Computer Section
FACULTY OF SCIENCE

SYLLABUS

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

B.C.A.(First and Second Semester)2023-2024

B.C.A.(Third and Fourth Semester)2024-2025

B.C.A.(Fifth and SixthSemester)2025-2026

BACHELOR OF COMPUTER PPLICATIONS
TEACHING AND EXAMINATION SCHEME2024

Semester	Course Code	Course Title	Delivery Type Per Week			Total Hours'	Credits	Internal Marks	External Marks	Max Marks
			L	T	P					
I	BCA5001	**IT and PC Tools**	L	T	P	60	6	30	70	100
	BCA5002	**C Programming**	L	T	P	60	6	30	70	100
	BCA5003	**Digital Electronics & Logic**	L	T	P	60	6	30	70	100
	BCA5201T	**Mathematics for Computing**	L	T	-	30	2	20	80	100
II	BCA5004	Web Design & Multimedia	L	T	P	60	6	30	70	100
	BCA5005	Object Oriented programming with C++	L	T	P	60	6	30	70	100
	BCA5006	Operating System	L	T	-	60	6	30	70	100
	BCA5202T	AECC-II (English / EVS)	L	T	-	30	2	30	70	100
III	BCA6007	**Data Structure And Algorithms**	L	T	P	60	6	30	70	100
	BCA6008	**Computer Oriented statistical**	L	T	-	60	6	30	70	100
	BCA6009	**Database Management System**	L	T	P	60	6	30	70	100
	BCA6301	**Dynamic Web Design Management**	L	T	P	30	2	30	70	100
IV	BCA6010	**E-Commerce/Cloud Computing**	L	T	-	60	2	30	70	100
	BCA6011	**Java Programming & Lab work**	L	T	P	60	6	30	70	100
	BCA6012	**Computer Communication & Networks**	L	T	P	60	6	30	70	100
	BCA6302	**Basic Python Programming**	L	T	P	30	6	30	70	100

	Code	Paper	L	T	P					
V	BCA7101	Introduction to Artificial Intelligence	L	T	-	60	2	30	70	100
	BCA7102	Advance Python Software Development	L	P	P	60	6	30	70	100
	BCA7103	System Analysis & design	L	T	-	60	6	30	70	100
	BCA7303	Linux & Shell Script	L	T	P	30	6	30	70	100
VI	BCA7104	Cyber Security	L	T	-	40	6	30	70	100
	BCA7105	R PROGRAMMING	L	T	-	40	6	30	70	100
	BCA7306	Project1	-	-	P	40	2	30	70	100
	BCA7304	Project2	-	-	P	90	6	30	70	100
						1260	120	720	1680	2400

Electives List Semester	Paper	Credits	Total Hours
V Semester Electives: Group - I			
XXX	Business Accounting	4	60
XXX	Business Accounting – LAB	2	60
XXX	Introduction to Data Mining	4	60
XXX	Introduction to Data Mining – LAB	2	60
XXX	Python Programming	4	60
XXX	Python Programming – LAB	2	60
XXX	Fundamentals of Cloud Computing	4	60
XXX	Cloud Computing – LAB	2	60
XXX	Discrete Mathematical Structure	4	60
XXX	Discrete Mathematical Structure - LAB	2	60
V Semester Electives: Group - II			
XXX	Internet of Things	4	60
XXX	Internet of Things – LAB	2	60
XXX	Desktop Publishing	4	60
XXX	Desktop Publishing – LAB	2	60
XXX	Mobile Application Development	4	60
XXX	Mobile Application Development – LAB	2	60

XXX	Advance Web Development	4	60
XXX	Advance We Development	2	6
XXX	Information System	4	6
XXX	Information System - LAB	2	6

V Semester Electives: Group - III

XXX	Fundamental of Artificial Intelligence	4	60
XXX	Artificial Intelligence - LAB	2	60
XXX	Data Analytics Using Excel	4	60
XXX	Data Analytics Using Excel - LAB	2	60
XXX	Dot Net Programming	4	60
XXX	Dot Net Programming - LAB	2	60
XXX	Fundamental of Machine Learning	4	60
XXX	Machine Learning - LAB	2	60
XXX	Software Engineering	4	60
XXX	Software Engineering - LAB	2	60

VI Semester Electives

XXX	Project Based on Web Technology	20	600
XXX	Project Based on C / C++ / Java / Python	20	600
XXX	Project Based on Dot Net	20	600
XXX	Project Based on Mobile Application Programming (Eg. Android)	20	600
Some Other	Paper	Credits	Total Hours
XXX	Open Source Programming	4	60
XXX	Open Source Programming - LAB	2	60
XXX	Fundamental of Data Science	4	60
XXX	Data Science - LAB	2	60
XXX	Basics of Big Data	4	60
XXX	Big Data - LAB	2	60
XXX	Data Mining and Knowledge Management	4	60
XXX	Data Mining and Knowledge Management -	2	60

BCA- FIRST YEAR FIRST SEMESTER

BCA5001 IT and PC Tools

Brief history of development of computers, Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers-Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super, Generations of computers, Personal Computer (PCs)-configurations, Pentium and Newer PCs specifications and main characteristics. Types of PCs- Desktop, Laptop, Notebook, Palmtop, Workstations etc. their characteristics. Basic components of a computer system –Control unit,ALU, Input/Output functions and characteristics, memory -RAM, ROM, EPROM , PROM and other types of memory.

Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Lightpen, Touch Screen, Monitors-characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate,Interlaced/ Non Interlaced, Dot Pitch,Video Standard- VGA, SVGA,XGA etc, Printers -Daisy wheel, DotMatrix, lnkjet, Laser, LinePrinter, Plotter,Sound Card and Speakers,Storage fundamentals – Primary Vs Secondary Data Storage and Retrieval methods- Sequential, Directand Index Sequential, Various Storage Devices Magnetic Tape, Magnetic Disks, Cartridge Tape,HardDisk Drives,Floppy Disks (Winchester Disk),Optical Disks,CD, VCD, CD-R,CD-RW, ZipDrive.

Types of Software - System software, Application software, System Software – Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Operating Systems -Functions, Types-Batch, Single, Multi programming, Multi processing,

Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software-Word-processing, Spreadsheet, Presentation Graphics, DataBase Management Software, characteristics, Uses and examples and areaof applications of each of them,Virus working principles, Types of viruses, virus detection and prevention,viruses on network. Physical structure of disk, drivename,

Filesystems- FAT, NTFS,File &directory structure and naming rules, booting process, Basic commands such a sDIR, MD, CD,RD,COPY", DEL,REN, VOL, DATE, TIME,CLS, PATH,TYPE, Introduction to Linux, Linux directory structure, Linux basic commands

BCA5002 PROGRAMMING WITH C

ProgramConcept,Programmingaids:Algorithms,FlowCharts-Symbols,RulesformakingFlowchart,Pseudocodes,

Introduction&features ofC,Structure ofCprogram,Variables, Expressions,Identifiers,Keywords, Data Types, Constants, Operatorandexpression Operator:Arithmetic,Logical,Relational,ConditionalandBitwiseOperators,Precedenceand Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input/output i.e. printf() and scanf(), Library functions

Ifstatement,If.....Elsestatement, NestingofIf....Else Statement, else if ladder,The?:operator,Switchstatement, Compound statement,Loopcontrols,for,while,do-while loops,break,continue,
ARRAYS Single and Multi Dimensional arrays, Array declaration and initialization of arrays,
Strings: declaration, initialization, functions.
The need and form of C functions, User defined and library functions, Function arguments,
Return values and nesting oi function,Recursion,Callingoffunctions,Scopeandlifeofvariables-localandglobalvariable,Storageclassspecified- auto, extern, static, register.

Defining structure, Declaration of structure variable, accessing structure members, Union,
working with text files reading a text file and writing to a file.
Understanding pointers, Declaration and initializing pointers, pointer expressions

BCA5003T DIGITAL ELECTRONICS & LOGIC

Data types and Number systems, Binary number system, Octal & Hexa-decimal number system,l's&2'scomplement, Binary Fixed-Point Representation,
Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, Codes,ASCII, EBCDICcodes,Graycode,Excess-3&BCD

Logic Gates, AND, OR,NOTGATES and their Truth tables, NOR, NAND &XOR gates,BooleanAlgebra,Basic Boolean Law's, Demorgan's theorem, MAP Simplification, Minimization techniques, K—Map- 2,3variable, Sum of Product &Product of Sum
Combinational circuits: Half Adder &Full Adder, Half subtractor, Full subtractor, Multiplexer, Demultiplexer, Encoder, Decoder,

Idea about Arithmetic Circuits, Program Control, Instruction Sequencing, Auxiliary memory, Associative Memory, Virtua Memory,

Sequential circuits: FlipFlops: RS, Dusing NAND and NOR Gates, Gated FlipFlops(latches),J-K FlipFlop, T-Flip Flop, J —K Master Salve Flip Flop Registers: Sift Register, Buffer Register.

BCA5002 MATHEMATICS FOR COMPUTING

Set,Relationand Functions: Sets,typeofsets,Cartesianproductofsets,Relations,typeofrelation,DomainandRangeofa relation, Functions, Domain, co-domain and Range of a function, types of a function, composite of afunction, Binary operations, type of binary operations

Cartesian system of rectangular coordinates: The number plane, distance formula area of a triangle, section formulae, slopes of a line, locusand equation.

Straight line: To find equation of a straight line parallel to an axis: the points lope form, two-point form, intercept form, slope-intercept form, normal form, condition of concurrency for three straight lines, analytical proof of geometric theorems.

Circle and family of circles: Standard form of equation of a circle, its general form, condition of tangentancy.

Polynomial: standard form of polynomial, notation, degree of polynomial, type of polynomial (monomial, binomial, trinomial only), polynomial operations (Addition, subtraction, multiplication),solving polynomial(linear and Quadratic).

Quadratic equation: Solution of quadratic equations, symmetric functions of roots.

Matrix: Definition and type of matrices, operation on matrices i.e. addition, subtraction and multiplication of a matrix, Properties and applications, elementary transformation of a matrix, inverse of a matrix, normal form of a matrix, orthogonal matrices.
Determinants: Definition and expansion of determinants, determinant of a square matrix od order 2 and 3, minors and Cofactors, singular and non-singular matrix, Adjoint of matrix, Inverse of a matrix.
Permutation and Combinations: Factorial notations, Value of up, and nc,

C PROGRAMMING LABORATORY
1. Program to read radius of a circle and to find area and circumference

