMP, TCP/IP Services Protocols- DHCP, DNS, WINS, FTP, SMTP, TELNET, NFS.

IP Addressing and Subnet- IP Address – Class A, B & C. Domain Name Addressing, URL, e-mail address, Subnet & subnet mask.

UNIT–IV

Network building blocks requires for setting up a small LAN using Windows in a office, Hardware & software required, Simple Installation and configuration of Networking under Windows.

Using HyperTerminal in Windows, overview and using Network Setup Wizard in Windows, Some basic networking configuration using Windows 95/98/XP/2000/2003 Server and clients, Simple network administration. Setting up Internet Connection Sharing in Windows.

Text & Reference Books:

- *Chellis Charles Perkins, Matthew Strebe* ***"Networking Essentials:Study Guide MCSE"****, Second Edition, BPB Publications.*
- *S.K.Basandra & S. Jaiswal,* ***"Local Area Networks",*** *Galgotia Publications*
- ***MCSE Windows 2000 Network Infrastructure Disign***
- *Andrew & Tanenbaum,* ***"Computer Network "***
- *William Stallings,* ***"Data and Computer Communication"***
- *Prakash C Gupta****, "Data Communication***

FORTH SEMESTER

BCA 403 PROGRAMMING WITH VISUAL BASIC.NET

(THE SYLLABUS IS BASED ON THE VISUAL STUDIO 2003)

UNIT–I

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming -Methods and events.

UNIT–II

The VB.NET Language: Variables, Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement. Msgbox & Inputbox.

UNIT – III

Working with Forms : Loading, showing and hiding forms, controlling One form within another. GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label. Designing menues : ContextMenu, access & shorcut keys.

UNIT–IV

Object Oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public Private, Projected. Overloading, My Base & My class keywords.

Overview of OLE, Accessing the WIN32 API from VB.NET & Interfacing with office97, COM technology, advantages of COM+, COM & .NET, Create User control, register User Control, access com components in .net application.

UNIT–V

Database Programming with ADO.NET: Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.
Generate Reports Using Crystal Report Viewer.

Text & Reference Books:

- ***VB. NET Programming Black Book*** *by steven holzner –dreamtech publications*
- ***Mastering VB.NET*** *by Evangelos petroutsos- BPB publications*
- ***Introduction to .NET framework****-Worx publication*
- *msdn.microsoft.com/net/*
- *www.gotdotnet.com*

FORTH SEMESTER

BCA- 404 Internet & E– Commerce

UNIT–I

Internet: Evolution, Concepts, Internet Vs Intranet, Growth of Internet, ISP, ISP in India, Types of connectivity - Dial-up, Leased line, DSL, Broadband, RF, VSAT etc., Methods of sharing of Internet connection, Use of Proxy server, Internet Services – USENET, GOPHER, WAIS, ARCHIE and VERONICA, IRC, WORLD WIDE WEB (WWW) - History, Working, Web Browsers, Its functions, URLs, web sites, Domain names, Portals. Concept of Search Engines, Search engines types, searching the Web, Web Servers, TCP/IP and others main protocols used on the Web. E-Mail: Concepts, POP and WEB Based E-mail, merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free E-mail services, e-mail servers and e-mail clients programs.

UNIT–II

HTML introduction, features, uses & versions Using various HTML tags, Elements of HTML syntax, Head & Body Sections, , Inserting texts, Text alignment, Using images in pages, Hyperlinks – text and images, bookmarks, Backgrounds and Color controls, creating and using Tables in HTML, and presentation, Use of font size & Attributes, List types and its tags. Cascading Style sheets – defining and using simple CSS, Use of Frames and Forms in web pages, Issues in Web site creations & Maintenance, Web Hosting and publishing Concepts, Hosting considerations, Choosing Web servers

UNIT–III

Javascript Overview, Javascript and the WWW, Javascript vs. VBScript, Javascript vs. Java, Javascript versions, Script element,.

Functions: Functions introduction, Calling functions, Javascript Comments, Variables: Variables overview, declaring variables, Types of variables, Casting variables, Alert box , Prompt & confirm. Expressions: Arithmetic operators, Assignment operators, Logical operators, Expressions and precedence, Statements: If statement, For statement, While statement, Break/Continue Creating arrays/event handlers, JavaScript Object model, Object and Events in JavaScript – OnClick, On MouseOver, On Focus, OnChange, OnLoad etc.

UNIT–IV

E - Commerce An introductions, Concepts, Advantages and disadvantages, Technology in E-Commerce, Internet & E-business, Applications, Feasibility & various constraints. E-transition challenges for Indian corporate, the Information Technology Act 2000 and its highlights related to e-commerce. Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems. E-security – Security on the internet, network and web site risks for e-business, use of firewalls, secure physical infrastructure.

