MANAV BHARTI UNIVERSITY

Village Laddo P.O Sultan pur Teh. Kamarhati Distt. Solan (H.P) India

BCA – SYLLABUS 2009-2010

Paper Code	**Title of Paper**
First semester	
BCA 101	***Computer Fundamentals***
BCA 102	***Logical Organization of Computer***
BCA 103	***Business Accounting***
BCA 104	***PC Software***
BCA 105	***Mathematics-I***
BCA 106	***Programming Language C***
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BCA 108	***Lab-I(MS-Office and 101)***
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Second semester	
BCA-201	***Logical Organization -II***
BCA-202	***DBMS***
BCA203	***Accounting and Financial Management***
BCA-204	***Programming in C++***
BCA-205	***Mathematics – II***
BCA-206	***Lab -I (202)***
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Third semester

BCA-301 ***Object Oriented Programming C++***

BCA-302 ***Discrete Mathematics***

BCA-303 ***Principal of Management***

BCA-304 ***System Analysis & Design***

BCA-305 ***Internet Programming with HTML***

BCA-306 ***Lab - I (301)***

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Fourth Semester

BCA-401 ***Visual Basic***

BCA-402 ***Multimedia Technology***

BCA-403 ***Introduction to Microprocessor***

BCA-404 ***Mathematics***

BCA-405 ***Software Engineering***

BCA-406 ***LAB- I(401)***

BCA-407 ***LAB –II(403)***

Fifth Semester

BCA-501 Data Structures

BCA-502 Computer Graphics

BCA-503 Statistical Methods

BCA-504 Computer Networking

BCA-505 Java Programming

BCA-506 LAB-I(501)

BCA-507 LAB-II(505)

Sixth Semester

BCA-601 Computer Security & Virus

BCA-602 Operating System

BCA-603 Micro Processor-II

BCA-604 Computer Hardware

BCA-605 LAB-I (603)

BCA-606 LAB-II(604)

BCA-607 Project

BCA -101

Computer Fundamentals

Computer fundamentals: - Definition, Block diagram along with its component, characteristics & classification of computer, application of computer in various fields.

Memory: - Concept of primary or secondary memory, RAM, ROM types of ROM, flash memory secondary storage devices, magnetic tape, magnetic disk, CD, DVD, and OCR.

Computer Hardware and Software: - I/O devices definition of software, types of software, overview of operating system, concept of multiprogramming, multitasking, multithreading, multiprocessing time sharing, real time, single user, multiuser operating system.

Computer Virus: - Definition, types of virus characteristics of viruses, antivirus software.

Dos command and Language: - Dos commands, external command, internal command.

Computer Language: - Assembly language machine language, high level language, compiler and interpreter, assembler, characteristics of a good programming language.

Internet and Networking: - Overview of network, introduction to computer network, network type (LAN, WAN MAN) network topologies, introduction to internet and its uses, TCP/IP, addressing in internet IP and domains, internet service providers, type of connectivity such as dial up leased VSAT etc.

BCA -102

Logical organization of computer-I

Introduction Representation:- Number system, binary decimal, octal number, Hexadecimal binary arithmetic, fixed point and floating point representation of number system, BCD code, character representation –ASCII, EBCDIC, Binary, octal, hexadecimal number.

Digital logic: - Basic gates- AND gate, OR gate, NOT gate, Universal gates- NAND gate.

Other gates-XOR gate, XNOR gate etc. NAND gate, NOR gate, AND gate, OR, INVERT gate, AND OR-AND invert.

Half adder, Full adder, Half subtraction, encoder decoders, multiprocessor, demulti processor, code converters BCD to seven segment decoders.

Conversion :binary arithmetic,addition, subtruactions, Multification and division

Operating system concept as resource manager and process manager, device and memory

Software/Hardware, Types of Software

BCA-103

Business Accounting

Basic Accounting: - Introduction, importance and scope, concept and conventions generally accepted

Accounting principles: Double entry framework. Basic concepts of journals, ledgers, purchase book, sale book, cash book.