2. Program to read three numbers and find the biggest of three

3. Program to demonstrate user defined and built in library functions

4. Program to check for prime number

5. Program to print prime numbers

6. Program to read a number, find the sum of the digits, reverse the number and check it for palindrome

7. Program to read numbers from keyboard continuously till the user presses 999 and to find the

   sum of only positive numbers

8. Program to read percentage of marks and to display appropriate message(Demonstrationofelse-ifladder)

9. Program to find the roots of quadratic equation(demonstration of switch Case statement)

10. Program to read marks scored by n students and find the average of marks

11Programtofindthelengthofastringwithoutusingbuiltinfunction

12. Program to demonstrate string functions.

13. Program to demonstrate pointers in C
14. Program to read a file and write to a file

PC TOOLS LABORATORY

1. Write aparagraph in MS-Word and show the use of various tools.
2. Writeanapplication&copyittoanotherdocumentanddifferentiatebetweenpasteandpastespecial.
3   HowtoInsertapictureorchartinadocument andreferenceittoanotherdocument?
4. WriteaparagraphinMS-Wordof12linesandExplaintheseFormattingtools:-
    •   Columns. Dropcap. Paragraph. Alignment. BulletandNumbering. TabSetting.
S. What is mailmerge? How touse this facility? Describe itStepbyStep.
6. Create a StudentTable(Rno,Name,Fname,Class,Address,Phone)and insert5recordsinitanddelete one record.
7. Tostudyvariouschartsandtheirimplementationsusingamarksheetof10students.
8. Createasalarystatementofanorganizationof10employeesusingifcondition(S.no.,Name, Designation,Basic,Da,Hra,total,netsalary)
9. Createa
10. Createapowerpointpresentationtopresentyourinstitution detail,createatleast7slideswithdifferent animation effect.
11. Createapowerpointpresentationon "destinationIndia"usingimagesfromclipart.
12. Createapowerpointpresentationon"youthiconofIndia"andshowthefollowing
13. Custom Animation.
14. CompareandMergePresentations.
15. SlideDesign.

BCA- FIRST YEAR SECOND SEMESTER

BCA5004 WEB DESIGN & MULTIMEDIA

UNIT I – World Wide Web: Elements of the web, Versions of Web, Web browser & its types,
Viewing pages with a browser, Security & Privacy issues (Cookies, firewalls, executable Applets, and scripts),
Pulg-ins, and Active controls, Dealing with web pages contain Active X, playing streaming
Audio & Video, playing MP music, Using Search Engines, making use of web resources
(Portal, News, Weather, Sports, , Shopping, Computers & Internet, Travel, Health & Medicine)

UNIT II- HTML Introduction, Basic structure of an HTML document, Mark up Tags,
Heading-Paragraphs, Line Breaks, HTML Tags, Elements of HTML, Working with Text,
Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia,
Working with Forms and controls.

UNIT III - CSS Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format,
Controlling Fonts),Working with block elements and objects, Working with Lists and Tables,
CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties) ,
Introduction to Web Publishing or Hosting ,
Introduction of Photoshop & CorelDraw & Their Toolbox, file & edit operations.

BCA5005 OBJECT ORIENTED PROGRAMMING WITH C++

Basic concept of Object Oriented Programming, concept of class, object, inheritance, encapsulation, polymorphism.

Structure of C++program, token and identifier, data types, operator, type conversion and type

cast operators. Console I/O cin and cout.Control statements, if, loops, break, continue, goto.

Functions-Declaration, definition, parameter passing, reference variable, overloaded functions, Inline

functions, default arguments, return by reference.

Classes and objects,class definition, object declaration, constructors and destructors, dynamic

initilization of objects, copy constructors.

Operator overloading, unary, binary operator, data and type conversions, conversion among objects,

basic types and different classes. Derived classes and base classes, protected access specifier, derived

class constructors, abstract base class, inheritance—
publicandprivateinheritance,multipleinheritance,memberfunction,constructor,ambiguityininheritance.

Pointers,addresses, pointers and strings, memory management using new and delete operator.

Virtual functions, friend function, static function, dynamic binding. File handling, File

Operation functions and attributes. Introduction to streams, templates and exception handling.

BCA5006 Operating System

Operating Systems Definitions, Types of operating system, Functionalities and Characteristics of

OS, Hardware Concepts related to OS, Operating system Services, and System Calls, System

programs, System structure.

Process Concepts, process state & process control block, Process Scheduling FCFS, SJF, Priority

Scheduling, Round robin, Algorithms, multiple level queue scheduling Threads concepts,

Critical Section Problem and Mutual Exclusion, Semaphores, Classical Problem of Synchronization, Deadlock, prevention, Avoidance, detection and Recovery

Memory Management, Logical versus physical address space, Swapping, Contiguous and Non Contiguous Allocating, Paging, Segmentation, Demand Paging, Page Replacement Algorithm, FIFO, LRU, LIFO, Hitratio Virtual Memory Concepts.

Disk Scheduling algorithms,SwapSpace Management, Disk reliability, Stable Storage Implementation. Types of Mobile OS,Overview of Android OS, Application of Mobile OS, Overview of Linux OS.

BCA5001 ENVIRONMENTAL SCIENCE

Themultidisciplinarynatureofenvironmentalstudies,Definition,scopeandimportance,Needforpublicawareness. Natural

Resources: Renewal and non-renewable resources, Natural Resources and associated problems.
    ForestResources:Useandover—exploration,deforestation,miningandtheireffectsonforestandtribalpeople.
    WaterResources:Useandover-utilizationofsurfaceandgroundwater,floodsanddrought.
    Food Resources: World food problem, effects of modern agriculture, fertilizer & pesticide problems.
    Land Resources: Land degradation, soil erosion and desertification.

Ecosystem: Structure and function of an eco system. Energy flow in the ecosystem, food chains, food webs and ecological pyramids.

