BHUPAL NOBLES' UNIVERSITY, UDAIPUR

FACULTY OF SCIENCE

DEPARTMENT OF

COMPUTER SCIENCE

&

APPLICATION

BACHELOR OF COMPUTER APPLICATION (BCA)

BCA (I Year)

Paper code	Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Min. Marks
				Ext.	Int.	
BCA 111	I	Introduction to Information Technology	3	70	30	36
BCA 112	II	PC Software Packages	3	70	30	36
BCA 113	III	Problem Solving through C Programming	3	70	30	36
BCA 114	IV	HTML & CSS	3	70	30	36
BCA 115	V	Computer Organization & Architecture	3	70	30	36
BCA 116	VI	Business Communications	3	70	30	36
BCA 117	Practical-I	PC Software & HTML Lab	6	200	-	72
BCA 118	Practical-II	C Programming Lab	6	200	-	72

BCA (II Year)

Paper code	Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Min. Marks
				Ext.	Int.	
BCA 221	I	Object Oriented Programming Using C++	3	70	30	36
BCA 222	II	Database Management System	3	70	30	36
BCA 223	III	Fundamentals of Operating Systems	3	70	30	36
BCA 224	IV	Data Structures	3	70	30	36

BCA 225	V	Business Organization	3	70	30	36
BCA 226	VI	Mathematics	3	70	30	36
BCA227	Practical-I	C++ Programming Lab	6	200	-	72
BCA 228	Practical-II	Data Structures & Database Management Lab	6	200	-	72

BCA (III Year)

Paper code	Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Min. Marks
				Ext.	Int.	
BCA 331	I	Computer Networks	3	70	30	36
BCA 332	II	Programming in Java	3	70	30	36
BCA 333	III	Information Security	3	70	30	36
BCA 334	IV	System Analysis and Design	3	70	30	36
BCA 335	V	Programming in PHP	3	70	30	36
BCA 336	Practical-I	Java Programming Lab	6	200	-	72
BCA 337	Practical-II	PHP Lab	6	200	-	72
BCA 338	Project	Project		200	-	72

BCA I Year

BCA 111: Introduction to Information Technology

UNIT-I
Block Diagram of Computer , Characteristics of Computers,
Input & Output Devices:
Keyboard, Pointing Devices (Mouse, Touch Panel, and Joystick), Scanners, MICR, OCR, OMR, Bar-code Reader.
Output-monitor-CRT and LCD, printers- Impact Printers , Non-Impact Printers .

UNIT-II
Computer Memory: Memory Cell, Memory Organization, Read Only Memory, RAM, Serial Access Memory, Magnetic Hard Disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives.
Configuration of a desktop and Lap top computer currently used

UNIT-III
 Software Concepts: Types of Software, Software (Its Nature & Qualities), Generation of Programming Languages.
Introduction to Compiler, Interpreter, Assembler.
Virus, Types of viruses, virus detection and prevention

UNIT-IV
Computer Generation & Classifications: First Generation of Computers, The Second Generation, The Third Generation, The Fourth Generation, The Fifth Generation, Moore's Law, Classification of computers, Distributed Computer System, parallel computers.
Overview of different operating systems- Windows, DOS, Linux

UNIT- V
Computers & Communications: Introduction to Computer Communications Types of Networks, OSI/TCP Model, Network Topologies.
Internet: Network, Client and Servers, Host & Terminals,TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet.

Recommended Books:
1. P .K. Sinha ,Fundamentals of Computers, BPB Publications
2. 1.V. Rajaraman, Fundamentals of Computers, 3rd Edition , PHI Publications

BCA 112: PC Software Packages
UNIT-I

DOS: Introduction, history & versions of DOS, DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files, DOS commands- internal & external,

UNIT-II

Windows Operating System: Windows concepts, Features, Windows Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Windows Accessories- Calculator, Notepad, Paint, Wordpad, Windows Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Sharing Information between programs.

UNIT-III

Word Processing: MS-Word: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing,& Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Mail Merge, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML etc.