Preparation of financial statements: - Profit and loss account and balance sheet.

Nature scope advantage, limitations of management accounting.

Source of rising of capital in corporate undertaking: - Simple treatment to issue of shares, Forfeiture of share and re-issue of forfeited shares.

Application of computer in accounting.

BCA-104

PC- Software

Ms- Windows: Operating system, definition and Function, Basic of windows, Basic components, Icons, Type of icons, taskbar, activating windows, using desktop, title bar, running application, explaining computer , file, folders , coping and moving.

Control panel: Display properties, Adding and removing software, setting date and time, screen saver, appearance using windows accessories

Ms- Word: Introduction to Ms Word, creating and editing document, saving, coping, formatting document , Auto text, auto correct, auto file, spelling and Grammar tool , document dictionary , page formatting, book mark, advance feature of ms-word : Mail merge, table, macro, file management, object, printing , styles linking object

Power Point : Screen information and introduction to power point , creating presentation, manipulating slides, charts organization, excel charts, word art, layering art object, animation and sounds, Inserting: picture, editing color in picture in picture, inserting animated pictures or object, inserting searched, sound effect or in built sound effect.

Ms- Excel: Electronic spread sheet, introduction to Ms- excels, about screen of ms-excel. Creating worksheet, editing, formatting, formulas, function, charts, advance features of ms-excel, Pivot table and Pivot chart linking and consolidation, database management, using excel sorting, filtering table, validation, goal seek, scenario.

BCA-105

Mathematics-I

Set relation and function: elements of a set, methods of describing a set, types of set, Venn diagrams, operation on sets, De-Morgan's laws, Duality.

Binomial Theorem and principle of mathematics induction

Introduction to matrix, Properties of matrix, multiplication of matricies, evaluation of determinet, minors and cofactors and properties of determinant.

Statistics: Introduction to statistics, collection and tabulation of data, mean, median and mode.

BCA-106

Programming in C

Overview of c language: History of c language, importance of c language, structure of C Program.

Element of C: Character set, identifiers and keyword, data types, constants and variables, assignment, symbolic constant.

Input / output: unformatted and formatted I/O function in c, input function: scan (), fetch (), getch (), output (), print (), put char (), puts ();

Operators and expression: arithmetic, relational, logical, bitwise, unary, assignment, conditional operators.

Decision making and branching: decision making with if statement, if-else statement, nested if statement, switch statement, go to statement.

Decision making and looping: While and do while loop, for loop, jumps in loops, break, continue statement.

Functions definition, prototypes, passing parameters

Array definition, processing an array, types, passing array to function.

BCA- 107

Communication Skills

INTERODUCTION: Meaning and important of communication in business, the process of communication, models of communication, types of information-order, advise, suggestion, motivation, persuasion, warning and education. Channels of communication, their effectiveness, limitations. Media of communication, barriers of communication, approaches to effective communication, tools of communication, Dictation, sentence, paragraph, punctuation and report writing. Group communication through committees, conference and other formal communication with public at large, interviews, seminar, symposia and conferences.

Specific business communication: essentials of effective business communication structure of business correspondence: inquires and replies, orders and their executions, complaints and adjustment, credit and status inquires, agency letters and sales letters. Process for drafting Effective Business Message

Letter writing: Good news, Bad news, Informative news, Persuasive news, Memorandum drafting E-mail writing Report writing – Short & Long Formal Reports Strategies to improve - reading skills, speaking skills, listening skills Guidelines to effective public speaking ,Developing job application – Covering letter, Resume, Interviewing: Negotiating the job offer

Recommended Text Books

1 Lesikar, Petit & Lesikar's Basic Business Tata McGraw

2 Flately Communication Hill

Reference Books:

1 Poe & Fruchling Basic Communication AITBS

2 Taylor English Conversion Practice Tata McGraw

3 Diwan & Aggarwal Business Communication Excel

4 Baugh, Frayer & Thomas

BCA-108

Practical Lab-I(PC-Software)

Pc –Software& Operating system DOS

Ms-Word

Ms Excel

Ms Power Point

Ms Dos

BCA-109

Lab-II (Programming in C)

Input / output function in c.

input function: scan () getch (), output (), print (), put char (), puts ();

Operators and expression: arithmetic, relational, logical, bitwise, unary, assignment, conditional operators.