Structure and function of following eco system- Desert ecosystem and Aquatic ecosystem

Bio diversity and its conservation: Introduction, Definition, Value of Bio diversity, Threats to bio diversity, Important endangered and endemic species of India.

Environmental Pollution: Definition, causes, effects and control measures of: Air pollution, water pollution and soil pollution.

OR

BCA5001 GENERAL ENGLISH
(Common for Science, Social Sciences and Humanities & Commerce Faculties)

Texts: The Many Worlds of Literature Edited by Jasbir Jain, Macmillan; India. George Orwell :
Animal Farm Or R.K. Narayan : A Vendor of Sweets
Current English for Language skills: (a) Short- answer questions (b) General questions
 (c) Questions on vocabulary
Animal Farm or A Vendor of Sweets:
Grammar (a) Tenses (b) Modal Auxiliaries (c) Phrasal Verbs (d) Clause (Nominal, Adjectival, Adverbial)
(e) Use of Non-finite verbs (Gerunds, Participles, m3 arks and marks infinitives)
(3) Comprehension and Composition : (a) Précis writing 5 (b) Essay (about 300 words)
7 on one topic out of four topics

WEB DESIGN LABORATORY
Q.1 What is www or Web , Difference between web 2.0 & web 3.0.
Q.2 Define browser, explain with proper diagram, also explain security & privacy in browser?
Q.3 What is HTML and write steps to create and present HTML file?
Q.4 Write an html program & demonstarte to show "Hello World"
Q.5 Write & demonstrate html headings <h1> to <h6>
Q.6 Write & demonstrate html program <hr> tag with its all attributes
Q.7 Write an html program to demonstrate <p>, <font>, <br> and <marquee> tags

Q.8 Write an html program to demonstrate <table> <th> <tr> <td> tags with their attributes with data also.

Q.9 Write an html program to demonstrate Unordered , ordered list , & tags

Q.10 Write an html program to demonstrate <form> , <input>, <button> tags

Q.11 Write an html program to demonstrate <frame> & <frameset> tags

Q.12 Write an html program to demonstrate internal CSS.

Q.13 Write an html program to demonstrate external CSS.

Q.14 Write an html program to demonstrate internal & inline CSS.

Q.15 Write an html program to demonstrate internal CSS with filter effect on <img> tag such as blur, contrast, brightness, inverse etc.

Q.16 Write an html program to demonstrate <iframe> tag.

Q17 .WAP to create internal CSS attributes for <P> and <H1> tags?

C++ OOPS LAB

Write a C++ program to add two numbers using pointers. Write a C++ program to find the factorial of a given number.

 Write a C++ program to search for an element using binary search. Write a C++ program to sort an array in ascending order.

 Write a C++ program to find the factorial of a given number using recursion.

Write a C++ program to check whether a given number is even or odd.

Write a C++ program to demonstrate the usage of Inline function.

Write a C++ program to demonstrate parameter passing mechanism using pass by value method.

Write a C++ program to demonstrate parameter passing mechanism using pass by address method. 2 Write a C++ program to demonstrate the usage of a constructor and destructor in a class.

Write a C++ program to demonstrate simple inheritance. Write a C++ program to calculate volume of cube, cylinder and rectangle using function overloading.

Write a C++ program to demonstrate the usage of friend function in a class.

Write a C++ program to demonstrate the usage of endl and setw manipulators.

Write a C++ program to display employee information using multiple inheritance.

Write a C++ program to demonstrate multilevel inheritance.

Write a C++ program to create a file. Write a C++ program to check whether a given number is a palindrome or not. Write a C++ program to generate the Fibonacci series using while loop.

Write a C++ program to overload + operator to add two complex numbers.

Write a C++ program to search for a given element in an array using linear search.

Write a C++ program to read a text file. Write a C++ program to find the sum of natural numbers using for loop. Write a C++ program to create a simple class named Account and write methods to deposit and withdraw amount from the account.

Write a C++ program to demonstrate dynamic memory allocation in c++.

Write a C++ program to demonstrate polymorphism by calculating area of rectangle and triangle using a shape class.

Write a C++ program using Switch case to add, subtract, multiply and divide two numbers.

Write a C++ program using class to implement basic operations on a stack using arrays.

Write a C++ program to display the sizes of various data types in c++ language.

Write a C++ program to accept and display employee details using structures.

Write a C++ program to find the length of a given string using string functions.

Write a C++ program to print the ASCII value of a user entered character.

Write a C++ program to add two dimensional matrices.

Write a C++ program to overload + (plus) operator to perform concatenation of two strings. Write a C++ program to find the sum of elements in a given array.

Write a C++ program to find the largest of 3 numbers.

Write a C++ program to demonstrate exception handling by dividing a number with zero.

Write a C++ program to convert a binary number to a decimal number.

BCA- SECOND YEAR THIRD SEMESTER

BCA6007 DATA STRUCTURES AND ALGORITHMS

Elementary data Structures: Arrays, STACKS: Definition, implementation, operations on stack, application of stacks, evaluationofarithmeticexpressionandrecursion,Prefixfixandpostfixnotations,evaluationofpostfixexpressionusing stacks, parenthesis matching using stack

Queues: Queue data structure, implementation, operation sequences - insertion, deletion, Circular queue, applications

Linked lists: Singly linked list,Insertinganddeletingelement,searchinginalist,Circularlylinkedlist,

Doubly linked list Application of linked list:

Trees: Concepts and terminology, tree representation using linked list, Binary tree,Linear and linked representation of binary tree, Tree traversal, Inorder, Preorder and post order traversal.