UNIT-IV

Worksheet- MS-Excel: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Coping formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database-Sorting, Filters and Subtotals, Creating and Using macros.

UNIT-V

Introduction to Power Point: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Recommended Books:

1. PC Software for Windows – R.K. Taxali
2. Unix Concepts and Applications – Sumitabha Das

BCA 113: Problem Solving through C Programming

UNIT-I

Algorithm & FlowChart : Definition and properties of algorithm, example of simple algorithms,Definition of Flow Chart flow chart symbols,Flow Chart Advantages & Disadvantages. Examples of Flow Chart, Introduction to program design, errors – syntax error, runtime error, logic error, testing, and documentation.

UNIT-II

Basics of C – Language: Constants – Integer, Real, Character; Variables and Keywords; Data types and size, Operators – arithmetic, relational, logical, increment and decrement, bitwise and assignment, Hierarchy of Operators and Operations, Associatively of Operators.

UNIT-III

Control Structure: Decision Structure: - Simple if, if – else, if – else – if, nested if, switch case; Loop Control Structure:- while , do while and for and nested loops.; Use of break, goto and continue;

UNIT-IV

Array : Definition ,Creation and Use, multi – dimensional arrays . Pointer : Introduction to pointers, pointer to pointer, pointers and array.

Functions: Function definition, declaration and prototypes, Call by Value and Call by Reference, Scope Rule of Functions.

UNIT-V

Storage Class – external, static, register; Recursive functions; Structures –definition, declaring and accessing elementsof structure, array of structure, Union, Bit Fields. File Input/Output – Create, Open, Read, Write, Delete, Close;

Recommended Books:
1. Yashavant Kanetkar, Let us C
2. Balaguruswamy, Programming in C

BCA 114: HTML & CSS

UNIT I

Internet Basics: Introduction to Internet, Internet Application, Internet Protocol, TCP/IP, Internet Services Provider (ISP), Addressing in Internet, Domain Names, Portals, World Wide Web (WWW), Hyper Text Transfer Protocol (HTTP), URL, Web Servers.

UNIT II

Introduction to HTML: Elementary tags in HTML, Headings, Paragraphs, Formatting, Fonts, List in HTML- Ordered List, Unordered Lists, Definition Lists, image, hyperlink anchors, tables, form related tags (action, method, name, input, submit etc).

UNIT III

Java Script : Java Script in Web Pages, Advantages of Java Script, Data Types and Literals, Java Script Array, Operators and Expression, Conditional Checking , Function, User Defined Function.

UNIT IV

CSS: CSS Introduction, Syntax, Id & Class, Styling, Styling Backgrounds, Styling Text, Styling Fonts, Styling Links, Styling Lists, Styling Tables, CSS Box Model, CSS Border, CSS Margin, CSS Padding

UNIT V

CSS Advanced: Visibility, Positioning, Layers, Pseudo class, Pseudo elements, Floating, Align, Navigation Bar, Image Gallery, Image Opacity

 Recommended Books:

1. Deitel & Deitel, Goldberg, "Internet and world wide web – How to Program", Pearson EducationAsia

REFERENCES
1. Eric Ladd, Jim O' Donnel, "Using HTML 4, XML and JAVA", Prentice Hall of India – QUE 2. Aferganatel, "Web Programming: Desktop Management", PHI

3. Rajkamal, "Web Technology", Tata McGraw-Hill,

BCA-115 Computer Organization and Architecture
UNIT-I

Number Systems: Binary, octal, decimal, hexadecimal and BCD number systems. Representation of positive, negative integers and real numbers. Characters digital codes: ASCII and EBCDIC coding, binary arithmetic in 1's and 2's complement.

UNIT-II

Boolean Algebra: Logic gates, truth table, logic expression, rules and laws of Boolean algebra. Demorgan's theorems, simplification of Boolean expression using Karnaugh map

UNIT-III

Combinational Circuits: Adder, subtractor, comparator, decoder, encoder, multiplexer, demultiplexer. Flip Flops: Latches, edge-triggered flip flops, pulse triggered flip flop, R-S flip, JK master-slave flip flop, D flip flop, T flip flop.