Decision making and branching: decision making with if statement, if-else statement, nested if statement, switch statement, go to statement.

Decision making and looping:

While and do while loop, for loop, jumps in loops, break, continue statement.

BCA 201

Logical organization-II

Introduction: - Overview of number system and types, codes.

Conversion & Arithmetics :- Binary, Decimal, Octal, Hexadecimal, Function of logic gates and applications.

Binary logic: - Boolean algebra, Boolean function and truth tables karnaugh maps, flip flops, clocked RS, D TYPE, T_TYPE and J.K master slane flip flops. Flip-flop execution tables.

Memory and I/O device: - Memory parameters semieondictior RAM, ROM Magnetic and optical storage device, flash memory, I/O device.

Registers: - Shift registers, encoder, decoder, multiplexer,demultiplexer circuits, multitasking, multi threading, various types, and application. Detection and correction code.

Fundamental of electronic devices :- Overview of semi-conductor, Physical band theory, transistor

BCA -202

DBMS

(Data Base Management System)

Basic concepts: - Introduction to database, representation of data, record data item, field name, data file, data and information characteristics of information. What is data base? Why data base.

Database management system: - Advantage of database management system, function of database management system.

Database basics. Data items, entities and attributes, logical and physical data, schema and subschema, data dictionary.

Data models: - Data models, E-R models, object base model, records base models.

Architecture of database management system, database language.

Structured quarry language (SQL): - Introduction, history, benefits of SQL.

BCA 203

ACCOUNTING AND FINANCIAL MANAGEMENT

The basic financial accounts: - Types of account, rules of entries of transaction, journal.

Cash book: - Types, format of cash book, balancing of cash book, subsidiary books, purchase, sales, purchase return and sales return.

Trial Balance: - Rectification of errors, adjustment entries. Depreciation and inflation. Principles of cost accounting. Valuation of stocks, allocation of overhead, methods of material issues.

Pay roll department, preparation of pay roll, preparation of wage record, methods of payment of wages, overview of computerizes d method for payroll preparation.

Inventory account and store record, inventory or stock control and cost accounting. Department demand and supply method of stock control.

Classification and condition of material report on material handling.

Overview of computerized accounting process- introduction to accounting system software, their features and some basic operations.

BCA-204

PROGRAMMING IN C++

Overview of C++: - History of C++, Importance characteristic set, Keyboard, data type, Constant and variable, passing parameters.

Input / output: unformatted and formatted I/O function in c, input function: scan (), fetch (), getch (), output (), print (), put char (), puts ();

Operators and expression: arithmetic, relational, logical, bitwise, unary, assignment, conditional operators.

Decision making and branching: decision making with if statement, if-else statement, nested if statement, switch statement, go to statement.

looping: While and do while loop, for loop, jumps in loops, break, continue statement.

Functions definition, prototypes, passing parameters

Operators and Expression: - Arithmetic, logical bitwise, assignment, conditional operations.

Program structure: - Storage of classes, automatic, external and static variable.

Arrays: - Definition, types one elimination arrays. Two elimination arrays.

Pointer: - Definition, pointer declarations, Passing structure.

Structure and unions: - Definition and structure.

Data types: - Data file. Class definition.

BCA 205

MATHEMATICS-II

Set theory. Relations and functions: - set notations and description, subsets, basic set operations. Venn diagrams, laws of set theory, partition of set, min sets, duality principle, basic definition of relations and functions, graphics of relations, properties of relations; injective, subjective and injective functions, composition.

Combinations: - Rule of products, permutations, combinations.

Algebra of logic: - Propositions and logic operations, truth tables and propositions generated by set, equivalence and implication laws of logic, mathematical system, and propositions over a universe, mathematical induction, quantifiers.