Graphs:Representation,Adjacencymatrix,Graphtraversal,Breadthfirstsearch andDepth firstsearchtraversal.

Searching and Sorting: Sequential searching, binary searching, Bubble, Selection and Insertion sort, quick sort

and merge sort, Hashing

BCA6008 Computer Oriented Statistical Techniques

Introduction: Raw material of statistics, ungrouped & grouped frequency distribution. Diagrammatic presentation: Bar diagram,Pie-diagram.Graphicalpresentation:Histogram,Frequencypolygon,Frequencycurve,Cumulativefrequency curve.

Measures of Central Tendency and Dispersion: Arithmetic Mean, Mode, Median, Geometric Mean, Harmonic Mean, Range, Mean Deviation, Standard Deviation, Skewness and Kurtosis.

Correlation and Regression Analysis: Linear Correlation, Measures of Correlation, The Least-Squares Regression Lines, Standard Error of Estimate, Explained and Unexplained Variation, Coefficient of Correlation,, Scatter diagram, Karl Pearson, Concurrent deviation methods, Regression Lines, Method of least square.,

Probability&ProbabilityDistribution:,IndependentandDependentEvents,MutuallyExclusiveEvents,Classical approach to probability, Addition and multiplicative law of probability, Conditional probability, Bayes Theorem, Probability Distributions

Sampling Theory, Random Samples and Random Numbers, Sampling With and Without Replacement, Sampling Distributions, Sampling Distribution of Means, Sampling Distribution of Proportions, Sampling Distributions of Differences and Sums, Standard Errors,

BCA6009 DATABASE MANAGEMENT SYSTEM

Purpose of the database system, data abstraction, data model, data independence, data definition language, data manipulatior language, database manager, dat base administrator, database users

ERModels,entities,mappingconstrains,keys,E-Rdiagram,reductionE-Rdiagramstotables,generalizationanc aggregation, design of an E-R database scheme.

Normalization: First, Second, Third, BCNF, Fourth and fifth Normal Forms

Oracle RDBMS, architecture, kernel, system global area(SGA), data base writer, log writer, process monitor,

database files control files,

SQL: commands and data types, data definition language commands, data manipulation commands, data query language commands, transaction language control commands, data control language commands.

Joins,equi-joins,non-equi-joins,selfjoins,otherjoins,aggregatefunctions,mathfunctions,stringfunctions,groupbj clause,

PL/SQL,basicsofpl/sql,datatypes,controlstructures,databaseaccesswithPL/SQL,databaseconnections,transaction management, data base locking, cursor management.

BCA6301 Web Design for Dynamic Pages

UNIT- I Development of website and web page, Planning, Navigation, Themes, Elements of a web page,

steps of creating website, Publishing & Publicizing site structuring website. Web page using Html & CSS.

UNIT- II JavaScript Variable, Naming Rules Data Types, Expressions and Operators, Flow Control,

Objects and Arrays Functions and Methods Pattern Matching with Regular Expressions Managing

Web Page Styles using JavaScript and CSS Introduction to Ajax

UNIT- III Current trends and Issues Email, Application Issues, Working with IIS and page Directives,

Error handling. Security - Authentication, IP Address, Secure by SSL & Client Certificates.

CSA**5004** DATA **STRUCTURE** AND ALGORITHMSLABORATORY

1. Design and implement Stack and its operations using arrays
2. Design and implement Queue and its operations using arrays
3. Design and implement linked list and its operations
4. Write a program to create a tree using linked list
5. Write a program to represent a graph using adjacency matrix
6. Write a program to implement linear search
7. Write a program to implement binary search
8. Write a program to implement Selection sort
9. Write a program to implement Insertion sort

CSA**6001P** DATABASE MANAGEMENT SYSTEM LABORATORY

Q1Draw E-R diagram of banking system
Q2Convert the ER diagram of question 1 of banking system into relation table.
Q3Create a database of an organization with appropriate tables and perform the following

- Display all the employees' details that belong to department SALES
- Display employees name along with their Salary who are MANAGER.
- Display theemployeeswhoaregettingSalarybetween25000 and50000.
- Display employees that are not managers.
- Display employees whose name begins with Character 'R'.
- Display employees that are analyst but getting salary greater than30000.
- Display all the employees having 'A' in their names.

- Display all the employees having T and 'R' in their names.
- List the average salary for each department. Then find out the employees who are getting more than that average salary.

Q4 Perform following operations on the tables.
- ALTER
- DROP
- UPDATE

Q5 Perform following on a table of a database
- INSERT into
- SELECT
- DELETE
- Min max count
- Like and between

Dynamic Web Design LAb

Q1. WAP to show 2 images names "delta.jpg & lumbush.jpg" in html?

Q2. WAP in javascript to add 3 numbers using onclick event and function?

Q3. Create a program to show table of 5 row and 3 columns Sr.no, Name and Percentage with heading also?

Q4 WAP to display Frames of Row 30%, 70% and then Cols 25% and 75%

Show files like a.html , b.html and c.html respectively in html.

Q5. WAP to accept 3 numbers and find out largest number in javascript.

Q6. Crate a program to demonstrate onclick event in javascipt to show your name.

Q 7. WAP in html to show table of 3 rows with records and 4 columns Srno, Name, Course, Amount?

Q8. WAP to demonstrate internal css in html with img tag?

Q9. WAP in html and javascript for bank deposit and withdraw program?