UNIT-IV

Basic Computer Organization and Design: Computer registers, bus system, instruction set, instruction cycle, memory reference instruction, input-output instructions and interrupts, Pipeline :Arithmetic & Instruction .

UNIT-V

Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control. Instruction formats, addressing modes.

Memory Organization: RAM, ROM, Cache memory, Associative memory, Mapping.

Recommended Books:

1. Thomas L. Floyd, Digital Fundamentals, United Book Stall New Delhi.
2. Mano M.M., Digital Logic and Computer Design, Prentice Hall of India Private Limited New Delhi.

BCA116 : Business Communication

UNIT-I

Nature of Communication: Process of communication, Types of communication (Verbal & Non Verbal), Importance of communication, Different forms of communication

Barriers to communication causes, Linguistic barriers, Psychological barriers, interpersonal barriers, cultural barriers, physical barriers, organizational barriers

UNIT-II

Business Correspondence: Letter writing, presentation, inviting quotations, sending quotations, placing orders, inviting tenders, sales letters, claim and adjustments letters and social correspondence, memorandum, inter-office memo, notices, agenda minutes, job application letter, preparing the resume

UNIT-III

Report Writing: Business reports, types, characteristics, importance, elements of structure, process of writing, order of writing, the final draft, check lists of reports.

UNIT-IV

Vocabulary: Words often confused, words often misspelt, common errors in English.

UNIT-V

Oral Presentation: Importance, characteristics, presentation plan, powerpoint presentation, visual aids.

Recommended Books:

1. Bovee, and Thill, Business Communication Today, Pearson Education
2. Lesikar, R.V. & Flatley, M.E. Kathryn Rentz; Business Comunication Making Connections in Digital world, 11th ed., MeGraw Hill Education.
3. Shirley Taylor, Communication for Business, Pearson Education
4. Locker and Kaczmarek, Buisness Communication: Buliding Critical Skills, TMH

5. Leena Sen, Communication Skills, PHI Learning

Note: Latest edition of text books may be used.

Practical-I (BCA-117): PC Software & HTML Lab Practical Based on BCA 112 & BCA114

Practical-II (BCA-118): C Programming Lab Practical Based on BCA 113

BCA II Year

BCA-221 Object Oriented Programming using C++

Unit I

Principles of Object Oriented Programming (OOP): Object oriented programming paradigm, basic concepts of object oriented programming, benefits of OOP.

Beginning with C++: What is C++? Applications of C++. A simple C++ program. , structure of C++ program.

Unit II

.Functions in C++: The main function, function prototyping, call by reference, return by reference, inline functions, default arguments, const argument, function overloading, friend and virtual functions.

Unit III

Classes and Objects: Specifying a class, defining member functions. A C++ program with class, making an outside function inline, nesting of member functions, private member functions, arrays within a class, memory allocation for objects. Static data members, static member functions. Arrays of objects, objects as a function argument, friendly functions, returning objects, const member functions

Unit IV

Constructors and Destructors: Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two-dimensional arrays, destructors.

Inheritance: Extending Classes: Defining derived classes, single inheritance, making a private member, inheritable, multi level inheritance, multiple inheritance, hierarchical inheritance, and hybrid inheritance. Virtual base classes, abstract classes, constructors in derived classes, member classes, nesting of classes.

Unit V

Pointers, Virtual Functions and Polymorphism: Compile time Polymorphism, Run time Polymorphism , Pointers to objects, this pointer, pointers to derived classes, virtual functions, pure virtual functions.

Suggested Book

1. Balaguruswamy E., Object Oriented Programming with C++, Tata Mc-Graw Hill New Delhi.

BCA 222: Database Management Systems

UNIT-I

Introduction : Purpose of the data base system, data abstraction, data model, data independence, data definition language, data manipulation language, data base administrator, data base users, overall structure.