Graph theory: - Various types of graphics, simple and multigraphs, directed and undirected graph, eulerian and Hamiltonian graph, graph connectivity, traversals, graph optimizations, graph coloring, trees, spanning trees, rooted trees, binary trees.

BCA-206

LAB -I (202) (DBMS)

Practical lab

-Creation of new records

-Editing the records

-Deleting the records

-Saving records

-Create new files

-Delete files

-Field

-Use seek, pack ,zap command

-Links

BCA-207

LAB-II(C++)

Internal Assessment: 40

External Assessment: 60

This laboratory course will mainly comprise of exercises on what is learnt under paper: BCA .

Note: Program should be fully documented with simple I/O data. Flow charts should be developed

wherever necessary.

Write program in 'C++' language

1.Using input and output statements

2.Using control statements.

3.Using functions.

BCA 301

OBJECT ORIENTED PROGRAMMING IN C++

Fundamentals: - Character set, keywords, data types, constants, set, constants variables, expressions, statement symbolic constant.

Expression and operation: - Arithmetic operators, unary operator relational and logical operators, assignment and conditional operators, library functions.

Data input and data output: - Single character input, single character output. Scanf function, printf function get and put function.

Control statement: - While, do while for statement.

Loop: - nested loops, if else, switch, bread, continues statement.

Function: -Brief overview defining function.

BCA 302

Discrete Mathematics

Sets & Relations: Operations on sets,Inclusion – exclusion principle, Fundamental Property, Partition of sets, Minset.

Relation: Equivalence relation, The Matrix of an relation, Adjacency matrix, Closures.

Logic: Truth tables of different kind of statements, Laws of logic, Associative and Distributive Laws, Biconditional Equivalence, Mathematical system: Other Connectives, AND , OR , NAND , NOR GATES. Quantifires.

Recursion & Recurrence: The many Faces of Recursion, Closed Form Expression, Some common Recurrence Relation, Generating Function, Application.

Graph Theory: Graph; Sub-graph, directed & undirected graphs, Chromatic number, Coloring graphs; Planar Graphs;Eulerian Paths, Circuits.
Graph:Hamiltonian Graphs, Travelling salesman problem.

Trees: Rooted trees, Ordered Rooted tree, Undirected Trees, Spanning Trees, Labelled trees, Minimal Spannig tree.

BCA-303

PRINCIPAL OF MANAGEMENT

Management: - Meaning and definition of management, nature, scope and its various functions.

Planning: - Nature and purpose, type, step in planning, decision making: strategic, tactical and operational decision, decision making process, rationality in decision making.

Organization: - Nature, importance, the organization process, organizations objective, formal and informal organization, organization chart, span of management: factors determining effective span.

Departmentation: - Definition, departmentation by function, by territory, product/service customer group; management by objectives (MBO), delegation, decentralization v/s centralization.

Staffing: - Definition, manpower management, factors affecting staffing, recruitment ad selection, performance appraisal.

Motivation: - Theories of motivation; Hierarchy of needs theory, theory of X and theory of Y.

Leadership: - Styles, theories of leadership: trait approach and situational approach, managerial grid.

Controlling: - Meaning and nature, steps in controlling, essential of effective control systems.

BCA 304

System Analysis and Design

System: - Introduction, definition types of elements and type of system, system development life cycle. System study, system analysis.

System analysis: - System approach diagram of computer based information system (CBIS). The hierarchical view of CBIS. Transaction processing system management information system (MIS). Decision support system, office automation system.

Role of a system analyst: - System analyst? Attributes of and effective system analyst.

Preliminary investigation: - Conducting the investigation, reviewing organization documents. On- site observations conducting interviews.

Testing project feasibility. Operational feasibility, technical feasibility,

Data flow diagram.

Data dictionary

File organization,

System design,

Structure design,

Input design,

Output design.

BCA-305

INTERNET PROGRAMMING WITH HTML

Internet Basics: What Is Internet. What Special About Internet?