Text & Reference Books:

- ***Frontiers of Electronic Commerce****, By- Kalakota, Ravi ; Stone, Tom ; Whinston, Andrew B, Addison Wesley Publishing Co , ISBN 8178080575*

- ***E-Commerce An Indian Perspective (Second Edition)*** *– by P.T. Joseph, S.J. Prentice-Hall of India*
- ***Internet & Web Design By A****. Mansoor, Pragya Publications.*
- ***Learn HTML in a weekend by Steven E****. Callihan, PHI*

BCA- 405 Practical Software Lab based on BCA-401. BCA-403 & BCA-404

FIFTH SEMESTER
BCA- 501 PROGRAMMING WITH JAVA

UNIT–I

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment.
JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting.
Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation**.**
If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch, ? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II

Defining a Class, Adding Variables and 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, Finalize Methods, Abstract methods and Classes, Visibility Control.

UNIT–III

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Package, Hiding Classes.

UNIT–IV

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface

UNIT–V

Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

Text & Reference Books:

- *Balaguruswamy,* ***"Programming In Java",*** *2nd Edition, TMH Publications* ISBN 0-07-463542-5
- *Peter Norton,* ***"Peter Norton Guide To Java Programming",*** *Techmedia Publications* ISBN 81-87105-61-5

FIFTH SEMESTER
BCA- 502 Computer Graphics

Development of computer graphics basic graphics system and standards Raster scan and Random scan graphics, continual refresh and storages displays, display processors and character generators. Color display techniques, frame buffer and Bit operations concepts in raster graphics. Points/lines and curves/scan conversion/line drawing algorithms/circle and ellipse generation/polygon filing/concoction generation, initializing.
Two-dimensional viewing .basic transformations, coordinate systems, windowing and clipping, segments interactive picture constriction techniques, interactive input/output device.
Three-dimensional concepts, 3-D representation and transformation, 3-D viewing, algorithms for 3-D volumes, Spine curves and surfaces, Fractals, Quad tree and Ochre data structures.
Hidden lines and surfaces, Rendering and Animation

Text & Reference Books:

1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice,2000.
2. Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, pearson, 2001
3. D.Haran & Baker. Computer Graphics Prentice Hall of India,1986

FIFTH SEMESTER
BCA- 503 System Analysis & Design

UNIT_I

Overview of System Analysis and Design:

System Development life cycle, concept and Models, requirements determination, logical design, physical design, test planning, implementation, planning and performance evaluation, communication, interviewing, presentation skills, group dynamics, risk and feasibility analysis, group based approaches, JAD, structures walkthroughs, and design and code review, prototyping, database design software quality metrics, application categories software package evaluation acquisition.

UNIT-II

Information Requirement Analysis:

Process modeling with physical logical data flow diagrams, data modeling with logical entity relationship diagrams.

Developing a Proposal: Feasibility study and cost estimation.

UNIT-III

System Design:

Design of input and control, design of output and control, file design/database design, Process design, user interface design, prototyping, software constructor, documentation.

Application development methodology and CASE tools:

Information engineering, structured system analysis and design, and object oriented methodologies for application development data modeling, process modeling, user interface

design, and prototyping, use of computer added engineering (CASE) tools in the analysis, design and implementation of information systems.

UNIT-IV

Design and Implementation on OO Platform:

Object oriented analysis and design through object modeling technique, object modeling, dynamic modeling and functional object oriented design and object oriented programming systems for implementation, object oriented databases.

UNIT-V

Managerial issues in Software Project:

Introduction to software markets; Planning of software projects, size and cost estimates, project scheduling, measurement of software quality and productivity, ISO and Capability Maturity Models for organization growth.

Text & Reference Books:

- ***System Analysis & Design*** *by V K Jain, Dreamtech Press*
- ***Modern System Analysis &Design*** *by A Hoffer, F George, S Valaciah Low Priced Edn. Pearson Education.*
- ***Information Technology & Computer Applications****, by V.K.Kapoor, Sultan Chand & Sons, New Delhi.*

FIFTH SEMESTER

BCA-504 Technical Documentation, Presentation & Communication Skills

Technical Documentation and Presentation

· Accuracy and conciseness in Technical English.
· Structure format etc. for Technical Reports & thesis.
· Comparing and contracting other aspects of short reports & long dissertation.

Communication Skill

Communication Process:

Concept & importance.

System of communication:

Formal & internal, barrier to effective communication.

Principles of Business communication:

Planning & conduct, conversation, interview and discussion. The preparation of oral statement, effective listening, telephonic communication.

Written Communication:

Guides to effective writing for business correspondence including letters and job application memorandum, office orders, Reports.

Non-Verbal Communication:

Importance & type-cluster and congruency kinetics Vocal cues.