UNIT-II

Relational Data Objects -Domains and Relations: Domains, relations, kinds of relations, relations and predicates, relational databases.

Relational Data Integrity - Candidate keys and related matters: Candidate keys. Primary and alternate keys. Foreign keys, foreign key rules, nulls. Candidate keys and nulls, foreign key and nulls.

UNIT-III

The SQL Language: Data definition, retrieval and update operations. Table expressions, conditional expressions,

Views: Introduction, what are views for, data definition, data manipulation, SQL support.

UNIT-IV

Hierarchical model : basic concepts, tree structure diagrams, data retrieval facility, update facility, virtual records, maping hierarchical to files, hierarchical system.

UNIT-V

File and system structure : overall system structure, file organisation, logical and physical file organization, sequential and random, indexing and hashing, B-tree index files.

Suggested Book

1. Date C.J., Database Systems, Addision Wesley.

2. Korth, Database Systems Concepts, McGraw Hill.

BCA 223:   Fundamentals of Operating System

UNIT-I

Introduction:

Introduction to Operating system. Types of operating systems :Batch System,Multiprogramming, TimeSharing, Distributed, Clustered ,Real time. Operating System Services ,Operating System Structure.

UNIT-II

Processes:
The Process concept, Process Life Cycle, Interprocess Communication ,Process control Block. Process Scheduling.
Process Synchronization: Critical-Section Problem - Synchronization Hardware - Semaphores ,
Critical Region - Monitors.

UNIT-III

Deadlocks: Characterization- Methods for Handling Deadlocks - Deadlock Prevention - Avoidance - Detection - Recovery.

CPU Scheduling: CPU Schedulers - Scheduling Criteria - Scheduling Algorithms.

UNIT-IV

Memory Management: Swapping, Contiguous Allocation - Internal & External Fragmentation.
Non Contiguous Allocation: Paging, Demand Paging and Segmentation Schemes. Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing,

UNIT-V

Linux:
Linux History, Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File Systems, Input and Output, Inter process Communication, Network Structure, Security Summary.

Reference Books:
1. Silbersachatz and Galvin, "Operating System Concepts", John Wiley & Sons,
    7 thEd. 2005
2. Deitel. H.M .. "An Introduction to Operating Systems". Addison Wesley Publishing
   Company 1984.
3. Milenkovic, M., "Operating Systems· Concepts and Design". McGraw Hill International
   Edition Computer Science series 1992.
4. Peterson, J.L .. Abraham Silberschatz. "Operating System Concepts". Addison Wesley
   Publishing Company. 1989.

5. Tanenbaum, A.S., "Modem Operating Systems", Prentice Hall of India Pvt. Ltd. 1995.

BCA 224: Data Structures

UNIT-I

Linear Structure: Arrays, records, stack, operation on stack, implementation of stack as an array, application of stack, queue, operations on queue, implementation of queue as an array, application of queue.

UNIT-II

Linked Structure: List representation, operations on linked list - get node and free node operation, linear linked list, circular linked list, doubly linked list, implementing the list operations- inserting, deleting, traversing and searching.

UNIT-III

Tree Structure: Definitions and concepts, Binary search tree- inserting, deleting and searching, implementing the insert, search and delete algorithms, tree traversals- pretraversal, intraversal and posttraversal

UNIT-IV

Graph Structure: Graph representation - Adjacency matrix, adjacency list, adjacency multilist representation, orthogonal representation. Graph traversals – breadth first traversal and depth first traversal, shortest path, transitive closure.

UNIT-V

Searching and sorting: Searching - sequential searching, binary searching, hashing. Sorting - selection sort, bubble sort, heap sort, quick sort, merge sort, and insertion sort, efficiency considerations.

Recommended Books:

Horowitz E Sartaj Sahni, Fundamentals of Data Structure, Galgotia Publication Private Limited., New Delhi.

BCA 225: Business Organization

Objective: The course aims to provide basic knowledge to the students about the organization and management of a business enterprise.