Dial Up Connection/Direct Connection; Slip Or PPP

WWW: The Client Site, Server Site, Web Pages In HTML, CGI Programming Overview,

Environment Variables, Difference Between HTML And DHTML, ECOM And Portals.

Internet & Internals: Transmission Control Protocol/Internet Protocol (TCP/IP)FTP, HTTP, WAIS (Wide Area Information Service), TELNET, Internet Addressing, IP Address, Electronic Mail Address, URL, E-Mail Basic.

Domain Name System: Name for Machine, Flat Name Space, Hierarchical

Names Internet Domain Names, Domain Name Revolution.

BCA-306

Practical Lab-I(301)

Object Oriented Programming in C++

External Assessment: 60

This laboratory course will mainly comprise of exercises on what is learnt under paper: **BCA(301)**

Maximum marks for continuous assessment: 40

Maximum marks for university examination: 60

Note: Program should be fully documented with simple I/O data. Flow charts should be developed

wherever necessary.

Write program in 'C++' language

1.Using input and output statements

2.Using control statements.

BCA-307

Practical Lab-II(305)

Practical lab of html programming.

-Creating the Frames,

Creating Hyperlinks

-Table

-Mails-

-Lists-

Links-

Insert Clip-partsand Objacts.

BCA-401

Visual Basics

Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers.

Displaying Information - Determinate Loops - Indeterminate Loops - Conditional- Built-in Functions - Functions and Procedures.

Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping.

VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics.

Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.

BCA 402

Multimedia Technology

What is Multimedia: Definitions - CD-ROM and the Multimedia Highway - Where to use Multimedia - Introduction to Making Multimedia: The stages of a Project - What You Need - Multimedia Skills and Training: The team - Macintosh and Windows Production Platforms: Macintosh Versus PC - The Macintosh Platform - The Windows Multimedia PC Platform - Networking Macintosh and Windows Computers - Hardware Peripherals: Connection - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices.

Basic Tools: Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image-Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories - Making Instant Multimedia: Linking Multimedia Objects - Office Suites - Word Processors - Spreadsheets - Databases - Presentation Tools. Multimedia Authoring Tools: Types of Authoring Tools - Card-and-Page-Based Authoring Tools - Icon Based Authoring Tools - Time-Based Authoring Tools - Object-Oriented Authoring Tools - Cross-Platform Authoring Notes

Text: The Power of Meaning - About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext - Sound: The Power of Sound - Multimedia System Sounds - MIDI Versus Digital Audio - Digital Audio - Making MIDI Audio - Audio File Formats - Working with Sound on the Macintosh - Notation Interchange File Format (NIFF) - Adding Sound to Your Multimedia Project - Toward Professional Sound: The Red Book Standard - Production Tips.

Images: Making Still Images - Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animations That Work - Video: Using Video - How Video works - Broadcast Video Standards - Integrating Computer and Television - Shooting and Editing Video - Video Tips - Recording

BCA-403

Introduction to Microprocessor

Introduction to 8086 assembly language programming - Development steps - Construction - Writing Programs and Development Tools - Standard program structures - Simple Programs - Jumps - While-do - repeat-until - Delay loops.

Strings - Procedures - Macros - Instruction Descriptions - Assembler Directives.

8086 Microcomputer - Observing Bus signals - Minimum mode System - Troubleshooting - 8086 interrupts - Interrupt Applications - Programmable timer/Counter - Interrupt Controller.

Parallel Ports - Handshaking - Interfacing Digital Devices - Analog Interfacing - Industrial Control.

DMA - DRAMS - Cache Memories - Co-Processors - EDA Tools - 80286, 80386 and 80486 microprocessors.

BCA 404

Mathematics

Propositions and logical operators, Truth tables and propositions generated by a set. Equivalence and implications, Laws of logic, mathematical system, proposition over a universe, mathematical induction, quantifiers.

Binary operations on a non empty set, Groups, subgroups, normal subgroups, cossets, factor groups, rings, sub rings, ideals, factor rings, prime ideals, minimal ideal, fields, direct product of groups, isomorphism of groups and rings (definitions and examples only).