Modern form of communication:

Telex, Fax, Telegram, Teleconferencing & E-mail.

Practical in Business Communication:

Report Writing, Public Speaking Seminars, Presentation, Interview, Group Discussion,

Effective Listening.

Text & Reference Books:

1) *Business Communication - K. K. Sinha - Galgotia Publishing Company, New Delhi.*
2) *Media and Communication Management - C. S. Rayudu - Himalaya Publishing House, Bombay.*
3) *Essentials of Business Communication - Rajendra Pal and J. S. Korlhalli - Sultan Chand & Sons, New Delhi.*
4) *Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.*
5) *Business Communication - Dr. S.V. Kadvekar, Prin. Dr. C. N. Rawal and Prof. Ravindra Kothavade - Diamond Publications, Pune.*
6) *Business Correspondence and Report Writing - R. C. Sharma, Krishna Mohan - Tata McGraw- Hill Publishing Company Limited, New Delhi*

BCA-505 Practical Software Lab based on BCA-501 & BCA-502.

SIXTH SEMESTER

BCA-601 SOFTWARE TESTING AND PROJECT MANAGEMENT

UNIT - I

Testing basics and Development Models: Principals and context of testing in software production, Usability and Accessibility Testing, Phases of Software Project, Process models to represents different phases, Software Quality Control and its relation with testing, validating and verification, Software Development life cycle models, various development models.

White Box Testing: White Box Testing - Static Testing, Structural Testing-Unit code functional testing, Code coverage testing, code complexity testing. **Black Box Testing-** What? Why and when to do Black box testing, Requirements based testing, Positive and Negative Testing, Boundary value testing, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing.

UNIT - II

Integration Testing: Introduction and types of integration testing, Scenario testing, defect bash.

System and Acceptance Testing- Overview, functional and non-functional testing, Acceptance testing.

Overview of some software testing tools: WinRunner, LoadRunner, Test Director. (Some practical should be conducted using these tools)

UNIT - III

Performance Testing- Introduction, factors related to performance testing, methodology for performing testing, Regression Testing,

Ad hoc Testing- Overview, Buddy & pair testing, Exploratory testing, Interactive testing, Agile and extreme testing. **Testing of Object Oriented Testing –** Introduction, Differences in OO testing.

UNIT-IV

Software Project Management: Overview, Software Project Management Framework, Software Development life cycle.

Organization Issues and Project Management, Managing Processes, Project Execution, Problems in Software Projects, Project Management Myths and its clarifications.

Software Project Scope: Need to scope a software project, scope management process, communication techniques and tools, communication methodology.

Software Requirement Gathering and Resource allocation: Requirement specifications, SRS Document preparation, Resources types for a software projects, requirement for resources allocation.

Text & Reference Books:

- ***Software Testing: Principles and Practice*** *By Gopalaswamy and Srinivasan, 817758121x. Publisher, Pearson Education India. ISBN, 817758121x.*
- ***Software Testing Tools:*** *Covering WinRunner, Silk Test, LoadRunner, JMeter and TestDirector with case By Dr. K.V.K.K. Prasad, ISBN: 8177225324, Wiley Dreamtech, List Price: Rs. 279.00*
- *http://www.columbia.edu/~jm2217/*
- ***Basics of Software Project Management*** *– By NIIT,, Prentice Hall of India, ISBN 81-203-2490-0*
- ***Software Project Management*** *by Bob Hughes & mike Cotterell, Tata McGraw Hill , ISBN – 0-07-061985-9*

SIXTH SEMESTER

BCA-602 Multimedia

UNIT- I

Definition - Classification, MM application, MM H/w - MM s/w - CDROM - DVD.

UNIT-II

MM Audio: Digital medium - Digital audio technology - sound cards - recording - editing - MP3 - MIDI fundamentals - Working with MIDI - audio file formats - adding sound to MM project.

UNIT-III

MM TEXT: Text in MM - MM graphics: coloring - digital imaging fundamentals - development and editing - file formats - scanning and digital photography

UNIT-IV

MM Animation : Computer animation fundamentals - Kinematics morphing - animation s/w tools and techniques.

MM Video : How video works - broadcast video standards - digital video fundamentals - digital video production and editing techniques - file formats.

UNIT-V

MM Project : stages of project - MM skills - design concept - authoring - planning and costing – MM team

Text & Reference Books:

- ***Multimedia: Making It Work*** *(4th Edition) – by Tay Vaughan, Tata Mcgraw Hills.*
- ***Multimedia In Action –*** *James E Shuman – Vikas Publishing House.*
- ***Multimedi Basics –*** *Volume – 1 Technology, Andreas Holzinger, Firewall Media(Laxmi Publications Pvt. Ltd) New Delhi*

BCA- Project Work

BCA– Viva Voce based on BCA-602, 601