Contents

Unit 1: Foundation of Indian Business

Manufacturing and service sectors; Small and medium enterprises; problems and government policy. India's experience of liberalization and globalization, Technological innovations and skill development, 'Make in India' Movement, Social responsibility and ethics

Emerging opportunities in business; Franchising, Outsourcing and E-Commerce

Unit 2: Business Enterprises

Forms of business organization; Sole proprietorship, Joint Hindu Family Firm, Partnership firm, Join stock company, cooperative society; Limited Liability Partnership; Choice of form of organization, Government-Business interface; Rationale and Forms of public Enterprises, International Business.

Multinational Corporations

Unit 3: Management and Organisation

The Process of Management; Planning; Decision making; Strategy Formulation, Organizing; Basic Considerations; Departmentation- Functional, Project, Matrix and Network; Delegation and Decentralization of Authority; Groups and Teams.

Unit 4: Leadership, Motivation and Control

Leadership: Concept and Styles; Trait and Situational Theory of Leadership.

Motivation: concept and Importance; Maslow need Hierarchy Theory; Herzberg Two Factors Theory.

Communication: Process and Barriers; Control; Concept and process.

Unit 5: Functional Areas of Management

Marketing Management: Marketing concept; Marketing Mix; Product Life Cycle; Pricing Policies and Practices, Human Resource Management: Concept and Functions; Basic Dynamics of Employer- Employee Relations.

Suggested Readings:

1. Kaul, V.K., Business Organisation and Management, Pearson Education, New Delhi
2. Chhabra, T.N., Business Organisation and Management, Sun India Publications, New Delhi,
3. Gupta CB, Modern Business Organisation, Mayur Paperbacks, New Delhi
4. Koontz and Weihrich, Essentials of Management, McGraw Hill Education.
5. Basu, C. R., Business organization and Management, McGraw Hill Education.
6. Jim, Barry, John Chandler, Heather Clark; Organisation and Management, Cengage Learning.
7. B. P. Singh and A.K. Singh, Essentials of Management, Excel Books
8. Buskirk, R.H., et al; Concept of Business; An Introduction to Business System, Dryden Press, New York.
9. Burton Gene and Manab Thakur; Management Today: Principles and Practice; Tata McGraw Hill, New Delhi.
10. Griffin, Management Principles and Application, Cengage Learning

(**Note:**Latest Editions of the above books may be used.)

BCA 226: Mathematics

UNIT-I

Sets: Definition of Sets, Representation of sets (Roaster Method, Set builder form), Subsets, Equal Sets, Null set, Universal Set, Finite & Infinite Sets etc. Laws of Sets (Distributive, Associative), D Morgan's operation on Sets, Union & Intersection of Sets, Difference Sets,Venn Diagram

UNIT-II

Relation: Definition, Types of Relation (Reflexive, Symmetric, Transitive), Equalience relation with new example

Function: Definition, Types of function, one-one onto, one to one function , composition of function, Inverse function

UNIT-III

Matrix: Definition of Matrix, Types of Matrices, Algebra of Matrices: addition, subtraction, Scalar Multiplication, Multiplication of Matrices

Determinants: Definition, Properties of Determinants, Adjoint of Matrices, Inverse of Matrix up to order 3

UNIT-IV

Limits: Definition, Standard limits, Various Method for Finding limits.

Continuity: Definition, Various examples of Continuous functions.

Differentiation: Derivative, Derivatives of sum differences, product, Quotients, chain rule, Derivatives of composite functions

UNIT-V

Integration: Introduction and various methods of Integration, Integration by substitution, Integration by parts, Partial Fractions, Integration of algebraic and transcendental functions.

Definite Integral: Meaning, Various properties of definite Integrals, Numerous illustrative Examples

Recommended Books:

1. C.L. Liu: Elements of Discrete Mathematics, Tata McGraw Hill
2. Thomas, G.B. and R.L. Finney: Calculus & Analytical Geometry, Addson-Wesley,9th Edition
3. Shanti Narayan: Differential Calculus, S. Chand & Co.
4. Shanti Narayan: Integral Calculus, S.Chand & Co.