Addition and multiplication of matrices, laws of matrix algebra, singular and non singular matrices, inverse of a matrix, rank of a matrix, rank of the product of two matrices, systems of linear equations i.e. AX=0 and AX=B.

Characteristic equations of a square matrix, cayley-hamilton theorem, eigen values and eigen vectors, eigen values and eigen vectors of symmetric skew symmetric, hermititian and skew-hermititan matrices, diagonalization of a square matrix.

BCA -405

Software Engineering

Software engineering: Definition of software & software engineering,Phases in software engineering

Software Process and life cycle: Software process,project and product software life cycle models, organization process.

Software Requirements and software design:software requirement, feasibility study,requirement Analysis,requirement specification, requirement validation, requirement management , Data flow modeling.

Software design: software design,data design.

Software coding:Feature of software coding , code guidelines , coding, methodology, code verification techniques,coding tools.

Software testing: software testing basics,testing plan,testing case design, model of software testing, level of software testing
Software testing tools,Debugging,Software maintenance, software cost estimation,software quality

Software Testing: Fundamental of software testing,type of testing,what is black box and white box testing ?

BCA 406

Practical-Lab I(401)

1. Building Simple Applications.
2. Working with Intrinsic Controls and ActiveX Controls.
3. Application with multiple forms.
4. Application with dialogs.
5. Application with Menus.
6. Application using Data Controls
7. Application using Common Dialogs.
8. Drag and Drop Events.
9. Database Management.
10. Creating ActiveX Controls.

BCA 407

Lab II(403)

Internal Assessment 40

External Assessment 60

This laboratory course will mainly comprise of exercise on what is learnt under the paper: Using 8085 and 8086 microprocessor kits do the following programs:

8085

1. To examine and modify the contents of a register and memory location.

2. To add two hexadecimal nos.

3. To subtract two hexadecimal nos.

4. To add two hexadecimal nos. The result should not be greater than 199.

5. To add two sixteen bit nos.

6. To subtract two sixteen bit nos.

7. For addition of 8 bit no series neglecting the carry generated.

8. To separate hexadecimal number into two digits(Breaking the byte into two nibbles).

8086

1.To add two binary no’s each 8 bit long.

2 To add two binary no’s each 8 bit long.

3. To multiply two binary no’s.

4.To find the maximum no in a given string (16 bytes long) and store it in a particular location.

5.To find the minimum no in a given string (16 bytes long) and store it in a particular location.

6.To sort a string of a no of bytes in descending order.

7.To multiply an ASCII string of eight numbers by single ASCII digit.

BCA501

DATA STRUCTURES

Introduction to data structure: - Basic concept of data, problem analysis, algorithm complexity, Big notation and time space trade off.

Stacks and Queues: - Basic stacks and queues, recursion, polish notation, circular Queues, priority Queues.

Linked Lists: - Single linked list, insertion, deletion, circular linked list, doubly linked list and dynamic storage management, generalized list, Garbage collection, binary tree, reverser sing binary.

Tree: - Definition and concept, basic tree, binary tree representation, threaded storage representation, binary tree traveler sale, application of tree.

Searching and Sorting: - Use of various data structures for searching and sorting, linear and binary search, insertion sort, selection sort, merge sort, double sort, quick sort, heap sort.

BCA-502
Computer Graphics

A server of computer graphics: - Graphic and charts, computer aids design, education and training computer art, entertainment graphical user interfaces.

Graphics systems: - Video display devices, refresh cathode-rat tubes, raster-scan displays, random scan displays. Color CRT monitor flat-panel displays, scan system.

Input device: - Button boxes, dials mouse devices, data gloves, digitizers, image scanners, touch panels, light pen, and voice system.

Hard copy device: - Graphics networks, graphics software introduction to open GL.

Attribute of graphics primitives. RGB color component color tables gray scull, point

BCA-503

Statistical Methods

Sample space - Events - Axiomatic approach to probability - conditional probability - Independent events - Baye's formula - Random Variables - Continuous and discrete random variables - distribution function of a random variables - Characteristic of distributions - Expectation, variance - coefficient of variation, moment generation function - Chebyshev's inequality.