BCA- SECOND YEAR FORTH SEMESTER

BCA6010A E-Commerce

UNIT-I e-Commerce: Definition, Framework, Architecture, benefits and Impact of e-Commerce, The

Anatomy of e-Commerce application, eCommerce Consumer applications, e-Commerce Organization

Application, e-commerce in India, Prospects of e-Commerce.

UNIT-II Consumer0oriented E-Commerce: Consumer0oriented applications, mercantile Process Models,

consumer's perspective, Merchant's perspective. Advertising and marketing on the Internet: The new age

information based marketing, Advertising on the Internet Active or push0based advertising models, Passive or

pull based advertising models. Guidelines for Internet advertising. Online marketing process.

UNIT-III Types of Electronic Payment System: Digital token0based electronic payment systems, smart cards

and electronic payment systems, credit card0based electronic payment systems, Risk and electronic payment systems.

Electronic data Interchange and its applications in business.

OR
BCA6010B CLOUD COMPUTING

Introduction: Cloud-definition, benefits, usage scenarios, History of Cloud Computing, Cloud Architecture, Types of Clouds, P layers in Cloud Computing, issues in Clouds.

Cloud Computing Architecture: Cloud computing stack, Comparison with traditional computing architecture (client/server), Services provided at various levels, Role of Networks in Cloud computing, protocols used, Role of Web services, Service Models(XaaS),Deployment Models & types of cloud.

Cloud Services: Types of Cloud services, Software as a Service,Platform as a Service, Infrastructure as a Service, Database as a Service, Monitoring as a Service, Communication as services.

Service Providers-Google, Amazon, Microsoft Azure, IBM, Sales force.

Collaborating Using Cloud Services Email Communication over the Cloud, CRM Management, Project Management, Event Management, Task Management, Calendar, Schedules, Word Processing, Presentation, Spreadsheet, Databases, Desktop, Social Networks and Groupware.

Virtualization for Cloud Need for Virtualization, Pros and cont of Virtualization, Types of Virtualization, System VM. Process VM, Virtual Machine monitor,Virtual machine properties, HLLVM, Hypervisors, Xen, KVM, VMWare, Virtual Box, Hyper-V.

Cloud Security: Infrastructure Security- Network tevel security, Host level security, Application level security, Data security, Authentication in cloud computing, Cloud security challenges.

BCA6011 COMPUTER NETWOKS

Introduction to Data Communication and computer Networks:-Transmission media, twisted pair, coaxial cable,

optical fiber, Network Devices-Hubs, Bridge, Switches, Router.

Principle of Layering Concept:-ISO-OSI Model, functions of each layer, TCP/IP Model. Concepts of circuit switching packet switching and network switching.

Elements of LAN,WAN,MAN.

LAN topologies: STAR, BUS and RING network ,LAN access techniques: ALOHA,CSMA/CD,CSMA/CA, token ring an‹ token bus. Issues related with network reliability and security.

Ethernet:-Ethernet Standards Zig Bee,Wifi etc.

Error detection and correcting codes: Hamming codes, parity generation and detection, single error detection

and correction double correction codes, CRC.

IP Addressing:- Internet Protocol and IPv4 Packet format, logical Addresses, Physical addresses, Network

Part, Hostpan Network Masks. Introduction toIPv6.

BCA6012 JAVA Programming

Principles of OOP, data hiding, encapsulation, inheritance, polymorphism, overloading,

I.MVAprogramstructure,JAVAvirtualmachine,Constant&Variables,DataTypes,DeclarationofVariables,Scopec Variables,

Symbolic Constants, Type Casting.

Operators: Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise

Ifstatement,if...else...statement,Nestingofif...else...statements, else...if Ladder,Switch,? operators,Loops—

While Do. For. Jumps in Loops, Labelled Loops.

Defining a Class, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Inheritance:

Derived classes and Base class, public, private and protected access specifiers,
Extendinga Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes,

Arrays: One Dimensional& two Dimensional, strings,

Defining InterfaceExtending Interface, ImplementingInterface, Accessing InterfaceVariable, System

Packages, UsingSystem Package, Addinga Classtoa Package,Hiding Classes.
CreatingThreads,ExtendingtheThreadsClass,Exceptions,,ImplementingtheRunnableInterface.

LocalandRemoteAppletsWritingApplets,AppletsLifeCycle,CreatinganExecutableApplet

BCA6302 INTRODUCTION TO PYTHON PROGRAMMING

Introduction to Python: Python variables, Python basic Operators, Understanding python blocks. Python Data Types, Declaring and using Numeric data types: int, float etc.

Python Program Flow Control Conditional blocks: if, else and elseif, Simple for loops in python,

For loop using ranges, string, list and dictionaries. Use of while loops in python, Loop manipulation using pass, continue, break and else. Programming using Python conditional and loop blocks.

Python Complex data types: Using string data type and string operations, Defining list and list slicing,

Use of Tuple data type. String, List and Dictionary, List Slicing, List comprehension, string manipulation methods, List manipulation. Dictionary manipulation, Programming using string, list and dictionary in-built functions. Python Functions, Organizing python codes using functions.