Practical-I (BCA 227): C++ Programming Lab: Practical based on BCA 221

Practical-II (BCA 228): Data Structures & Database Management Lab: Practical based on BCA 222 & BCA 224

BCA III Year

BCA 331: Computer Networks

UNIT-I

Basic Concepts: Components of data communication, Topology, Parallel & Serial Transmission, transmission mode, and categories of networks. OSI and TCP/IP Models: Layers and their functions, comparison of models.

UNIT-II

Digital Transmission: Interfaces and Modems: DTE-DCE Interface, modems, cable modems. Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Multiplexing, error detection and correction, WDM, TDM, FDM, circuit switching, packet switching and message switching.

UNIT-III

Data Link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols overview. ISDN: Services, ISDN, Layers, and broadband ISDN. CSMA, CSMA/ CD, Token passing LAN.

UNIT-IV

Devices: Repeaters, bridges, gateways, routers, The Network Layer, Design Issues, Network Layer Addressing and Routing concepts (Forwarding Function, Filtering Function);Routing Methods (Static and dynamic routing, Distributed routing, Hierarchical Routing);

UNIT- V

Network Security: Security Requirement, Data encryption strategies, authentication protocols, Firewalls.
Basic Applications: Telnet, FTP, NFS, SMTP, SNMP and HTTP.

Recommended Books:
1. A.S. Tenanbaum, Computer Networks, 4th Ed., Pearson Education Asia, 2003.
2. Behrouz A. Forouzan, Data Communication and Networking, 2nd Ed., Tata McGraw Hill.

3. D. E. Comer, Internetworking with TCP/IP, Pearson Education Asia, 2001.
4. William Stallings, Data and Computer Communications, 7th Ed., Pearson education Asia, 2002

BCA 332: Programming In Java

UNIT I

Introduction to Java, Java Program Structure, Java Tokens, Java Virtual Machine, Constants, Variables, and Data Types, Scope of Variables, Symbolic Constants, Type Casting.

Operators and Expressions: Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evolution of Expressions, Operator Precedence and Associativity,.

Defining and using Array.

Decision Making and Branching: Simple if Statement, The if... else Statement, Nesting of if ... else Statements, The else if Ladder, The switch Statement, The ?: Operator. Decision Making and Looping: Introduction, The while Statement, The do Statement, The for Statement, Jumps in Loops, Labelled Loops.

UNIT II

Classes, Objects and Methods: Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Inheritance: Extending Class, Overriding Methods, final Variables and Methods, Final Classes, Finalizer Methods, Abstract Methods and Classes, Visibility Control.

UNIT III

Interfaces: Multiple Inheritance: Introduction, Defining Interfaces, Extending Interfaces, implementing Interfaces, Accessing Interface Variables.

Packages: Defining Package, Creating Packages, Accessing Packages, Using a Package, Adding a Class to a Package.

UNIT IV

Multithreaded Programming: Introduction, Creating Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization.

Exceptions: Introduction, Syntax of Exception Handling Code, Multiple Catch Statements, Using finally Statement, Throwing Our Own Exceptions

UNIT V

Applet Programming: Introduction, How Applets Differ from Application, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets.

Text Book:

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

Reference Books:

2. H.M.Deitel & P.J.Deitel- JA V A- How to Program, 5th Edn, Pearson Education,New

Delhi-2004.

BCA 333: Information Security

UNIT-I
Introduction: Security, Attacks, Computer Criminals, Security Services, Security Mechanisms.
Cryptography: Substitution ciphers, Transpositions Cipher, Confusion, diffusion, Symmetric, Asymmetric Encryption. DES Modes of DES, Uses of Encryption, key exchange, Digital Signatures, Digital Certificates.