Bivariate distribution - conditional and marginal distributions - Discrete distributions - discrete uniform, Binomial poison and geometric Distributions - Continuous distributions - Uniform, Normal, Exponential and Gamma distributions.

Correlation coefficient - Rank Correlation coefficient of determination - Linear Regression - Method of Least squares - Fitting of the curve of the form $ax + b$, $ax^2+bx+ c$, ab^x and ax^b - multiple and partial correlation (3 - variables only).

Concept of sampling - Methods of sampling - simple random sampling - Systematic sampling and stratified random sampling (descriptions only).

BCA 504

Computer Networking

Introduction: -Introduction to network, Evolution of computer networks, classification of computer, types of networks.

Network application; network hardware, network software, OSI reference model, TCP/IP model, network standardization.

Physical layer: circuit switching, packet switching, message switching, terminal handling, telephone system, modems, connections, transmission media.

Data link layer: design issues, elementary data link protocols-sliding window protocol, HDLC/SDLC, ALOHA, CSMA/CD, token passing, IEEE standard 802 for LAN and WAN.

Network layer: design issues, Routing algorithms: shortest path routing, flooding, distance vector routing, flow based routing, Congestion control algorithms: leaky bucket, token bucket, Internet working, the network layer in the Internet IP protocol, IP address.

BCA-505

Java Programming

Introduction: History of Java, Introduction, Application of Java, Constants, Variables, Differences between Java and C++, JDK.

Working with Java Objects: Encapsulation, Abstraction, Inheritance And Polymorphisms, Constructors, Garbage Collection and finalize,

Data Types, Modifiers And Expressions, Array and Flow Control Statement, Input Output Statement, Function, Break, Switch, Exception Handling, Threads, Event Handling, JDBC.

Operators: Data input and output, assignment statements, conditional statements.Iteration, arrays, strings processing, defining function, types of functions, function prototype,passing parameters, recursion.

Storage class specifiers, pre-processor, header files and standard functions.

BCA-506

Practical -LAB-I(Data Structure-501)

Write program in C / C++

1. To insert and delete a node in a linked list

2. To add two polynomials using linked list

3. To insert and delete a node in a circular linked list.

4. To implement a stack using arrays and linked list.

5. To implement a queue using arrays and linked list.

6. To invert a linked list.

BCA-507

LAB-II(505)

Maximum marks for continuous assessment: 40

Maximum marks for university examination: 60

Note: Program should be fully documented with simple I/O data. Flow charts should be developed wherever necessary.

Write program in ‘java’ language

1.Using input and output statements

2.Using control statements.

3.Using functions.

4.Using array

5.Using Classes and implementation of Constructor and

BCA-601

Computer Security & Virus

1). Definition : Security, Privacy , Security Status on PC.
Branches of Security
- -Theft of Pc & Media
- -Damage due to Breakage
- -Environment Damage
- -Inadvertent Corruption/Loss
- -Environment Loss
- -Malicious Damage/ Leakage
- -Unauthorised Access
- -Computer Viruses
- -Data Trapping

2).Security Measures:
- -Physical Security
- -Environment Conditions
- -Software Security
- -Network Security
- -Password Security
- -Other Aspects
  - -Database Access
  - -Access to Software
  - -Access Control Card

3).Computer Virus:
- -The Evolution of Virus
- -Classification of Virus
- -Process Of Infection
- -Boot Infector
- -System Infector
- -General Executable Programme Infector

4). Types of Virus

BCA-602

Operating System

Introduction: - Operating system, computer system organization, computer architecture, OS structure, OS operations, process management, memory management, storage management.

System structures: - User operating system interface. System cell, types of system cells, system programmed OS design and implement, OS structure.

Process management: - Multithread program, process scheduling, process coordination, background monitor and deadlocks.

Memory management: - Memory allocation, FIFO page replacement, basic page replacement.