JAVA LABORATORY

1. Writeaprogramthatprintsallintegerbetween0and36.

2. Create an array of 4 random numbers.

3. Create a rectangleclassthatcontainswidthand heightfieldsalsogiveitagetarea()methodagain.Makeafew testcases.

4. WriteaJavaprogramtocreateaclasscalled"Rectangle"withwidthandheight attributes.Calculatetheareaand perimeter of the rectangle

5. WriteaJavaprogramtocreateaclasscalled"Employee"withaname, salary,andhiredateattributes, andamethodto calculate yearsofservice

6. Createaclasswiththreedifferentmethodstocalculateminimum,maximumandaddition ofintegers

7. CreateaclassFruitwhichhasdatamembers-colorandtaste.Createconstructor to set thevaluesofdatamembersanda methodDetails()whichprintsthevaluesofcolorandtaste.Create anewclass Applewhich inheritsfromFruit classandhas datamembers-sizeandcondition.

8 Writeandexecutejavaprogramwhichcreateashapeclassand derivecircleandrectangleclassesfromshapeclass. Allthe classesinthisprogramshouldhaveproperconstructors andmethodstodisplaydetailsofdifferentshapes.Alsouse appropriateaccessspecifiersinyourprogram

9. CreateaninterfaceAccounthavingmethods-deposit(),withdraw()andaboutBank()(aboutBank() isastaticmethod). CreatetwoclassesSavingandCurrentwhichimplementtheAccountinterface.CallthemethodsofSavingandCurrent classes in main method

10. Write an Applet program to display the "HelloWorld" in the browser.

11. Write anApplet programthatautomatically displaythetextwithFontStyle,Fonttype.

12. Write a programtoillustrateusageoftry/catchwithfinallyclause.

13. Write a programtodescribeusageofthrowsclause.

14. Write a programforcreation ofuserdefinedexception.

BCA-THIRD YEAR FIFTH SEMESTER

CSA**7101 Introduction to Artificial Intelligence**

Introduction, AI problems,Examples,Applications.,Challenges

Intelligentbehavior.TheTuring test,Agent,Environment,.Rationalversusnon-rationalreasoning.Natureofenvironments -Fullyversuspartiallyobservable,Singleversusmulti-agent,Deterministicversusstochastic,Staticversusdynamic, Discrete versuscontinuous.

Natureofagents:Autonomousversussemi-autonomous,Reflexive,goal-based,andutility-based.Theimportanceof perceptionandenvironmentalinteractions

Basic Search: StrategiesProblemspaces,problemsolvingby search,Uninformedsearch-breadth-first, depth-first,depth- first withIterative deepening.

Perceptron&NeuralNetworkLearning—FeedForward&BackPropagation

Basic MachineLearningApplications,MachineLearningalgorithms,

CSA**7102 Advance Python Programming**

Regular Expressions – Concept of regular expression, various types of regular expressions, using match function.
Classes and Objects: Overview of OOP (Object Oriented Programming), Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data

Hiding Multithreaded Programming: Thread Module, creating a thread, synchronizing threads, multithreaded priority queue Modules: Importing module, Creating and exploring modules, Math module, Random module, Time module 12 V

Creating the GUI Form and Adding Widgets: Widgets: Button, Canvas, Checkbutton, Entry, Frame, Label, Listbox, Menubutton, Menu, Message, Radiobutton, Scale, Scrollbar, text, Toplevel, Spinbox, PanedWindow, LabelFrame, tkMessagebox. Handling Standard attributes and Properties of Widgets.
Layout Management: Designing GUI applications with proper Layout Management features. Look and Feel Customization: Enhancing Look and Feel of GUI using different appearances of widgets.

Storing Data in Our MySQL Database via Our GUI : Connecting to a MySQL database from Python, Configuring the MySQL connection, Designing the Python GUI database, Using the INSERT command, Using the UPDATE command, Using the DELETE command, Storing and retrieving data from MySQL database.

CSA**7103 System Analysis & Design**

Unit 1: Basic Concept of Systems The System: Definition and Concepts; Elements of a System:
Input, Output Processor, Control, Feedback, Environment, Boundaries and Interface; Characteristics of a System;
Types of systems -Physical and Abstract System, Open and Closed Systems, Man-made Systems; Information and
its categories   Information System and System Analyst Information systems : TPS, OAS, MIS, DSS, ESS;
 System Analyst: Role and need of system analyst, System Analyst as an agent of change.
Unit 2: System Development Life Cycle Introduction to SDLC, Various phases: study, analysis, design,
development, testing, implementation, maintenance; System documentation: Types of documentation
and their importance.

Unit 3: System Planning and Information Gathering Initial Investigations, Identification of user needs,

Project Identification and Selection; Needs of Information Gathering, Determination of requirements,

Information gathering tools: interviews, group communication, questionnaires, presentations and site visits.

Feasibility Study Definition, Importance of feasibility study, Types of feasibility study, System selection

plan and proposal, Prototyping, Cost-Benefit Analysis: Tools and Techniques.

CSA**7301 Linux Shell Scripting**

Unit-1 Introduction: Linux Operating systems, Difference between Linux and other operating systems, Features and

Architecture, Installation, Booting and shutdown process, System processes (an overview),

External and internal commands, Creation of partitions in OS, Processes and its creation phases –

Fork, Exec, wait, exit. User Management and the File System: Types of Users, Creating users, Granting rights, User management

commands, File quota and various file systems available, File System Management and Layout,

File permissions, Login process, Managing Disk Quotas, Links (hard links, symbolic links)

Unit-2 Shell introduction and Shell Scripting: Shell and various type of shell, Various editors present in Linux,

Different modes of operation in vi editor, Shell script, Writing and executing the shell script,

Shell variable (user defined and system variables), System calls, Using system calls, Pipes and Filters.

Unit-3 Linux Control Structures and Utilities: Decision making in Shell Scripts (If else, switch),

Loops in shell, Functions, Utility programs (cut, paste, join, tr, uniq utilities), Pattern matching utility (grep).