UNIT-II
Program Security: Secure programs, Non malicious Program errors, Malicious codes virus, Trap doors, Salami attacks, Covert channels, Control against program.
Block Ciphers : Modes of Operation –ECB,CBC,CFB & OFB

UNIT-III
Users authentication : Authentication basics, password, authentication tokens, certificate based authentication, biometric authentication, Kerberos, Single sign on approach**.**

UNIT-IV
Database Security: Requirements, Reliability, Integrity, Sensitive data, Inference, Multilevel Security.
Security in Networks: Threats in Networks, Security Controls, firewalls, Intrusion detection systems, Secure   e-mail

UNI-V
Administrating Security: Security Planning, Risk Analysis, Organisational Security Policy, Physical Security. Ethical issues in Security: Protecting Programs and data.

Recommended Books:
1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006
2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

BCA 334: System Analysis and Design

UNIT-I

Introduction: System Concept and the need for system approach, Definition of system and system analysis, Factoring into subsystems, Black box system, Introduction to the basic elements of the system, Different types and behaviour of the system.

UNIT-II

The System Development Life Cycle and System Analyst: Source and inspiration of a new system development, Recognition and need, Linear approach and prototype approach, Different phases in SDLC, Role of System Analyst.

UNIT-III

System Analysis: Importance of planning and control, Information Gathering: Various Methods, Tools of Structured Analysis: DFD, Decision Tree, Structured English, Decision Tables, Data Dictionary, Feasibility study. System Design: The Process of Design: Logical and Physical design, Methodologies: Structured, Form-Driven, IPO Charts etc., Input Output Form Design, Database Design, Logical and Physical View of Data.

UNIT-IV

System Implementation: Need of Testing, Test Plan, Quality Assurance, Trends in Testing, Audit Trail, Post Implementation Review, Project Scheduling, Selection of Hardware and Software

UNIT-V

Security and Recovery in System Development: System Security: Definition, Threats to system security, Control measures, Disaster/ Recovery Planning, Ethics in System Development.

Recommended books:

1. System Analysis and Design - E.M.Awad
2. System Analysis and Design - Dennis Wixom

BCA 335:   Programming in PHP

UNIT I

PHP: Introduction, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.

Decisions and loop: Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.

UNIT II

Function: What is a function, Define a function, Call by value and Call by reference, Recursive function, String Creating and accessing, String Searching & Replacing String.

Array: Anatomy of an Array, Creating index based and Associative array Accessing array, Element, Looping with Index based array, Looping with associative array using each () and foreach().

UNIT III

Handling Html Form with Php: Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.

Working with file and Directories: Understanding file& directory, Opening and closing, a file, Coping, renaming and deleting a file, working with directories, Creating and deleting folder, File Uploading & Downloading

UNIT IV

Session and Cookie: Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.

UNIT V

Database Connectivity with MySql: Introduction to RDBMS, Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query-Join (Cross joins, Inner joins, Outer Joins, Self joins.)

Reference Books:

1. Core PHP Programming by Leon Atkinson : Pearson publishers

2. The complete Reference PHY by Stever Holzner   : McGrow Hill

3. Beginning PHP 5.0 Database by Christopher Scollo, Harish Rawat, Deepak Thomas,

Publisher: WROX press

4. PHP – A beginners Guide By: Ashok Appu Publisher: Wiley

5. PHP 5.0 and MySql Bible Tim Converse, Joyce Park, Clark Morgan, Publishers: John

Wiley & Sons

6. MySql Bible by Steve Suehring Publisher: John Wiley & Sons

7. PHP Black Book by Peter Moulding

8. PHP 5 and Mysql – Tim converse, Joyce Park and Clark Morgan – Bible Wiley

9. Beginning PHP 5.3 by Matt Doyle - By Wrox Publication

Practical-I (BCA 336): Java Programming Lab: Practical Based on BCA 332

Practical-II (BCA 337): PHP Lab: Practical Based on BCA 335

BCA 308: PROJECT

In house project must be done by each student on simple applications using any computer language/ RDBMS/ Web design/visual programming etc.