Virtual memory management: - Background designed, copy on write.

The Linux system: - History, design principle, network structure Input/output, securities

BCA-603

Micro Processor

Introduction to 8086 Microcomputer - Observing Bus signals - Minimum mode System - Troubleshooting - 8086 interrupts - Interrupt Applications - Programmable timer/Counter - Interrupt Controller.

Parallel Ports - Handshaking - Interfacing Digital Devices - Analog Interfacing - In 8086 Microcomputer - Observing Bus signals - Minimum mode System - Troubleshooting - 8086 interrupts - Interrupt Applications - Programmable timer/Counter - Interrupt Controller.

Review of 8 bit microprocessors and support components Selected Case Studies of 16/32//64 bit microprocessors and support Contents.

Power PC 601, Alpha 2106, Pentium super space, Transporter Architectures and Case.

BCA-604

Computer Hardware

1. To study the functions of basic logic gates and verify the truth table of AND, OR, NOT, X-OR, NAND, NOR.
2. To study applications of AND, OR, NAND, X-OR gates for gating digital signal.
3. To develop the different Arithmetic Circuits:
   (a) Half-Adder and Subtract or.
   (b) Full-Adder and Subtract or.
4. To study the BCD to binary and binary to BCD Code converter.
5. Study of Decoder Circuits:
   (a) BCD-to – Decoder Decoder.
   (b) BCD-to-7-Segment Decoder.
6. Study of Encoder Circuits:
   (a) BCD-to-Decimal Encoder.
   (b) Octal-to-Binary Encoder.
7. To study the flip flop circuits:
   (a) R-S Flip Flop.
   (b) J-K Flip Flop.
   (c) Master Slave J-K Flip Flop.
   (d) D-Flip Flop.
8. To study the R-S, J-K and D Flip Flop Using IC's.
9. Study of Shift Register.
10. Study of Ring Counter.
11. Study of Asynchronous and Synchronous Counters.

BCA-605

PRACTICAL-LAB-I (603)

Internal Assessment 40

External Assessment 60

This laboratory course will mainly comprise of exercise on what is learnt under the paper: Using 8085 and 8086 microprocessor kits do the following programs:

8085

1. To examine and modify the contents of a register and memory location.

2. To add two hexadecimal nos.

3. To subtract two hexadecimal nos.

4. To add two hexadecimal nos. The result should not be greater than 199.

5. To add two sixteen bit nos.

6. To subtract two sixteen bit nos.

7. To separate hexadecimal number into two digit.

8086

1.To add two binary no's each 8 bit long.

2 To add two binary no's each 8 bit long.

3. To multiply two binary no's.

BCA-606

LAB-II(604)

PRACTICAL HARDWARE LAB

To study the functions of basic logic gates and verify the truth table of AND, OR, NOT, X-OR, NAND, NOR.

study applications of AND, OR, NAND, X-OR gates for gating digital signal.

To develop the different Arithmetic Circuits:

(c) Half-Adder and Subtract or.

(d) Full-Adder and Subtract or.

To study the BCD to binary and binary to BCD Code converter.

Study of Decoder Circuits:

BCD-to – Decoder Decoder.

(c) BCD-to-7-Segment Decoder.

Study of Encoder Circuits:

(c) BCD-to-Decimal Encoder.

(d) Octal-to-Binary Encoder.

To study the flip flop circuits:

(e) R-S Flip Flop.

(f) J-K Flip Flop.

(g) Master Slave J-K Flip Flop.

(h) D-Flip Flop.

To study the R-S, J-K and D Flip Flop Using IC’s.

BCA-607

Project On any Language

Project report and for any other activity, which the committee thinks to be proper.

Academic dairy is to be maintained by the student which should have day to day work done by him/her. This dairy should be presented at the time of viva.

Joint project will be allowed and joint project report will be also being accepted.

Individual project will be recognized and the student should highlight their contribution in a joint project report.

Committee for evaluation of project report / work:

Head of department / director

Internal guide (if any) faculty

External examiner.