BCA-THIRD YEAR SIXTH SEMESTER

BCA**7104 Cyber Security**

Information security: overview, information security importance, information security components.
Threats to information system- external and internal thread, security threat and vulnerability- overview,
malware, type of malware: virus, worms, trojans, rootkits, robots, adware's, spywares, ransom wares,
zombies etc., desktop security

UNIT-II Application security- database security, e- mail security,

internet security, principles of security- confidentiality, integrity, availability, introduction to
cryptography- symmetric key cryptography, asymmetric key cryptography, message authentication,
applications of cryptography. Security technology- firewall, type of firewall, firewall benefits, VPN,
antivirus software

UNIT-III Cyberspace- cloud computing &security, social network sites security, attack prevention
passwords, protection against attacks in social media, securing wireless networks, security threats.
Cybercrime-concept of cybercrime, type of cybercrime, phishing, cyber crime prevention, case study,
security threats to e- commerce- electronic payment system, Digital Signature– digital signature process

BCA**7105** R PROGRAMMING

Introduction- How to run R, R Sessions and Functions, Basic Math and statistics, Variables, Data Types, Vectors— Advanced Data Structures- DataFrames, Lists, Matrices, Arrays, Classes.

R Programming Structures -Control Statements, Loops, Looping Over Non-vector Sets, If Else-Arithmetic and Boolean Operatorsandvalues,DefaultValuesforArgument,ReturnValues-DecidingWhethertoexplicitlycallreturnReturning ComplexObjects-FunctionsareObjective-NoPointersinR—Recursion,AQuicksort Implementation Extended, Example: A Binary Search Tree.

Doing Math, statistics and Simulation in R- Math Function-Extended Example Calculating Probability Cumulative Sums andProductsMinimaandMaximaCalculus-FunctionsFirStatisticalDistribution—Sorting-LinearAlgebraOperationon Vectors and Matrices -Extended Example: Vector cross Product Extended Example: Finding Stationary Distribution of MarkovChains-SetOperation-Input/Output-AccessingtheKeyboardandMonitor-ReadingandwriterFiles.

CreatingGraphs-TheWorRorseofRBaseGraphics-theplot()Function—CustomizingGraphs-SavingGraphstoFiles.

Probability Distributions -Normal Distribution Binomial Distribution Poisson Distributions other Distribution -Basic Statistics-Correlationand Covariance— T tests — ANOVA – Linear Models- Simple Linear Regression- Multiple Regression Generalized Linear Models-Logistic Regression —Poisson Regression other Generalized Linear Models Survival Analysis, Nonlinear Models, Splines Decision Random Forests,

Project 1 BCA7106 – Based on Online / Offline Web Design Using HTML, CSS, Javascript.

Project 2 BCA7302 - Based on Python Language using mysql database.

CSA6003PPYTHONPROGRAMMINGLABORATORY

1. Readalistofnumbersandwriteaprogramtocheckwhetheraparticularelementispresentornotusing membership operators.

2. Ready our name and age and write a program to display the year in which youwillturn100 yearsold.

3. Readwidthandlengthofaconeandwriteaprogramtofindtheareaofarectanglecone.

4. Writeaprogramtocomputedistancebetweentwopointstakinginputfromtheuser(Hint:usePythagorean theorem)

5. Writeaprogramtoread astringandprintthevowelspresentinthestring

6. WriteaPythonfunctionthattakestwolistsandreturnsTrueiftheyhaveatleastone commonmember.

7. WriteaPythonprogramtogetthelargestnumber fromalist

8. WriteaPythonprogramtosumalltheitemsinalist.

9. WriteaPythonprogramtoappendalisttothesecondlist.

10. Uselisttostore[1,2,3,...,12]and[Jan,Feb,Mar,...,Dec].Createadictionary usingtheselistswherekeyvaluesare 1,2,3... and value are Jan,feb,Mar,. ....Printthekeyandvalueelementsofthecreateddictionary.

11. Writeaprogramtoreadandprint allthelinesofatextfile.
12. Writeaprogramforhandlingexceptions

CSA**6004P INTERNET TECHNOLOGY** LABORATORY

l.Design a HTML document using basic elements like:
        `<HTML>,<body>,<head>,<tit1e>, <br>, <hr>`.

2.Design a HTML document which show the use of following Text formatting tag:
        center, sup,em, ins, sub,font, h1 toh6.

3.Design a HTML document to demonstrate all computer output tag:
        code, kbd, samp, tt, var, pre, listing, xmp.

4.Design a HTML document which demonstrate the use of following tag:
     abbr, acronym, address, bdo, blockquote, .
   Also apply these character entities in your HTML document:
        Non-breaking space

5. Demonstrate how to create a link in an HTML document.
6. Demonstrate how to use an image as a link in HTML document.
7. Demonstrate how to link to an otherpage by opening a new window
8. Demonstrate how to use a link to jump to another part of same document.
9. Demonstrate how to make a vertical and horizontal frame set with three different documents.
10. Design a HTML document which does not allow a user to resize frame.
11. Demonstrate how to make a navigation frame.This navigation framecontainsalist oflinkswiththesecondframeasthe target.
12. Designa HTML document having
       Colored back ground table.
       Table having image in background. Colored
       background cell.
       Table having image in only one cell.
13. Demonstratehowtousethe"frame"attribute(withvalueslike:box,void,above,below,hside, vside,lhs,rhs)andborder